




## **ESCC QUALIFIED PARTS LIST**

**REP005**

**Updated 15 October 2013**



Document Custodian: European Space Agency - see <https://spacecomponents.org>

	General Information	
As affected		
Section/Page No.	Description	
Section 02 02-03-001-1 02-03-001-2 02-03-004-1	Index of Connectors HE 801 Series from Hypertac HE 801 Series from Hypertac UK OHD Interposer from Hypertac	Amended Extended Extended Extended
Section 04 04-13-003-3	Index of Diodes Varactor, Tuning, CH 76xxx from Cobham Microwave	Amended
Section 08 08-90-001	Index of Microcircuits PLL Frequency Synthesizer from Peregrine Semiconductor	Amended Extended
Section 09 09-01-005 09-01-006 09-02-007	Index of Relays Type E from LEACH Type 317 Type 3*7B from STPI	Amended Amended Amended
Section 10 10-08-006 10-09-003 10-11-001-1	Index of Resistors Surface Mount, Type MS1 from Vishay Electronic (Selb) Type CHP from Vishay SA Sfernice Single & Double Layer from IRCA	Amended Extended Extended Amended
Section 11 11-01-001	Index of Thermistors Types G15K4D489 and *K3A35* from MEAS Ireland (Betatherm)	Amended
Section 12 12-05-003-01	Index of Transistors Types STRH100N10FSY3 and STRH40N6SG from STMicroelectronic	Amended Amended
		Qualified Parts List
		DOCUMENT CHANGES
		Change Date: 15 Oct 2013

	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 02	Index of Connectors	Amended
02-01-001-1	D*M Series, Rectangular from C&K Components	Extended
02-02-001-1	D*MA Series, Rectangular from C&K Components	Extended
02-03-002-1	KMC Series from Hypertac	Extended
02-03-003-1	MHD Series from Hypertac	Extended
02-05-001-1	MDM Series, Rectangular from C&K Components	Extended
Section 08	Index of Microcircuits	
08-90-001	PLL Frequency Synthesizer from Peregrine Semiconductor	Amended
Section 12	Index of Transistors	
12-02-002-3A-B	Types PNP from STMicroelectronics	Amended
Section 13	Index of Wires and Cables	Amended
13-01-005-1	Crosslinked PTFE, Type Silver-Plated Copper from Tyco Electronics	Extended



**Qualified Parts List**  
**DOCUMENT CHANGES**


**Change Date: 15 Sep 2013**

	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-05-003-1	Index of Capacitors Type PM94S from Eurofarad	Amended Extended
Section 02 02-02-003	Index of Connectors DBAS Series, Circular from Deutsch	Amended Extended
Section 13 13-01-001-3 13-01-004-3 13-01-005-2 13-01-010-2	Index of Wires and Cables Polyimide, Types 3901002**B from Axon' Cable Polyimide, Types 3901013**B from Axon' Cable Crosslinked PTFE, Type Silver-Plated Copper from Axon' Cable Polyimide, Insulated, Shielded, Drain Wire, Types 3901021**B from Axon' Cable	Amended Extended Extended Extended Extended
13-02-003-1	Symmetric, Quad, Spacewire from Axon' Cable	Extended
Section 14 14-16-99-003	Index of Miscellaneous Switches, Thermostatic, Bimetallic from Comepa	Amended Extended



**Qualified Parts List**  
**DOCUMENT CHANGES**

**Change Date: 15 Aug 2013**


	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-01-006 01-02-004-1	Index of Capacitors Ceramic, Fixed, Type II, High Voltage from AVX (N.I.) Ceramic, Fixed Chip, Type II, High Voltage from AVX (N.I.)	Amended Extended Extended
Section 02 02-05-003-1	Index of Connectors MDMA Rectangular from C&K Components	Amended Extended
Section 04 04-01-003-2 04-02-001-3	Index of Diodes Types 1N6640U and 1N6642U from ST Microelectronics Types 1N5806U and 1N5811U from ST Microelectronics	Amended Extended Extended
Section 10 10-08-007	Index of Resistors Surface Mount, Type TNPS from Vishay Electronic (Selb)	Amended Extended
	<b>Qualified Parts List</b>	
	<b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 July 2013</b>	


	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01	Index of Capacitors	Amended
01-01-006	Ceramic, Fixed, Type II, High Voltage from AVX (N.I.)	Amended
01-02-001-1	Ceramic, Fixed, Chip Type I from AVX/TPC	Extended
01-02-002-1	Ceramic, Fixed, Chip Type II from AVX/TPC	Extended
01-02-004-1	Ceramic, Fixed Chip, Type II, high Voltage from AVX (N.I.)	Amended
Section 03	Index of Crystals	Amended
03-01-001-3	TO-5 Can from KVG (D)	Extended
03-01-002-3	TO-8 Can from KVG (D)	Extended
Section 04	Index of Diodes	
04-01-003-2	Types 1N6640U and 1N6642U from ST Microelectronics	Amended
Section 08	Index of Microcircuits	
08-09-001	PLL Frequency Synthesizer from Peregrine Semiconductor Europe	Amended
Section 12	Index of Transistors	
12-05-003-1	Type STRH100N10FSYS3	Amended
Section 13	Index of Wires and Cables	Amended
13-01-004-1	Polyimide, Types SPC from W.L. Gore	Extended



**Qualified Parts List**  
**DOCUMENT CHANGES**

**Change Date: 15 Jun 2013**


	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-02-001-1 01-02-002-1	Index of Capacitors Ceramic, Fixed, Chip Type I from AVX/TPC Ceramic, Fixed, Chip Type II from AVX/TPC	Amended Amended
Section 03 03-01-001-3 03-01-002-3	Index of Crystals TO-5 Can from KVG (D) TO-8 Can from KVG (D)	Amended Amended
Section 14 14-16-99-003	Index of Miscellaneous Thermostatic, Bimetallic from COMEPA	Amended
	Qualified Parts List	
	DOCUMENT CHANGES	
		Change Date: 15 May 2013

	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-01-007 01-11-001	Index of Capacitors Type II, Types CNC53 to CNC56 from Eurofarad Type 101M, 201M, 400M 401M from Cobham Microwave	Amended Extended Extended
Section 09 09-02-003 09-02-004-3	Index of Relays Type EL415 from REL STPI Type M302 from LEACH Sarralbe	Amended Extended Extended
Section 10 10-09-002 A-D	Index of Resistors Type PHR; PFRR; PRAHR/CNWHR from Vishay S.A. Sfernice	Amended Amended
		
<b>Qualified Parts List</b>		
<b>DOCUMENT CHANGES</b>		
<b>Change Date: 15 April 2013</b>		




**QPL**





	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-02-002-2	Index of Capacitors Type II, Types CNC2S to CNC14S from Eurofarad	Amended
Section 04 04-13-003-1A-B	Index of Diodes PIN and Varactors from RF2M Microwave	Amended Extended
Section 08 08-09-001	Index of Microcircuits PLL Frequency Synthesizer from Peregrine	Amended
Section 10 10-11-002	Index of Resistors Single & Double Layer from Minco	Amended Added
Section 12 12-05-003-01 12-06-003-01	Index of Transistors Type STRH100N10FSY3 from STMicroelectronics Type STRH40P10 from STMicroelectronics	Amended Amended Added
		
<b>Qualified Parts List</b>		
<b>DOCUMENT CHANGES</b>		
<b>Change Date: 15 March 2013</b>		



**QPL**


	General Information	
As affected		
Section/Page No.	Description	
Section 02 02-05-004-1	Index of Connectors 8MCG, Rectangular from SOURIAU	Amended
Section 10 10-07-001	Index of Resistors Types SM*-PW and SM*-PT from Isabellenhütte	Amended Extended
Section 12 12-02-002-3A-B	Index of Transistors Types PNP from STMicroelectronics	Amended
Section 13 13-01-003 13-01-011-1 13-02-001	Index of Wires and Cables PTFE, Types MTV-BTV from Nexans Crosslinked, Modified ETFE, Type Silver-Plated Copper, Lightweight from Tyco Electronics PTFE/Polyimide, Type 50 CIS from Nexans	Amended Extended Extended Extended
		<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p> <p align="center">Change Date: 15 February 2013</p>

	General Information	
As affected		
Section/Page No.	Description	
Section 04 04-02-002-1 04-02-003-1	Index of Diodes Type STPS20100 from STMicroelectronics Types BYW-81, BYV52, BYV54 from STMicroelectronics	Amended Amended
Section 08 08-80-001-2 08-80-002-2	Index of Microcircuits 4000 B Series from ST Microelectronics 54HCMOS Series from ST Microelectronics	Amended Amended
Section 09 09-01-004	Index of Relays Type E 215 from REL STPI	Amended Extended
Section 12 12-02-002-3A-B	Index of Transistors Types PNP from STMicroelectronics	Amended
Section 13 13-01-012-2	Index of Wires and Cables Fluoropolymer, Lightweight, Based on Type CSWL from W.L. Gore	Amended Extended
	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 January 2013</b>	

	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-01-005 01-02-001-1	Index of Capacitors Type II, High Capacitance from AVX (N.I.) Type I from AVX/TPC	Amended Extended Amended
Section 02 02-05-004-1	Index of Connectors 8MCG, Rectangular from SOURIAU	Amended Extended
Section 04 04-02-002-1 04-02-003-1	Index of Diodes Type STPS20100 from STMicroelectronics Types BYW-81, BYV52, BYV54 from STMicroelectronics	Amended Extended Extended
Section 09 09-02-004	Index of Relays Type EL215 from REL STPI	Amended Extended
Section 12 12-05-003-01	Index of Transistors Type STRH100N10FSY3 from STMicroelectronics	Amended Extended
Section 13 13-02-003-2	Index of Wires and Cables Symmetric, Quad, Spacewire from W.L. Gore	Amended Extended
		
<b>Qualified Parts List</b>		
<b>DOCUMENT CHANGES</b>		
<b>Change Date: 15 December 2012</b>		



**QPL**

	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-01-005	Index of Capacitors Type II, High Capacitance from AVX (N.I.)	Amended
Section 02 02-02-009	Index of Connectors Series ACB1 from Axon' Cables	Amended Extended
Section 04 04-02-002-1 04-02-003-1	Index of Diodes Type STPS20100 from STMicroelectronics Types BYW-81, BYV52, BYV54 from STMicroelectronics	Amended Amended
Section 09 09-02-004	Index of Relays Type EL215 from REL STPI	Amended
Section 13 13-01-004-2	Index of Wires and Cables Polyimide, Types SPL from W.L. Gore	Amended Extended
		
		<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>
		<b>Change Date: 15 November 2012</b>

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
Document Changes	-
Table of Contents	1
1 Foreword	2
2 Procurors' Responsibility	2
3 Use of Tables	2
4 Revision Procedure	2
5 Table of Qualified Component Types	3
Appendices	
'A' Qualified Components List	4

## 1. FOREWORD

This document contains a list of components that have been qualified to the rules of the ESCC System and are intended for use in ESA and other spacecraft and associated equipment in accordance with the requirements of the ECSS Standard ESCC-Q-ST-60.

It is permitted to advertise the ESCC qualification status of a product provided such publicity or advertisement does not state or imply that the product is the only qualified or capability approved one of that particular type, range or family.

## 2. PROCURORS' RESPONSIBILITY

When procuring ESCC qualified or capability approved components, the procurer is responsible for ensuring that the qualification or capability approval status is valid and that delivered components fulfill the specified requirements of the applicable ESCC specifications. The procurer is advised to utilise the ESCC non-conformance system in the event that a qualified or capability approved manufacturer delivers non-conforming components.

## 3. USE OF TABLES

### 3.1 Publication

The individual entries are published in sections within this document and are presented by manufacturer on the web. Please refer to our [escies.org](http://escies.org) website.

### 3.2 Type Designation

The referenced type (style) designations are derived from industrial standards (i.e., JEDEC PRO-ELECTRON, MIL, IEC and CECC). The purpose is to identify the similarity of a listed qualified component to a standard type designation.

### 3.3 Components Characteristics

The electrical characteristics are listed for guidance only and, unless otherwise stated, are specified at +25°C. The precise characteristics of the qualified component are defined in the referenced ESCC specification.

### 3.4 Manufacturer

Plant locations are indicated in the individual listing; contact information is given in full on the appropriate web pages. Please refer to our [escies.org](http://escies.org) website.

## 4. REVISION PROCEDURE

Amendments to earlier issues of the QPL implemented herein are indicated by the date on the front page and by the content of the "Document Changes" pages. The latter provides the changes over a one year period. The same issue date appears on the table at the start of each Section on the Appendix irrespective of whether changes have been made in a particular section. This indicates the information has been reviewed and is current. Finally, it should be noted that the ESA/SCC System is superseded by the ESCC (European Space Components Coordination ) System.



5. **TABLE OF QUALIFIED COMPONENTS**

Components qualified to the ESCC System are grouped by component type designations. Individual components are listed within the relevant sections as indicated in Table 5.1

**TABLE 5.1**

Section	Component Types
01	Capacitors
02	Connectors
03	Crystals
04	Diodes
05	Filters
06	Fuses
07	Inductors
08	Microcircuits
09	Relays
10	Resistors
11	Thermistors
12	Transistors
13	Wires and Cables
14	Miscellaneous
18	Optoelectronics






**APPENDIX A**


**Qualified Components List**


**Section 01****Component Type: Capacitors**


Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
<b>01-01</b>			<b>Ceramic, Fixed</b>	
	01-01-005	231 H	Type II, High Capacitance	AVX (N.I.)
	01-01-005-1	315	Type II, Types CNC 31 to CNC 34	Eurofarad
	01-01-006	262 E	Type II, High Voltage	AVX (N.I.)
	01-01-007	306 A	Type II, Types CNC 53 to CNC 56	Eurofarad
<b>01-02</b>			<b>Ceramic, Fixed, Chip</b>	
	01-02-001-1	109 L	Type I	AVX/TPC
	01-02-001-2	323	Type I, Types CEC2S to CEC14S	Eurofarad
	01-02-002-1	110 L	Type II	AVX/TPC
	01-02-002-2	324	Type II, Types CNC2S to CNC14S	Eurofarad
	01-02-004-1	264 E	Type II, High Voltage	AVX (N.I.)
<b>01-03</b>			<b>Tantalum, (Solid), Fixed, Electrolytic</b>	
	01-03-004	196 E	Type TAJ	AXV (CZ)
<b>01-05</b>			<b>Fixed, Film</b>	
	01-05-001-1	251 F	Type HT86PS, High Voltage	Eurofarad
	01-05-003-1	270 E	Type PM94S	Eurofarad
<b>01-11</b>			<b>Semiconductor</b>	
	01-11-001	286 B	Type 101M, 201M, 400M and 401M	Cobham Microwave


Types covered by similarity:  ±20% tolerance		Remarks: Capacitors no longer use a varnish finish.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3001  Detail ESCC 3001/030	AVX Limited Coleraine Northern Ireland	Qualification	DRA	Jul 1996
		Extension	DERA	Jul 1999
		Extension	DERA	Jul 2001
		Extension	QinetiQ	Oct 2003
		Extension	QinetiQ	Mar 2006
		Extension	BNSC	Jun 2008
Characteristics: E12 series		Extension	UK Space Agency	Sep 2010
Qualified Range:		Extension	UK Space Agency	Jun 2012
Variants 01 to 74 capacitance range for 50V, 100V and 200V, as per Detail Specification		Extension	UK Space Agency	Dec 2012
Variants 01 to 52, and 59 to 60, for 500V are qualified				
±10% tolerance				
Operating Temperature Range (°C): -55 to +125				
 	<p style="text-align: center;">CAPACITORS, CERAMIC, TYPE II, HIGH CAPACITANCE, BASED ON CASE STYLES BR, CV, AND CH</p>	Current Validity of Qualification		Page
		Certificate	Valid Until	01-01
		231 H	December 2014	005

Types covered by similarity:  E6 ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3001  Detail ESCC 3001/037	EUROFARAD Chanteloup en Brie France	Qualification	CNES	Nov 2011
Characteristics: E12 ±10% tolerance  Qualified Range:  Variants 01 to 16. 16V : 2.2 to 68 µF 25V: 1.2 to 39 µF  DIL format with equal number of leads per side Lead material : type A with type 10 finish (electro-deposited 98% Ag min.) Operating Temperature Range (°C): -55 to +125				
	CAPACITORS, CERAMIC, TYPE II, MULTIPLE LAYERS, BASED ON TYPES CNC 31 to 34, NE, PE AND PLE	Current Validity of Qualification		Page
		Certificate	Valid Until	01-01
		315	November 2013	005-1

Types covered by similarity:  ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3001	AVX Limited Coleraine Northern Ireland	Qualification	DERA	Sep 2000
Detail ESCC 3001/034		Extension	QinetiQ	Aug 2002
		Extension	QinetiQ	Mar 2006
		Extension	BNSC	Jan 2009
		Extension	UK Space Agency	Apr 2011
		Extension	UK Space Agency	Jul 2013
<p>Characteristics: E12 series</p> <p>Qualified Range:</p> <p>Variants 01 to 22 are qualified ±10% tolerance</p> <p>Operating Temperature Range (°C): -55 to +125</p>				
	<p>CAPACITORS, CERAMIC, TYPE II, HIGH VOLTAGE, 1.0 TO 5.0 KV, BASED ON CASE STYLES VR, CV, AND CH</p>	Current Validity of Qualification		Page
		Certificate  262 E	Valid Until  January 2015	01-01  006

Types covered by similarity:  E6: ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3001  Detail ESCC 3001/038	EUROFARAD Chanteloup en Brie France	Qualification  Extension	CNES  CNES	Mar 2011  Apr 2013
<p>Characteristics:</p> <p>Qualified Range:</p> <p>Variants 01 to 04, 08 to 11, 15 to 18 and 22 to 25 are qualified All values 50V to 500V E12: ±10% tolerance</p> <p>Operating Temperature Range (°C): -55 to +125</p>				
	<p>CAPACITORS,  CERAMIC, TYPE II, 50V TO 500V,  BASED ON TYPES CNC53 TO CNC56</p>	Current Validity of Qualification		Page
		Certificate  306 A	Valid Until  March 2015	01-01  007

Types covered by similarity:  Tolerance ( $\pm$ ): 0.5pF; 2, 5, 20%								Remarks:																																																		
Procurement Specifications				Manufacturer				Nature of Approval	Supervising Authority	Date																																																
Generic ESCC 3009  Detail ESCC 3009/003 3009/004 3009/005 3009/006 3009/022				AVX/TPC St Apollinaire France				Qualification	CNES	Feb 1983																																																
Characteristics: Operating Temp. Range ( $^{\circ}$ C), -55 to +125 Variants 01, 03 and 06 are qualified Values covered by ESCC Specifications defined below.				<table border="1"> <thead> <tr> <th>Style</th> <th>Model</th> <th>Detail Spec.</th> <th>Variants</th> <th>Capacitance Range (pF)</th> <th>Rated Volt. (V)</th> <th>Tolerance (<math>\pm</math>%)</th> <th>TC (ppm/<math>^{\circ}</math>C)</th> </tr> </thead> <tbody> <tr> <td>0805</td> <td>A_12C</td> <td>3009/003</td> <td>01, 03, 06</td> <td>4.7 to 9.1 10 to 1 500</td> <td>50, 100 50, 100</td> <td>0.5pF 1, 2, 5, 10</td> <td><math>\pm</math>30</td> </tr> <tr> <td>1206</td> <td>A_20C</td> <td>3009/022</td> <td>01, 03, 06</td> <td>10 to 3 900</td> <td>50, 100</td> <td>1, 2, 5, 10</td> <td><math>\pm</math>30</td> </tr> <tr> <td>1210</td> <td>A_13C</td> <td>3009/004</td> <td>01, 03, 06</td> <td>22 to 6 800 8 200 to 10 000</td> <td>50, 100 50</td> <td>1, 2, 5, 10</td> <td><math>\pm</math>30</td> </tr> <tr> <td>1812</td> <td>A_14C</td> <td>3009/005</td> <td>01, 03, 06</td> <td>100 to 15 000</td> <td>50, 100</td> <td>1, 2, 5, 10</td> <td><math>\pm</math>30</td> </tr> <tr> <td>2220</td> <td>A_15C</td> <td>3009/006</td> <td>01, 03, 06</td> <td>470 to 33 000</td> <td>50, 100</td> <td>1, 2, 5, 10</td> <td><math>\pm</math>30</td> </tr> </tbody> </table>				Style	Model	Detail Spec.	Variants	Capacitance Range (pF)	Rated Volt. (V)	Tolerance ( $\pm$ %)	TC (ppm/ $^{\circ}$ C)	0805	A_12C	3009/003	01, 03, 06	4.7 to 9.1 10 to 1 500	50, 100 50, 100	0.5pF 1, 2, 5, 10	$\pm$ 30	1206	A_20C	3009/022	01, 03, 06	10 to 3 900	50, 100	1, 2, 5, 10	$\pm$ 30	1210	A_13C	3009/004	01, 03, 06	22 to 6 800 8 200 to 10 000	50, 100 50	1, 2, 5, 10	$\pm$ 30	1812	A_14C	3009/005	01, 03, 06	100 to 15 000	50, 100	1, 2, 5, 10	$\pm$ 30	2220	A_15C	3009/006	01, 03, 06	470 to 33 000	50, 100	1, 2, 5, 10	$\pm$ 30	Extension	CNES	Sep 1986
								Style	Model	Detail Spec.	Variants	Capacitance Range (pF)	Rated Volt. (V)	Tolerance ( $\pm$ %)	TC (ppm/ $^{\circ}$ C)																																											
								0805	A_12C	3009/003	01, 03, 06	4.7 to 9.1 10 to 1 500	50, 100 50, 100	0.5pF 1, 2, 5, 10	$\pm$ 30																																											
								1206	A_20C	3009/022	01, 03, 06	10 to 3 900	50, 100	1, 2, 5, 10	$\pm$ 30																																											
								1210	A_13C	3009/004	01, 03, 06	22 to 6 800 8 200 to 10 000	50, 100 50	1, 2, 5, 10	$\pm$ 30																																											
								1812	A_14C	3009/005	01, 03, 06	100 to 15 000	50, 100	1, 2, 5, 10	$\pm$ 30																																											
								2220	A_15C	3009/006	01, 03, 06	470 to 33 000	50, 100	1, 2, 5, 10	$\pm$ 30																																											
								Requalification	CNES	Apr 1992																																																
								Extension	CNES	Jan 1995																																																
								Extension	CNES	Jun 1998																																																
Extension	CNES	Nov 2000																																																								
Extension	CNES	Jun 2003																																																								
Requalification	CNES	Feb 2005																																																								
Extension	CNES	May 2007																																																								
Extension	CNES	Jun 2009																																																								
Extension	CNES	Jun 2011																																																								
Extension	CNES	Jun 2013																																																								
				CAPACITORS, CERAMIC, FIXED, CHIP, TYPE I				Current Validity of Qualification		Page																																																
								Certificate	Valid Until	01-02																																																
								109 L	June 2015	001-1																																																

Types covered by similarity: Tolerance ( $\pm$ ): <10pF; 0.25– 0.5-1pF; $\geq$ 10pF; 1, 2, 5, 10%		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3009  Detail ESCC 3009/003 3009/004 3009/005 3009/006 3009/022 3009/037	EUROFARAD Chanteloup en Brie France	Qualification	CNES	Oct 2012
Characteristics: Variant 06 is qualified See Table on next page  Operating Temp. Range ( $^{\circ}$ C), -55 to +125				
	CAPACITORS, CERAMIC, FIXED, CHIP, TYPE I	Current Validity of Qualification		Page
		Certificate	Valid Until	01-02
		323	October 2014	001-2A



Characteristics:

Style	Model	Detail Spec.	Variants	Capacitance Range (pF)			Rated Volt. (V)	Tol. (±%)
0805	CEC2S	3009/003	06	10	to	2 700	16	<10pF 0.25—0.5 -1 (pF)
				10	to	2 200	25	
				1	to	1 800	50	
				1	to	1 200	100	
1210	CEC4S	3009/004	06	10	to	15 000	16	
				10	to	13 000	25	
				10	to	12 000	50	
				10	To	6 800	100	
1812	CEC6S	3009/005	06	100	to	33 000	16	
				100	to	30 000	25	
				100	to	22 000	50	
				100	to	12 000	100	
2220	CEC7S	3009/006	06	470	to	68 000	16	
				470	to	56 000	25	
				470	to	47 000	50	
				470	to	27 000	100	
1206	CEC12S	3009/022	06	10	to	6 800	16	
				10	to	6 200	25	
				1	to	5 600	50	
				1	to	3 900	100	
0603	CEC14S	3009/037	06	10	to	1 000	16	
				10	to	680	25	
				1	to	560	50	
				1	to	330	100	



CAPACITORS,  
CERAMIC, FIXED,  
CHIP, TYPE I

Current Validity of Qualification

Certificate

323


Valid Until

October 2014

Page

01-02

002-2B

Types covered by similarity:  Tolerance ( $\pm\%$ ): 10, 20%		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3009  Detail ESCC 3009/008 3009/009 3009/010 3009/011 3009/023	AVX/TPC St Apollinaire France	Qualification Extension Requalification Extension Extension Extension Extension Extension Requalification Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES	Feb 1983 Sep 1986 Oct 1992 Mar 1995 Jun 1998 Nov 2000 Jun 2003 Feb 2005 May 2007 Jun 2009 Jun 2011 Jun 2013
Characteristics:  See Table on next page  Operating Temperature Range ( $^{\circ}\text{C}$ ), -55 to +125				
	CAPACITORS, CERAMIC, FIXED, CHIP, TYPE II	Current Validity of Qualification		Page
		Certificate  110 L	Valid Until  June 2015	01-02  002-1A

Characteristics:	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)			Rated Volt. (V)	Tol. (±%)
	0805	A_12G	3009/008	01, 03, 06	10 000	to	47 000	25	5, 10, 20
					3 900	to	27 000	50	5, 10, 20
					820	to	10 000	100	5, 10, 20
	0805	A612Z	3009/008	07	27 000	to	100 000	25	5, 10, 20
					27 000	to	68 000	50	
					10 000	to	47 000	100	
	1210	A_13G	3009/009	01, 03, 06	47 000	to	220 000	25	5, 10, 20
					33 000	to	120 000	50	5, 10, 20
					3 900	to	47 000	100	5, 10, 20
1210	A613Z	3009/009	07	100 000	to	470 000	25	5, 10, 20	
				100 000	to	330 000	50		
				47 000	to	220 000	100		
1812	A_14G	3009/010	01, 03, 06	82 000	to	470 000	25	5, 10, 20	
				56 000	to	270 000	50	5, 10, 20	
				6 800	to	82 000	100	5, 10, 20	
1812	A614Z	3009/010	07	220 000	to	1 000 000	25	5, 10, 20	
				220 000	to	680 000	50		
				82 000	to	470 000	100		
2220	A_15G	3009/011	01, 03, 06	180 000	to	1 000 000	25	5, 10, 20	
				100 000	to	680 000	50	5, 10, 20	
				18 000	to	180 000	100	5, 10, 20	
2220	A615Z	3009/011	07	470 000	to	2 200 000	25	5, 10, 20	
				470 000	to	1 500 000	50		
				180 000	to	1 000 000	100		
1206	A_20G	3009/023	01, 03, 06	27 000	to	100 000	25	5, 10, 20	
				12 000	to	68 000	50	5, 10, 20	
				2 200	to	22 000	100	5, 10, 20	
1206	A620Z	3009/023	07	47 000	to	220 000	25	5, 10, 20	
				47 000	to	150 000	50		
				27000	to	100 000	100		



CAPACITORS,  
 CERAMIC, FIXED,  
 CHIP, TYPE II

Current Validity of Qualification

Certificate

110 L


Valid Until

June 2015

Page

01-02

002-1B

Types covered by similarity:  Tolerance (±%): 10, 20%						Remarks:																																																										
Procurement Specifications				Manufacturer		Nature of Approval		Supervising Authority	Date																																																							
Generic ESCC 3009  Detail ESCC    3009/008        3009/009 3009/010        3009/011 3009/023        3009/038 3009/039				EUROFARAD Chanteloup en Brie France		Qualification		CNES	Oct 2012																																																							
Characteristics: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">Style</th> <th rowspan="2">Model</th> <th rowspan="2">Detail Spec.</th> <th rowspan="2">Variants</th> <th colspan="2">Capacitance Range (pF)</th> <th rowspan="2">Rated Volt. (V)</th> <th rowspan="2">Tol. (±%)</th> </tr> <tr> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td rowspan="8">Table continues on next page</td> <td rowspan="4">0805</td> <td rowspan="4">CNC2S</td> <td rowspan="4">3009/008</td> <td rowspan="4">06</td> <td>6 800</td> <td>to</td> <td>150 000</td> <td>16</td> <td rowspan="4">5, 10, 20</td> </tr> <tr> <td>6 800</td> <td>to</td> <td>100 000</td> <td>25</td> </tr> <tr> <td>100</td> <td>to</td> <td>47 000</td> <td>50</td> </tr> <tr> <td>68</td> <td>to</td> <td>10 000</td> <td>100</td> </tr> <tr> <td rowspan="4"></td> <td rowspan="4"></td> <td rowspan="4"></td> <td rowspan="4"></td> <td rowspan="4">07</td> <td>6 800</td> <td>to</td> <td>220 000</td> <td>16</td> <td rowspan="4">5, 10, 20</td> </tr> <tr> <td>6 800</td> <td>to</td> <td>150 000</td> <td>25</td> </tr> <tr> <td>100</td> <td>to</td> <td>100 000</td> <td>50</td> </tr> <tr> <td>68</td> <td>to</td> <td>47 000</td> <td>100</td> </tr> </tbody> </table>											Style	Model	Detail Spec.	Variants	Capacitance Range (pF)		Rated Volt. (V)	Tol. (±%)			Table continues on next page	0805	CNC2S	3009/008	06	6 800	to	150 000	16	5, 10, 20	6 800	to	100 000	25	100	to	47 000	50	68	to	10 000	100					07	6 800	to	220 000	16	5, 10, 20	6 800	to	150 000	25	100	to	100 000	50	68	to	47 000	100
	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)		Rated Volt. (V)	Tol. (±%)																																																								
Table continues on next page	0805	CNC2S	3009/008	06	6 800	to	150 000	16	5, 10, 20																																																							
					6 800	to	100 000	25																																																								
					100	to	47 000	50																																																								
					68	to	10 000	100																																																								
					07	6 800	to	220 000	16	5, 10, 20																																																						
						6 800	to	150 000	25																																																							
						100	to	100 000	50																																																							
						68	to	47 000	100																																																							
Operating Temperature Range (°C), -55 to +125																																																																
			CAPACITORS, CERAMIC, FIXED, CHIP, TYPE II				Current Validity of Qualification			Page																																																						
							Certificate	Valid Until		01-02																																																						
							324	October 2014	002-2A																																																							

Characteristics:	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)			Rated Volt. (V)	Tol. (±%)
	0805		CNC2 04S	3009/039	02	6 800 6 800 100 68	to to to to	150 000 100 000 47 000 10 000	16 25 50 100
				14	6 800 6 800 100 68	to to to to	390 000 150 000 100 000 47 000	16 25 50 100	5, 10, 20
1210		CNC4S	3009/009	06	33 000 33 000	to to	560 000 330 000	16 25	5, 10, 20
		CNC4 04S	3009/039	04	2 200 2 200	to to	220 000 56 000	50 100	
		CNC4S	3009/009	07	33 000 33 000	to to	820 000 560 000	16 25	5, 10, 20
		CNC4 04S	3009/039	16	2 200 2 200	to to	390 000 220 000	50 100	
1812		CNC6S	3009/010	06	100 000 100 000	to to	1 200 000 680 000	16 25	5, 10, 20
		CNC6 04S	3009/039	05	3 900 3 900	to to	470 000 120 000	50 100	
		CNC6S	3009/010	07	100 000 100 000	to to	1 800 000 1 200 000	16 25	5, 10, 20
		CNC6 04S	3009/039	17	3 900 3 900	to to	820 000 470 000	50 100	
2220		CNC7S	3009/011	06	150 000 150 22 000	to to to	2 700 000 1 500 000 1 000 000	16 25 50	5, 10, 20
		CNC7 04S	3009/039	06	22 000 22 000	to to	1 000 000 270 000	50 100	
		CNC7S	3009/011	07	150 000 150 000	to to	3 900 000 2 200 000	16 25	5, 10, 20
		CNC7 04S	3009/039	18	22 000 22 000	to to	1 800 000 1 000 000	50 100	
1206		CNC12S	3009/023	06	10 000 10 000 470 470	to to to to	270 000 180 000 82 000 27 000	16 25 50 100	5, 10, 20
				07	10 000 10 000 470 470	to to to to	390 000 270 000 180 000 120 000	16 25 50 100	5, 10, 20



CAPACITORS,  
CERAMIC, FIXED,  
CHIP, TYPE II

Current Validity of Qualification

Certificate

324

Valid Until

October 2014

Page

01-02

002-1B

Characteristics:

Style	Model	Detail Spec.	Variants	Capacitance Range (pF)			Rated Volt. (V)	Tol. (±%)
1206	CNC12 04S	3009/039	03	10 000	to	270 000	16	5, 10, 20
				10 000	to	180 000	25	
				470	to	82 000	50	
				470	to	27 000	100	
			15	10 000	to	1 000 000	16	5, 10, 20
				10 000	to	270 000	25	
				470	to	180 000	50	
				470	to	120 000	100	
0603	CNC14S	3009/038	06	390	to	33 000	16	5, 10, 20
				390	to	22 000	25	
				10	to	10 000	50	
				10	to	2 700	100	
			07	390	to	39 000	16	5, 10, 20
				390	to	33 000	25	
				10	to	22 000	50	
				10	to	12 000	100	
0603	CNC14 04S	3009/039	01	390	to	33 000	16	5, 10, 20
				390	to	22 000	25	
				10	to	10 000	50	
				10	to	2 700	100	
			13	390	to	100 000	16	5, 10, 20
				390	to	33 000	25	
				10	to	22 000	50	
				10	to	12 000	100	



CAPACITORS,  
 CERAMIC, FIXED,  
 CHIP, TYPE II

Current Validity of Qualification

Certificate

324


Valid Until


October 2014

Page


01-02


002-1B


Types covered by similarity:  ±20% tolerance				Remarks:																																
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																														
Generic ESCC 3009		AVX Limited Coleraine Northern Ireland		Qualification	DERA	Feb 2001																														
Detail ESCC 3009/034				Extension	QinetiQ	Apr 2003																														
				Extension	QinetiQ	May 2006																														
				Extension	BNSC	Jan 2009																														
				Extension	UK Space Agency	Mar 2011																														
				<b>Extension</b>	<b>UK Space Agency</b>	<b>Jul 2013</b>																														
<p>Characteristics: E12 series</p> <p>Qualified Range: Variants 01 to 12 are qualified</p> <p>Terminations: Variants 01 to 12: metallised pads</p> <p>Operating Temperature Range (°C):-55 to +125</p>		<table border="1"> <thead> <tr> <th>Style</th> <th>Rated Voltage (kV)</th> <th colspan="2">Capacitance Range (pF)</th> <th>Tol. (±%)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">1812</td> <td>1.0</td> <td>3 900</td> <td>to 22 000</td> <td>10</td> </tr> <tr> <td>2.0</td> <td>1 500</td> <td>to 1 800</td> <td>10</td> </tr> <tr> <td>3.0</td> <td>820</td> <td>to 1 000</td> <td>10</td> </tr> <tr> <td rowspan="3">1825</td> <td>1.0</td> <td>27 000</td> <td>to 56 000</td> <td>10</td> </tr> <tr> <td>2.0</td> <td>2 200</td> <td>to 6 800</td> <td>10</td> </tr> <tr> <td>3.0</td> <td>820</td> <td>to 2 700</td> <td>10</td> </tr> </tbody> </table>				Style	Rated Voltage (kV)	Capacitance Range (pF)		Tol. (±%)	1812	1.0	3 900	to 22 000	10	2.0	1 500	to 1 800	10	3.0	820	to 1 000	10	1825	1.0	27 000	to 56 000	10	2.0	2 200	to 6 800	10	3.0	820	to 2 700	10
Style	Rated Voltage (kV)	Capacitance Range (pF)		Tol. (±%)																																
1812	1.0	3 900	to 22 000	10																																
	2.0	1 500	to 1 800	10																																
	3.0	820	to 1 000	10																																
1825	1.0	27 000	to 56 000	10																																
	2.0	2 200	to 6 800	10																																
	3.0	820	to 2 700	10																																
		<p>CAPACITORS, FIXED, CHIP, CERAMIC, TYPE II, HIGH VOLTAGE, BASED ON 1812 and 1825</p>			<p>Current Validity of Qualification</p>																															
				Certificate	Valid Until	Page																														
				264 E	January 2015	01-02 004-1																														

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3012	AVX Czech Republic sro Tantalum Division Lanskroun Czech Republic	Qualification	DRA	Jun 1993
Detail ESCC 3012/001		Extension	DERA	Apr 2001
		Extension	QinetiQ	Apr 2003
		Extension	BNSC	Mar 2008
		Re-qualification	ESTEC	Mar 2010
Characteristics:		Extension	ESTEC	Mar 2012
Variants 01 to 07 and 11 to 17 are qualified				
Termination finish:				
<ul style="list-style-type: none"> <li>A and B case sizes are available in NILO only, e.g., <ul style="list-style-type: none"> <li>Variant 01 (A case), Variant 02 (B case)</li> </ul> </li> <li>C, D, E case sizes are available as Copper only, e.g., <ul style="list-style-type: none"> <li>Variant 13 (C case), Variant 14 (D case), Variant 17 (E case)</li> </ul> </li> </ul>				
	CAPACITORS, LEADLESS SURFACE MOUNTED, TANTALUM, SOLID ELECTROLYTE, TYPE TAJ	Current Validity of Qualification		Page
		Certificate 196 E	Valid Until March 2014	01-03 004



Types covered by similarity: 20% tolerance by variant where applicable			Remarks:																																																				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																																																		
Generic ESCC 3006  Detail ESCC 3006/022		EUROFARAD Chanteloup en Brie France	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  <a href="#">Extension</a>	CNES  CNES  CNES  CNES  CNES  CNES  CNES  <a href="#">CNES</a>	Aug 1998  Jan 2001  Aug 2003  Dec 2005  Apr 2008  Oct 2010  <a href="#">Aug 2012</a>																																																		
Characteristics: Operating Temperature Range, (°C): -55 to +125 All values defined by the ESCC Detail Specification  <table border="1"> <thead> <tr> <th colspan="3">Capacitance Range (nF)</th> <th>Tol. (±%)</th> <th>U<sub>R</sub>(kV)</th> </tr> </thead> <tbody> <tr> <td>33</td> <td>to</td> <td>2 200</td> <td>10</td> <td>1.5</td> </tr> <tr> <td>15</td> <td>to</td> <td>1 500</td> <td>10</td> <td>2.5</td> </tr> <tr> <td>15</td> <td>to</td> <td>1 000</td> <td>10</td> <td>3.5</td> </tr> <tr> <td>6.8</td> <td>to</td> <td>470</td> <td>10</td> <td>5.0</td> </tr> <tr> <td>2.2</td> <td>to</td> <td>220</td> <td>10</td> <td>7.5</td> </tr> <tr> <td>1.0</td> <td>to</td> <td>100</td> <td>10</td> <td>10.0</td> </tr> <tr> <td>3.3</td> <td>to</td> <td>68</td> <td>10</td> <td>12.5</td> </tr> <tr> <td>1.5</td> <td>to</td> <td>33</td> <td>10</td> <td>15.0</td> </tr> <tr> <td>0.68</td> <td>to</td> <td>15</td> <td>10</td> <td>20.0</td> </tr> </tbody> </table>			Capacitance Range (nF)			Tol. (±%)	U <sub>R</sub> (kV)	33	to	2 200	10	1.5	15	to	1 500	10	2.5	15	to	1 000	10	3.5	6.8	to	470	10	5.0	2.2	to	220	10	7.5	1.0	to	100	10	10.0	3.3	to	68	10	12.5	1.5	to	33	10	15.0	0.68	to	15	10	20.0			
Capacitance Range (nF)			Tol. (±%)	U <sub>R</sub> (kV)																																																			
33	to	2 200	10	1.5																																																			
15	to	1 500	10	2.5																																																			
15	to	1 000	10	3.5																																																			
6.8	to	470	10	5.0																																																			
2.2	to	220	10	7.5																																																			
1.0	to	100	10	10.0																																																			
3.3	to	68	10	12.5																																																			
1.5	to	33	10	15.0																																																			
0.68	to	15	10	20.0																																																			
		CAPACITORS, FIXED, RECONSTITUTED MICA, HIGH VOLTAGE, BASED ON TYPE HT86PS			Current Validity of Qualification <table border="1"> <tr> <td>Certificate</td> <td>Valid Until</td> <td>Page</td> </tr> <tr> <td>251 F</td> <td>April 2014</td> <td>01-05 001-1</td> </tr> </table>	Certificate	Valid Until	Page	251 F	April 2014	01-05 001-1																																												
Certificate	Valid Until	Page																																																					
251 F	April 2014	01-05 001-1																																																					



Types covered by similarity:  All values defined by the ESCC Detail Specification ±20% (E6 Series) tolerance by variant where applicable		Remarks:																																							
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																																			
Generic ESCC 3006  Detail ESCC 3006/024		EUROFARAD Marmoutier France		Qualification	CNES	Aug 2002																																			
Characteristics: E12 Series All values defined by the ESCC Detail Specification  Sizes Available 01, 02, 03, 04  Maximum dimensions (mm): 01: 10.7 x 10.7 x B 02: 15.5 x 15.5 x B 03: 16.5 x 15.5 x B 04: 18.5 x 17.0 x B  Where B= 6, 8, 10, 12, 14, 15 depending on capacitance value Operating Temperature Range, (°C): -55 to +125		<table border="1"> <thead> <tr> <th colspan="3">Capacitance Range (µF)</th> <th>Tol. (±%)</th> <th>U<sub>R</sub>(V)</th> </tr> </thead> <tbody> <tr> <td>2.2</td> <td>to</td> <td>47</td> <td>10</td> <td>50</td> </tr> <tr> <td>1.5</td> <td>to</td> <td>22</td> <td>10</td> <td>63</td> </tr> <tr> <td>0.56</td> <td>to</td> <td>12</td> <td>10</td> <td>100</td> </tr> <tr> <td>0.33</td> <td>to</td> <td>5.6</td> <td>10</td> <td>200</td> </tr> <tr> <td>0.22</td> <td>to</td> <td>4.7</td> <td>10</td> <td>250</td> </tr> <tr> <td>0.10</td> <td>to</td> <td>1.8</td> <td>10</td> <td>400</td> </tr> </tbody> </table>		Capacitance Range (µF)			Tol. (±%)	U <sub>R</sub> (V)	2.2	to	47	10	50	1.5	to	22	10	63	0.56	to	12	10	100	0.33	to	5.6	10	200	0.22	to	4.7	10	250	0.10	to	1.8	10	400	Extension	CNES	Apr 2005
				Capacitance Range (µF)			Tol. (±%)	U <sub>R</sub> (V)																																	
				2.2	to	47	10	50																																	
				1.5	to	22	10	63																																	
				0.56	to	12	10	100																																	
0.33	to	5.6	10	200																																					
0.22	to	4.7	10	250																																					
0.10	to	1.8	10	400																																					
Extension	CNES	Aug 2007																																							
Extension	CNES	Jun 2010																																							
Extension	CNES	Aug 2011																																							
Extension	CNES	Aug 2013																																							
		CAPACITORS, FIXED, SURFACE MOUNT, D.C. SELF-HEALING, NON-INDUCTIVE, POLYTEREPH- THALATE DIELECTRIC, BASED ON TYPE PM94S		Current Validity of Qualification		Page																																			
				Certificate	Valid Until	01-05																																			
				270 E	August 2015	003-1																																			


Types covered by similarity:  Unless otherwise stated in Table 1(a) of the Detail Specification, 10% and 20% tolerance are available.		Remarks:																		
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date															
Generic ESCC 5010  Detail ESCC 5711/002		COBHAM MICROWAVE Les Ulis France	Qualification  Extension  Extension	CNES  CNES  CNES	Dec 2008  May 2011  Apr 2013															
Characteristics: Operating Temperature Range, (°C): $-55$ to $+150$ All variants defined by the ESCC Detail Specification. <table border="1" data-bbox="143 746 1317 1209"> <thead> <tr> <th>Type</th> <th>Capacitance Range (pF)</th> <th><math>U_R(V)</math></th> </tr> </thead> <tbody> <tr> <td>400M106A &amp; C 400M10xA &amp; 107C 400M108A &amp; C 400M110A &amp; C 400M113J &amp; 114J</td> <td>8.2, 10, 12, 15 18, 22, 27, 33, 39 47, 56, 68 81, 100 10</td> <td>40</td> </tr> <tr> <td>101M106A &amp; C 101M10xA &amp; 107C 101M108A &amp; C</td> <td>3.9, 4.7, 5.6, 6.8 10, 12, 15 22, 27, 33, 39</td> <td>100</td> </tr> <tr> <td>201M106C 201M106A 201M10xA &amp; 107C 201M108A &amp; C 201M111J &amp; 112J</td> <td>2.2, 2.7, 3.3 0.1X (201M106C, -107C, -108C) + 210M106C 3.9, 4.7, 5.6, 6.8, 8.2 10, 12, 15, 18 0.25 &amp; 0.4</td> <td>200</td> </tr> <tr> <td>401M111J 401M112J</td> <td>0.125 0.2</td> <td>400</td> </tr> </tbody> </table>						Type	Capacitance Range (pF)	$U_R(V)$	400M106A & C 400M10xA & 107C 400M108A & C 400M110A & C 400M113J & 114J	8.2, 10, 12, 15 18, 22, 27, 33, 39 47, 56, 68 81, 100 10	40	101M106A & C 101M10xA & 107C 101M108A & C	3.9, 4.7, 5.6, 6.8 10, 12, 15 22, 27, 33, 39	100	201M106C 201M106A 201M10xA & 107C 201M108A & C 201M111J & 112J	2.2, 2.7, 3.3 0.1X (201M106C, -107C, -108C) + 210M106C 3.9, 4.7, 5.6, 6.8, 8.2 10, 12, 15, 18 0.25 & 0.4	200	401M111J 401M112J	0.125 0.2	400
Type	Capacitance Range (pF)	$U_R(V)$																		
400M106A & C 400M10xA & 107C 400M108A & C 400M110A & C 400M113J & 114J	8.2, 10, 12, 15 18, 22, 27, 33, 39 47, 56, 68 81, 100 10	40																		
101M106A & C 101M10xA & 107C 101M108A & C	3.9, 4.7, 5.6, 6.8 10, 12, 15 22, 27, 33, 39	100																		
201M106C 201M106A 201M10xA & 107C 201M108A & C 201M111J & 112J	2.2, 2.7, 3.3 0.1X (201M106C, -107C, -108C) + 210M106C 3.9, 4.7, 5.6, 6.8, 8.2 10, 12, 15, 18 0.25 & 0.4	200																		
401M111J 401M112J	0.125 0.2	400																		
		CAPACITORS,  MICROWAVE, SILICON, NAKED DIE, MOS,  BASED ON TYPES 101M, 201M, 400M AND 401M		Current Validity of Qualification		Page														
				Certificate	Valid Until	01-11														
				286 B	December 2014	001														


## Section 02


## Component Type: Connectors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
<b>02-01</b>			<b>Multipin, Solder Contacts</b>	
	02-01-001-1	71 P	D*M Series, Rectangular	C&K COMPONENTS
	02-01-001-2	155 K	D*M Series, Rectangular	SOURIAU
<b>02-02</b>			<b>Multipin, Crimp Contacts</b>	
	02-02-001-1	72 P	D*MA Series, Rectangular	C&K COMPONENTS
	02-02-001-2	156 J	D*MA Series, Rectangular	SOURIAU
	02-02-003	25 N	DBAS Series, Circular	Deutsch
	02-02-005	220 F	Series I, Circular, Crimp	SOURIAU
	02-02-006	221 F	Series II, Circular, Crimp	SOURIAU
	02-02-007-1	222 F	Series III, Circular, Miniature	SOURIAU
	02-02-008	223 E	Series III, Hermetic	SOURIAU
	02-02-009	288 A	ACB1 Series	Axon' Cables
<b>02-03</b>			<b>Printed Circuit Board</b>	
	02-03-001-1	99 M	HE 801 Series	HYPERTAC
	02-03-001-2	217 F	HE 801 Series	HYPERTAC UK
	02-03-002-1	149 K	KMC Series	HYPERTAC
	02-03-003-1	250 F	MHD Series	HYPERTAC
	02-03-004-1	281 C	IHD INTERPOSER	HYPERTAC
<b>02-04</b>			<b>R.F. Coaxial</b>	
	02-04-001	68 L	SMA Series	Radiall
	02-04-002	283 B	SMA 2.9	Radiall
<b>02-05</b>			<b>Micro-miniature, Crimp Contacts</b>	
	02-05-001-1	140 M	MDM Series, Rectangular	C&K COMPONENTS
	02-05-002-1	141 L	MTB Series, Rectangular	C&K COMPONENTS
	02-05-003-1	290 B	MDMA, Rectangular	C&K COMPONENTS
	02-05-004-1	301 A	8MCG, Rectangular	SOURIAU


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401		C&K COMPONENTS Dole France	Qualification	CNES	Feb 1981
			Extension	CNES	Jun 1983
Detail ESCC 3401/001			Extension	CNES	Sep 1986
3401/004			Extension	CNES	Oct 1988
3401/022			Extension	CNES	Jun 1989
3401/040			Extension	CNES	Sep 1991
3401/072			Extension	CNES	Apr 1994
3401/080			Extension	CNES	Jan 1997
Characteristics:	Shell Size: E, A, B, C, D, F		Extension	CNES	Jan 2000
Range of Contacts:	9, 15, 25, 37 and 50 size 20 contacts for standard density layout 3W3 to 8W8, 5W1 to 47W1 combined contact arrangements 15, 26, 44, 62, 78 and 104 size 22 contacts for high density layout		Extension	CNES	Apr 2003
Mounting Type:	Blank: standard mounting holes; Y: floating mount; E: captive nuts	Extension	CNES	Aug 2005	
Range of Connectors:	3401/001: Variants 01 & 02	Extension	CNES	Aug 2007	
Range of Contacts:	3401/004: Variants 01 to 25; 3401/022: 01 to 95; 3401/040: 01 to 17; 3401/080: 01 3401/072: Variants 05 to 14, 25 to 39, 46 to 55, 61 to 65, 72, 73, 76 to 80	Extension	CNES	Sep 2009	
Termination contacts:	solder bucket, straight PCB, 90° PCB	Extension	CNES	Aug 2011	
Gold-plated non-magnetic coating		Extension	CNES	Aug 2013	
Coaxial contact arrangements:	3401/004 variants 01 to 25: Power contact arrangements: 3401/040 variants 01 to 17				
Operating Temperature Range (°C):	-55 to +125				
 	<p style="text-align: center;">CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG,</p>	Current Validity of Qualification		Page	
		Certificate	Valid Until	02-01	
		71 P	September 2015	001-1	


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/001 3401/022 3401/072		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988
Characteristics: Complete range as defined in the Detail Specifications are qualified <b>except</b> for <ul style="list-style-type: none"> <li>high density 104 contacts arrangement</li> <li>coaxial and power contacts and arrangement</li> </ul>			Extension	CNES	Apr 1991
Range of Connectors: 3401/001: variants 01 to 02			Extension	CNES	Jan 1994
Range of Contacts: Size 20 : 9, 15, 25, 37 and 50 contacts, Size 22: 15, 26, 44, 62, 78 contacts			Extension	CNES	Jul 1996
3401/022: variants 01 to 16 & 44 to 57 & 65 to 80 3401/072: variants 01 to 65			Extension	CNES	Oct 1997
Mounting Type= blank: standard mounting holes; Y: floating mount; E: captive nuts			Extension	CNES	Mar 2000
Gold-plated non-magnetic coating			Extension	CNES	Apr 2003
Operating Temperature Range (°C): -55 to +125			Extension	CNES	Mar 2006
			Extension	CNES	May 2008
			Extension	CNES	May 2010
		<b>Extension</b>	<b>CNES</b>	<b>May 2012</b>	
	CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, NON-REMOVABLE, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*M	Current Validity of Qualification		Page	
		Certificate	Valid Until	02-01	
		155 K	May 2014	001-2	


Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/002 3401/005 3401/020 3401/021</p>		<p>C&amp;K COMPONENTS Dole France</p>	Qualification	CNES	Feb 1981	
			Extension	CNES	Jun 1983	
			Extension	CNES	Sep 1986	
			Extension	CNES	Oct 1988	
			Extension	CNES	Jun 1989	
			Extension	CNES	Sep 1991	
			Extension	CNES	Apr 1994	
			Extension	CNES	Jan 1997	
			Extension	CNES	Jan 2000	
			Extension	CNES	Apr 2003	
		Extension	CNES	Aug 2005		
		Extension	CNES	Aug 2007		
		Extension	CNES	Sep 2009		
		Extension	CNES	Aug 2011		
		Extension	CNES	Aug 2013		
<p>Characteristics: Complete range defined in the corresponding Detail Specifications are qualified Shell Size: E, A, B, C, D, F</p> <p>Range of Connectors: 3401/002: variants 01 and 02 9, 15, 25, 37 and 50 size 20* contacts for standard density layout</p> <p>Range of Contacts: *Accepts wire sizes : AWG # 20 to 24 (standard bucket: variants 01 and 02) per 3401/005 3401/005: variants 01 to 08 : AWG # 26 and 28 (reduced bucket: variants 03 and 04) per 3401/005 3401/021 variants 01 &amp; 02 :AWG # 18 and 20 (large bucket: variants 05 to 06) per 3401/005 3401/022: variants 01 &amp; 02 15, 26, 44, 62, 78 and 104 size 22** contacts for high density layout ** Accepts wire sizes AWG # 22 to 26 (standard bucket: variants 07 to 08) per 3401/005</p> <p>Mounting Type: Blank: standard mounting holes; Y: floating mount; E: captive nuts Gold-plated non-magnetic coating Connector Savers: For usage with above connector range</p> <p>Operating Temperature Range (°C): -55 to +125</p>						
		<p>CONNECTORS, ELECTRICAL, CRIMP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG,</p>		Current Validity of Qualification		Page
				Certificate	Valid Until	02-02
				72 P	September 2015	001-1



Types covered by similarity:		Remarks: .			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/002 3401/005 3401/020 3401/021 3401/022 3401/072		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988
			Extension	CNES	Apr 1991
			Extension	CNES	Jan 1994
			Extension	CNES	Jul 1996
		Extension	CNES	Mar 2000	
		Extension	CNES	Apr 2003	
		Extension	CNES	Mar 2006	
Characteristics: Complete range as defined in the Detail Specifications <b>except</b> high density 104 contacts arrangement are qualified Accessories variants <b>qualified</b> : 3401/022: variants 01 to 16, 44 to 57, 65 to 80 3401/072: variants 01 to 65  <b>Range of Connectors:-</b> 3401/002: variants 1 & 2 *Accepts wire sizes AWG # 20 to 24 (standard bucket: variants 01 and 02) 3401/005: variants 1 to 8 *Accepts wire sizes AWG # 26 and 28 (reduced bucket: variants 03 and 04) 3401/021 & 22: variants 1 & 2 *Accepts wire size AWG# 18 and 20 (large bucket: variants 05 and 06) *Accepts wire size AWG # 22, 24 and 26 (contact AWG # 22 for high density, contact arrangements, variants 07 and 08)  <b>Range of Contacts:</b> 9, 15, 25, 37 and 50 contacts size 20 for standard contact arrangements 15, 26, 44, 62, 78 contacts size 22 for high density contact arrangements  Gold-plated non-magnetic coating Connector Savers- For usage with connector range defined above  Operating Temperature Range (°C): -55 to +125		Extension	CNES	May 2008	
		Extension	CNES	Jun 2010	
		<b>Extension</b>	<b>CNES</b>	<b>May 2012</b>	
	CONNECTORS AND CONNECTOR SAVER, ELECTRICAL, CRIMP CONTACTS, REMOVABLE  RECTANGULAR RECEPTACLE AND PLUG,  BASED ON TYPE D*MA	Current Validity of Qualification		Page	
		Certificate	Valid Until	02-02	
		156 J	May 2014	001-2	





Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/008 3401/009 3401/012 3401/064		Cie DEUTSCH Evreux France	Qualification	CNES	Jul 1979
Characteristics: 3401/008: Variant 01  3401/009: Variants 01 to 20; 3401/012: Variants 01 to 04; 3401/064: Variants 01 to 41  Circular Multicontact connectors Standard contact arrangements with 3, 7, 12, 19, 27, 37 or 61 contacts in wire size AWG # 20 Special contact arrangements with contacts size AWG 22, 20, 16, 12 and 8  Operating Temperature Range (°C): -65 to +200			Extension	CNES	Nov 1982
			Extension	CNES	Nov 1985
			Extension	CNES	Oct 1989
			Extension	CNES	Apr 1992
			Extension	CNES	Aug 1994
			Extension	CNES	Feb 1997
			Extension	CNES	May 1999
			Extension	CNES	Aug 2001
			Extension	CNES	Nov 2004
		Extension	CNES	May 2007	
Extension	CNES	Jul 2010			
Extension	CNES	Aug 2011			
Extension	CNES	Aug 2013			
	CONNECTORS,  MINIATURE, ELECTRICAL, CIRCULAR, PUSH-PULL COUPLING,  REMOVABLE CRIMP CONTACTS,  BASED ON TYPE DBAS		Current Validity of Qualification		Page
			Certificate	Valid Until	02-02
			25 N	May 2015	003


Types covered by similarity:		Remarks:																	
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date														
Generic ESCC 3401  Detail ESCC 3401/052 3401/058 3401/062		SOURIAU Connection Technology Marolles en Brie France	Qualification Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES	May 1995 Mar 1998 Jul 2001 Jun 2005 Mar 2008 Mar 2010 Mar 2012														
Characteristics: All connector variants are qualified For 3401/058, variants 01 to 14 are qualified For 3401/062, variants 01 to 27 are qualified		<table border="1"> <thead> <tr> <th>Contact Size</th> <th>Ratings (A)</th> </tr> </thead> <tbody> <tr><td>4</td><td>80</td></tr> <tr><td>8</td><td>46.0</td></tr> <tr><td>12</td><td>23.0</td></tr> <tr><td>16</td><td>13.0</td></tr> <tr><td>20</td><td>7.5</td></tr> <tr><td>22</td><td>5.0</td></tr> </tbody> </table>	Contact Size	Ratings (A)	4	80	8	46.0	12	23.0	16	13.0	20	7.5	22	5.0	Extension Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES	Mar 2012 Mar 2012 Mar 2012 Mar 2012 Mar 2012 Mar 2012 Mar 2012
Contact Size	Ratings (A)																		
4	80																		
8	46.0																		
12	23.0																		
16	13.0																		
20	7.5																		
22	5.0																		
Range: # 20 with standard contact arrangements 3, 6, 10, 19, 26, 32, 41, 53, 61 # 22 with high density arrangements 6, 13, 22, 37, 55, 66, 79, 100, 128  Other arrangements with contact sizes: 20, 16, 12, 8 Receptacle and Plug Shell Sizes: 09, 11, 13, 15, 17, 19, 21, 23, 25  Operating Temperature Range (°C): -65 to +200																			
		CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, SCOOP-PROOF, REMOVABLE  CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES I		Current Validity of Qualification		Page													
		Certificate	Valid Until	220 F	March 2014	02-02 005													


Types covered by similarity:		Remarks:													
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date										
Generic ESCC 3401  Detail ESCC 3401/044 3401/045 3401/062		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995										
Characteristics: For 3401/044, all variants are qualified For 3401/045, variants 01 to 08 are qualified For 3401/062, variants 01 to 27 are qualified			Extension	CNES	Mar 1998										
Range: # 20 with standard contact arrangements 3, 6, 10, 18, 26, 32, 41, 55, 61 # 22 with high density arrangements 6, 13, 22, 37, 55, 66, 79, 100, 128		<table border="1"> <thead> <tr> <th>Contact Size</th> <th>Ratings (A)</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>23.0</td> </tr> <tr> <td>16</td> <td>13.0</td> </tr> <tr> <td>20</td> <td>7.5</td> </tr> <tr> <td>22</td> <td>5.0</td> </tr> </tbody> </table>	Contact Size	Ratings (A)	12	23.0	16	13.0	20	7.5	22	5.0	Extension	CNES	Jul 2001
Contact Size	Ratings (A)														
12	23.0														
16	13.0														
20	7.5														
22	5.0														
Other arrangements with contact sizes: 20, 16, 12 Receptacle and Plug Shell Sizes: 08, 10, 12, 14, 16, 18, 20, 22, 24 Operating Temperature Range (°C): -65 to +200			Extension	CNES	Jun 2005										
		CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, REMOVABLE CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES II	Extension	CNES	Mar 2008										
			Extension	CNES	CNES	Mar 2010									
			Extension	CNES	Mar 2012										
			Current Validity of Qualification		Page										
			Certificate	Valid Until	02-02										
			221 F	March 2014	006										

Types covered by similarity:				Remarks:																															
Procurement Specifications			Manufacturer		Nature of Approval	Supervising Authority	Date																												
Generic ESCC 3401  Detail ESCC 3401/056 3401/058 3401/062 3401/066 3401/070			SOURIAU Connection Technology Marolles en Brie France		Qualification Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES	May 1995 Mar 1998 Jul 2001 Jun 2005 Mar 2008 Mar 2010 Mar 2012																												
Charac- 3401/056 all variants are qualified teristics: 3401/058 variants 01 to 14 are qualified 3401/062 variants 28 to 54 are qualified 3401/066 variants 01 and 02 are qualified 3401/058 crimp contacts and 3401/066 triax contacts to be mounted on 3401/056 connectors 3401/070 connector receptacles with PCB contacts			<table border="1"> <thead> <tr> <th>Crimp Contact Size</th> <th>Ratings (A)</th> <th>PCB Contact Size</th> <th>Ratings (A)</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>80.0</td> <td>16</td> <td>10.0</td> </tr> <tr> <td>8</td> <td>46.0</td> <td>20</td> <td>5.0</td> </tr> <tr> <td>12</td> <td>23.0</td> <td>22</td> <td>3.0</td> </tr> <tr> <td>16</td> <td>13.0</td> <td></td> <td></td> </tr> <tr> <td>20</td> <td>7.5</td> <td></td> <td></td> </tr> <tr> <td>22</td> <td>5.0</td> <td></td> <td></td> </tr> </tbody> </table>		Crimp Contact Size	Ratings (A)	PCB Contact Size	Ratings (A)	4	80.0	16	10.0	8	46.0	20	5.0	12	23.0	22	3.0	16	13.0			20	7.5			22	5.0			Extension CNES Mar 2012		
Crimp Contact Size	Ratings (A)	PCB Contact Size	Ratings (A)																																
4	80.0	16	10.0																																
8	46.0	20	5.0																																
12	23.0	22	3.0																																
16	13.0																																		
20	7.5																																		
22	5.0																																		
Range: # 20 with standard contact arrangements (3, 4, 5, 6, 7, 8, 10, 18, 19, 26, 32, 41, 53, 55, 61 contacts) # 22 with high density arrangements (6, 13, 22, 37, 55, 66, 79, 100, 128 contacts)																																			
Other arrangements with contact sizes:# 20, 16, 12, 8,4 Receptacle and Plug Shell Sizes: 09, 11, 13, 15, 17, 19, 21, 23, 25. Triax contacts Operating Temperature Range (°C): -65 to +200																																			
 		CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF- LOCKING COUPLING, SCOOP-PROOF, REMOVABLE AND NON-REMOVABLE  CRIMP CONTACTS  BASED ON TYPE MIL-C-38999, SERIES III			Current Validity of Qualification		Page																												
					Certificate	Valid Until	02-02																												
					222 F	March 2014	007-1																												


Types covered by similarity:		Remarks:						
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date			
Generic ESCC 3401  Detail ESCC 3401/057		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995			
			Requalification	CNES	Jul 2001			
			Extension	CNES	Jun 2005			
			Extension	CNES	Mar 2008			
			Extension	CNES	Mar 2010			
			Extension	CNES	Mar 2012			
Characteristics: All variants are qualified <table border="1"> <thead> <tr> <th>Contact Size</th> <th>Ratings (A)</th> </tr> </thead> <tbody> <tr> <td>8, 12, 16 20, 22D</td> <td>33, 17, 10 5.0, 3.0</td> </tr> </tbody> </table> Range: # 20 with standard contact arrangements (3, 6, 10, 19, 26, 32, 41, 53, 61 contacts) # 22 with high density arrangements (6, 13, 22, 37, 55, 66, 79, 100, 128 contacts) Receptacle Shell Sizes: 09, 11, 13, 15, 17, 19, 21, 23, 25 Receptacle (contacts # 8, 12, 16, 20, 22D) and Feedthrough (contacts # 8, 12, 16, 20, 22D)  Operating Temperature Range (°C): -65 to +200		Contact Size	Ratings (A)	8, 12, 16 20, 22D	33, 17, 10 5.0, 3.0			
Contact Size	Ratings (A)							
8, 12, 16 20, 22D	33, 17, 10 5.0, 3.0							
	CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF-LOCKING COUPLING, SCOOP-PROOF, HERMETIC  RECEPTACLE AND FEEDTHROUGH, BASED ON TYPE MIL-C-38999, SERIES III	Current Validity of Qualification		Page				
		Certificate	Valid Until	02-02				
		223 E	March 2014	008				


Types covered by similarity:  Variants 02 to 04, 06 to 08, 10 to 12, 14 to 16 and 18		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/079	AXON' CABLE S.A. Montmirail France	Qualification  Extension	CNES  CNES	May 2009  Nov 2012
<p>Characteristics:</p> <p>Variants 01 to 18 are qualified</p> <p>Variants 01 to 08: Plug 3 and 4 Lugs, Straight and Right Angle with pin contact Variants 09 to 18: Bulkhead Jacks, 3 and 4 Lugs, Straight and Right Angle with solder contact</p> <p>All cables are 77Ω MIL-STD- 1553B Data Bus twisted shielded pairs</p> <p>Working Voltage: 200 Vrms Rated Current (contact): 1A</p> <p>Operating Temperature Range (°C): -55 to +150</p>				
	<p>CONNECTORS, ELECTRICAL, TRIAXIAL, BAYONET COUPLING, NON-REMOVABLE CRIMP CON- TACTS, MIL-STD-1553B DATABUS, BASED ON TYPE ACB1 SERIES</p>	Current Validity of Qualification		Page
		Certificate  288 A	Valid Until  May 2013	02-02  009


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/016 3401/017		HYPERTAC SA Saint-Aubin-Lès-Elbeuf France	Qualification	CNES	Nov 1982
Characteristics: All variants are qualified Shell specifications and sizes: 3401/016 Contact: 3401/017 Crimp wire-wrap solder and savers, 1 to 22 and 64 to 70 2 rows: 17, 29, 41, 53, 65, 72, 84, 96, 120 contacts 3 rows: 62, 80, 98, 160 contacts Contact Ratings: 5 A (1 contact AWG 22) 1.5 A (>31 contacts, AWG 22) Operating Temperature Range (°C): -55 to +125			Extension	CNES	May 1985
			Extension	CNES	May 1988
			Extension	CNES	Apr 1991
			Extension	CNES	Jan 1994
			Extension	CNES	Mar 1996
			Extension	CNES	Mar 1998
			Extension	CNES	Jan 2002
			Extension	CNES	Jun 2004
			Extension	CNES	Mar 2007
		Extension	CNES	Oct 2009	
Extension	CNES	Nov 2011			
Extension	CNES	Aug 2013			
	CONNECTORS, ELECTRICAL, REMOVABLE CONTACTS, CRIMP WIRE-WRAP SOLDER AND SAVER, PRINTED CIRCUIT BOARD, BASED ON TYPE HE 801		Current Validity of Qualification		Page
			Certificate	Valid Until	02-03
		99 M	October 2015	001-1	

Types covered by similarity:		Remarks: Reorganization of the qualified facility is under-way. This may affect the delivery of the ESCC product.				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3401  Detail ESCC 3401/016 3401/017		HYPERTAC LTD London England	Qualification Extension Extension Extension Extension Extension Extension	DRA DRA DERA QinetiQ QinetiQ BNSC UK Space Agency	Jul 1994 Nov 1996 Nov 1998 Apr 2002 Mar 2005 Jan 2009 Dec 2011	
Characteristics: All variants are qualified  Shell specifications and sizes: 3401/016 Range of components: 17 to 160 way connectors PCB, 90°, crimp, wire-wrap and saver contacts  Guiding/locking device numbers: 26, 27, 28, 29, 33, 34, 35, 36, 40, 41, 43, 46, 54, 55, 71, 72, 73, 76, 77, 78  Contact Ratings: 5 A (1 contact AWG 22) 1.5 A (>31 contacts, AWG 22)  Operating Temperature Range (°C): -55 to +125						
		CONNECTORS, ELECTRICAL, REMOVABLE CONTACTS, CRIMP WIRE-WRAP SOLDER AND SAVER, PRINTED CIRCUIT BOARD, BASED ON TYPE HE 801		Current Validity of Qualification		Page
				Certificate	Valid Until	02-03
			217 F	January 2013	001-2	





Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/039		HYPERTAC SA Saint-Aubin-Lès-Elbeuf France	Qualification	CNES	Mar 1987
Characteristics:  3 rows contacts: 26, 44, 62, 80, 98, 144 Contact codes: 10, 30, 31, 40, 50, 51 and 91 Guiding and locking devices codes: 110, 121, 143, 201, 202, 204, 206, 703  Contact Ratings: 2 A (1 contact)  Operating Temperature Range (°C): -55 to +125			Extension	CNES	May 1990
			Extension	CNES	Jan 1993
			Extension	CNES	Oct 1995
			Extension	CNES	Mar 1998
			Extension	CNES	Jan 2002
			Extension	CNES	Jun 2004
			Extension	CNES	Mar 2007
			Extension	CNES	Sep 2009
			Extension	CNES	Nov 2011
			<a href="#">Extension</a>	<a href="#">CNES</a>	<a href="#">Aug 2013</a>
	CONNECTORS,  ELECTRICAL, NON-REMOVABLE SOLDER AND  WIRE-WRAP CONTACTS AND SAVERS, PRINTED CIRCUIT BOARD,		Current Validity of Qualification		Page
			Certificate	Valid Until	02-03
			149 K	September 2015	002-1


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/065		HYPERTAC SA Saint-Aubin-Les-Elbeuf France	Qualification	CNES	Aug 1998
Characteristics:  Contact: 52, 100, 152, 200, 252, 300, 352 and 400 Contact Codes: 10, 11, 12, 30, 31, 43, 45, 47 and 91 Guiding and Locking Devices Codes: 110, 111, 121, 124, 134 and 201  Operating Temperature Range (°C): -55 to +125			Extension	CNES	Jan 2002
			Extension	CNES	Jun 2004
			Extension	CNES	Mar 2007
			Extension	CNES	Sep 2009
			Extension	CNES	Nov 2011
			Extension	CNES	Aug 2013
	CONNECTORS AND SAVERS, ELECTRICAL, RECTANGULAR, NON-REMOVABLE, PRINTED CIRCUIT BOARD,		Current Validity of Qualification		Page
			Certificate	Valid Until	02-03
			250 F	September 2015	003-1


Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3401  Detail ESCC 3401/076		HYPERTAC SA Saint-Aubin-Les-Elbeuf France	Qualification	CNES	Aug 2007	
Characteristics: All design envelops specified in Table 1(a) of ESCC Detail Specification are qualified  Max. number of rows 11 Max. number of contacts: 660  Locking and Guiding Devices: -Through holes only -M2 studs with locking nuts and washers -Locating pins not available  Rated current: 1A each contact Total contact compression range: 0.1 to 0.65 mm per contact Compression force: 1.6N per contact Torque for locking devices: 10 N-cm Operating Temperature Range (°C): -55 to +125			Extension	CNES	Oct 2009	
			Extension	CNES	Apr 2012	
			Extension	CNES	Aug 2013	
		CONNECTORS, ELECTRICAL, CRIMP CONTACTS, Z-AXIS INTERPOSER, PRINTED CIRCUIT BOARD, BASED ON TYPE RX		Current Validity of Qualification		
				Certificate	Valid Until	Page
				281 C	October 2015	02-03 004-1




Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3402  Detail ESCC 3402/021 3402/022 3402/023		RADIALL Saint-Quentin-Fallavier France	Qualification Extension Extension	CNES CNES CNES	Dec 2007 May 2010 Jan 2012
Characteristics: Frequency Range 0-40 GHz 50 Ohms  3402/021 Pin contact (Plug). Variants 01 to 05 and 07 3402/022 Socket contact (Receptacle). Variants 01 to 05 3402/023 Adapters. Variants 01 to 06 Crimp- or solder-type contact for flexible and semi-rigid cables, contacts for micro strip Shell material and finish: passivated amagnetic stainless steel. Operating Temperature Range (°C): -65 to +165					
	CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPE SMA 2.9		Current Validity of Qualification		Page
			Certificate	Valid Until	02-04
		283 B	December 2013	002	

Types covered by similarity:		Remarks:														
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date											
Generic ESCC 3401  Detail ESCC 3401/029 3401/041 3401/032		C&K COMPONENTS Dole France	Qualification	CNES	Oct 1986											
			Extension	CNES	Oct 1988											
			Extension	CNES	Jun 1989											
			Extension	CNES	Sep 1991											
			Extension	CNES	Apr 1994											
			Extension	CNES	Jan 1997											
			Extension	CNES	Oct 1999											
			Extension	CNES	Apr 2003											
			Extension	CNES	Nov 2005											
			Extension	CNES	Aug 2007											
		Extension	CNES	Sep 2009												
		Extension	CNES	Aug 2011												
		Extension	CNES	Sep 2013												
Characteristics: Layout: 9 - 15 - 21- 25 - 31 - 37 - 51 Contacts Non removable crimp contacts Termination types: Nickel or Gold Plated Shells Operating Temperature Range (°C): -55 to +125		<table border="1"> <thead> <tr> <th>AWG #</th> <th>ESCC No.</th> <th>Max. Rated (A)</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>Uninsulated rigid wire Bent and straight PCB</td> <td>2.5</td> </tr> <tr> <td>26</td> <td>3901 013 02 3901 002 56</td> <td>2.5</td> </tr> <tr> <td>28</td> <td>3901 013 01 3901 002 61</td> <td>1.5</td> </tr> </tbody> </table>	AWG #	ESCC No.	Max. Rated (A)	25	Uninsulated rigid wire Bent and straight PCB	2.5	26	3901 013 02 3901 002 56	2.5	28	3901 013 01 3901 002 61	1.5		
AWG #	ESCC No.	Max. Rated (A)														
25	Uninsulated rigid wire Bent and straight PCB	2.5														
26	3901 013 02 3901 002 56	2.5														
28	3901 013 01 3901 002 61	1.5														
	CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, CRIMP CONTACT,		Current Validity of Qualification		Page											
			Certificate	Valid Until	02-05											
		140 M	September 2015	001-1												

Types covered by similarity:		Remarks:														
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date											
Generic ESCC 3401  Detail ESCC 3401/031		C&K COMPONENTS Dole France	Qualification	CNES	Oct 1986											
Characteristics:  Shell sizes: 5 through 81 contacts  Non removable crimp contacts  Termination Types:  Operating Temperature Range (°C): -55 to +125			Extension	CNES	Oct 1988											
			Extension	CNES	Jun 1989											
			Extension	CNES	Sep 1991											
			Extension	CNES	Apr 1994											
			Extension	CNES	Jan 1997											
			Extension	CNES	Oct 1999											
			Extension	CNES	Apr 2003											
			Extension	CNES	Nov 2005											
			Extension	CNES	Aug 2007											
		Extension	CNES	Sep 2009												
Extension	CNES	Aug 2011														
<table border="1"> <thead> <tr> <th>AWG #</th> <th>ESCC No.</th> <th>Max. Rated (A)</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>Uninsulated rigid wire Bent PCB</td> <td>2.5</td> </tr> <tr> <td>26</td> <td>3901 013 02</td> <td>2.5</td> </tr> <tr> <td>28</td> <td>3901 013 01</td> <td>1.5</td> </tr> </tbody> </table>		AWG #	ESCC No.	Max. Rated (A)	25	Uninsulated rigid wire Bent PCB	2.5	26	3901 013 02	2.5	28	3901 013 01	1.5			
AWG #	ESCC No.	Max. Rated (A)														
25	Uninsulated rigid wire Bent PCB	2.5														
26	3901 013 02	2.5														
28	3901 013 01	1.5														
		CONNECTORS, ELECTRICAL, MICROMINIATURE, CRIMP CONTACT, SINGLE-IN-LINE, BASED ON TYPE MTB		<table border="1"> <thead> <tr> <th colspan="2">Current Validity of Qualification</th> <th>Page</th> </tr> <tr> <th>Certificate</th> <th>Valid Until</th> <th></th> </tr> </thead> <tbody> <tr> <td>141 L</td> <td>September 2013</td> <td>02-05 002-1</td> </tr> </tbody> </table>		Current Validity of Qualification		Page	Certificate	Valid Until		141 L	September 2013	02-05 002-1		
Current Validity of Qualification		Page														
Certificate	Valid Until															
141 L	September 2013	02-05 002-1														

Types covered by similarity:  Contact sizes 21, 31		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3401  Detail ESCC 3401/077 3401/078		C&K COMPONENTS Dole France	Qualification Extension Extension	CNES CNES CNES	Jun 2009 Aug 2011 Jul 2013	
Characteristics: All variants are qualified  Range of contacts: 9 - 15 - 21- 25 - 31 - 37  Accepts wires AWG 24 or 2x28 in crimping barrel AWG 24 Accepts wires AWG 26 and 28 in crimping barrel AWG 26  Max. rating for 1 isolated contact:- AWG 24 wire: 3.5 A AWG 26 wire and uninsulated AWG 25 solid wire: 2.5 A AWG 28 wire: 1.5 A  Nickel or Gold Plated Shells  Working Voltage (Max.) 150Vrms  Operating Temperature Range (°C): -55 to +125						
		CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, REMOVABLE CRIMP CONTACT, BASED ON TYPE MDMA		Current Validity of Qualification		Page
				Certificate	Valid Until	02-05
				290 B	September 2015	003-1




Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/081 3401/082 3401/083 3401/084</p>		<p>SOURIAU Connection Technology Marolles en Brie France</p>	<p>Qualification <a href="#">Extension</a></p>	<p>CNES <a href="#">CNES</a></p>	<p>Jun 2010 <a href="#">Dec 2012</a></p>	
<p>Characteristics:</p> <p>3401/081: Shell variant 01 (glass-fibre reinforced thermoplastic), variant 02 (aluminium alloy). Contacts arrangements 7, 13, 25, 51, 104 contacts. Contacts termination OL3 (straight PCB), 1A7N (90° PCB 2.54mm spacing), 1B7N (90° PCB 2.54mm spacing). Gold-plated shells.</p> <p>3401/082: Shell variant 01 (glass-fibre reinforced thermoplastic), variant 02 (aluminium alloy). Contacts arrangements 7, 13, 25, 51, 104 contacts.</p> <p>3401/083: Contacts variant 01 (male crimp barrel 26), 02 (female crimp barrel 26), 03 (male crimp barrel 24), 04 (female crimp barrel 24). Accepts wires AWG 24, 26, 28</p> <p>3401/084: Accessories variants 01 to 62.</p> <p>Operating Temperature Range (°C): -55 to +125</p>						
		<p>CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, REMOVABLE AND NON-REMOVABLE, GAUGE 26, PCB PIN CONTACT, BASED ON TYPE 8MCG</p>		Current Validity of Qualification		Page
				Certificate	Valid Until	02-05
				301 A	June 2014	004-1


**Section 03****Component Type: Crystals**


Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
03-01			Crystals	
	03-01-001-1	33 L	TO-5 Can	RAKON (F)
	03-01-001-3	308 A	TO-5 Can	KVG (D)
	03-01-002	34 L	TO-8 Can	RAKON (F)
	03-01-002-3	309 A	TO-8 Can	KVG (D)

**SECTION 03-\*\*: INDEX OF CRYSTALS****REP005 Updated on 15 Oct 2013**



Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3501  Detail ESCC      3501/001 3501/008 3501/011 3501/012 3501/018		KVG Quartz Crystal Technology GmbH Neckarbischofsheim Germany	Qualification  <a href="#">Extension</a>	DLR  <a href="#">DLR</a>	Apr 2011  <a href="#">Jun 2013</a>
Characteristics:                      All variants are qualified.  TO-5 Can (T 807)  Frequency Range: 8 - 140 MHz					
	CRYSTALS, TO-5 CAN		Current Validity of Qualification		Page
			Certificate	Valid Until	03-01
		308 A	April 2015	001-3	


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3501  Detail ESCC      3501/002 3501/009 3501/019		RAKON France Argenteuil France	Qualification	CNES	Oct 1979
			Extension	CNES	Jun 1983
			Extension	CNES	Oct 1986
			Extension	CNES	Jul 1989
			Extension	CNES	Jan 1995
			Extension	CNES	Apr 1997
			Extension	CNES	Apr 2000
			Extension	CNES	Nov 2002
			Extension	CNES	Jun 2005
			Extension	CNES	Mar 2008
Characteristics:            All variants are qualified. TO-8 Can (T 1507)  Frequency Range: 2.5 - 20 MHz			Extension	CNES	Jul 2010
			Extension	CNES	Aug 2012
	CRYSTALS, TO-8 CAN		Current Validity of Qualification		Page
			Certificate	Valid Until	03-01
		34 L	March 2014	002	

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3501  Detail ESCC      3501/002 3501/009 3501/019		KVG Quartz Crystal Technology GmbH Neckarbischofsheim Germany	Qualification  Extension	DLR  DLR	Apr 2011  Jun 2013
Characteristics:            All variants are qualified.  TO-8 Can (T 1507)  Frequency Range: 2.5 - 26 MHz					
	CRYSTALS, TO-8 CAN		Current Validity of Qualification		Page
			Certificate	Valid Until	03-01
		309 A	April 2015	002-3	


## Section 04


## Component Type: Diodes


04-01			Switching	
	04-01-003-2	311 A	Types 1N6640U and 1N6642U	STMicroelectronics
	04-01-003-3	316	Types BAY6642	Infineon
04-02			Power Rectifier	
	04-02-001-3	297 B	Types 1N5806U and 1N5811U	STMicroelectronics
	04-02-001-4	302 A	Types 1N5819U and 1N5822U	STMicroelectronics
	04-02-002-1	272 E	Type STPS20100	STMicroelectronics
	04-02-003-1	274 D	Types BYW-81, BYV52, BYV54	STMicroelectronics
04-05			RF/Microwave, Silicon Schottky	
	04-05-001-3	227 D	Schottky, BAS 70	Infineon
04-13			RF/Microwave, Varactors	
	04-13-003 1A-B	200 F	PIN and Varactors	RF2M Microwave
	04-13-003-2A-B	225 E	Multiplier and PIN, DH 2xx and DH 50xxx	Cobham Microwave
	04-13-003-3	273 C	Varactor, Tuning, DH 76xxx	Cobham Microwave
04-16			RF/Microwave, PIN	
	04-16-002-2	224 E	PIN, BXY 42	Infineon
	04-16-003	236 E	PIN, BXY 43 and 44	Infineon


Types covered by similarity:				Remarks:																				
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																		
Generic ESCC 5000  Detail ESCC      5101/026 5101/027		ST Microelectronics Rennes France		Qualification  Extension	CNES  CNES	May 2011  Jul 2013																		
Characteristics: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #ADD8E6;"> <th>Type</th> <th>Variants</th> <th>V<sub>BR</sub> (V)</th> <th>V<sub>RWM</sub> (V)</th> <th>I<sub>FSM</sub> (A)</th> <th>Case</th> </tr> </thead> <tbody> <tr> <td>1N6640U</td> <td>07, 08</td> <td>75</td> <td>75</td> <td>2</td> <td>LCC2-D</td> </tr> <tr> <td>1N6642U</td> <td>07, 08</td> <td>100</td> <td>100</td> <td>2</td> <td>LCC2-D</td> </tr> </tbody> </table>							Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case	1N6640U	07, 08	75	75	2	LCC2-D	1N6642U	07, 08	100	100	2	LCC2-D
Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case																			
1N6640U	07, 08	75	75	2	LCC2-D																			
1N6642U	07, 08	100	100	2	LCC2-D																			
Operating Temperature Range (°C): -65 to +175																								
		DIODES, SWITCHING, BASED ON TYPES 1N6640U AND 1N6642U			Current Validity of Qualification		Page																	
					Certificate	Valid Until	04-01																	
					311 A	May 2015	001-3-2																	



Types covered by similarity:				Remarks:																				
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																		
Generic ESCC 5000  Detail ESCC 5101/029		INFINEON Technologies AG Neubiberg Germany		Qualification	DLR	Dec 2011																		
Characteristics: <table border="1" data-bbox="85 890 1400 1053"> <thead> <tr> <th>Type</th> <th>Variant</th> <th>V<sub>BR</sub> (V)</th> <th>t<sub>rr</sub> (ns)</th> <th>V<sub>RWM</sub> (V<sub>pk</sub>)</th> <th>I<sub>R</sub> (μA)@ V<sub>RWM</sub></th> <th>I<sub>FSM</sub> (A<sub>pk</sub>)</th> <th>C (pF)</th> <th>Case</th> </tr> </thead> <tbody> <tr> <td>BAY6642 (ES)</td> <td>01</td> <td>100</td> <td>4</td> <td>75</td> <td>100</td> <td>2.5</td> <td>2.5</td> <td>HSL2-1808</td> </tr> </tbody> </table>							Type	Variant	V <sub>BR</sub> (V)	t <sub>rr</sub> (ns)	V <sub>RWM</sub> (V <sub>pk</sub> )	I <sub>R</sub> (μA)@ V <sub>RWM</sub>	I <sub>FSM</sub> (A <sub>pk</sub> )	C (pF)	Case	BAY6642 (ES)	01	100	4	75	100	2.5	2.5	HSL2-1808
Type	Variant	V <sub>BR</sub> (V)	t <sub>rr</sub> (ns)	V <sub>RWM</sub> (V <sub>pk</sub> )	I <sub>R</sub> (μA)@ V <sub>RWM</sub>	I <sub>FSM</sub> (A <sub>pk</sub> )	C (pF)	Case																
BAY6642 (ES)	01	100	4	75	100	2.5	2.5	HSL2-1808																
Operating Temperature Range (°C): -65 to +175																								
		DIODES, SWITCHING, BASED ON TYPES BAY6642(ES)			Current Validity of Qualification		Page																	
					Certificate 316	Valid Until December 2013	04-01 001-3-3																	

Types covered by similarity:				Remarks:																							
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																					
Generic ESCC 5000  Detail ESCC      5101/013 5101/014		ST Microelectronics Rennes France		Qualification  Extension  Extension	CNES  CNES  CNES	Nov 2009  Jan 2012  Jul 2013																					
Characteristics: <table border="1" data-bbox="107 885 1386 1050"> <thead> <tr> <th>ESCC</th> <th>Type</th> <th>Variants</th> <th>V<sub>BR</sub> (V)</th> <th>V<sub>RWM</sub> (V)</th> <th>I<sub>FSM</sub> (A)</th> <th>Case</th> </tr> </thead> <tbody> <tr> <td>5101/014</td> <td>1N5806U</td> <td>13, 14</td> <td>160</td> <td>150</td> <td>33</td> <td>LCC2-A</td> </tr> <tr> <td>5101/013</td> <td>1N5811U</td> <td>11, 12</td> <td>160</td> <td>150</td> <td>100</td> <td>LCC2-B</td> </tr> </tbody> </table>							ESCC	Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case	5101/014	1N5806U	13, 14	160	150	33	LCC2-A	5101/013	1N5811U	11, 12	160	150	100	LCC2-B
ESCC	Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case																					
5101/014	1N5806U	13, 14	160	150	33	LCC2-A																					
5101/013	1N5811U	11, 12	160	150	100	LCC2-B																					
Operating Temperature Range (°C): -65 to +175																											
 <p>ESCC European Space Components Coordination QPL</p>		DIODES, POWER RECTIFIER, BASED ON TYPES 1N5806U AND 1N5811U			Current Validity of Qualification		Page																				
					Certificate	Valid Until	04-02																				
					297 B	November 2015	001-3																				

Types covered by similarity:		Remarks:																					
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																		
Generic ESCC 5000  Detail ESCC      5106/020 5106/021		ST Microelectronics Rennes France	Qualification  Extension	CNES  CNES	Sep 2010  Sep 2012																		
Characteristics: Variants 01 and 02 of 5106/020 and Variants 02 and 03 of 5106/021 are qualified																							
<table border="1"> <thead> <tr> <th>Type</th> <th>V<sub>RWM</sub> (V)</th> <th>dV/dt (V/μs)</th> <th>I<sub>R</sub> (μA) @ V<sub>R</sub>= 40</th> <th>I<sub>FSM</sub> (A)</th> <th>I<sub>O</sub> (A) @ Tamb</th> </tr> </thead> <tbody> <tr> <td>1N5819U</td> <td>40</td> <td>10 000</td> <td>15 (DC)</td> <td>25</td> <td>1</td> </tr> <tr> <td>1N5822U</td> <td>40</td> <td>10 000</td> <td>80 (pulse)</td> <td>80</td> <td>3</td> </tr> </tbody> </table>						Type	V <sub>RWM</sub> (V)	dV/dt (V/μs)	I <sub>R</sub> (μA) @ V <sub>R</sub> = 40	I <sub>FSM</sub> (A)	I <sub>O</sub> (A) @ Tamb	1N5819U	40	10 000	15 (DC)	25	1	1N5822U	40	10 000	80 (pulse)	80	3
Type	V <sub>RWM</sub> (V)	dV/dt (V/μs)	I <sub>R</sub> (μA) @ V <sub>R</sub> = 40	I <sub>FSM</sub> (A)	I <sub>O</sub> (A) @ Tamb																		
1N5819U	40	10 000	15 (DC)	25	1																		
1N5822U	40	10 000	80 (pulse)	80	3																		
Operating Temperature Range (°C): -65 to +150 Package Type: LCC2-B																							
		DIODES, POWER SCHOTTKY, BASED ON TYPES 1N5819U AND 1N5822U		Current Validity of Qualification	Page																		
		Certificate  302 A	Valid Until  September 2014	04-02  001-4																			

Types covered by similarity		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5000  Detail ESCC      5106/016 5106/017 5106/018 5106/019		ST Microelectronics Rennes France	Qualification Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES	Nov 2002 Mar 2006 Jul 2008 Feb 2009 Nov 2010 Dec 2012	
Characteristics: Maximum Ratings for 5106/016:  $V_{RRM}$ :            100 V $I_o$ :                    2 x 20 A $dV/dt$ 10 000 V/ $\mu$ s $T_j$ :                    + 175°C Package Types      TO254, SMD.5 and SMD1 Operating Temperature Range (°C): -65 to +175						
		DIODES, POWER, SCHOTTKY BARRIER, BASED ON TYPE STPS20100		Current Validity of Qualification		Page
				Certificate	Valid Until	04-02
				272 E	November 2014	002-1A

Types covered by similarity:

ESCC COMP. NO.	VARANTS	RANGE OF COMPONENTS	BASED ON
5106/016	01	TO254	STPS20100FSY
	02	TO254	STPS20100AFSY
	03	TO254	STPS20100CFSY
	04	TO254	STPS20100SFSY
	05	SMD.5	STPS20100S
	06	SMD1	STPS20100SA
	07	SMD1	STPS20100CSA
5106/017	01	SMD.5	STPS1045S
	02	SMD.5	STPS1045CS
5106/018	01	TO254	STPS6045CFSY
	02	SMD1	STPS6045CSA
5106/019	01	TO254	STPS40100C2FSY
	02	TO254	STPS40100C1FSY
	03	SMD1	STPS40100CSA



DIODES, POWER, SCHOTTKY BARRIER,  
BASED ON TYPE STPS20H100

Current Validity of Qualification

Certificate

272 E


Valid Until

November 2014


Page

04-02

002-1B

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000  Detail ESCC      5103/029 5103/030 5103/031		ST Microelectronics Rennes France	Qualification Extension Extension Extension Extension	CNES CNES CNES CNES CNES	Aug 2003 Mar 2006 Jul 2008 Nov 2010 Dec 2012
Characteristics: 5103/029 variants 01 to 05 are qualified (types BYW81-200) 5103/030 variant 01 is qualified (types BYV52-200) 5103/031 variant 01 to 05 are qualified (types BYV54-200) Maximum Ratings: $V_{RRM}$ :            200 V $I_O$ :                    40 A for BYV 54-200, 30 A for BYV52-200, 15 and 30 A for BYW-81-200 $T_j$ :                    + 150°C Package Types      TO254, TO254AA and SMD.5 Operating Temperature Range (°C): -55 to +150					
	DIODES, SILICON, POWER RECTIFIER, HIGH EFFICIENCY, FAST RECOVERY, BASED ON TYPES BYW81, BYV52 AND BYV54	Current Validity of Qualification		Page	
		Certificate	Valid Until	04-02	
		274 D	November 2014	003-1	



Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010  Detail ESCC      See types covered by similarity		RF2M Microwave Milton Keynes England	Qualification	DRA	Dec 1993
			Extension	DERA	Oct 1997
			Extension	QinetiQ	Mar 2002
			Extension	QinetiQ	Feb 2006
			Extension	BNSC	Nov 2008
			Extension	UK Space Agency	Jan 2011
			<a href="#">Extension</a>	<a href="#">UK Space Agency</a>	<a href="#">Mar 2013</a>
Characteristics:  Operating Temperature Range (°C): -65 to +125 and 150					
	DIODES, MICROWAVE, SILICON, PIN AND VARACTORS	Current Validity of Qualification		Page	
		Certificate	Valid Until	04-13	
		200 F	November 2014	003-1A	



Types covered by similarity:

ESCC Spec. No.	Component Type
5513/007	ML4207 to ML 4209, variants 01-03, 06, 08-13, 17, 19, 21-27, 30, 32-37, 41, 43, 45-51, 54, 56-61, 65, 67, 69-72
5513/009	ML4610, ML4617 to ML4619, variants 01-03, 06, 08-13, 17, 19, 21-23, 25-28, 31, 33-38, 42, 44, 46-48, 50-53, 56, 58-63, 67, 69, 71-73, 75-78, 81, 83-88, 92, 94, 96-99
5513/010	ML4611, ML4612, ML4614, ML4615, variants 01-03, 06, 08-13, 17, 19, 21-23, 25-28, 31, 33-38, 42, 44, 46-48, 50-53, 56, 58-63, 67, 69, 71-73, 75-78, 81, 83-88, 92, 94, 96-99
5513/014	ML4622 to ML4624, variants 01-03, 06, 08-13, 17, 19, 21-23, 25-28, 31, 33-38, 42, 45-47, 49-52, 55, 57-58, 61, 63
5513/015	ML4627 to ML4629, variants 01-03, 06, 08-13, 17, 19, 21-23, 25-28, 31, 33-38, 42, 45-47, 49-52, 55, 57-58, 61, 63
5512/001	ML4402, ML4404 to ML4409 and ML40721, variants 01-03,05, 07-12, 14-18, 20, 22-27, 29-33, 35, 37-42, 44-48, 50, 52-57, 59-63, 65, 67-72, 74-78, 80, 82-84, 86, 88, 90-92
5512/003	ML4310 to ML4319, variants 01-02, 05-06, 09-13, 16-17, 20-24, 27-28, 31-35, 38-39, 42-46, 49-50, 53-57, 60-61, 64-68, 71-72, 75-79, 83-85, 89-91, 95
5512/004	ML4331 to ML4335, variants 01-02, 05-06, 09-13, 16-17, 20-24, 27-28, 31-35, 38-39, 42-46, 49-50, 53-55
5512/005	ML4336 to ML4343, variants 01-02, 06-08, 12-14, 18-20, 24-26, 30-32, 36-38, 42-44, 48
5512/006	ML4351 to ML4354, variants 01-02, 05-06, 09-13, 16-17, 20-24, 27-28, 31-35, 38-39, 42-44
5512/007	ML4355 to ML4365, variants 01-02, 06-08, 12-14, 18-20, 24-26, 30-32, 36-38, 42-44, 47-48, 51-52, 55-56



DIODES,  
MICROWAVE, SILICON, PIN AND VARACTORS

Current Validity of Qualification

Certificate

200 F

Valid Until

November 2014

Page

04-13

003-1B



Types covered by similarity:

ESCC Spec. No.	Component Type
5513/031	DH 50151 to DH 50157, Variants 01 to 56
5513/032	DH 50033 to DH 50037, Variants 01 to 40
5513/033	DH 50201 to DH 50209, Variants 01 to 70
5513/034	DH 50251 to DH 50256, Variants 01 to 41
5513/036	DH 50052 to DH 50057, Variants 01 to 48
5513/037	DH 50071 to DH 50077, Variants 01 to 56
5513/038	DH 50101 to DH 50107, Variants 01 to 56
5512/016	DH 267, Variants 10 to 15 and 16
5512/016	DH 292, Variants 20 to 25 and 26
5512/016	DH 256, Variants 30 to 35 and 36
5512/016	DH 252, Variants 40 to 45 and 46
5512/016	DH 294, Variants 50 to 55 and 56



DIODES,  
 MICROWAVE, SILICON, MULTIPLIER AND PIN,  
 BASED ON TYPES DH 2XX AND DH 50XXX

Current Validity of Qualification

Certificate

225 E


Valid Until


February 2014


Page

04-13

003-2B


Types covered by similarity: .			Remarks: Maintenance of qualification testing has been initiated.																													
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																											
Generic ESCC 5010		COBHAM MICROWAVE Les Ulis France	Qualification	CNES	Jun 2003																											
Detail ESCC 5512/023			Extension	CNES	Mar 2007																											
			Extension	CNES	Jun 2009																											
			Extension	CNES	Feb 2012																											
<p>Characteristics: All variants are qualified.</p> <p>Maximum Ratings: <math>V_R = 20</math> at <math>I_R = 10 \mu A</math> and <math>T_{amb} = +25 \text{ }^\circ C</math></p> <p>Operating Temperature Range (<math>^\circ C</math>): -55 to +155</p> <table border="1"> <thead> <tr> <th>Variants</th> <th><math>C_j</math>(typ.) (-4 V)</th> <th>Based on Type</th> </tr> </thead> <tbody> <tr><td>01 to 09</td><td>1.0 pF</td><td>DH 76010</td></tr> <tr><td>10 to 18</td><td>1.50 pF</td><td>DH 76015</td></tr> <tr><td>19 to 27</td><td>2.20 pF</td><td>DH 76022</td></tr> <tr><td>28 to 36</td><td>2.30 pF</td><td>DH 76033</td></tr> <tr><td>37 to 45</td><td>4.70 pF</td><td>DH 76047</td></tr> <tr><td>46 to 54</td><td>6.80 pF</td><td>DH 76068</td></tr> <tr><td>55 to 63</td><td>10.00 pF</td><td>DH 76100</td></tr> <tr><td>64 to 72</td><td>15.00 pF</td><td>DH 76150</td></tr> </tbody> </table>						Variants	$C_j$ (typ.) (-4 V)	Based on Type	01 to 09	1.0 pF	DH 76010	10 to 18	1.50 pF	DH 76015	19 to 27	2.20 pF	DH 76022	28 to 36	2.30 pF	DH 76033	37 to 45	4.70 pF	DH 76047	46 to 54	6.80 pF	DH 76068	55 to 63	10.00 pF	DH 76100	64 to 72	15.00 pF	DH 76150
Variants	$C_j$ (typ.) (-4 V)	Based on Type																														
01 to 09	1.0 pF	DH 76010																														
10 to 18	1.50 pF	DH 76015																														
19 to 27	2.20 pF	DH 76022																														
28 to 36	2.30 pF	DH 76033																														
37 to 45	4.70 pF	DH 76047																														
46 to 54	6.80 pF	DH 76068																														
55 to 63	10.00 pF	DH 76100																														
64 to 72	15.00 pF	DH 76150																														
 <p>ESCC European Space Components Coordination QPL</p>		DIODES, MICROWAVE, SILICON, HYPER-ABRUPT JUNCTION TUNING VARACTOR BASED ON TYPES DH 76xxx		Current Validity of Qualification		Page																										
				Certificate	Valid Until	04-13																										
				273 C	June 2013	003-3																										

Types covered by similarity: Variant 02		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010  Detail ESCC 5513/017		INFINEON Technologies AG Neubiberg Germany	Qualification Extension Extension Requalification Requalification Extension	DARA DLR DLR DLR DLR DLR	Jun 1995 Jan 2000 Jan 2004 Mar 2008 Nov 2010 Mar 2012	
Characteristics: Variants 01 and 02 are qualified  Maximum Ratings: $V_R = 50\text{ V}$ $I_{FM} = 5.0\text{ A @ } t_p=1.0\ \mu\text{s, duty cycle} = 0.001\%$  D.C Parameters: $I_{R1} = 10\ \mu\text{A max @ } V_R = 50\text{ V}$ $I_{R2} = 5\ \text{nA max @ } V_R = 40\text{ V}$ $V_F = 1.1\text{ V max. @ } I_F = 100\text{ mA}$  Package Types T1 ( $P_D = 350\text{mW}$ ) and T Operating Temperature Range ( $^{\circ}\text{C}$ ): $-55$ to $+175$						
		DIODES, MICROWAVE, SILICON, PIN, BASED ON TYPE BXY 42- MESA		Current Validity of Qualification		Page
				Certificate	Valid Until	04-16
				224 E	March 2014	002-2

Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010  Detail ESCC 5513/030		INFINEON Technologies AG Neubiberg Germany	Qualification Extension Extension Requalification Requalification Extension	DARA DLR DLR DLR DLR DLR	Oct 1996 Jan 2000 Jan 2004 Mar 2008 Nov 2010 Mar 2012	
Characteristics: Variants 01, 02, 05 and 06 are qualified.  BXY 43 (variants 01-02)                      BXY 44 (variants 05-06)  Maximum Ratings: $V_R = \overset{-}{\sim} 150 \text{ V}$ $\overset{-}{\sim} 200 \text{ V}$  $I_F = 400 \text{ mA}$ $P_D = 500 \text{ mW}$  D.C Parameters: $I_R = 100 \text{ nA max @ } V_R = \overset{-}{\sim} 150 \text{ V}$ $5 \text{ nA @ } V_R = \overset{-}{\sim} 100 \text{ V}$ $V_F = 1.0 \text{ V max.}$ $1.05 \text{ V max. @ } I_F = 100 \text{ mA}$  Package Type                      T, T1  Operating Temperature Range (°C): $\overset{-}{\sim} 55 \text{ to } \overset{+}{\sim} 150$						
		DIODES, MICROWAVE, SILICON, PIN, PLANAR  BASED ON TYPES BXY 43 AND 44		Current Validity of Qualification		Page
				Certificate	Valid Until	04-16
				236 E	March 2014	003

**Section 05****Component Type: Filters**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
05			Feedthrough	
	05-01-001-A-B	252 F	Types SFC, SFL, SFP	Eurofarad

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3008  Detail ESCC      Please refer to the next page		EUROFARAD Chanteloup en Brie France	Qualification	CNES	Aug 1998
			Extension	CNES	Apr 2001
			Extension	CNES	Nov 2003
			Extension	CNES	Mar 2006
			Extension	CNES	Jun 2008
			Extension	CNES	Apr 2011
Characteristics: All variants specified in the Detail Specifications are qualified. Operating Temperature Range (°C): -55 to +125			Extension	CNES	Aug 2012
	CAPACITOR FILTERS, PI-, C-, AND L- TYPES, FEEDTHROUGH, ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY AND NON-HERMETICALLY SEALED, BASED ON TYPES SFC, SFL AND SFP	Current Validity of Qualification		Page	
		Certificate	Valid Until	05-01	
		252 F	June 2014	001A	



Types covered by certificate:

Domain	Style	Detail Specification	Variants	Capacitance Range (nF)	Rated Current (A)	Rated Voltage (V)
SFC, Hermetic, Glass Fill	SFC 060	3008/026	01 to 06	0.68 to 220	10	25 to 200
	SFC 100	3008/027	01 to 06	1.0 to 1000	10	25 to 200
SFP, Hermetic, Glass Fill	SFP 060	3008/021	01 to 14	2.4 to 89.6	10	35 to 500
	SFP 100	3008/028	01 to 06	0.16 to 1 312.0	10	50 to 300
SFL, Hermetic, Glass Fill	SFL 100	3008/029	01 to 48	17.6 to 1 600	5, 10, 15	40 to 300
Capacitance Range (pF)						
SFC, Non-Hermetic, Resin Fill	SFC 035	3008/031	01 to 06	470 to 22 000	10	25 to 200
	SFC 040	3008/032	01 to 12	470 to 22 000	10	25 to 200
	SFC 060	3008/033	01 to 12	680 to 220 000	10	25 to 200
SFP, Non-Hermetic, Resin Fill	SFP 035	3008/025	01 to 20	2 400 to 35 200	10	35 to 200
	SFP 040	3008/014	01 to 40	750 to 4 800	10 (DC 7 LF)	70 to 250
	SFP 060	3008/030	01 to 28	2 400 to 89 600	10	35 to 500
Capacitance Range (pF)						
SFC, Mixed fill, for soldering	SFC 030V	3008/020	01 to 12	470 to 22 000	1.0 to 5.0	25 to 200



CAPACITOR FILTERS, PI-, C-, AND L- TYPES, FEEDTHROUGH,  
ELECTROMAGNETIC INTERFERENCE SUPPRESSION,  
HERMETICALLY AND NON-HERMETICALLY SEALED,

Current Validity of Qualification

Certificate

252 F

Valid Until

June 2014

Page


05-01

001B

**Section 06****Component Type: Fuses**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
06-01			Thin film	
	06-01-001	284 B	Type MGA-S	Schurter


**SECTION 06-\*\*: INDEX OF FUSES****REP005 Updated on 15 Oct 2013**


Types covered by similarity: Variants 02 to 09		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4008  Detail ESCC 4008/001	Schurter Lucerne Switzerland	Qualification  Extension  <a href="#">Extension</a>	ESTEC  ESTEC  <a href="#">ESTEC</a>	Jun 2008  Oct 2010  <a href="#">Sep 2012</a>
<p>Characteristics: Variants 01 to 12 are qualified.</p> <p>Rated Voltage (VAC or VDC): 125/125, 63/125 and 32/125 by variant</p> <p>Rated Current (VAC and VDC): 0.14 to 3.5 A by variant</p> <p>AC Interrupt Current (A): 50 at maximum rated voltage, power factor &gt; 0.95</p> <p>DC Interrupt Current (A): at maximum rated voltage, time constant ≤ 1 ms</p> <p>Variants 01 to 10: 300, Variants 11 and 12: 50</p> <p>Operating Temperature Range, (°C): -50 to +125 (90% I<sub>R</sub> to 107% I<sub>R</sub>)</p>				
	<p>FUSES, SURFACE MOUNT, THIN FILM, 0.14 TO 3.5 AMPS, BASED ON TYPE MGA-S</p>	Current Validity of Qualification		Page
		Certificate  284 B	Valid Until  June 2014	06-01  001

**Section 07****Component Type: Inductors**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
07-01			Fixed, RF	
	07-01-001	241 F	Types MSC1 10K, 12K, 20K and H01	Microspire
07-02			Power	
	07-02-002	276 C	Types SESI and CMC	Microspire


**SECTION 07-\*\*: INDEX OF INDUCTORS****REP005 Updated on 15 Oct 2013**

Types covered by similarity:						Remarks:				
Procurement Specifications				Manufacturer		Nature of Approval		Supervising Authority	Date	
Generic ESCC 3201				MICROSPIRE Illange France		Qualification		CNES	Apr 1997	
Detail ESCC 3201/008						Extension		CNES	Nov 2000	
						Extension		CNES	Mar 2003	
						Extension		CNES	Dec 2005	
						Extension		CNES	Jun 2008	
						Extension		CNES	Jan 2011	
Characteristics: Variants 01 to 05 are qualified						Extension		CNES	Oct 2012	
Series No.	Range (μH)	Tolerance (±%)	Q min.	Min. SRF f <sub>r</sub> (MHz)	Max. DCR, R <sub>dc</sub> (Ω)	Rated DC Current, I <sub>R</sub> (mA)				
10k	0.010-10	2.0, 5.0, 10	60 - 42	1000 - 33	0.025 - 3.3	750 - 87				
12k	12 - 1000	2.0, 5.0, 10	56 - 12	26 - 1.5	2.0 - 120	110 - 15				
20k	0.010 - 1000	10	75 - 30	1000 - 1.7	0.04 - 80	1000 - 25				
H01	0.380 - 100	15	30	8	0.029 - 3.8	1500 - 100				
Dielectric Withstanding Voltage (DWV): 200 Vrms										
Operating Temperature Range (°C): -55 to +125										
			INDUCTORS, FIXED, RF, MINIATURE, MOULDED, SURFACE MOUNT, BASED ON SERIES MSC1 10k, 12k, 20k and H01				Current Validity of Qualification			Page
							Certificate		Valid Until	07-01
241 F		June 2014	001							

Types covered by similarity:								Remarks: Termination finish shall be Sn90Pb10.																																														
Procurement Specifications					Manufacturer			Nature of Approval		Supervising Authority	Date																																											
Generic ESCC 3201  Detail ESCC 3201/009 3201/010					MICROSPIRE Illange France			Qualification Extension Extension Extension		CNES CNES CNES CNES	Apr 2004 May 2007 Dec 2010 Feb 2012																																											
Characteristics: 3201/009 Variants 01 to 08 are qualified 3201/010 Variants 01, 03 and 05 are qualified																																																						
<b>3201/009</b> <table border="0"> <tr> <td><b>SESI</b></td> <td>14</td> <td>15</td> <td>15W</td> <td>18</td> <td>9.1</td> <td>22</td> <td>32WR</td> <td>32PR</td> <td colspan="2"></td> </tr> <tr> <td>Variant</td> <td>01</td> <td>02</td> <td>03</td> <td>04</td> <td>05</td> <td>06</td> <td>07</td> <td>08</td> <td colspan="2"></td> </tr> </table> <b>3201/010</b> <table border="0"> <tr> <td><b>CMC</b></td> <td>15</td> <td>18</td> <td>22</td> <td colspan="7"></td> </tr> <tr> <td>Variant</td> <td>01</td> <td>02</td> <td>03</td> <td colspan="7"></td> </tr> </table> Operating Temperature Range (°C): -55 to +125											<b>SESI</b>	14	15	15W	18	9.1	22	32WR	32PR			Variant	01	02	03	04	05	06	07	08			<b>CMC</b>	15	18	22								Variant	01	02	03							
<b>SESI</b>	14	15	15W	18	9.1	22	32WR	32PR																																														
Variant	01	02	03	04	05	06	07	08																																														
<b>CMC</b>	15	18	22																																																			
Variant	01	02	03																																																			
 <b>ESCC</b> European Space Components Coordination <b>QPL</b>			INDUCTORS, POWER, MOULDED, SURFACE MOUNT, BASED ON SERIES SESI AND CMC					Current Validity of Qualification			Page																																											
								Certificate		Valid Until	07-02																																											
								276 C		May 2013	002																																											

**Section 08****Component Type: Microcircuits**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
08-80			Digital C-MOS	
	08-80-001-2 A to E	73 N	4000 B Series	ST Microelectronics
	08-80-002-2 A to F	190 J	54HCMOS Series	ST Microelectronics
08-90			Other Functions	
	08-90-001	307 A	PLL Frequency Synthesizer	Peregrine Semiconductor Europe

Types covered by similarity: See next pages		Remarks: ST has announced a customer last time buy ending 15 June 2013 affecting devices listed herein marked with an (*).			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 9000  Detail ESCC      See types covered by similarity		ST Microelectronics Rennes France	Qualification	CNES	Apr 1981
			Extension	CNES	Jan 1981
			Extension	CNES	Dec 1984
			Extension	CNES	May 1987
			Extension	CNES	Apr 1990
			Extension	CNES	Oct 1992
			Extension	CNES	Apr 1995
			Extension	CNES	Apr 1997
			Extension	CNES	Apr 1999
			Extension	CNES	May 2001
		Extension	CNES	Nov 2002	
		Extension	CNES	Nov 2005	
		Extension	CNES	Feb 2008	
		Extension	CNES	May 2010	
		Extension	CNES	Feb 2012	
Characteristics: Package Types: Ceramic Dual-in-Line Ceramic Flat Pack					
	MICROCIRCUITS, DIGITAL, C-MOS-B, 4000B SERIES	Current Validity of Qualification		Page	
		Certificate	Valid Until	08-80	
		73 N	February 2014	001-2A	



## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type
9201/041	Quad 2-input NOR gate	4001B
9201/042	Dual 4-input NOR gate	4002B
9202/039	4-bit full adder	4008B
9201/043	Quad 2-input NAND gate	4011B
9201/044	Dual 4-input NAND gate	4012B
9203/023	Dual D-type flip-flop	4013B
9306/014	8-stage synchronous static shift register	4014B
9306/015	Dual 4-stage static shift register with serial input/parallel input	4015B
9202/050	Quad bilateral switch	4016B (*)
9204/020	Decade counter/divider	4017B
9204/021	Presettable divide-by-N counter	4018B
9202/051	Quad AND/OR select gate	4019B
9204/022	14-stage ripple carry binary counter/divider	4020B
9306/016	8-stage static shift register	4021B
9204/023	Octal counter/divider	4022B
9201/045	Triple 3-input NAND gates	4023B
9204/024	7-stage ripple carry binary counter/divider	4024B
9201/046	Triple 3-input NOR gate	4025B
9406/001	Ripple carry decade counter/divider	4026B (*)
9203/022	Dual J-K master slave flip-flop	4027B



MICROCIRCUITS, DIGITAL,  
C-MOS-B, 4000B SERIES

Current Validity of Qualification

Certificate

73 N

Valid Until

February 2014

Page

08-80

001-2B

## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type
9205/010	BCD-to-decimal or binary-to-octal decoder	4028B
9204/025	Presetable up/down counter binary or BCD decade	4029B
9201/047	Quad 2-input exclusive OR gates	4030B
9306/017	64-stage static shift register	4031B (*)
9306/025	8-stage static bidirectional parallel/serial input/output bus register with 3 state output	4034B
9306/018	4-bit universal shift register	4035B (*)
9204/026	12-stage ripple carry binary counter/divider	4040B
9202/040	Quad true/complement buffer with unbuffered outputs	4041UB
9202/041	Quad clocked D latch	4042B
9202/042	Quad NOR 3-state R/S latches	4043B
9202/043	Quad NAND 3-state R/S latch	4044B
9202/044	Micropower phase-locked loop	4046B
9207/003	Low power monostable/astable multivibrator	4047B
9202/045	Hex buffer/converter (inverting type)	4049UB
9202/046	Hex buffer/converter (non-inverting type)	4050B
9202/047	Analogue multiplexer/demultiplexer	4051B
9202/048	Analogue multiplexer/demultiplexer	4052B
9202/049	Triple 2-channel analogue multiplexer/demultiplexer	4053B
9209/001	4-bit magnitude comparator	4063B
9204/052	14-stage ripple-carry binary counter/divider and oscillator	4060B



MICROCIRCUITS, DIGITAL,  
C-MOS-B, 4000B SERIES

Current Validity of Qualification

Certificate

73 N

Valid Until

February 2014

Page

08-80

001-2C

Types covered by similarity:		
ESCC Spec. No.	Component Type	Component Type
9408/005	Quad bilateral switch	4066B
9408/009	Analogue multiplexer/demultiplexer	4067B
9201/061	8-input NAND gate	4068B
9401/010	Hex inverter	4069UB
9201/048	Quad exclusive OR gate	4070B
9201/063	Quad 2-input OR gate	4071B
9201/082	Dual 4-input OR gate	4072B
9201/064	Triple 3-input AND gate	4073B
9201/065	Triple 3-input OR gate	4075B
9306/022	4-bit D-type register with 3-state output	4076B
9201/055	Quad exclusive NOR gate	4077B
9201/062	8-input OR/NOR gate	4078B
9201/052	Quad 2-input AND gate	4081B
9201/066	Dual 4-input AND gate	4082B
9201/067	Dual 2-wide 2-input AND/OR inverter gate	4085B (*)
9409/002	Quad 2-input NAND gate with Schmitt trigger input	4093B
9306/026	8-stage shift and store bus register with synchronous serial outputs and 3-state parallel output	4094B
9206/003	Dual monostable multivibrator	4098B
9202/058	8-bit addressable latch	4099B (*)
9401/006	Strobed hex inverter/buffer	4502B (*)



MICROCIRCUITS, DIGITAL,  
C-MOS-B, 4000B SERIES

Current Validity of Qualification

Certificate

73 N

Valid Until

February 2014

Page

08-80

001-2D

## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type
9401/030	Hex non-inverting buffers with 3-state output	4503B
9202/063	Dual 4-bit latch with 3-state output	4508B (*)
9408/006	8-channel multiplexer with 3-state output	4512B
9408/012	4-bit latch/4-to-16 decoder	4514B
9205/011	4-bit latch/4-to-16 line decoder	4515B
9204/045	Synchronous quad presettable up/down binary counter	4516B
9204/028	Dual binary up counter	4520B
9202/065	8-bit priority encoder	4532B
9207/007	Dual monostable multivibrator with reset	4538B
9408/011	Dual 1-of-4 decoder/demultiplexer	4555B
9408/025	Dual 1-of-4 decoder/demultiplexer (output low on select)	4556B
9204/036	Presettable 8-bit synchronous down-counter	40103B
9306/033	FIFO register with 3-state output	40105B (*)
9409/005	Hex Schmitt-trigger	40106B
9401/013	Dual 2-input NAND buffer/driffer	40107B
9407/003	Quad low-to-high 3-state voltage level shifter	40109B
9204/054	Programmable 4-bit binary counter with asynchronous clear	40161B
9204/046	Programmable 4-bit binary counter with synchronous clear	40163B (*)
9203/038	Hex D-type flip-flop	40174B
9204/041	Presettable binary up/down counter (dual clock with reset)	40193B
9408/017	Quad 2-lin-to-1-line data selector/multiplexer with 3-state output	40257B (*)



MICROCIRCUITS, DIGITAL,  
C-MOS-B, 4000B SERIES

## Current Validity of Qualification

Certificate

73 N


Valid Until


February 2014

Page

08-80

001-2E

Types covered by similarity: See next pages		Remarks: ST has announced a customer last time buy ending 15 June 2013 affecting devices listed herein marked with an (*).			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 9000  Detail ESCC      See types covered by similarity		ST Microelectronics Rennes France	Qualification	CNES	Nov 1992
			Extension	CNES	Apr 1995
			Extension	CNES	Apr 1997
			Extension	CNES	Apr 1999
			Extension	CNES	May 2001
			Extension	CNES	Nov 2002
			Extension	CNES	Nov 2005
			Extension	CNES	Feb 2008
			Extension	CNES	May 2010
			<a href="#">Extension</a>	<a href="#">CNES</a>	<a href="#">Feb 2012</a>
Characteristics: Qualified Packages: <ul style="list-style-type: none"> <li>Ceramic Dual-in-Line</li> <li>Ceramic Flat Pack</li> </ul> <b>NOTES</b> 1. These parts have successfully passed radiation testing to 50 kRads.					
	MICROCIRCUITS, DIGITAL, MONOLITHIC, HIGH SPEED CMOS, 54HC AND 54HCT SERIES	Current Validity of Qualification		Page	
		Certificate	Valid Until	08-80	
		190 J	February 2014	002-2A	

Types covered by similarity:				
ESCC Spec. No.	Component Type	Component Type	Note	
9201/105	Quad 2-input NAND gate	54HC 00	1	
9201/113	Quad 2-input NOR gate	02	1	
9201/114	Quad 2-input NAND gate with open drain output	03	1	
9401/033	Hex inverter	04	1	
9201/106	Quad 2-input positive AND gate	08	1	
9201/107	Triple 3-input NAND gate	10	1	
9201/117	Triple 3-input AND gate	11	1	
9409/007	Hex Schmitt trigger inverter	14	1	
9201/118	Dual 4-input NAND gate	20	1	
9201/108	Dual 4-input AND gate	21	1	
9201/109	Triple 3-input NOR gate	27	1	
9201/110	8-input NAND gate	30	1	
9201/111	Quad 2-input OR gate	32	1	
9203/071	Dual negative-edge triggered J-K flip-flops with clear	73 (*)	1	
9203/050	Dual D-type flip-flop with preset and clear	74	1	
9203/065	Quad 4-bit bistable D-type latch	75 (*)	1	
9209/004	4-bit magnitude comparator	85	1	
9201/119	Quad 2-input exclusive OR gate	86	1	
9203/072	Dual J-K negative-edge triggered flip-flop with direct clear	107 (*)	1	
	<p>MICROCIRCUITS, DIGITAL, MONOLITHIC, HIGH SPEED CMOS, 54HC AND 54HCT SERIES</p>	Current Validity of Qualification		Page
		Certificate	Valid Until	08-80
		190 J	February 2014	002-2B

## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type	Note
9306/048	Dual J-K positive edge triggered flip-flop with preset and clear	54HC 109	1
9203/051	Dual J-K negative edge triggered flip-flop with preset and clear	112 (*)	1
9207/006	Dual positive or negative edge Schmitt-retriggerable monostable multivibrator with clear	123	1
9401/039	Quad bus buffer with 3 state output	125	1
9401/046	Quad bus buffer with 3 state output	126 (*)	1
9201/120	Quad 2-input NAND gate with Schmitt-trigger input	132	1
9205/013	3-to-8 line decoder/demultiplexer with address latch and inverted output	137	1
9408/046	3-to-8 line decoder/demultiplexer with inverted output	138	1
9205/017	Dual 2-to-4 line decoder/demultiplexer with inverted output	139	1
9410/017	8-line to 3-line priority encoder	148	1
9408/054	8-line to 1-line data selector/multiplexer	151	1
9408/038	Dual 4-line to 1-line data selectors/multiplexer	153	1
9205/023	4-to-16 line decoder/demultiplexer with inverted output	154	1
9408/057	Quad 2-line to 1-line data selector/multiplexer	157	1
9408/059	Quad 2-line to 1-line data selector/multiplexer with inverted output	158	1
9204/062	Synchronous presettable 4-bit decade counter with direct clear	160	1
9204/059	Asynchronous 4-bit binary counter	161	1
9204/073	Synchronous 4-bit binary counter	163 (*)	1
9306/041	8-bit SIPO shift register	164	1
9306/042	8-bit PISO shift register	165	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
HIGH SPEED CMOS, 54HC AND 54HCT SERIES

## Current Validity of Qualification

Certificate

190 J

Valid Until

February 2014

Page

08-80

002-2C

## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type	Note
9306/043	8-bit PISO shift register	54HC 166	1
9306/052	Hex D-type edge-triggered flip-flop with clear	174	1
9203/052	Quad D-type edge-triggered flip-flop with clear	175	1
9204/066	Synchronous 4-bit up/down binary counter	191	1
9204/065	Synchronous 4-bit up/down binary counter (dual clock with clear)	193	1
9306/047	4-bit PIPO shift register	194	1
9306/053	4-bit PIPO shift register with overriding clear	195 (*)	1
9205/021	3-line to 8-line decoder/demultiplexer with address latch	237	1
9401/034	Octal bus buffer with inverted 3-state output	240	1
9401/035	Octal bus buffer with 3-state output	241 (*)	1
9405/011	Quad bus transceiver with inverted 3-state output	242 (*)	1
9405/012	Quad bus transceiver with 3-state output	243 (*)	1
9401/048	Octal bus buffer with 3-state output	244	1
9405/013	Octal bus transceiver with 3-state output	245	1
9408/048	1-to-8 data selector/multiplexer with 3-state output	251	1
9408/058	Dual 4-line to 1-line data selector/multiplexer with 3-state output	253 (*)	1
9408/047	Quad 2-line to 1-line data selector/multiplexer with 3-state output	257	1
9203/073	8-bit addressable latch	259	1
9203/053	Octal D-type edge-triggered flip-flop with clear	273	1
9208/003	9-bit odd/even parity generator/checker	280	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
HIGH SPEED CMOS, 54HC AND 54HCT SERIES

## Current Validity of Qualification

Certificate

190 J

Valid Until

February 2014

Page

08-80

002-2D



## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type	Note
9202/075	4-bit binary full adder with fast carry	54HC 283	1
9401/052	Hex bus buffer with 3-state output	365 (*)	1
9401/044	Hex bus buffer with 3-state output	367	1
9203/059	Octal D-type transparent latch with 3-state output	373	1
9203/060	Octal D-type edge-triggered flip-flop with 3-state output	374	1
9201/121	Quad 2-input exclusive OR gate	386 (*)	1
9204/074	Dual 4-bit negative edge-triggered binary counter	393	1
9401/049	Octal bus buffer with inverted 3-state output	540	1
9401/047	Octal bus buffer with 3-state output	541	1
9202/072	Octal D-type transparent latch with 3-state output	573	1
9203/054	Octal D-type edge-triggered flip-flop with 3-state output	574	1
9204/071	8-bit binary counter with 3-state output register	590	1
9306/051	8-bit shift register with 3-state output register	595	1
9306/054	8-bit PISO shift register	597	1
9209/005	8-bit identify comparator	688	1
9201/130	Dual 4-input NOR gate	4002 (*)	1
9204/070	Asynchronous negative-edge-triggered 14-bit binary counter	4020	1
9204/069	Asynchronous negative edge-triggered 12-bit binary counter	4040	1
9401/037	Hex buffer/converter with inverted output	4049	1
9401/038	Hex buffer/converter	4050	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
HIGH SPEED CMOS, 54HC AND 54HCT SERIES

Current Validity of Qualification

Certificate

190 J

Valid Until

February 2014

Page

08-80

002-2E

Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type	Note
9408/064	Analogue multiplexer/demultiplexer	54HC 4051	1
9408/065	Analogue multiplexer/demultiplexer (triple 2-channel)	4053	1
9204/076	Asynchronous negative-edge-triggered 14-bit binary counter and oscillator	4060	1
9408/052	Quad bilateral switch	4066	1
9201/124	Dual 4-input OR gate	4072 (*)	1
9201/129	Triple 3-input OR gate	4075 (*)	1
9201/123	8-input OR/NOR gate	4078	1
9306/050	8-bit SIPO shift latch register with 3-state output	4094	1
9205/019	4-to-16 line decoder/latch	4514	1
9203/070	Dual D-type flip-flop with preset and clear	54HCT 74	1
9401/045	Octal buffer with inverted 3-state output	240 (*)	1
9402/009	Octal bus buffer with 3-state output	244	1
9405/014	Octal bus transceiver with 3-state output	245	1
9203/064	Octal D-type transparent latch with 3-state output	373	1
9203/066	Octal D-type edge-triggered flip-flop with 3-state output	374 (*)	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
HIGH SPEED CMOS, 54HC AND 54HCT SERIES

Current Validity of Qualification

Certificate

190 J


Valid Until

February 2014

Page

08-80



002-2F


Types covered by similarity: in CQFPJ-44; PE33362-62 Variant 01 of 9202/078 is qualified PE33382-62 Variant 01 of 9202/079 is qualified		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 9000  Detail ESCC      9202/077 9202/078 9202/079		Peregrine Semiconductor Berkshire England	Qualification  Extension	ESTEC  ESTEC	Mar 2011  Oct 2013
Characteristics for PE33632-62      Variant 01 is qualified  $V_{DD}$ (V)= 2.85 to 3.45  RF input up to 3.5 GHz, 3 wire serial interface  18-bit delta-sigma modulator, divide by 10/11 dual mode prescaler,  programmable counters, phase detectors and control logic  Power Dissipation (maximum): PD (max) = 275mW  Package Types: CQFPJ-68  Operating Temperature Range (°C): -40 to +80					
	MICROCIRCUITS, CMOS SOS, 3.5 GHz DELTA-SIGMA MODULATED FRACTIONAL-N PLL FREQUENCY SYNTHESIZER, BASED ON TYPE PE33632		Current Validity of Qualification		Page
			Certificate	Valid Until	08-90
			307 A	March 2015	001



## Section 09


## Component Type: Relays

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
09-01			Non-Latching, 28Vdc Contact Rating	
	09-01-001	102 F	Type T**	REL STPI
	09-01-002	02 L	Type GP5	LEACH
	09-01-004	205 D	Type E 215	REL STPI
	09-01-004-3	318	Type M300	LEACH Sarralbe
	09-01-005	239 D	Type E	LEACH
	09-01-006	279 B	Type 317	STPI
09-02			Latching, 28Vdc Contact Rating	
	09-02-001	88 G	Type TL	REL STPI
	09-02-002	13 L	Type GP2	LEACH
	09-02-003	98 F	Type EL415	REL STPI
	09-02-003-3	317	Type M402	LEACH Sarralbe
	09-02-004	167 E	Type EL215	REL STPI
	09-02-004-3	310 A	Type M302	LEACH Sarralbe
	09-02-006	240 E	Type D	LEACH
	09-02-007	280 B	Type 3*7B	STPI
09-03			Latching, 50Vdc Contact Rating	
	09-03-001	93 K	Type GP250	LEACH


Types covered by similarity: Rated Coil Voltages 5, 6, 9, 12 and 18 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3601	3601/002	REL-STPI St Jean de la Ruelle France	Qualification	CNES	Feb 1983
Detail ESCC			Extension	CNES	Dec 1985
			Extension	CNES	Dec 1988
			Extension	CNES	Jan 1993
			Extension	CNES	Nov 1997
			Re-qualification	CNES	Oct 2009
			Extension	CNES	Nov 2011
Characteristics: Variants 01 to 06 are qualified					
Contact Rating	1A at 28Vdc				
Contact Configuration	2PDT				
Package Type	TO-5 Can				
Coil Voltage	5 - 26.5 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE T **		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
		102 F	October 2013	001	



Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3601	LEACH International Europe Niort France	Qualification	CNES	Apr 1978
			Extension	CNES	Oct 1980
Detail ESCC	3601/003		Extension	CNES	Jan 1984
			Extension	CNES	Oct 1986
			Extension	CNES	Jul 1992
			Extension	CNES	Jun 1995
			Extension	CNES	Dec 1998
			Extension	CNES	Nov 2001
			Extension	CNES	Jun 2005
			Extension	CNES	Feb 2008
Characteristics: Variants 01 to 08 are qualified			Extension	CNES	Apr 2010
Contact Rating	2 A at 28 Vdc		Extension	CNES	Mar 2012
Contact Configuration	2 PDT		Extension	CNES	
Package Type	Half-crystal can		Extension	CNES	
Coil Voltage	26.5 Vdc		Extension	CNES	
Operating Temperature Range (°C): -65 to +125			Extension	CNES	
	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE GP 5		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
			02 L	April 2014	002



Types covered by similarity: Coil Voltage 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3601	REL STPI St Jean de la Ruelle France	Qualification	CNES	Jan 1994
Detail ESCC	3601/007		Extension	CNES	Dec 1998
			Merge	CNES	Nov 1999
			Re-qualification	CNES	Dec 2010
			Extension	CNES	Jan 2013
Characteristics: Variants 03, 04 and 06 are qualified					
Contact Rating	15 A at 28 Vdc				
Contact Configuration	2 PDT				
Package Type	Half cubic inch can				
Coil Voltage	12 and 28 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE E 215		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
		205 D	December 2014	004	



Types covered by similarity: Coil Voltage 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC      3601  Detail ESCC      3601/007		LEACH Sarralbe France	Qualification	CNES	Feb 2012
Characteristics:      Variants 03, 04 and 06 are qualified  Contact Rating          15 A at 28 Vdc Contact Configuration    2 PDT Package Type            Half cubic inch can Coil Voltage              12 and 28 Vdc Operating Temperature Range (°C): -65 to +125					
	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE M300		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
			318	February 2014	004-3






Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks: This certificate will be deleted from the next QPL.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3601	LEACH International Europe Niort France	Qualification	CNES	Apr 1997
			Extension	CNES	Sep 2000
Detail ESCC	3601/012		Extension	CNES	Jan 2004
			Extension	CNES	Feb 2008
			Extension	CNES	Apr 2010
Characteristics: Variants 01 to 11 are qualified					
Contact Rating	1 A at 28 Vdc				
Contact Configuration	2 PDT				
Package Type	1/6 crystal can				
Coil Voltage	26.5 Vdc				
Operating Temperature Range (°C): -65 to +125					
	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE E		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
			239 D	April 2012	005



Types covered by similarity: Coil voltage 12 Vdc		Remarks: Maintenance of qualification testing has not been initiated.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3601	STPI Paris France	Qualification	CNES	Apr 2007
Detail ESCC	3601/007		Extension	CNES	Oct 2010
			Extension	CNES	Jun 2012
Characteristics: Variants 01 to 06 are qualified					
Contact Rating	15 A at 28 Vdc				
Contact Configuration	2 PDT				
Size (mm. max.)	26x26x14				
Package Type	1/2 can				
Coil Voltage	28 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE 317		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
		279 B	April 2013	006	


Types covered by similarity: Rated Coil Voltages 5, 6, 9, 12 and 18 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3602	REL-STPI Saint Jean de la Ruelle France	Qualification	CNES	Jan 1982
			Extension	CNES	Oct 1983
Detail ESCC	3602/002		Extension	CNES	Oct 1986
			Extension	CNES	Nov 1989
			Extension	CNES	Jan 1993
			Requalification	CNES	Nov 1997
			Requalification	CNES	Jan 2010
Characteristics: Variants 01 to 06 are qualified			Extension	CNES	Mar 2012
Contact Rating	1 A at 28 Vdc				
Contact Configuration	2 PDT				
Package Type	TO-5 Can				
Coil Voltage	26.5 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, LATCHING, ELECTROMAGNETIC, TYPE TL		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
		88 G	January 2014	001	

Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602		LEACH International Europe Niort France	Qualification	CNES	Jan 1979
			Extension	CNES	Feb 1981
Detail ESCC 3602/003			Extension	CNES	Jan 1984
			Extension	CNES	Oct 1986
			Extension	CNES	Jul 1992
			Extension	CNES	Jun 1995
			Extension	CNES	Dec 1998
			Extension	CNES	Nov 2001
			Extension	CNES	Jun 2005
			Extension	CNES	Feb 2008
Characteristics: Variants 01 to 08 are qualified			Extension	CNES	Apr 2010
Contact Rating 2 A at 28 Vdc			Extension	CNES	Mar 2012
Contact Configuration 2 PDT			Extension	CNES	
Package Type Half-size crystal can			Extension	CNES	
Coil Voltage 26.5 Vdc			Extension	CNES	
Operating Temperature Range (°C): -65 to +125			Extension	CNES	
 	RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 2		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
			13 L	April 2014	002



Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3602	REL STPI St Jean de la Ruelle France	Qualification	CNES	Nov 1982
			Extension	CNES	Dec 1985
Detail ESCC	3602/004		Extension	CNES	Nov 1989
			Extension	CNES	Jan 1994
			Re-qualification	CNES	Apr 2011
			Extension	CNES	Apr 2013
Characteristics: Variants 04, 06 and 09 and 14, 16 and 19 are qualified					
Contact Rating	15 A at 28 Vdc				
Contact Configuration	4PDT				
Package Type	Cubic inch can				
Coil Voltage	28 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, LATCHING, ELECTROMAGNETIC, TYPE EL 415		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
		98 F	April 2015	003	


Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC        3602		LEACH Sarralbe France	Qualification	CNES	Feb 2012
Detail ESCC        3602/004					
Characteristics:        Variants 04, 06 and 09 and 14, 16 and 19 are qualified  Contact Rating        15 A at 28 Vdc Contact Configuration    4PDT Package Type        Cubic inch can Coil Voltage        28 Vdc Operating Temperature Range (°C): -65 to +125					
	RELAY, LATCHING, ELECTROMAGNETIC, TYPE M402		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
			317	February 2014	003-3


Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3602	REL STPI St Jean de la Ruelle France	Qualification	CNES	Feb 1990
Detail ESCC	3602/009		Extension	CNES	Nov 1993
			Extension	CNES	Dec 1998
			Merged	CNES	Nov 1999
			Re-qualification	CNES	Oct 2010
			Extension	CNES	Dec 2012
Characteristics: Variants 03, 04 and 06 and 13, 14 and 16 are qualified					
Contact Rating	15 A at 28 Vdc				
Contact Configuration	2PDT				
Package Type	Half-cubic inch can				
Coil Voltage	28 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, LATCHING, ELECTROMAGNETIC, TYPE EL 215	Current Validity of Qualification		Page	
		Certificate	Valid Until	09-02	
		167 E	October 2014	004	

Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602		LEACH Sarralbe France	Qualification  Extension	CNES  CNES	Apr 2011  Apr 2013
Detail ESCC 3602/009					
Characteristics: Variants 03, 04 and 06 and 13, 14 and 16 are qualified  Contact Rating 15 A at 28 Vdc Contact Configuration 2PDT Package Type Half-cubic inch can Coil Voltage 28 Vdc Operating Temperature Range (°C): -65 to +125					
	RELAY, LATCHING, ELECTROMAGNETIC, BASED ON TYPE M302		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
			310 A	April 2015	004-2



Types covered by similarity: Coil Voltages 6 and 12 Vdc .		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3602	LEACH International Europe Niort France	Qualification	CNES	Apr 1997
			Extension	CNES	Sep 2000
Detail ESCC	3602/019		Extension	CNES	Jan 2004
			Extension	CNES	Feb 2008
			Extension	CNES	Apr 2010
			Extension	CNES	Mar 2012
Characteristics: Variants 01 to 11 are qualified					
Contact Rating	1 A at 28 Vdc				
Contact Configuration	2 PDT				
Package Type	1/6 crystal can				
Coil Voltage	26.5 Vdc				
Operating Temperature Range (°C): -65 to +125					
 	RELAY, LATCHING, ELECTROMAGNETIC, TYPE D		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
		240 E	April 2014	006	


Types covered by similarity: Coil Voltage 12 Vdc				Remarks: Maintenance of qualification testing has not been initiated.																														
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																												
Generic ESCC	3602	STPI Paris France	Qualification Extension <a href="#">Extension</a>	CNES CNES <a href="#">CNES</a>	Apr 2007 Oct 2010 <a href="#">Jun 2012</a>																													
Detail ESCC	3602/004 3602/009																																	
<p>Characteristics:</p> <table border="0"> <tr> <td>3602/004</td> <td>Variants 04, 06 and 09 14, 16 and 19 are qualified</td> <td>3602/009</td> <td>Variants 03, 04 and 06 and 13, 14 and 16 are qualified</td> </tr> <tr> <td>Contact Rating</td> <td>15 A at 28 Vdc</td> <td>Contact Rating</td> <td>15 A at 28 Vdc</td> </tr> <tr> <td>Contact Configuration</td> <td>4 PDT</td> <td>Contact Configuration</td> <td>2 PDT</td> </tr> <tr> <td>Size (mm. max.)</td> <td>26x26x26</td> <td>Size (mm. max.)</td> <td>26x26x13.34</td> </tr> <tr> <td>Package Type</td> <td>can</td> <td>Package Type</td> <td>1/2 can</td> </tr> <tr> <td>Coil Voltage</td> <td>28 Vdc</td> <td>Coil Voltage</td> <td>28 Vdc</td> </tr> <tr> <td colspan="2">Operating Temperature Range (°C): -65 to +125</td> <td colspan="2">Operating Temperature Range (°C): -65 to +125</td> </tr> </table>							3602/004	Variants 04, 06 and 09 14, 16 and 19 are qualified	3602/009	Variants 03, 04 and 06 and 13, 14 and 16 are qualified	Contact Rating	15 A at 28 Vdc	Contact Rating	15 A at 28 Vdc	Contact Configuration	4 PDT	Contact Configuration	2 PDT	Size (mm. max.)	26x26x26	Size (mm. max.)	26x26x13.34	Package Type	can	Package Type	1/2 can	Coil Voltage	28 Vdc	Coil Voltage	28 Vdc	Operating Temperature Range (°C): -65 to +125		Operating Temperature Range (°C): -65 to +125	
3602/004	Variants 04, 06 and 09 14, 16 and 19 are qualified	3602/009	Variants 03, 04 and 06 and 13, 14 and 16 are qualified																															
Contact Rating	15 A at 28 Vdc	Contact Rating	15 A at 28 Vdc																															
Contact Configuration	4 PDT	Contact Configuration	2 PDT																															
Size (mm. max.)	26x26x26	Size (mm. max.)	26x26x13.34																															
Package Type	can	Package Type	1/2 can																															
Coil Voltage	28 Vdc	Coil Voltage	28 Vdc																															
Operating Temperature Range (°C): -65 to +125		Operating Temperature Range (°C): -65 to +125																																
		RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE 3*7B		Current Validity of Qualification		Page																												
				Certificate	Valid Until	09-02																												
				280 B	April 2013	006																												


Types covered by similarity: Coil Voltage 6 Vdc and 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3602	LEACH International Europe Niort France	Qualification	ESTEC	Feb 1982
			Extension	CNES	Jul 1984
Detail ESCC	3602/010		Extension	CNES	Sep 1987
			Extension	CNES	Jul 1992
			Extension	CNES	Jun 1995
			Extension	CNES	Dec 1998
			Extension	CNES	Nov 2001
			Extension	CNES	Jun 2005
			Extension	CNES	Feb 2008
			Extension	CNES	Apr 2010
			<a href="#">Extension</a>	<a href="#">CNES</a>	<a href="#">Mar 2012</a>
Characteristics: Variants 01 to 08 are qualified					
Contact Rating	2 A at 50 Vdc (100000 ops)				
Contact Configuration	2 PDT				
Package Type	Half-size crystal can				
Coil Voltage	26.5 Vdc				
Operating Temperature Range (°C): -65 to +125					
	RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 250		Current Validity of Qualification		Page
			Certificate	Valid Until	09-03
			93 K	April 2014	001

## Section 10

## Component Type: Resistors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
10-02			Fixed, Film, High Precision	
	10-02-001	116 M	Type RNC 90	Vishay S.A. Sfernice
10-07			Shunts	
	10-07-001	285 B	Types SM*-PW and SM*-PT	Isabellenhütte
10-08			Fixed, Film	
	10-08-006	256 G	Surface Mount, Type MS1	Vishay Electronic (Selb)
	10-08-007	289 B	Surface Mount, Type TNPS	Vishay Electronic (Selb)
10-09			Chip	
	10-09-002 A to D	287 C	Type PHR; PFRR; PRAHR/CNWHR	Vishay S.A. Sfernice
	10-09-003	314 A	Type CHP	Vishay S.A. Sfernice
10-11			Flexible, Foil, Heaters	
	10-11-001-1	184 J	Single & Double Layer	IRCA
	10-11-002	325	Single & Double Layer	Minco

Types covered by similarity:							Remarks: New package fabrication is now located in Nice.																																								
Tolerance ( $\pm\%$ ) = 0.02, 0.05, 0.1, 0.2, 0.5, 1%																																															
Procurement Specifications				Manufacturer			Nature of Approval	Supervising Authority	Date																																						
Generic ESCC 4001				VISHAY S.A. Division Sfernice Nice France			Qualification	CNES	Dec 1983																																						
Detail ESCC 4001/011							Extension	CNES	Oct 1986																																						
Characteristics: Variants 03, 04, 07 and 08 are qualified							Extension	CNES	Nov 1989																																						
							Extension	CNES	Jul 1992																																						
<table border="1"> <thead> <tr> <th>Style</th> <th>Detail Spec.</th> <th>Range (<math>\Omega</math>)</th> <th>Tol. (<math>\pm\%</math>)</th> <th>TC (<math>\pm</math>ppm/<math>^{\circ}</math>C)</th> <th>Power Rating (W)</th> <th>Max. Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>RNC 90 (RS92N)</td> <td>4001/011</td> <td>50 - 100k</td> <td>0.02 0.05 0.5 1.0</td> <td><math>\pm 5, \leq 125^{\circ}</math>C <math>\pm 10, \leq 125^{\circ}</math>C  <math>\pm 10, &gt; 125^{\circ}</math>C and <math>\leq 175^{\circ}</math>C</td> <td>0.5 @ <math>70^{\circ}</math>C 0.3 @ <math>125^{\circ}</math>C</td> <td>300</td> </tr> </tbody> </table>				Style	Detail Spec.	Range ( $\Omega$ )	Tol. ( $\pm\%$ )	TC ( $\pm$ ppm/ $^{\circ}$ C)	Power Rating (W)	Max. Voltage (V)	RNC 90 (RS92N)	4001/011	50 - 100k	0.02 0.05 0.5 1.0	$\pm 5, \leq 125^{\circ}$ C $\pm 10, \leq 125^{\circ}$ C  $\pm 10, > 125^{\circ}$ C and $\leq 175^{\circ}$ C	0.5 @ $70^{\circ}$ C 0.3 @ $125^{\circ}$ C	300	<table border="1"> <tbody> <tr> <td>Requalification</td> <td>CNES</td> <td>Apr 1994</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Sep 1996</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Jan 1999</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Jul 2001</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Nov 2003</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Apr 2006</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Sep 2008</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Nov 2010</td> </tr> <tr> <td>Extension</td> <td>CNES</td> <td>Aug 2012</td> </tr> </tbody> </table>			Requalification	CNES	Apr 1994	Extension	CNES	Sep 1996	Extension	CNES	Jan 1999	Extension	CNES	Jul 2001	Extension	CNES	Nov 2003	Extension	CNES	Apr 2006	Extension	CNES	Sep 2008	Extension	CNES	Nov 2010	Extension	CNES	Aug 2012
				Style	Detail Spec.	Range ( $\Omega$ )	Tol. ( $\pm\%$ )	TC ( $\pm$ ppm/ $^{\circ}$ C)	Power Rating (W)	Max. Voltage (V)																																					
RNC 90 (RS92N)	4001/011	50 - 100k	0.02 0.05 0.5 1.0	$\pm 5, \leq 125^{\circ}$ C $\pm 10, \leq 125^{\circ}$ C  $\pm 10, > 125^{\circ}$ C and $\leq 175^{\circ}$ C	0.5 @ $70^{\circ}$ C 0.3 @ $125^{\circ}$ C	300																																									
Requalification	CNES	Apr 1994																																													
Extension	CNES	Sep 1996																																													
Extension	CNES	Jan 1999																																													
Extension	CNES	Jul 2001																																													
Extension	CNES	Nov 2003																																													
Extension	CNES	Apr 2006																																													
Extension	CNES	Sep 2008																																													
Extension	CNES	Nov 2010																																													
Extension	CNES	Aug 2012																																													
Operating Temperature Range, ( $^{\circ}$ C): -55 to +175																																															
				RESISTORS, FILM, FIXED, NON-HERMETICALLY SEALED, BASED ON TYPE RNC 90			Current Validity of Qualification		Page																																						
							Certificate	Valid Until	10-02																																						
							116 M	September 2014	001																																						

Types covered by similarity:  Tolerance (%) = ±1				Remarks:			
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date	
Generic ESCC 4001  Detail ESCC 4001/027 4001/028		ISABELLENHÜTTE HEUSLER GmbH & Co. KG Dillenburg Germany		Qualification Extension <a href="#">Extension</a>	DLR DLR <a href="#">DLR</a>	Nov 2008 Jul 2010 <a href="#">Feb 2013</a>	
Characteristics: Variants 01, 02 and 03 are qualified							
Style	Detail Spec. Variant	Range (Ω)	Tol. (±%)	TC (± 10 <sup>-6</sup> /°C) Applicable to All Variants	Power Rating (W)		
SMP- 2010	001	0.005-1.000	0.5	Refer to ESCC Detail Specifications	1		
SMR-4723	001	0.010- 4.7	0.5		3		
SMS- 2512	002	0.003-1.000	0.5		2		
SMT- 2817	003	0.004-2.000	0.5		3		
SMV-4723	002	0.0022 - 1.0	0.5		3		
Operating Temperature Range, (°C): -55 to +170							
		RESISTORS, FIXED, CHIP, METAL FOIL, BASED ON TYPES SM*-PW AND SM*-PT			Current Validity of Qualification		Page
					Certificate  285 B	Valid Until  July 2014	10-07  001

Types covered by similarity:  
Tolerance ( $\pm\%$ ) = 0.1, 0.5, 1.0

Remarks:

Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4001  Detail ESCC 4001/022	VISHAY Electronic GmbH Division Draloric Selb Germany	Qualification Extension Extension Extension Extension Extension Extension Extension Extension	DLR DLR DLR DLR DLR DLR DLR DLR DLR	Oct 1999 Oct 2001 Oct 2003 Nov 2005 Oct 2007 Oct 2009 Oct 2011 Oct 2013

Characteristics: Critical R = 160 k $\Omega$


Range ( $\Omega$ )	Tol. ( $\pm\%$ )	TC ( $\pm$ ppm/ $^{\circ}$ C)	Value Series
43.2 - 1.004 M	0.1	50	E96
10.0 - 1.004 M	0.5		
2.20 - 5.114 M	1.0		
43.2 - 1.004 M	0.1	25	E96
10.0 - 1.004 M	0.5		
10.0 - 1.004 M	1.0		
43.2 - 0.2213 M	0.1	15	E96
10.0 - 0.5113 M	0.5		

Operating Temperature Range, ( $^{\circ}$ C): -55 to +125




RESISTORS,  
FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE  
MS1

Current Validity of Qualification		Page
Certificate	Valid Until	10-08
256 G	October 2015	006

Types covered by similarity: Temperature Coefficient ( $\pm$ ppm/ $^{\circ}$ C): 25, 50 Tolerance ( $\pm$ % ) = 0.5, 1.0					Remarks:																																		
Procurement Specifications				Manufacturer		Nature of Approval	Supervising Authority	Date																															
Generic ESCC 4001  Detail ESCC 4001/029				VISHAY Electronic Division Draloric Selb Germany		Qualification Extension <a href="#">Extension</a>	DLR DLR <a href="#">DLR</a>	May 2009 Jun 2011 <a href="#">Jul 2013</a>																															
Characteristics: Variants 01 to 03 inclusive are qualified E96 Series																																							
<table border="1"> <thead> <tr> <th>Variants</th> <th>Style</th> <th colspan="3">Range (<math>\Omega</math>)</th> <th>Tol. (<math>\pm</math>%)</th> <th>TC (<math>\pm</math>ppm/<math>^{\circ}</math>C)</th> <th>Critical R (<math>\Omega</math>)</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>0603</td> <td>10</td> <td>-</td> <td>0.221 M</td> <td>0.1</td> <td>15</td> <td>56.25</td> </tr> <tr> <td>02</td> <td>0805</td> <td>10</td> <td>-</td> <td>0.422 M</td> <td>0.1</td> <td>15</td> <td>180</td> </tr> <tr> <td>03</td> <td>1206</td> <td>10</td> <td>-</td> <td>1 M</td> <td>0.1</td> <td>15</td> <td>160</td> </tr> </tbody> </table>								Variants	Style	Range ( $\Omega$ )			Tol. ( $\pm$ %)	TC ( $\pm$ ppm/ $^{\circ}$ C)	Critical R ( $\Omega$ )	01	0603	10	-	0.221 M	0.1	15	56.25	02	0805	10	-	0.422 M	0.1	15	180	03	1206	10	-	1 M	0.1	15	160
Variants	Style	Range ( $\Omega$ )			Tol. ( $\pm$ %)	TC ( $\pm$ ppm/ $^{\circ}$ C)	Critical R ( $\Omega$ )																																
01	0603	10	-	0.221 M	0.1	15	56.25																																
02	0805	10	-	0.422 M	0.1	15	180																																
03	1206	10	-	1 M	0.1	15	160																																
Operating Temperature Range, ( $^{\circ}$ C): -55 to +125																																							
		RESISTORS, FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE TNPS				Current Validity of Qualification		Page																															
						Certificate 289 B	Valid Until May 2015	10-08 007																															



Types covered by similarity:		Remarks: Components under ESCC QML qualification. Refer to Technology Flow description in REF006. This certificate replaces certificate 265C.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4001  Detail ESCC 4001/023 ESCC 4001/025	VISHAY S.A. Division Sfernice Nice France	Qualification Extension <a href="#">Extension</a>	CNES CNES <a href="#">CNES</a>	Feb 2009 Feb 2011 <a href="#">Feb 2013</a>
<p>Characteristics: Refer to tables on the next page</p> <p>4001/023    PHR    High Stability and Precision Chip</p> <p>4001/023    PFRR    High Stability and Precision Chip with Established Reliability Level R</p> <p>4001/025    PRA/CNWHR    High Stability and Precision Surface Mount Array</p> <p>Operating Temperature Range, (°C): -55 to +155 Lead material is E with either Type 2 or Type 4 finish</p>				
	RESISTORS, FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR	Current Validity of Qualification		Page
		Certificate  287 C	Valid Until  Feb 2015	10-09  002-A

Characteristics: Type PHR, Variants 01 to 08 are qualified

Detail Specification	Style	Critical R (kΩ)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	0603	12.25	0.100	35	01; 05
	0805	45	0.125	75	02; 06
	1206	40	0.250	100	03; 07
	2010	45	0.500	150	04; 08

Style	Range (Ω)	Tolerance (±%)	Temperature Coefficient (±ppm/°C)
0603; 0805; 1206; 2010	From 10 to <20	0.1	25
0603; 0805; 1206; 2010	From 20 to <50	0.1	10; 25
0603; 0805; 1206; 2010	From 50 to <100	0.05; 0.1	5; 10; 25
0603; 0805; 1206; 2010	From 100 to <250	0.02; 0.05; 0.1	5; 10; 25
0603; 0805; 1206; 2010	From 250 to <200K	0.01; 0.02; 0.05; 0.1	5; 10; 25
0805; 1206; 2010	From 200K to <250K	0.01; 0.02; 0.05; 0.1	5; 10; 25
1206; 2010	From 250K to <1M	0.01; 0.02; 0.05; 0.1	5; 10; 25
2010	From 1M to 3M	0.01; 0.02; 0.05; 0.1	5; 10; 25



RESISTORS,  
FILM, FIXED, CHIP AND ARRAY, THIN FILM,  
BASED ON TYPES PHR; PFRR; PRAHR/CNWHR

Current Validity of Qualification

Certificate

287 C

Valid Until

Feb 2015

Page

10-09



002-B

Characteristics: Type PFRR, Variants 09 to 12 and 15 are qualified

Detail Specification	Style	Critical R (kΩ)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	0402	32	0.050	40	15
	0603	25	0.100	50	09
	0805	80	0.125	100	10
	1206	90	0.250	150	11
	2010	80	0.500	200	12

Style	Resistance Range (Ω)	Tolerance (±%)	Temperature Coefficient TC(±10 <sup>-6</sup> /°C)
0402; 0603; 0805; 1206; 2010	From 100 to ≤ 100K	0.05; 0.1	10; 25
0603; 0805; 1206; 2010	From 100 to ≤ 261K	0.05; 0.1	10; 25
0805; 1206; 2010	From 261K to ≤ 301K	0.05; 0.1	10; 25
1206; 2010	From 301K to ≤ 1M	0.05; 0.1	10; 25
2010	From 1M to 3M01	0.05; 0.1	10; 25

The Established Reliability Level R is evaluated according to the ESCC Basic Specification 26000.

 <b>ESCC</b> European Space Components Coordination  <b>QPL</b>	<b>RESISTORS,</b> FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR	Current Validity of Qualification		Page
		Certificate	Valid Until	
		287 C	Feb 2015	002-C

Characteristics: Type PRAHR/CNWHR,, Variants 01 to 42 are qualified

Detail Specification	Style	Critical R (KΩ)	Rated Dissipation (W/resistor)	Limiting Element Voltage (V/resistor)	Type Variant	
					Same Ohmic Values	Different Ohmic Values
4001/025	PRA100	12.25	0.100	35	01 to 07	22 to 28
	PRA135	56.25	0.100	75	08 to 14	29 to 35
	PRA182	100	0.100	100	15 to 21	36 to 42

Style	Resistance Range (Ω)	Tolerance (±%)		Temperature Coefficient TC(±10 <sup>-6</sup> /°C)	
		Absolute	Relative	Absolute	Relative
PRA100; PRA135; PRA182	From 100 to 200K	0.1; 0.5; 1	0.05; 0.1	10	3; 5
PRA135; PRA182	From 200K to 250K	0.1; 0.5; 1	0.05; 0.1	10	3; 5
PRA182	From 250K to 1M	0.1; 0.5; 1	0.05; 0.1	10	3; 5

Number of Resistors per Array: 2 to 8



RESISTORS,  
FILM, FIXED, CHIP AND ARRAY, THIN FILM,  
BASED ON TYPES PHR; PFRR; PRAHR/CNWHR

Current Validity of Qualification

Certificate

287 C


Valid Until



Feb 2015


Page

10-09

002-D

Types covered by similarity:				Remarks:																																
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																														
Generic ESCC 4001  Detail ESCC 4001/026		VISHAY S.A. Division Sfernice Nice France		Qualification  Extension	CNES  CNES	Oct 2011  Oct 2013																														
Characteristics: Type CHPHR, Variants 01 to 10 are qualified																																				
<table border="1"> <thead> <tr> <th>Style</th> <th>Critical R (K<math>\Omega</math>)</th> <th>Rated Dissipation</th> <th>Limited Element Voltage (V)</th> <th>Type Variant</th> </tr> </thead> <tbody> <tr> <td>0603</td> <td>25</td> <td>0.100</td> <td>50</td> <td>01;06</td> </tr> <tr> <td>0805</td> <td>50</td> <td>0.200</td> <td>100</td> <td>02;07</td> </tr> <tr> <td>1206</td> <td>160</td> <td>0.250</td> <td>200</td> <td>03;08</td> </tr> <tr> <td>2010</td> <td>180</td> <td>0.500</td> <td>300</td> <td>04;09</td> </tr> <tr> <td>2512</td> <td>112.5</td> <td>0.800</td> <td>300</td> <td>05;10</td> </tr> </tbody> </table>							Style	Critical R (K $\Omega$ )	Rated Dissipation	Limited Element Voltage (V)	Type Variant	0603	25	0.100	50	01;06	0805	50	0.200	100	02;07	1206	160	0.250	200	03;08	2010	180	0.500	300	04;09	2512	112.5	0.800	300	05;10
Style	Critical R (K $\Omega$ )	Rated Dissipation	Limited Element Voltage (V)	Type Variant																																
0603	25	0.100	50	01;06																																
0805	50	0.200	100	02;07																																
1206	160	0.250	200	03;08																																
2010	180	0.500	300	04;09																																
2512	112.5	0.800	300	05;10																																
<table border="1"> <thead> <tr> <th>Style</th> <th>Range(<math>\Omega</math>)</th> <th>Tol. (<math>\pm</math>%)</th> <th>TC(<math>\pm</math>ppm/<math>^{\circ}</math>C)</th> </tr> </thead> <tbody> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 1 to &lt; 10</td> <td>2; 5</td> <td>200</td> </tr> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 10 to &lt; 1M</td> <td>1; 2; 5</td> <td>100;200</td> </tr> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 1M to <math>\leq</math> 10M</td> <td>2; 5</td> <td>200</td> </tr> </tbody> </table>							Style	Range( $\Omega$ )	Tol. ( $\pm$ %)	TC( $\pm$ ppm/ $^{\circ}$ C)	0603;0805;1206;2010;2512	From 1 to < 10	2; 5	200	0603;0805;1206;2010;2512	From 10 to < 1M	1; 2; 5	100;200	0603;0805;1206;2010;2512	From 1M to $\leq$ 10M	2; 5	200														
Style	Range( $\Omega$ )	Tol. ( $\pm$ %)	TC( $\pm$ ppm/ $^{\circ}$ C)																																	
0603;0805;1206;2010;2512	From 1 to < 10	2; 5	200																																	
0603;0805;1206;2010;2512	From 10 to < 1M	1; 2; 5	100;200																																	
0603;0805;1206;2010;2512	From 1M to $\leq$ 10M	2; 5	200																																	
Operating Temperature Range, ( $^{\circ}$ C): -55 to +155 Lead material is E with either Type 2 or Type 4 finish																																				
		RESISTORS,  FIXED, CHIP, THICK FILM, BASED ON TYPE CHP			Current Validity of Qualification		Page																													
					Certificate	Valid Until	10-09																													
					314 A	October 2015	003																													


Types covered by similarity:		Remarks: Maintenance of qualification testing has not been initiated.				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 4009  Detail ESCC 4009/002		IRCA RICA Division Vittorio Veneto Italy	Qualification	ESTEC	Apr 1992	
Characteristics:  Single, double layer and magnetically compensated heaters  Maximum Ohmic density      200 Ω/cm <sup>2</sup>  Tolerances                      ±2, 3, 5, 10 %  Resistance                        1 to 5000 Ω  Heating Area                      1.6 to 1300 cm <sup>2</sup>  Terminal Lead                    20, 22, 24, 26, 28, 30 AWG  Temperature coefficient        (10 <sup>-6</sup> /°C): 175 Operating Temperature Range, (°C): -65 to +200			Extension	ESTEC	May 1994	
			Extension	ESTEC	Mar 1996	
			Extension	ESTEC	Feb 1998	
			Extension	ESTEC	Apr 2000	
			Extension	ESTEC	Aug 2002	
			Extension	ESTEC	Dec 2004	
			Extension	ESTEC	Aug 2007	
		Extension	ESTEC	Oct 2009		
			Extension	ESTEC	Oct 2011	
  	RESISTORS, HEATERS,  FLEXIBLE SINGLE AND DOUBLE LAYER		Current Validity of Qualification		Page	
			Certificate	Valid Until	10-11	
				184 J	October 2013	001-1

Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 4009  Detail ESCC 4009/003		Minco SAS Aston France	Qualification	ESTEC	Mar 2013	
Characteristics: Variants 01, 02 and 03 are qualified  Single, double layer heaters  Maximum Ohmic density      70 Ω/cm <sup>2</sup> Rated power density        0.38 (variants 01, 03), 0.54 (variant 02) W/cm <sup>2</sup> Resistance                      1 to 5000 Ω Heating Area                    0.26 to 1000 cm <sup>2</sup> Terminal Lead                  20 to 30 AWG Resistance Tolerance        (%): ±1 to ±10  Operating Temperature Range, (°C): -65 to +150 for variants 01 and 03; 65 to +200 for variant 02						
		RESISTORS, HEATERS,  FLEXIBLE SINGLE AND DOUBLE LAYER		Current Validity of Qualification		Page
				Certificate	Valid Until	10-11
				325	March 2015	002

**Section 11****Component Type: Thermistors**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
11-01			NTC	
	11-01-001	266 F	Types G15K4D489 and *K3A35*	MEAS Ireland (Betatherm) Ltd.




Types covered by similarity:		Remarks: Refer to variants table 1(a) in the Detail Specifications for resistance to temperature characteristics.  Maintenance of qualification testing has been completed.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4006  Detail ESCC 4006/013 4006/014	MEAS Ireland (Betatherm) Galway Ireland	Qualification	ESTEC	Jul 2001
<p>Characteristics:</p> <p>4006/013: Variants 01 to 05 and 06 to 07 are qualified.</p> <p>4006/014: Variants 08, 09, 12 and 13 are qualified.</p> <p>Operating Temperature Range, (°C): 4006/013 : -55 to +115 4006/014 : -60 to +160</p> <p>Please refer to the relevant Detail Specification for complete information on the qualified variants.</p>		Extension	ESTEC	Jan 2002
		Extension	ESTEC	Sep 2004
		Extension	ESTEC	Nov 2006
		Extension	Enterprise Ireland	Nov 2008
		Extension	Enterprise Ireland	Nov 2009
		Extension	Enterprise Ireland	Dec 2011
	<p>THERMISTORS, (THERMALLY SENSITIVE RESISTORS), NTC, BASED ON TYPES G15K4D489 AND *K3A35*</p>	Current Validity of Qualification		Page
		Certificate	Valid Until	11-01
		266 F	November 2013	001

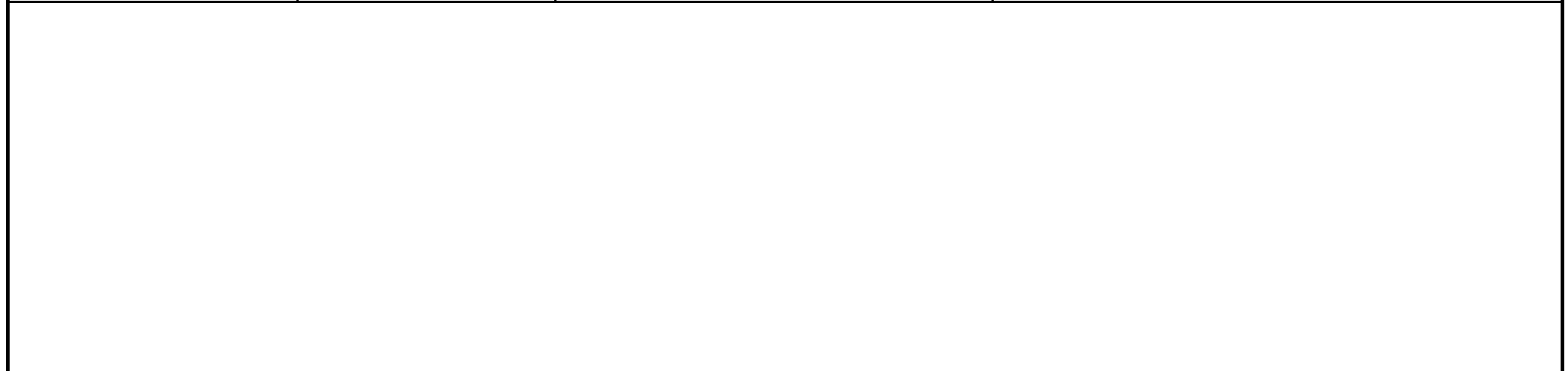
## Section 12


## Component Type: Transistors


Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
12-01			Low Power, NPN	
	12-01-002-3A-B	233 J	Types NPN	STMicroelectronics
12-02			Low Power, PNP	
	12-02-002-3A-B	234 J	Types PNP	STMicroelectronics
12-05			MOSFET, Power, N-Channel	
	12-05-003-01	303 A	Types STRH100N10FSY3, STRH40N6SG, SRH100N6HYG, and STRH8N10	STMicroelectronics
	12-05-003-02	319	Type BUY**CS***	Infineon
12-06			MOSFET, Power, P-Channel	
	12-06-003-01	326	Type STRH40P10	STMicroelectronics
12-10			RF/Microwave, NPN, Low Power, Low Noise	
	12-10-001	230 E	Types BFY193	Infineon
	12-10-002	245 E	Types BFY405, -420 and -450	Infineon
	12-10-003	320	Type BFY640	Infineon
	12-10-004	321	Types BFY640B and BFY650B	Infineon
	12-10-005	322	Type BFY740B	Infineon
12-16			Microwave, Gallium Arsenide	
	12-16-001	213 E	Types CFY67, High Electron Mobility, Low Noise	Infineon

Types covered by similarity:		Remarks: As a result of NCCS 2CSTM201 currently under investigation, the qualification of products in TO39 package is suspended.																																																
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																																													
Generic ESCC 5000  Detail ESCC Please refer to the next page		ST Microelectronics Rennes France	Qualification	CNES	Sep 1996																																													
Characteristics:  Maximum Rating: <table border="1" data-bbox="71 901 1160 1193"> <tr> <td></td> <td>2N2222A</td> <td>2N2484</td> <td></td> <td>2N5551</td> <td>2N3700</td> <td>2N5154</td> <td>BUX 77</td> <td>2N2920A</td> </tr> <tr> <td>V<sub>CB0</sub>(V):</td> <td>75</td> <td>60</td> <td>BV<sub>CB0</sub>(V)</td> <td>180</td> <td>140</td> <td>100</td> <td>100</td> <td>60</td> </tr> <tr> <td>V<sub>CE0</sub>(V):</td> <td>40</td> <td>60</td> <td>BV<sub>CE0</sub>(V)</td> <td>160</td> <td>80</td> <td>80</td> <td>80</td> <td>60</td> </tr> <tr> <td>Packages:</td> <td colspan="8">TO-18, TO-66, TO-77, TO-257, LCCC3, LCCC6 and SMD0.5</td> </tr> <tr> <td colspan="9">Operating Temperature Range (°C), -65 to +200</td> </tr> </table>				2N2222A	2N2484		2N5551	2N3700	2N5154	BUX 77	2N2920A	V <sub>CB0</sub> (V):	75	60	BV <sub>CB0</sub> (V)	180	140	100	100	60	V <sub>CE0</sub> (V):	40	60	BV <sub>CE0</sub> (V)	160	80	80	80	60	Packages:	TO-18, TO-66, TO-77, TO-257, LCCC3, LCCC6 and SMD0.5								Operating Temperature Range (°C), -65 to +200									Extension	CNES	Sep 1997
				2N2222A	2N2484		2N5551	2N3700	2N5154	BUX 77	2N2920A																																							
			V <sub>CB0</sub> (V):	75	60	BV <sub>CB0</sub> (V)	180	140	100	100	60																																							
			V <sub>CE0</sub> (V):	40	60	BV <sub>CE0</sub> (V)	160	80	80	80	60																																							
			Packages:	TO-18, TO-66, TO-77, TO-257, LCCC3, LCCC6 and SMD0.5																																														
			Operating Temperature Range (°C), -65 to +200																																															
			Extension	CNES	Aug 1998																																													
			Extension	CNES	Nov 1999																																													
			Extension	CNES	Nov 2001																																													
		Extension	CNES	Dec 2003																																														
Extension	CNES	Mar 2006																																																
Extension	CNES	Jul 2008																																																
Extension	CNES	Jul 2010																																																
Extension	CNES	Aug 2012																																																
		TRANSISTORS, LOW AND HIGH POWER, NPN		Current Validity of Qualification		Page																																												
				Certificate	Valid Until	12-01																																												
				233 J	July 2014	002-3A																																												

ESCC Specification No.	Component Type	Package	Qualified Variants
5201/001	2N 2484	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5201/002	2N 2222A	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 11, 12
5201/019	2N 5551	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 08, 09
5201/004	2N 3700	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5203/010	2N 5154, BFX 34	TO-257, SMD.5	04, 05, 06, 07
5203/016	BUX 77ESY	TO-257	06, 07
5207/002	2N 2920A	TO-77 and LCCC6	03, 06, 12, 15




 <b>ESCC</b> <small>European Space Components Coordination</small> <b>QPL</b>	<p style="text-align: center;">TRANSISTORS, LOW AND HIGH POWER, NPN</p>	Current Validity of Qualification		Page 12-01 002-3B
		Certificate 233 J	Valid Until July 2014	


Types covered by similarity:						Remarks: As a result of NCCS 2CSTM201 currently under investigation, the qualification of products in TO39 package is suspended. Devices 2N3350 and 2N4033 are not extended.																																
Procurement Specifications						Manufacturer		Nature of Approval	Supervising Authority	Date																												
Generic ESCC 5000  Detail ESCC Please refer to the next page						ST Microelectronics Rennes France		Qualification	CNES	Sep 1996																												
Characteristics:  <table border="1"> <tr> <td></td> <td>2N2907A</td> <td>2N3810</td> <td>2N5153</td> <td>BUX 78</td> <td>2N5401</td> </tr> <tr> <td>BV<sub>CBO</sub>(V)</td> <td>60</td> <td>60</td> <td>100</td> <td>100</td> <td>160</td> </tr> <tr> <td>BV<sub>CEO</sub>(V)</td> <td>60</td> <td>60</td> <td>80</td> <td>80</td> <td>150</td> </tr> <tr> <td>Packages:</td> <td colspan="5">TO-18, TO-77, TO-78, TO-257, LCCC3, LCCC6 and SMD0.5</td> </tr> <tr> <td colspan="6">Operating Temperature Range (°C), -65 to +200</td> </tr> </table>							2N2907A	2N3810	2N5153	BUX 78	2N5401	BV <sub>CBO</sub> (V)	60	60	100	100	160	BV <sub>CEO</sub> (V)	60	60	80	80	150	Packages:	TO-18, TO-77, TO-78, TO-257, LCCC3, LCCC6 and SMD0.5					Operating Temperature Range (°C), -65 to +200						Extension	CNES	Sep 1997
							2N2907A	2N3810	2N5153	BUX 78	2N5401																											
						BV <sub>CBO</sub> (V)	60	60	100	100	160																											
						BV <sub>CEO</sub> (V)	60	60	80	80	150																											
						Packages:	TO-18, TO-77, TO-78, TO-257, LCCC3, LCCC6 and SMD0.5																															
						Operating Temperature Range (°C), -65 to +200																																
						Extension	CNES	Aug 1998																														
Extension	CNES	Nov 1999																																				
Extension	CNES	Nov 2001																																				
Extension	CNES	Jan 2004																																				
Extension	CNES	Mar 2006																																				
Extension	CNES	Jul 2008																																				
Extension	CNES	Jul 2010																																				
Extension	CNES	Aug 2012																																				
 <b>QPL</b>						TRANSISTORS, LOW AND HIGH POWER, PNP				Current Validity of Qualification		Page																										
										Certificate	Valid Until	12-02																										
										234 J	July 2014	002-3A																										

ESCC Specification No.	Component Type	Package	Qualified Variants
5202/001	2N 2907A	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05,06, 07
5202/014	2N 5401	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5204/002	2N 5153	TO-257, SMD.5	04, 05, 06, 07
5204/006	BUX 78ESY	TO-257	06, 07
5207/005	2N 3810	TO-78, LCCC6	01, 02, 07, 09





 <b>ESCC</b> <small>European Space Components Coordination</small> <b>QPL</b>	<p style="text-align: center;">TRANSISTORS, LOW AND HIGH POWER, PNP</p>	Current Validity of Qualification		Page
		Certificate	Valid Until	
		234 J	July 2014	002-3B





Types covered by similarity: Variant 01 in each Detail Specification is qualified.				Remarks: These devices have a TID tested capability of 100 kRad (Si) SEE tested : LET (MeV-cm <sup>2</sup> /mg) 56 @ V <sub>GS</sub> = -10V, V <sub>DS</sub> = 250V SOA and SE SOA derating graphs are incorporated in the Detail Specifications.																																										
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																																								
Generic ESCC 5000  Detail ESCC 5205/026 5205/027 5205/028		Infineon Technologies AG Neubiberg Germany		Qualification	DLR	Aug 2012																																								
<table border="1"> <thead> <tr> <th>Characteristics: ESCC No.</th> <th>5205/026</th> <th>5205/027</th> <th>5205/028</th> </tr> </thead> <tbody> <tr> <td>r<sub>DS(ON)</sub> (mΩ) @ 25 °C</td> <td>130</td> <td>30</td> <td>130</td> </tr> <tr> <td colspan="4">Maximum Ratings:</td> </tr> <tr> <td>I<sub>DS</sub> (A)</td> <td>12.4</td> <td>54</td> <td>12.4</td> </tr> <tr> <td>V<sub>DS</sub> (V) max.</td> <td>250</td> <td>250</td> <td>100</td> </tr> <tr> <td>V<sub>GS</sub> (V) max.</td> <td>± 20</td> <td>± 20</td> <td>± 20</td> </tr> <tr> <td>P<sub>tot</sub> (W)</td> <td>75</td> <td>250</td> <td>75</td> </tr> <tr> <td>R<sub>th(j-c)</sub> (°C/W)</td> <td>1.66</td> <td>0.5</td> <td>1.66</td> </tr> <tr> <td>Package:</td> <td>SMD0.5</td> <td>SMD2</td> <td>SMD0.5</td> </tr> <tr> <td colspan="4">Operating Temperature Range (°C): T<sub>op</sub> = - 55 to +150</td> </tr> </tbody> </table>							Characteristics: ESCC No.	5205/026	5205/027	5205/028	r <sub>DS(ON)</sub> (mΩ) @ 25 °C	130	30	130	Maximum Ratings:				I <sub>DS</sub> (A)	12.4	54	12.4	V <sub>DS</sub> (V) max.	250	250	100	V <sub>GS</sub> (V) max.	± 20	± 20	± 20	P <sub>tot</sub> (W)	75	250	75	R <sub>th(j-c)</sub> (°C/W)	1.66	0.5	1.66	Package:	SMD0.5	SMD2	SMD0.5	Operating Temperature Range (°C): T <sub>op</sub> = - 55 to +150			
Characteristics: ESCC No.	5205/026	5205/027	5205/028																																											
r <sub>DS(ON)</sub> (mΩ) @ 25 °C	130	30	130																																											
Maximum Ratings:																																														
I <sub>DS</sub> (A)	12.4	54	12.4																																											
V <sub>DS</sub> (V) max.	250	250	100																																											
V <sub>GS</sub> (V) max.	± 20	± 20	± 20																																											
P <sub>tot</sub> (W)	75	250	75																																											
R <sub>th(j-c)</sub> (°C/W)	1.66	0.5	1.66																																											
Package:	SMD0.5	SMD2	SMD0.5																																											
Operating Temperature Range (°C): T <sub>op</sub> = - 55 to +150																																														
		<p style="text-align: center;">TRANSISTORS, POWER, MOSFET, N-CHANNEL, BASED ON TYPE BUY **CS***</p>			Current validity of Qualification		Page																																							
					Certificate  319	Valid Until  August 2014	12-05  003-2																																							





Types covered by similarity:		Remarks: These devices have a TID tested capability of 100kRAD(Si).			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000  Detail ESCC 5205/025		ST Microelectronics Rennes France	Qualification	CNES	Mar 2013
Characteristics: Variants 01 and 02 are qualified  $V_{GS(th)}$ -2 to -4.5V min/max, $V_{DS} \geq V_{GS}$ , $I_D = -1mA$ $r_{DS(on)}$ 75 m $\Omega$ , $V_{GS} = -12V$ , $I_D = -17A$ pulsed Maximum Ratings: $I_{DS}$ (A) -34, $T_{case}$ ( $^{\circ}C$ ) = $\leq +25$ $V_{DS}$ ( $V_{dc}$ ): -100 over $T_{op}$ , $V_{GS} = 0V$ $V_{GS}$ ( $V_{dc}$ ): $\pm 20$ $R_{th(j-s)}$ 0.71 $^{\circ}C/W$ $P_{tot}$ 176 W at $T_{case}$ ( $^{\circ}C$ ) = $\leq +25$ C  Package Type: TO-254AA Operating Temperature Range ( $^{\circ}C$ ): -55 to +150					
	TRANSISTORS, MOSFET, P-CHANNEL, POWER, TYPE STRH40P10		Current validity of Qualification		Page
			Certificate	Valid Until	12-06
		326	March 2015	003-1	


Types covered by similarity: Variants 01 to 08 are qualified.			Remarks:		
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010		Infineon Technologies AG Neubiberg Germany	Qualification	DARA	Jun 1996
Detail ESCC 5611/006			Extension	DLR	Jan 2000
<b>Characteristics for BFY 193</b>  $V_{CE0}$ (V) max.                                      12 $V_{CBO}$ (V)max.    20 $h_{FE}$ min/max.    50/175    @ $V_{CE} = 8.0\text{ V}$ , $I_C = 30\text{mA}$ NF (dB) max.    @ 2 GHz    2.9    @ $V_{CE} = 5.0\text{ V}$ , $I_C = 15\text{mA}$ MAG/MSG (dB) min.                                    @ 2 GHz    12.5    @ $V_{CE} = 5.0\text{ V}$ , $I_C = 40\text{mA}$ $f_T$ (GHz) min.    @ 500 MHz    6.5    @ $V_{CE} = 5.0\text{ V}$ , $I_C = 40\text{mA}$  Package: " Micro-X1"  Total Power Dissipation ( $P_{tot}$ ) = 580 mW  Operating Temperature Range (°C): $T_{op} = - 65$ to +200			Extension	DLR	Nov 2004
			Requalification	DLR	Mar 2008
			Requalification	DLR	Nov 2010
			Extension	DLR	Mar 2012
	TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPE BFY 193		Current validity of Qualification		Page
			Certificate	Valid Until	12-10
			230 E	March 2014	001

Types covered by similarity: Variants 01, 02 and 03 are qualified.		Remarks:																														
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																											
Generic ESCC 5010		Infineon Technologies AG Neubiberg Germany	Qualification	DARA	Jun 1997																											
Detail ESCC 5611/008			Extension	DLR	Jan 2000																											
<p>Characteristics for BFY 450</p> <table border="0"> <tr> <td>V<sub>CEO</sub> (V) max.</td> <td>4.5</td> <td></td> <td></td> </tr> <tr> <td>V<sub>CBO</sub> (V) max.</td> <td>15</td> <td></td> <td></td> </tr> <tr> <td>I<sub>C</sub> (mA) max.</td> <td>100</td> <td></td> <td></td> </tr> <tr> <td>I<sub>B</sub> (mA) max.</td> <td>10</td> <td></td> <td></td> </tr> <tr> <td>h<sub>FE</sub> min/max.</td> <td>50/150</td> <td>@ V<sub>CE</sub> = 1.0 V, I<sub>C</sub> = 20mA</td> <td></td> </tr> <tr> <td>NF (dB) max.</td> <td>@ 1.8 GHz</td> <td>2.0</td> <td>@ V<sub>CE</sub> = 2.0 V, I<sub>C</sub> = 10mA</td> </tr> <tr> <td>f<sub>T</sub> (GHz) min.</td> <td>@ 1.0 GHz</td> <td>18</td> <td>@ V<sub>CE</sub> = 3.0 V, I<sub>C</sub> = 90mA</td> </tr> </table> <p>Package: "Micro-X"</p> <p>Total Power Dissipation (P<sub>tot</sub>) = 450 mW</p> <p>Operating Temperature Range (°C): T<sub>op</sub> = - 65 to +175</p>		V <sub>CEO</sub> (V) max.	4.5			V <sub>CBO</sub> (V) max.	15			I <sub>C</sub> (mA) max.	100			I <sub>B</sub> (mA) max.	10			h <sub>FE</sub> min/max.	50/150	@ V <sub>CE</sub> = 1.0 V, I <sub>C</sub> = 20mA		NF (dB) max.	@ 1.8 GHz	2.0	@ V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 10mA	f <sub>T</sub> (GHz) min.	@ 1.0 GHz	18	@ V <sub>CE</sub> = 3.0 V, I <sub>C</sub> = 90mA	Extension	DLR	Dec 2003
		V <sub>CEO</sub> (V) max.	4.5																													
		V <sub>CBO</sub> (V) max.	15																													
		I <sub>C</sub> (mA) max.	100																													
		I <sub>B</sub> (mA) max.	10																													
h <sub>FE</sub> min/max.	50/150	@ V <sub>CE</sub> = 1.0 V, I <sub>C</sub> = 20mA																														
NF (dB) max.	@ 1.8 GHz	2.0	@ V <sub>CE</sub> = 2.0 V, I <sub>C</sub> = 10mA																													
f <sub>T</sub> (GHz) min.	@ 1.0 GHz	18	@ V <sub>CE</sub> = 3.0 V, I <sub>C</sub> = 90mA																													
	Requalification	DLR	Mar 2008																													
	Requalification	DLR	Nov 2010																													
	Extension	DLR	Mar 2012																													
	<p>TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPE BFY 450</p>		Current validity of Qualification		Page																											
			Certificate	Valid Until	12-10																											
		245 E	March 2014	002																												

Types covered by similarity: Variants 01, 02 and 03 are qualified.		Remarks: -			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010  Detail ESCC 5611/009		Infineon Technologies AG Neubiberg Germany	Qualification	DLR	Sep 2012
Characteristics for BFY 640 Variant 03					
V <sub>CEO</sub> (V) max.		4.0			
V <sub>CBO</sub> (V) max.		13			
I <sub>C</sub> (mA) max.		50.0			
I <sub>B</sub> (mA) max.		3.0			
h <sub>FE</sub> min/max		135/250 @ V <sub>ce</sub> =3V & I <sub>C</sub> =30mA			
MSG/MAG min (dB)		@ 1.8GHz 23 @ V <sub>ce</sub> =3V & I <sub>C</sub> = 30mA			
		@ 6.0 GHz 12 V <sub>ce</sub> =3V & I <sub>C</sub> = 30mA			
NF <sub>max</sub> (dB)		@ 1.8 GHz < 0.8 @ V <sub>ce</sub> =3V & I <sub>C</sub> =5mA			
NF <sub>max</sub> (dB)		@ 6.0 GHz < 1.4 @ V <sub>ce</sub> =3V & I <sub>C</sub> =5mA			
Package: "Micro-X"					
Total Power Dissipation (P <sub>tot</sub> ) max. = 200 mW					
Operating Temperature Range (°C): T <sub>op</sub> = - 65 to +175					
		<p style="text-align: center;">TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPE BFY 640</p>			Page
					Current validity of Qualification
		Certificate	Valid Until	003	
		320	September 2014		

Types covered by similarity: Variants 01, 02, 03 and 04 are qualified.		Remarks:																								
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																					
Generic ESCC 5010  Detail ESCC 5611/010		Infineon Technologies AG Neubiberg Germany	Qualification	DLR	Sep 2012																					
<p>Characteristics for BFY 650B Variant 04</p> <table border="0"> <tr> <td>V<sub>CEO</sub> (V) max.</td> <td></td> <td>4.0</td> </tr> <tr> <td>V<sub>CBO</sub> (V) max.</td> <td></td> <td>13</td> </tr> <tr> <td>I<sub>C</sub> (mA) max.</td> <td></td> <td>150</td> </tr> <tr> <td>I<sub>B</sub> (mA) max.</td> <td></td> <td>10</td> </tr> <tr> <td>h<sub>FE</sub> min/max</td> <td></td> <td>100/250 @ V<sub>CE</sub>=3V &amp; I<sub>C</sub>=80mA</td> </tr> <tr> <td>MSG/MAG min (dB)</td> <td>@1.8 GHz</td> <td>18 @ V<sub>CE</sub>=3V &amp; I<sub>C</sub>=80mA</td> </tr> <tr> <td>Pout (dBm)</td> <td>@ 1.8 GHz</td> <td>16</td> </tr> </table> <p>Package: "Micro-X"</p> <p>Total Power Dissipation (P<sub>tot</sub>) max. = 600 mW</p> <p>Operating Temperature Range (°C): T<sub>op</sub> = - 65 to +175</p>						V <sub>CEO</sub> (V) max.		4.0	V <sub>CBO</sub> (V) max.		13	I <sub>C</sub> (mA) max.		150	I <sub>B</sub> (mA) max.		10	h <sub>FE</sub> min/max		100/250 @ V <sub>CE</sub> =3V & I <sub>C</sub> =80mA	MSG/MAG min (dB)	@1.8 GHz	18 @ V <sub>CE</sub> =3V & I <sub>C</sub> =80mA	Pout (dBm)	@ 1.8 GHz	16
V <sub>CEO</sub> (V) max.		4.0																								
V <sub>CBO</sub> (V) max.		13																								
I <sub>C</sub> (mA) max.		150																								
I <sub>B</sub> (mA) max.		10																								
h <sub>FE</sub> min/max		100/250 @ V <sub>CE</sub> =3V & I <sub>C</sub> =80mA																								
MSG/MAG min (dB)	@1.8 GHz	18 @ V <sub>CE</sub> =3V & I <sub>C</sub> =80mA																								
Pout (dBm)	@ 1.8 GHz	16																								
		<p>TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPES BFY 640B and BFY650B</p>		Current validity of Qualification		Page																				
				Certificate	Valid Until	12-10																				
				321	September 2014	004																				

Types covered by similarity:		Remarks:																														
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																											
Generic ESCC 5010  Detail ESCC 5611/011		Infineon Technologies AG Neubiberg Germany	Qualification	DLR	Sep 2012																											
Characteristics for BFY 740B Variant 01  <table border="0"> <tr> <td>V<sub>CEO</sub> (V) max.</td> <td></td> <td>4.0</td> </tr> <tr> <td>V<sub>CBO</sub> (V) max.</td> <td></td> <td>13</td> </tr> <tr> <td>I<sub>C</sub> (mA) max.</td> <td></td> <td>30.0</td> </tr> <tr> <td>I<sub>B</sub> (mA) max.</td> <td></td> <td>3.0</td> </tr> <tr> <td>h<sub>FE</sub> min/max</td> <td></td> <td>185/380 @V<sub>CE</sub>=3V &amp; I<sub>C</sub>=20mA</td> </tr> <tr> <td>MSG/MAG min (dB)</td> <td>@ 1.8 GHz</td> <td>24 @V<sub>CE</sub>=3V &amp; I<sub>C</sub>=20mA</td> </tr> <tr> <td>MSG/MAG min (dB)</td> <td>@ 6.0 GHz</td> <td>17 @V<sub>CE</sub>=3V &amp; I<sub>C</sub>=20mA</td> </tr> <tr> <td>NF<sub>max</sub> (dB)</td> <td>@ 1.8 GHz</td> <td>≤ 0.75 @V<sub>CE</sub>=3V &amp; I<sub>C</sub>=8mA</td> </tr> <tr> <td>NF<sub>max</sub> (dB)</td> <td>@ 6.0 GHz</td> <td>≤ 1.15 @V<sub>CE</sub>=3V &amp; I<sub>C</sub>=8mA</td> </tr> </table> Package: "Micro-X"  Total Power Dissipation (P <sub>tot</sub> ) max. = 120 mW  Operating Temperature Range (°C): T <sub>op</sub> = - 65 to +175		V <sub>CEO</sub> (V) max.		4.0	V <sub>CBO</sub> (V) max.		13	I <sub>C</sub> (mA) max.		30.0	I <sub>B</sub> (mA) max.		3.0	h <sub>FE</sub> min/max		185/380 @V <sub>CE</sub> =3V & I <sub>C</sub> =20mA	MSG/MAG min (dB)	@ 1.8 GHz	24 @V <sub>CE</sub> =3V & I <sub>C</sub> =20mA	MSG/MAG min (dB)	@ 6.0 GHz	17 @V <sub>CE</sub> =3V & I <sub>C</sub> =20mA	NF <sub>max</sub> (dB)	@ 1.8 GHz	≤ 0.75 @V <sub>CE</sub> =3V & I <sub>C</sub> =8mA	NF <sub>max</sub> (dB)	@ 6.0 GHz	≤ 1.15 @V <sub>CE</sub> =3V & I <sub>C</sub> =8mA				
V <sub>CEO</sub> (V) max.		4.0																														
V <sub>CBO</sub> (V) max.		13																														
I <sub>C</sub> (mA) max.		30.0																														
I <sub>B</sub> (mA) max.		3.0																														
h <sub>FE</sub> min/max		185/380 @V <sub>CE</sub> =3V & I <sub>C</sub> =20mA																														
MSG/MAG min (dB)	@ 1.8 GHz	24 @V <sub>CE</sub> =3V & I <sub>C</sub> =20mA																														
MSG/MAG min (dB)	@ 6.0 GHz	17 @V <sub>CE</sub> =3V & I <sub>C</sub> =20mA																														
NF <sub>max</sub> (dB)	@ 1.8 GHz	≤ 0.75 @V <sub>CE</sub> =3V & I <sub>C</sub> =8mA																														
NF <sub>max</sub> (dB)	@ 6.0 GHz	≤ 1.15 @V <sub>CE</sub> =3V & I <sub>C</sub> =8mA																														
	TRANSISTORS,  MICROWAVE, SMALL SIGNAL, BIPOLAR,  BASED ON TYPE BFY 740B		Current validity of Qualification		Page																											
			Certificate	Valid Until	12-10																											
			322	September 2014	005																											

Types covered by similarity:				Remarks:											
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date									
Generic ESCC 5010		Infineon Technologies AG Neubiberg Germany		Qualification	DARA	Apr 1994									
Detail ESCC 5613/004				Extension	DLR	Jan 2000									
Characteristics (@ 12 GHz): All variants are qualified				Extension	DLR	Dec 2003									
				Requalification	DLR	Mar 2008									
		<table border="1"> <thead> <tr> <th></th> <th>NFmin. (dB)</th> <th>Ga (dB)</th> </tr> </thead> <tbody> <tr> <td>5613/004</td> <td>0.8</td> <td>11</td> </tr> <tr> <td>pseudo-morphic</td> <td>1.0</td> <td>10.5</td> </tr> </tbody> </table>			NFmin. (dB)	Ga (dB)	5613/004	0.8	11	pseudo-morphic	1.0	10.5	Requalification	DLR	Nov 2010
	NFmin. (dB)	Ga (dB)													
5613/004	0.8	11													
pseudo-morphic	1.0	10.5													
				Extension	DLR	Mar 2012									
Package: Micro-X Total Power Dissipation ( $P_{tot}$ ) = 200 mW derated from $+31\text{ }^{\circ}\text{C } T_{amb}$ Operating Temperature Range ( $^{\circ}\text{C}$ ): $T_{stg} = -65$ to $+150$															
		TRANSISTORS, HIGH ELECTRON MOBILITY, GALLIUM ARSENIDE, MICROWAVE, LOW NOISE, SMALL SIGNAL, BASED ON TYPE CFY 67			Current validity of Qualification		Page								
					Certificate	Valid Until	12-16								
				213 E	March 2014	001									

## Section 13

## Component Type: Wires and Cables

## INDEX PAGE 1 of 2

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
13-01			Low Frequency	
	13-01-001-1	07 P	Polyimide, Types FA-3901-1, FA 3901-2	Draka Fileca
	13-01-001-2	09 N	Polyimide, Types 1871-1872	Nexans
	13-01-001-3	132 M	Polyimide, Types 3901002**B	Axon' Cable
	13-01-003	08 P	PTFE, Types MTV-BTV	Nexans
	13-01-003-2	292 A	PTFE/Polyimide, Types 3901013**B	Axon' Cable
	13-01-004-1	138 K	Polyimide, Type SPC	Gore
	13-01-004-2	219 J	Polyimide, Types SPL	Gore
	13-01-004-3	268 E	Polyimide, Types 3901019**B	Axon' Cable
	13-01-004-4	295 A	Polyimide, Types 3901019	Leoni
	13-01-005-1	159 L	Crosslinked PTFE, Type Silver-Plated Copper	Tyco Electronics
	13-01-005-2	267 F	Crosslinked PTFE, Type Silver-Plated Copper	Axon' Cable
	13-01-008	215 J	PTFE, Polyimide / PFA Insulated, Type SPP	Gore
	13-01-009	216 H	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM	Gore
	13-01-009-2	294 A	PTFE, Polyimide/PFA Insulated, Shielded, Type 3901018	Leoni
	13-01-009-3	300 A	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM	Axon' Cable
	13-01-010-1	229 H	Polyimide, Insulated, Shielded, Type SPLD, Drain Wire	Gore
	13-01-010-2	293 B	Polyimide, Insulated, Shielded, Drain Wire, Types 3901021**B	Axon' Cable
	13-01-010-3	296 A	Polyimide, Insultated, Shielded, Drain Wire, Type 3901021	Leoni
	13-01-011-1	257 F	Crosslinked, Modified ETFE, Type Silver-Plated Copper, Lightweight	Tyco Electronics
	13-01-012-1	299 A	Fluoropolymer, Lightweight, Based on Type CSWL	Axon' Cable
	13-01-012-2	305 A	Fluoropolymer, Lightweight, Based on Type CSWL	Gore



SECTION 13-\*\*: INDEX OF WIRES AND CABLES

REP005 Updated on 15 Oct 2013





**Section 13****Component Type: Wires and Cables****INDEX PAGE 2 of 2**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
13-02			Coaxial, RF, Flexible	
	13-02-001	24 Q	PTFE/Polyimide, Type 50 CIS	Nexans
	13-02-002-1	255 G	Coaxial, Triaxial, Balanced Shielded Line	Gore
	13-02-002-2	298 A	Coaxial, Triaxial, Balanced Shielded Line	Axon' Cable
	13-02-003-1	291 B	Symmetric, Quad, Spacewire	Axon' Cable
	13-02-003-2	304 A	Symmetric, Quad, Spacewire	Gore


**SECTION 13-\*\*: INDEX OF WIRES AND CABLES****REP005 Updated on 15 Oct 2013**





Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/001 3901/002		Nexans Draveil France	Qualification	CNES	Jan 1979
Characteristics:  Medium weight 1871 - n/1871 - 871 (3901/001) Variants 24 to 47 are qualified Light weight 1872 - n/1872 - 872 (3901/002) Variants 31 to 73 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200			Extension	CNES	Sep 1981
			Extension	CNES	Dec 1983
			Extension	CNES	Mar 1987
			Extension	CNES	Jul 1989
			Extension	CNES	Sep 1991
			Extension	CNES	Aug 1993
			Extension	CNES	Sep 1995
			Extension	CNES	Aug 1997
			Extension	CNES	Aug 1999
		Extension	CNES	Aug 2001	
Extension	CNES	Aug 2003			
Extension	CNES	Nov 2005			
Extension	CNES	May 2008			
Extension	CNES	Oct 2011			
	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION  BASED ON TYPES 1871 - 1872		Current validity of Qualification		Page
			Certificate	Valid Until	13-01
		09 N	May 2013	001-2	

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/001 3901/002		AXON' CABLE Montmirail France	Qualification	ESTEC	Dec 1985
			Extension	ESTEC	Jul 1988
			Extension	ESTEC	Jul 1990
			Extension	ESTEC	Nov 1993
			Extension	ESTEC	Jan 1996
			Extension	ESTEC	May 1999
			Extension	CNES	Jun 2002
			Extension	CNES	Sep 2004
			Extension	CNES	Oct 2004
			Extension	CNES	Mar 2007
		Extension	CNES	Jun 2009	
		Extension	CNES	Jun 2011	
		Extension	CNES	Aug 2013	
Characteristics:  The following variants are qualified: 3009/001: variants 24 to 47 3009/002: variants 31 to 73  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200					
	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES 3901001**B and 3901002**B		Current validity of Qualification		Page
			Certificate	Valid Until	13-01
		132 M	June 2015	001-3	






Types covered by similarity:		Remarks: :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/013	AXON' CABLE Montmirail France	Qualification  <a href="#">Extension</a>	CNES  <a href="#">CNES</a>	Jun 2009  <a href="#">Jun 2011</a>
<p>Characteristics:</p> <p>Variants 01 to 77 are qualified</p> <p>Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, PTFE/POLYIMIDE INSULATION, BASED ON TYPES 3901013**B</p>	Current validity of Qualification		Page
		Certificate  292 A	Valid Until  June 2013	13-01  003-02



Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	W.L. Gore & Co Pleinfeld Germany	Qualification	DLR	Aug 1986
Detail ESCC 3901/009		Extension	ESTEC	Dec 1988
		Extension	DARA	Jul 1991
		Extension	DARA	Aug 1993
		Extension	DARA	Feb 1996
		Extension	DLR	Feb 1998
		Requalification	DLR	Nov 2004
		Extension	DLR	Apr 2007
		Extension	DLR	May 2009
Extension		DLR	May 2011	
Extension	DLR	June 2013		
Characteristics:  Variants 01-66 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -200 to +200				
	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES SPC 2110	Current validity of Qualification		Page
		Certificate	Valid Until	13-01
		138 K	May 2015	004-1


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	W.L. Gore & Co Pleinfeld Germany	Qualification	DARA	Nov 1994
Detail ESCC 3901/019		Extension	DARA	Nov 1996
		Extension	DLR	Oct 1998
		Extension	DLR	Oct 2000
		Extension	DLR	Nov 2002
		Extension	DLR	Nov 2004
		Extension	DLR	Oct 2006
		Extension	DLR	Nov 2008
		Extension	DLR	Dec 2010
		Extension	DLR	Nov 2012
Characteristics:  Variants 01-94 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -200 to +200				
	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES SPL	Current validity of Qualification		Page
		Certificate	Valid Until	13-01
		219 J	November 2014	004-2






Types covered by similarity:		Remarks :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/019	AXON' CABLE Montmirail France	Qualification Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES	Jun 2002 Sep 2004 Mar 2007 Jun 2009 Jun 2011 Aug 2013
<p>Characteristics:</p> <p>AWG 12 to 28 inclusive are qualified AWG 30 are not qualified</p> <p>Voltage Rating, maximum (Vrms):600</p> <p>Temperature Range (°C): -200 to +200</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES 3901019**B</p>	Current validity of Qualification		Page
		Certificate 268 E	Valid Until June 2015	13-01 004-3


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/019	LEONI Special Cables GmbH Friesoythe Germany	Qualification  Extension	DLR  DLR	Oct 2009  Apr 2012
<p>Characteristics:</p> <p>All variants are qualified with the exception of variants 01, 09, 17, 24, 25, 32, 48, 56, 64, 72, and 79</p> <p>Conductor according to ISO 2635 (except AWG 28) AWG 12 to 28 inclusive are qualified For silver coated strands the silver thickness shall be 2.0µm minimum</p> <p>Voltage Rating, maximum (<math>V_{rms}</math>):600</p> <p>Temperature Range (°C): -200 to +200</p>				
 	<p>WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPE 3901019</p>	Current validity of Qualification		Page
		Certificate  295 A	Valid Until  October 2013	13-01  004-4


Types covered by similarity:		Remarks:  This product is not intended for human space flight applications.				
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3901  Detail ESCC 3901/012	Tyco Electronics Dorcan, Swindon England	Qualification	RAE	Feb 1989		
		Extension	RAE	Jul 1992		
		Extension	DRA	Mar 1995		
		Extension	DERA	Sep 1997		
		Extension	DERA	Oct 1999		
		Extension	QinetiQ	Nov 2001		
		Characteristics:		Extension	QinetiQ	Nov 2003
		Variants 01 to 80 are qualified		Extension	QinetiQ	Nov 2005
		Maximum voltage: 600 Vrms		Extension	BNSC	Oct 2007
		Operating temperature range (°C): -100 to +200		Extension	BNSC	Sep 2009
		Extension	UK Space Agency	Sep 2011		
		Extension	UK Space Agency	Aug 2013		
  	WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED FLUOROPOLYMER INSULATION, BASED ON TYPE 55/995X		Current validity of Qualification		Page	
			Certificate	Valid Until	13-01	
		159 L	September 2015	005-1		

Types covered by similarity:		Remarks: :  This product is not intended for human space flight applications.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/012	AXON' CABLE Montmirail France	Qualification Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES	Mar 2002 Feb 2003 Sep 2004 Mar 2007 Jun 2009 Jun 2011 Aug 2013
<p>Characteristics:</p> <p>Variants 02 to 10, 12 to 20, 22 to 30, 32 to 40, 42 to 50, 52 to 60, 62 to 70, 72 to 80 are qualified AWG 30 variants are not qualified Wire code ISO 2635</p> <p>Voltage Rating, maximum (Vrms) : 600</p> <p>Temperature Range (°C): -100 to +200</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED FLUOROPOLYMER INSULATION, BASED ON TYPE 3901012**B</p>	Current validity of Qualification		Page
		Certificate  267 F	Valid Until  June 2015	13-01  005-2


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	W.L. Gore & Co. Pleinfeld Germany	Qualification	DARA	Jul 1994
Detail ESCC 3901/017		Extension	DARA	Sep 1996
		Extension	DLR	Aug 1998
		Extension	DLR	Aug 2000
		Extension	DLR	Aug 2002
		Extension	DLR	Nov 2004
		Extension	DLR	Aug 2006
		Extension	DLR	Sep 2008
		Extension	DLR	Oct 2010
		Extension	DLR	Sep 2012
<p>Characteristics:</p> <p>All variants are qualified</p> <p>Voltage Rating, maximum (Vrms) : 600</p> <p>Temperature Range (°C): -200 to +200</p> <p>I<sub>max</sub> (A): 45, 81 and 133 for AWG: 0, 4 and 8, respectively</p> <p>Expanded PTFE, extruded polyimide/fluorthermoplast insulation</p>				
	<p>POWER WIRES FOR CRIMPING, LOW FREQUENCY, BASED ON TYPE SPP</p>	Current validity of Qualification		Page
		Certificate	Valid Until	13-01
		215 J	September 2014	008


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/018	W.L. Gore & Co. Pleinfeld Germany	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension  Extension  Extension	DARA  DARA  DLR  DLR  DLR  DLR  DLR  DLR  DLR  DLR  DLR	Jul 1994  Sep 1997  Aug 1999  Aug 2001  Aug 2003  Nov 2005  Feb 2008  Mar 2010  Mar 2012
<p>Characteristics:</p> <p>Variants 01 to 88 are qualified.</p> <p>Voltage Rating, maximum (<math>V^{rms}</math>) : 600</p> <p>Temperature Range (°C): -200 to +200</p> <p>Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires.</p> <p>Expanded PTFE, extruded polyimide/fluorothermoplast insulated cables, shielded and jacketed.</p>				
 	<p>WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM</p>	Current validity of Qualification		Page
		Certificate	Valid Until	13-01
		216 H	March 2014	009


Types covered by similarity: .		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/018	LEONI Special Cables GmbH Friesoythe Germany	Qualification  Extension	DLR  DLR	Oct 2009  Apr 2012
Characteristics:  Variants 01 to 88 are qualified.  Voltage Rating, maximum ( $V_{rms}$ ) : 600 Temperature Range (°C): -200 to +200  Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires. Expanded PTFE, extruded polyimide/fluorothermoplast insulated cables, shielded and jacketed.  Conductor silver thickness shall be 2.0µm minimum				
	<p>WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE 3901018</p>	Current validity of Qualification		Page
		Certificate  294 A	Valid Until  October 2013	13-01  009-2


Types covered by similarity:		Remarks: :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/018	AXON' CABLE Montmirail France	Qualification  Extension	CNES  CNES	Dec 2009  Jun 2011
<p>Characteristics:</p> <p>All variants are qualified except those based on AWG 30 and 32 are not qualified.</p> <p>Voltage Rating, maximum (<math>V_{rms}</math>) : 600</p> <p>Temperature Range (°C): -200 to +200</p> <p>Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires. Expanded PTFE, extruded polyimide/fluorothermoplast insulated cables, shielded and jacketed.</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM</p>	Current validity of Qualification		Page
		Certificate  300 A	Valid Until  December 2013	13-01  009-03





Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	W.L. Gore & Co. Pleinfeld Germany	Qualification	DARA	Feb1996
Detail ESCC 3901/021		Extension	DLR	Feb 1998
		Extension	DLR	Feb 2000
		Extension	DLR	Feb 2002
		Extension	DLR	Feb 2004
		Extension	DLR	Feb 2006
		Extension	DLR	Mar 2008
		Extension	DLR	Apr 2010
		Extension	DLR	Apr 2012
		Characteristics:		
All variants (01 to 41) are qualified				
Voltage Rating, maximum (Vrms) : 600				
Temperature Range (°C): -200 to +200				
 <b>ESCC</b> <small>European Space Components Coordination</small> <b>QPL</b>	POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE,  LOW FREQUENCY, BASED ON TYPE SPLD		Page	
			Current validity of Qualification	
	Certificate	Valid Until	13-01	
229 H	April 2014	010-1		



Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/021	AXON' CABLE Montmirail France	Qualification  Extension  Extension	CNES  CNES  CNES	Jun 2009  Jun 2011  Aug 2013
<p>Characteristics:</p> <p>Variants 02 to 09, 11 to 17, 19 to 23, 25 to 41 are qualified AWG 30 variants are not qualified.</p> <p>Voltage Rating, maximum (Vrms) : 600 Temperature Range (°C): -200 to +200</p>				
	<p>POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE,  LOW FREQUENCY, BASED ON TYPES 3901021**B</p>	Current validity of Qualification		Page
		Certificate  293 B	Valid Until  June 2015	13-01  010-2


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/021	LEONI Special Cables GmbH Friesoythe Germany	Qualification  Extension	DLR  DLR	Oct 2009  Apr 2012
<p>Characteristics:</p> <p>All variants 01 to 41 are qualified</p> <p>Voltage Rating, maximum (Vrms) : 600 Temperature Range (°C): -200 to +200</p>				
	<p>POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE,  LOW FREQUENCY, BASED ON TYPE 3901021</p>	Current validity of Qualification		Page
		Certificate  296 A	Valid Until  October 2013	13-01  010-3

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/020 ESCC 3901/022	Tyco Electronics Dorcan, Swindon England	Qualification  Extension  Extension  Extension  Extension  Extension	DERA  QinetiQ  QinetiQ  BNSC  BNSC  UK Space Agency  UK Space Agency	Oct 1999  Jan 2002  Jan 2005  Feb 2007  Feb 2009  Jan 2011  Feb 2013
<p>Characteristics: 3901/020: All variants (01 - 80) are qualified 3901/022: All variants (01 - 72) are qualified.</p> <p>Wires and Cables variants consist of 1, 2, 3 and 4 cores with and without jackets and shields</p> <p>ESCC Detail Specification No. 3901/020 cables are silver-plated copper braided, and ESCC Detail Specification No. 3901/022 cables are silver-plated copper spiral shielded, Wire sizes are in accordance with ISO 2635.</p> <p>Maximum voltage: 600 Vrms Operating temperature range (°C): -100 to +200</p>		<p>Extension</p> <p>UK Space Agency</p> <p>Feb 2013</p>		
	<p>WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED MODIFIED ETFE, LIGHTWEIGHT</p>	Current validity of Qualification		Page
		Certificate  257 F	Valid Until  February 2015	13-01  011-1


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/024	AXON' CABLE Montmirail France	Qualification  <a href="#">Extension</a>	CNES  <a href="#">CNES</a>	Dec 2009  <a href="#">Jun 2011</a>
<p>Characteristics:</p> <p>All variants are qualified except for those variants based on AWG 30</p> <p>Wires and Cables variants consist of 1, 2, 3 and 4 cores with and without jackets and shields</p> <p>Maximum voltage: 600 Vrms Operating temperature range (°C): -200 to +200</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, FLUROPOLYMER INSULATION, 600V, BASED ON TYPE CSWL</p>	Current validity of Qualification		Page
		Certificate  299 A	Valid Until  December 2013	13-01  012-1


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/024	W.L. Gore Pleinfeld Germany	Qualification  Extension	DLR  DLR	Jan 2011  Jan 2013
Characteristics:  Variants 01 to 64 inclusive are qualified The specification contains 64 variants with several wire sizes, single wires and cables with several cores, either shielded or unshielded.  Cable construction: 1, 2, 3 and 4 twisted wires are in one core with or without shield  Maximum voltage: 600 Vrms Operating temperature range (°C): -200 to +200				
	WIRES AND CABLES, LOW FREQUENCY, FLUROPOLYMER INSULATION, 600V, BASED ON TYPE CSWL	Current validity of Qualification		Page
		Certificate	Valid Until	13-01
		305 A	January 2015	012-2


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3902	Nexans Draveil France	Qualification	CNES	July 1979
Detail ESCC 3902/001		Extension	CNES	Feb 1982
		Extension	CNES	July 1984
		Extension	CNES	Mar 1987
		Extension	CNES	July 1989
		Extension	CNES	Sept 1991
		Extension	CNES	Aug 1993
		Extension	CNES	Sep 1995
		Extension	CNES	Aug 1997
		Extension	CNES	Jan 1998
		Extension	CNES	Aug 1999
		Extension	CNES	Aug 2001
		Extension	CNES	Aug 2003
		Extension	CNES	Nov 2005
Extension	CNES	May 2008		
Extension	CNES	Jan 2011		
Extension	CNES	Feb 2013		
Characteristics:  Variants 01, 02, and 03 are qualified Miniature flexible 50 ohm coaxial cable PTFE Dielectric Polyimide Jacketed, Double Shield and Shielded / Jacketed  Maximum voltage: 900 Vrms Operating temperature range (°C): -80 to +200 (-100 for variant 01)		Current validity of Qualification		Page
   WIRES AND CABLES, RF COAXIAL,  PTFE/POLYIMIDE INSULATION,  BASED ON TYPE 50 CIS		Certificate	Valid Until	13-02
		24 Q	May 2014	001

Types covered by similarity:		Remarks:										
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date								
Generic ESCC 3902  Detail ESCC 3902/002	W.L. Gore Pleinfeld Germany	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension	DLR  DLR  DLR  DLR  DLR  DLR  DLR  DLR	Jan 1999  Feb 2001  Feb 2003  Mar 2005  Mar 2007  May 2009  May 2010  <a href="#">Jun 2012</a>								
<p>Characteristics:</p> <p>Variants 03 to 06, 10 to 13 and 20 to 30 are qualified</p> <p>Variants encompass coaxial, triaxial, and balanced shielded line</p> <p>Operating Voltage (Continuous), maximum ratings, (Vrms):</p> <table border="0"> <tr> <td>Variants 03</td> <td>180</td> </tr> <tr> <td>Variants 04, 10, 21, 22, 23, 24</td> <td>200</td> </tr> <tr> <td>Variants 06, 25</td> <td>250</td> </tr> <tr> <td>All Other Variants</td> <td>300</td> </tr> </table> <p>AWG Range: 20, 22, 24, 26, 28, 30 dependent on variant</p> <p>Temperature range (°C): -200 to +180</p>		Variants 03	180	Variants 04, 10, 21, 22, 23, 24	200	Variants 06, 25	250	All Other Variants	300			
Variants 03	180											
Variants 04, 10, 21, 22, 23, 24	200											
Variants 06, 25	250											
All Other Variants	300											
	<p>WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAxIAL AND SYMMETRIC, BASED ON TYPES GCX, GTX, GSC AND GBL</p>	Current validity of Qualification		Page								
		Certificate	Valid Until	13-02								
		255 G	May 2014	002-1								




Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3902  Detail ESCC 3902/002		AXON' CABLE Montmirail France	Qualification  Extension	CNES  CNES	Dec 2009  Jun 2011	
Characteristics: All variants are qualified except variants 13 and 22 are not qualified Variants encompass coaxial, triaxial, and balanced shielded line Operating Voltage (Continuous), maximum ratings, (Vrms): Variants 03                              180 Variants 04, 10, 21, 23, 24              200 Variants 06, 25                              250 All Other Variants                              300 AWG Range: 20, 22, 24, 26, 28 dependent on variant  Temperature range (°C): -200 to +180						
		WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAXIAL AND SYMMETRIC, BASED ON TYPE 3902/002		Current validity of Qualification		Page
				Certificate	Valid Until	13-02
				298 A	December 2013	002-2


Types covered by similarity:		Remarks:															
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date												
Generic ESCC 3902  Detail ESCC 3902/003		AXON' CABLE Montmirail France	Qualification  Extension  Extension	CNES  CNES  CNES	Jun 2009  Jun 2011  Aug 2013												
Characteristics: Variant 01 AWG 28/07 (white) and variant 02 AWG 26/07 (blue) are qualified																	
<table border="1"> <thead> <tr> <th>Variant</th> <th>Data Rate</th> <th>Operating Voltage (Continuous), (Vrms)</th> <th>Current (A)</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>100Mb/s— 400MHz</td> <td>200</td> <td>1.5</td> </tr> <tr> <td>02</td> <td>200Mb/s— 400MHz</td> <td>200</td> <td>1.5</td> </tr> </tbody> </table>						Variant	Data Rate	Operating Voltage (Continuous), (Vrms)	Current (A)	01	100Mb/s— 400MHz	200	1.5	02	200Mb/s— 400MHz	200	1.5
Variant	Data Rate	Operating Voltage (Continuous), (Vrms)	Current (A)														
01	100Mb/s— 400MHz	200	1.5														
02	200Mb/s— 400MHz	200	1.5														
Temperature range (°C): -200 to +180																	
		WIRES AND CABLES, SPACEWIRE, ROUND, QUAD SYMMETRIC, FLEXIBLE, BASED ON TYPE SPACEWIRE		Current validity of Qualification													
				Certificate  291 B	Valid Until  June 2015												
					Page  13-02  003-1												


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3902  Detail ESCC 3902/003	W.L. Gore Pleinfeld Germany	Qualification  Extension	DLR  DLR	Jan 2011  Dec 2012
Characteristics:  Variant 01 AWG 28/07 (white) and Variant 02 AWG 26/07 (blue) are qualified, 100 Ω  Data Rate, Operating Voltage (Continuous), Current  Variant 01    100Mb/s—400 MHz    200V—1.5A Variant 02    200Mb/s—400 MHz    200V— 2.5A  Temperature range (°C): -200 to +180				
	WIRES AND CABLES, SPACEWIRE, ROUND, QUAD SYMMETRIC, FLEXIBLE, BASED ON TYPE SPACEWIRE	Current validity of Qualification		Page
		Certificate  304 A	Valid Until  January 2015	13-02  003-2

**Section 14****Component Type: Miscellaneous**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
14-16-99			Switches	
	14-16-99-003	275 D	Thermostatic, Bimetallic	COMEPA
14-30-10			Passive Devices, RF	
	14-30-10-002-2	185 F	Coaxial Loads, 0 to 22 GHz	Radiall
	14-30-10-004	178 G	Attenuators, Type R413	Radiall

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3702  Detail 3702/001	COMEPA BAGNOLET France	Qualification  Requalification  Extension	CNES  CNES  CNES	Mar 2004  Aug 2005  Jun 2008
Characteristics:  Variants 01 to 03 are qualified  Range of Components: Grade 1 and Grade Y  Maximum Ratings:  Rated Current ( $I_R$ ): 4 A (30 Vdc resistive)  Operating Temperature Range ( $^{\circ}\text{C}$ ), $-50$ to $+150$		Extension  Extension	CNES  CNES	Jul 2010  Aug 2013
	SWITCHES, THERMOSTATIC, BIMETALLIC, SPST, OPENING CONTACT, BASED ON TYPE TH 47	Current Validity of Qualification		Page 14-16-99-003
		Certificate  275 D	Valid Until  June 2014	

Types covered by similarity:				Remarks:																															
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																													
Generic ESCC 3403  Detail 3403/006		RADIALL Saint-Quentin-Fallavier France		Qualification	CNES	Jul 1992																													
Characteristics: All variants are qualified. 50 ohms DC to 22 GHz  <table border="1"> <thead> <tr> <th>Type</th> <th>Detail Spec.</th> <th>Frequency Range (GHz)</th> <th>Rated Pin (W)</th> <th>Impedance (Ω)</th> </tr> </thead> <tbody> <tr> <td>3403/006</td> <td>3403/006</td> <td>0-22</td> <td>1</td> <td>50</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th rowspan="2">Type</th> <th colspan="4">VSWR max</th> </tr> <tr> <th>0&lt;f(GHz)≤4</th> <th>4&lt;f(GHz)≤12.4</th> <th>12.4&lt;f(GHz)≤18</th> <th>18&lt;f(GHz)≤22</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.05</td> <td>1.15</td> <td>1.20</td> <td>1.30</td> </tr> <tr> <td>2</td> <td>1.05</td> <td>1.15</td> <td>1.20</td> <td>1.25</td> </tr> </tbody> </table> Operating Temperature Range (°C), -55 to +125				Type	Detail Spec.	Frequency Range (GHz)	Rated Pin (W)	Impedance (Ω)	3403/006	3403/006	0-22	1	50	Type	VSWR max				0<f(GHz)≤4	4<f(GHz)≤12.4	12.4<f(GHz)≤18	18<f(GHz)≤22	1	1.05	1.15	1.20	1.30	2	1.05	1.15	1.20	1.25	Extension	CNES	Jun 1997
				Type	Detail Spec.	Frequency Range (GHz)	Rated Pin (W)	Impedance (Ω)																											
				3403/006	3403/006	0-22	1	50																											
				Type	VSWR max																														
					0<f(GHz)≤4	4<f(GHz)≤12.4	12.4<f(GHz)≤18	18<f(GHz)≤22																											
				1	1.05	1.15	1.20	1.30																											
2	1.05	1.15	1.20	1.25																															
Extension	CNES	Jan 2002																																	
Extension	CNES	Apr 2005																																	
Extension	CNES	Mar 2008																																	
Extension	CNES	Sep 2010																																	
Extension	CNES	Jun 2012																																	
				Current Validity of Qualification		Page																													
PASSIVE DEVICES, R.F. COAXIAL LOADS, 0-22 GHz BASED ON TYPE R404				Certificate	Valid Until	14-30-10																													
				185 F	March 2014	002-2																													

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3403  Detail 3403/005	RADIALL Saint-Quentin-Fallavier France	Qualification Extension Extension Extension Extension Extension Extension <a href="#">Extension</a>	CNES CNES CNES CNES CNES CNES CNES <a href="#">CNES</a>	Jan 1991 Jan 1994 Jun 1997 Mar 2002 Apr 2005 Mar 2008 Sep 2010 <a href="#">Jun 2012</a>
Characteristics:  Variants 01 to 31  Frequency range (GHz): 0 - 22  Attenuation (dB): 0 - 20   Operating Temperature Range (°C), -55 to +125				
	R.F. ATTENUATORS  FIXED, COAXIAL  BASED ON TYPE R413	Current Validity of Qualification		Page
		Certificate	Valid Until	14-30-10
		178 G	March 2014	004

**Section 18****Component Type: Optoelectronics**

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
			Currently there are no qualified sources of Optoelectronics	