



## **ESCC QUALIFIED PARTS LIST**

**REP005**

**Updated 15 December 2011**



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

	General Information		
As affected			
Section/Page No.	Description		
Section 02 02-003-001-2	Index of Connectors HE 801 Series from Hypertac UK	Amended Extended	
Section 04 04-01-003	Index of Diodes Types BAY6642 from Infineon	Amended Added	
Section 11 11-01-001	Index of Thermistors Types G15K4D489 and *K3A35* from MEAS Ireland (Betatherm) Ltd	Amended Extended	
 			<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p>
			<p align="center">Change Date: 15 December 2011</p>

	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-001-005	Index of Capacitors Type II, Types CNC 31 to CNC 34 from Eurofarad	Amended Added
Section 02 02-003-001-1 02-03-002-1 02-03-003-1	Index of Connectors HE 801 Series from Hypertac KMC Series from Hypertac MHD Series from Hypertac	Amended Extended Extended Extended
Section 09 09-01-001	Index of Resistors Type T** from REL STPI	Amended Extended
 	<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p>	
<p align="center">Change Date: 15 November 2011</p>		

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Section/Page No.	Description	
Section 01 01-02-001-1	Index of Capacitors Type 1 from AVX/TPC	Amended
Section 02 02-02-003	Index of Connectors DBAS Series, Circular from Deutsch	Amended
Section 10 10-08-006 10-09-003 10-11-001-1	Index of Resistors Surface Mount, Type MS1 from Vishay Selb Type CHP from Vishay S.A. Sfernice Single & Double Layer from IRCA	Amended Extended Added Extended
Section 13 13-01-001-2	Index of Wires and Cables Polyimide, Types 1871-1872 from Nexans	Amended Extended
 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 October 2011</b>	

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Section/Page No.	Description	
Section 02	Index of Connectors	
02-02-005	Series I, Circular, Crimp from SOURIAU	Amended
02-02-006	Series II, Circular, Crimp from SOURIAU	Amended
02-02-007	Series III, Circular, Miniature from SOURIAU	Amended
02-02-008	Series III, Hermetic from SOURIAU	Amended
02-03-002-1	KMC Series from Hypertac	Amended
02-03-003-1	MHD Series from Hypertac	Amended
02-03-004-1	IHD INTERPOSER from Hypertac	Amended
02-04-001	SMA Series from Radiall	Amended
02-04-002	SMA 2.9 from Radiall	Amended
Section 04	Index of Diodes	
04-13-003-3	Varactor, tuning, DH 76xxx from Cobham Microwave	Amended
Section 09	Index of Relays	
09-01-001	Type T** from REL STPI	Amended
09-01-002	Type GP5 frp, LEACH	Amended
09-01-005	Type E from LEACH	Amended
09-01-006	Type 317 from STPI	Amended
09-02-002	Type GP2 from LEACH	Amended
09-02-006	Type D from LEACH	Amended
09-02-007	Type 3*7B from STPI	Amended
09-03-001	Type GP250 from LEACH	Amended
Section 13	Index of Wires and Cables	Amended
13-01-001-2	Polyimide, Types 1871-1872 from Nexans	Amended
13-01-005-1	Crosslinked PTFE, Type Silver-Plated Copper from Tyco Electroncis	Extended
		
<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>		
<b>Change Date: 15 September 2011</b>		



**QPL**

**Qualified Parts List**

**DOCUMENT CHANGES**

**Change Date: 15 September 2011**

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Section 01 01-05-003-1	Index of Capacitors Type PM94S from Eurofarad	Amended Extended
Section 02 02-01-001-1 02-02-001-1 02-02-003 02-05-001-1 02-05-002-1 02-05-003-1	Index of Connectors D*M Series, Rectangular from C&K Components D*MA Series, Rectangular from C&K Component DBAS Series, Circular from Deutsch MDM Series, Rectangular from C&K Components MTB Series, Rectangular from C&K Components MDMA, Rectangular from C&K Components	Amended Extended Extended Extended Extended Extended Extended
Section 10 10-09-002A-D	Index of Resistors Types PHR; PFRR; PRAHR/CNWHR from Vishay Sfernice	Amended
Section 13 13-01-001-3 13-01-003-2 13-01-004-3 13-01-005-2 13-01-009-3 13-01-010-2 13-01-012-1 13-02-002-2 13-02-003-2	Index of Wires and Cables Polyimide, Types 3901002**B from Axon' Cable PTFE/Polyimide, Types 3901013**B from Axon' Cable Polyimide, Types 3901019**B from Axon' Cable Crosslinked PTFE, Type Silver-Plated Copper from Axon' Cable PTFE, Polyimide / PFA Insulated, Shielded, Type SPM from Axon' Cable Polyimide, Insulated, Shielded, Drain Wire, Types 3901021**B from Axon' Cable Fluoropolymer, Lightweight, based on type CSWL from Axon' Cable Coaxial, Triaxial, Balanced Shielded Line from Axon' Cable Symmetric, Quad, Spacewire from Axon' Cable	Amended Extended Extended Extended Extended Extended Extended Extended Extended Extended Extended
 	<b>Qualified Parts List</b>	
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 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 July 2011</b>	

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Section 01 01-02-001-1 01-02-002-1	Index of Capacitors Type I from AVX/TPC Type II from AVX/TPC	Amended Extended Extended
Section 02 02-02-003 02-02-009 02-03-001-2 02-04-001 02-05-003-1	Index of Connectors DBAS Series, Circular from Deutsch Series ACB1 from Axon Cables HE801 Series from HYPERTAC UK SMA Series from Radiall MDMA, Rectangular from C&K Components	Amended Amended Amended Amended Amended
Section 03 03-01-002-3	Index of Crystals TO-8 Can from KVG (D)	Amended
Section 07 07-02-002	Index of Inductors Types SESI from Microspire	Amended
Section 09 09-01-006 09-02-007	Index of Relays Type 317 from STPI Types 3*7B from STPI	Amended Amended
Section 10 10-08-007 10-09-002 10-09-002A-D	Index of Resistors Surface Mount, Type TNPS from Vishay Electronic (Selb) Type P HR from Vishay S.A. Sfernice Types PHR; PFRR; PRAHR/CNWHR from Vishay Sfernice	Amended Extended Deleted Added
Section 12 12-10-001	Index of Transistors Type BFY 193 from Infineon	Amended
Section 13 13-01-001-3 13-01-003-2 13-01-004-1 13-01-004-3 13-01-005-2 13-01-010-2 13-02-003-1	Index of Wires and Cables Polyimide, Types 3901002**B from Axon Cable PTFE/Polyimide, Type 3901013**B from Axon Cable Polyimide, Type SPC from W.L. Gore Polyimide, Types 3901019**B from Axon Cable Crosslinked PTFE, Type Silver-Plated from Axon Cable Polyimide, Insulated, Shielded Drain Wire Types 3901021**B from Axon Cable Symmetric, Quad Spacewire from Axon Cable	Amended Amended Amended Amended Amended Amended Amended
		<b>Qualified Parts List</b>
		<b>DOCUMENT CHANGES</b>
		<b>Change Date: 15 June 2011</b>

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Section 01 01-02-001-1 01-02-002-1 01-11-001	Index of Capacitors Type I from AVX/TPC Type II from AVX/TPC Type 101M, 201M, 400M, 401M from Cobham Microwave	Amended Amended Amended Extended
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 04 04-02-003-2	Index of Diodes Types 1N6640U and 1N6642U from STMicroelectronics	Amended Added
Section 10 10-08-007	Index of Resistors Surface Mount, Type TNPS from Vishay Electronic (Selb)	Amended
Section 13 13-01-004-1	Index of Wires and Cables Polyimide, Type SPC from W.L. Gore	Amended Extended
		<b>Qualified Parts List</b>
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		<b>Change Date: 15 May 2011</b>

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Section 01 01-01-006	Index of Capacitors Type II, High Voltage from AVX (N.I.)	Amended Extended
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 Added Added
Section 05 05-01-001-A-B	Index of Filters Types SFC, SFL, SFP from Eurofarad	Amended Extended
Section 09 09-02-003 09-02-004-2	Index of Relays Type EL415 from REL STPI Type M302 from LEACH	Amended Re-Qualified Added
Section 12 12-01-003-1	Index of Transistors Type 2N2369A from STMicroelectronics	Amended Deleted
Section 14 14-16-99-003	Index of Miscellaneous Thermostatic, Bimetallic from COMEPA	Amended
	<b>Qualified Parts List</b>	
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	<b>Change Date: 15 April 2011</b>	

	<b>General Information</b>	
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Section 01 01-01-007 01-02-004-1 01-03-004 01-05-001-1	Index of Capacitors Type II, Types CNC 53 to CNC 56 from Eurofarad Type II, High Voltage from AVX (N.I.) Type TAJ from AXV (CZ) Type HT86PS, High Voltage from Eurofarad	Amended Added Extended Amended Amended
Section 02 02-04-002	Index of Connectors RF, Coaxial, Type SMA 2.9 from Radiall	Amended
Section 07 07-01-001	Index of Inductors Types MSCI 10K, 12K, 20K and H01 from Microsprie	Amended
Section 08 08-90-001	Index of Microcircuits PLL Frequency Synthesizer from Peregrine Semiconductor Europe	Amended Added
		<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p> <p align="center">Change Date: 15 March 2011</p>

	<b>General Information</b>
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<b>Section/Page No.</b>	<b>Description</b>
Section 01 01-02-001-1 01-02-002-1B	Index of Capacitors Type 1 from AVX/TPC <span style="float: right;">Amended</span> Type II from AVX/TPC <span style="float: right;">Amended</span>
Section 11 11-01-001	Index of Thermistors Types G15K4D489 and *K3A35* from MEAS Ireland (Betatherm) <span style="float: right;">Amended</span>
 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>  Change Date: 15 February 2011

	General Information	
As affected		
Section/Page No.	Description	
Section 04 04-13-003-1A-B	Index of Diodes PIN and Varactors from Cobham MAL	Amended Extended
Section 07 07-01-001	Index of Inductors Types MSC1, 10K, 12K, 20K and HO1 from Microspire	Amended Extended
Section 09 09-02-006	Index of Relays Type 3*7B from STPI	Amended
Section 11 11-01-001	Index of Thermistors Types G15K4D489 and *K3A35* from MEAS Ireland Betatherm	Amended
Section 13 13-01-003 13-01-011-1	Index of Wires and Cables PTFE, Types MTV-BTV from Nexans Crosslinked, Modified ETFE, Type Silver-Plated Copper, Lightweight from Tyco Electronics	Amended Extended Extended
13-01-012-2 13-02-001 13-02-003-2	Fluoropolymer, Lightweight, Based on Type CSWL from W.L. Gore PTFE/Polyimide, Type 50 CIS from Nexans Symmetric, Quad, Spacewire from W.L. Gore	Added Extended Added

  

 	<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p>
	<p align="center"><b>Change Date: 15 January 2011</b></p>

	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-11-001	Index of Capacitors Types 101M, 201M, 400M, 401M from Cobham Microwave	Amended
Section 07 07-02-002	Index of Inductors Types SESI from Microspire	Amended Extended
Section 09 09-01004	Index of Relays Type E 215 from REL STPI	Amended Re-qualified
Section 13 13-01-004-2	Index of Wires and Cables Polyimide, Types SPL from W.L. Gore	Amended Extended
 	<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p>	
	<p align="center"><b>Change Date: 15 December 2010</b></p>	

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## 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
01-01			Ceramic, Fixed	
	01-01-005	231 F	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 D	Type II, High Voltage	AVX (N.I.)
	01-01-007	306	Type II, Types CNC 53 to CNC 56	Eurofarad
01-02			Ceramic, Fixed, Chip	
	01-02-001-1	109 K	Type I	AVX/TPC
	01-02-002-1	110 K	Type II	AVX/TPC
	01-02-004-1	264 D	Type II, High Voltage	AVX (N.I.)
01-03			Tantalum, (Solid), Fixed, Electrolytic	
	01-03-004	196 D	Type TAJ	AXV (CZ)
01-05			Fixed, Film	
	01-05-001-1	251 E	Type HT86PS, High Voltage	Eurofarad
	01-05-003-1	270 D	Type PM94S	Eurofarad
01-11			Semiconductor	
	01-11-001	286 A	Type 101M, 201M, 400M and 401M	Cobham Microwave

**SECTION 01-\*\*: INDEX OF CAPACITORS**

REP005 Updated on 15 Dec 2011

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  Extension  Extension  Extension  Extension  Extension	DRA  DERA  DERA  QinetiQ  QinetiQ  BNSC  UK Space Agency	Jul 1996  Jul 1999  Jul 2001  Oct 2003  Mar 2006  Jun 2008  Sep 2010
<p>Characteristics: E12 series</p> <p>Qualified Range:</p> <p>Variants 01 to 74 capacitance range for 50V, 100V and 200V, as per Detail Specification Variants 01 to 52, and 59 to 60, for 500V are qualified ±10% tolerance</p> <p>Operating Temperature Range (°C): -55 to +125</p>				
 <b>ESCC</b> <small>European Space Components Coordination</small> <b>QPL</b>	<p>CAPACITORS, CERAMIC, TYPE II, HIGH CAPACITANCE, BASED ON CASE STYLES BR, CV, AND CH</p>	Current Validity of Qualification		Page
		Certificate  231 F	Valid Until  June 2012	01-01  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 315	Valid Until November 2013	01-01 005-1

Types covered by similarity:  ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3001  Detail ESCC 3001/034	AVX Limited Coleraine Northern Ireland	Qualification  Extension  Extension  Extension  Extension	DERA  QinetiQ  QinetiQ  BNSC  UK Space Agency	Sep 2000  Aug 2002  Mar 2006  Jan 2009  Apr 2011
<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 D	Valid Until  January 2013	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	CNES	Mar 2011
<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	Valid Until  March 2013	01-01  007

Types covered by similarity: Tolerance (±): 0.5pF; 2, 5, 20%								Remarks:		
Procurement Specifications				Manufacturer				Nature of Approval	Supervising Authority	Date
Generic ESCC 3009				AVX/TPC St Apollinaire France				Qualification	CNES	Feb 1983
Detail ESCC 3009/003								Extension	CNES	Sep 1986
3009/004								Requalification	CNES	Apr 1992
3009/005								Extension	CNES	Jan 1995
3009/006								Extension	CNES	Jun 1998
3009/022								Extension	CNES	Nov 2000
Extension								CNES	Jun 2003	
Characteristics: Operating Temp. Range (°C), -55 to +125 Variants 01, 03 and 06 are qualified Values covered by ESCC Specifications defined below.								Requalification	CNES	Feb 2005
Style	Model	Detail Spec.	Variants	Capacitance Range (pF)	Rated Volt. (V)	Tolerance (±%)	TC (ppm/°C)	Extension	CNES	May 2007
0805	A_12C	3009/003	01, 03, 06	4.7 to 9.1 10 to 1 390	50, 100 50, 100	0.5pF 1, 2, 5, 10	±30	Extension	CNES	Jun 2009
1206	A_20C	3009/022	01, 03, 06	10 to 1 000	50, 100	1, 2, 5, 10	±30	Extension	CNES	Jun 2011
1210	A_13C	3009/004	01, 03, 06	22 to 1 500	50, 100	1, 2, 5, 10	±30	Extension	CNES	
1812	A_14C	3009/005	01, 03, 06	100 to 2 700	50, 100	1, 2, 5, 10	±30	Extension	CNES	
2220	A_15C	3009/006	01, 03, 06	470 to 6 800	50, 100	1, 2, 5, 10	±30			
			CAPACITORS, CERAMIC, FIXED, CHIP, TYPE I					Current Validity of Qualification		Page
								Certificate	Valid Until	01-02
	109 K	June 2013	001-1							

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 Requalification Extension Extension Extension	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
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 K	Valid Until  June 2013	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 K

Valid Until

June 2013

Page

01-02

002-1B

Types covered by similarity:  ±20% tolerance				Remarks:																																	
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																															
Generic ESCC 3009  Detail ESCC 3009/034		AVX Limited Coleraine Northern Ireland		Qualification	DERA	Feb 2001																															
<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" data-bbox="676 699 1370 1061"> <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	Extension	QinetiQ	Apr 2003
				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																																	
Extension	QinetiQ	May 2006																																			
Extension	BNSC	Jan 2009																																			
Extension	UK Space Agency	Mar 2011																																			
		<p>CAPACITORS, FIXED, CHIP, CERAMIC, TYPE II, HIGH VOLTAGE, BASED ON 1812 and 1825</p>			Current Validity of Qualification		Page																														
					Certificate	Valid Until	01-02																														
					264 D	January 2013	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:  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 D	Valid Until  March 2012	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		EUROFARAD Chanteloup en Brie France		Qualification	CNES	Aug 1998																														
Detail ESCC 3006/022				Extension	CNES	Jan 2001																														
				Extension	CNES	Aug 2003																														
				Extension	CNES	Dec 2005																														
				Extension	CNES	Apr 2008																														
				Extension	CNES	Oct 2010																														
Characteristics: Operating Temperature Range, (°C): -55 to +125 All values defined by the ESCC Detail Specification																																				
<table border="1"> <thead> <tr> <th>Capacitance Range (pF)</th> <th>Tol. (±%)</th> <th>U<sub>R</sub>(kV)</th> </tr> </thead> <tbody> <tr> <td>33 000 to 2 200 000</td> <td>10</td> <td>1.5</td> </tr> <tr> <td>15 000 to 1 500 000</td> <td>10</td> <td>2.5</td> </tr> <tr> <td>15 000 to 1 000 000</td> <td>10</td> <td>3.5</td> </tr> <tr> <td>6 800 to 470 000</td> <td>10</td> <td>5.0</td> </tr> <tr> <td>2 200 to 220 000</td> <td>10</td> <td>7.5</td> </tr> <tr> <td>1 000 to 100 000</td> <td>10</td> <td>10.0</td> </tr> <tr> <td>3 300 to 68 000</td> <td>10</td> <td>12.5</td> </tr> <tr> <td>1 500 to 33 000</td> <td>10</td> <td>15.0</td> </tr> <tr> <td>680 to 15 000</td> <td>10</td> <td>20.0</td> </tr> </tbody> </table>				Capacitance Range (pF)	Tol. (±%)	U <sub>R</sub> (kV)	33 000 to 2 200 000	10	1.5	15 000 to 1 500 000	10	2.5	15 000 to 1 000 000	10	3.5	6 800 to 470 000	10	5.0	2 200 to 220 000	10	7.5	1 000 to 100 000	10	10.0	3 300 to 68 000	10	12.5	1 500 to 33 000	10	15.0	680 to 15 000	10	20.0			
Capacitance Range (pF)	Tol. (±%)	U <sub>R</sub> (kV)																																		
33 000 to 2 200 000	10	1.5																																		
15 000 to 1 500 000	10	2.5																																		
15 000 to 1 000 000	10	3.5																																		
6 800 to 470 000	10	5.0																																		
2 200 to 220 000	10	7.5																																		
1 000 to 100 000	10	10.0																																		
3 300 to 68 000	10	12.5																																		
1 500 to 33 000	10	15.0																																		
680 to 15 000	10	20.0																																		
		CAPACITORS, FIXED, RECONSTITUTED MICA, HIGH VOLTAGE, BASED ON TYPE HT86PS			Current Validity of Qualification		Page																													
					Certificate 251 E	Valid Until April 2012	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																																			
				Extension	CNES	Apr 2005																																			
				Extension	CNES	Aug 2007																																			
Characteristics: E12 Series All values defined by the ESCC Detail Specification				Extension	CNES	Jun 2010																																			
<p>Sizes Available 01, 02, 03, 04</p> <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> <p>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</p> <p>Where B= 6, 8, 10, 12, 14, 15 depending on capacitance value Operating Temperature Range, (°C): -55 to +125</p>		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 2011
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																																					
  	CAPACITORS, FIXED, SURFACE MOUNT, D.C. SELF-HEALING, NON-INDUCTIVE, POLYTEREPHTHALATE DIELECTRIC, BASED ON TYPE PM94S			Current Validity of Qualification		Page																																			
				Certificate	Valid Until	01-05																																			
				270 D	August 2013	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	CNES  CNES	Dec 2008  May 2011
Characteristics: Operating Temperature Range, (°C): -55 to +150 All variants defined by the ESCC Detail Specification.					
Type	Capacitance Range (pF)	U <sub>R</sub> (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  286 A	Valid Until  December 2012

## Section 02

## Component Type: Connectors

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

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC     3401  Detail ESCC     3401/001 3401/004 3401/022 3401/040 3401/080	C&K COMPONENTS Dole France	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	
Characteristics: Complete range as defined in the corresponding Detail Specifications are qualified Shell Size: E, A, B, C, D, F  Range of Contacts: 9, 15, 25, 37 and 50 size 20 contacts for standard density layout 3W3, 5W1 to 47W1 combined contact arrangements 15, 26, 44, 62, 78 and 104 size 22 contacts for high density layout  Mounting Type: Blank: standard mounting holes Y: floating mount E: captive nuts  Termination contacts: solder bucket, straight PCB, 90 ° PCB Gold-plated non-magnetic coating 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		Extension	CNES	Aug 2005	
		Extension	CNES	Aug 2007	
		Extension	CNES	Sep 2009	
		Extension	CNES	Aug 2011	
	CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*M	Current Validity of Qualification		Page	
		Certificate	Valid Until	02-01	
		71 N	September 2013	001-1	

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3401	SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988
Detail ESCC	3401/001		Extension	CNES	Apr 1991
	3401/022		Extension	CNES	Jan 1994
	3401/072		Extension	CNES	Jul 1996
			Extension	CNES	Oct 1997
			Extension	CNES	Mar 2000
			Extension	CNES	Apr 2003
			Extension	CNES	Mar 2006
			Extension	CNES	May 2008
			Extension	CNES	May 2010
Characteristics:	Complete range as defined in the Detail Specifications are qualified except for				
		<ul style="list-style-type: none"> <li>high density 104 contacts arrangement</li> <li>coaxial and power contacts and arrangement</li> </ul>			
		3401/022: variants 01 to 16, 44 to 57, 65 to 80			
		3401/072: variants 01 to 65			
Range of Contacts:		Size 20: 9, 15, 25, 37 and 50 contacts.			
Range of Contacts:		Size 22:15, 26, 44, 62, 78 contacts.			
Mounting Type=		blank: standard mounting holes			
		Y: floating mount			
		E: captive nuts			
		Gold-plated non-magnetic coating			
		Operating Temperature Range (°C): -55 to +125			
 	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 J	May 2012	001-2

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
Detail ESCC	3401/002		Extension	CNES	Jun 1983
	3401/005		Extension	CNES	Sep 1986
	3401/020		Extension	CNES	Oct 1988
	3401/021		Extension	CNES	Jun 1989
Characteristics:	Complete range defined in the corresponding Detail Specifications are qualified Shell Size: E, A, B, C, D, F		Extension	CNES	Sep 1991
Range of Contacts:	9, 15, 25, 37 and 50 size 20* contacts for standard density layout *Accepts wire sizes AWG # 20 to 24 (standard bucket: variants 01 and 02) per 3401/005 *Accepts wire sizes AWG # 26 and 28 (reduced bucket: variants 03 and 04) per 3401/005 *Accepts wire size AWG # 18 and 20 (large bucket: variants 05 to 06) per 3401/005 ** Accepts wire sizes AWG # 22 to 26 (standard bucket: variants 07 to 08) per 3401/005 15, 26, 44, 62, 78 and 104 size 22** contacts for high density layout		Extension	CNES	Apr 1994
Mounting Type:	standard mounting holes; floating mount		Extension	CNES	Jan 1997
Gold-plated non-magnetic coating			Extension	CNES	Jan 2000
Connector Savers: For usage with above connector range			Extension	CNES	Apr 2003
Operating Temperature Range (°C): -55 to +125		Extension	CNES	Aug 2005	
		Extension	CNES	Aug 2007	
		Extension	CNES	Sep 2009	
		Extension	CNES	Aug 2011	
 	CONNECTORS, ELECTRICAL, CRIMP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA	Current Validity of Qualification		Page	
		Certificate	Valid Until	02-02	
		72 N	September 2013	001-1	

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3401	SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988
Detail ESCC	3401/002		Extension	CNES	Apr 1991
	3401/005		Extension	CNES	Jan 1994
	3401/020		Extension	CNES	Jul 1996
	3401/021		Extension	CNES	Mar 2000
	3401/022		Extension	CNES	Apr 2003
	3401/072		Extension	CNES	Mar 2006
Characteristics:	Complete range as defined in the Detail Specifications except high density 104 contacts arrangement are qualified 3401/022: variants 01 to 16, 44 to 57, 65 to 80 3401/072: variants 01 to 65		Extension	CNES	May 2008
Connectors:-	*Accepts wire sizes AWG # 20 to 24 (standard bucket: variants 01 and 02) *Accepts wire sizes AWG # 26 and 28 (reduced bucket: variants 03 and 04) *Accepts wire size AWG # 22, 24 and 26 (contact AWG # 22 for high density, contact arrangements, variants 07 and 08)		Extension	CNES	Jun 2010
Range of Contacts:	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				
Operating Temperature Range (°C):	-55 to +125	Connector Savers-	For usage with above connector range		
 	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 H	May 2012	001-2	



Types covered by similarity:		Remarks: Maintenance of qualification testing is under-way.													
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date										
Generic ESCC 3401		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995										
			Extension	CNES	Mar 1998										
Detail ESCC 3401/052			Extension	CNES	Jul 2001										
3401/058			Extension	CNES	Jun 2005										
3401/062			Extension	CNES	Mar 2008										
<p>Characteristics: All connector variants are qualified For 3401/058, variants 01 to 14 are qualified For 3401/062, variants 01 to 27 are qualified</p> <table border="1"> <thead> <tr> <th>Contact Size</th> <th>Ratings (A)</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>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</p> <p>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</p>		Contact Size	Ratings (A)	8	46.0	12	23.0	16	13.0	20	7.5		Extension	CNES	Mar 2010
Contact Size	Ratings (A)														
8	46.0														
12	23.0														
16	13.0														
20	7.5														
	CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, SCOOP-PROOF, REMOVABLE CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES I		Current Validity of Qualification		Page										
			Certificate 220 E	Valid Until March 2012	02-02 005										

Types covered by similarity:		Remarks: Maintenance of qualification testing is under-way.										
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date							
Generic ESCC	3401	SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995							
Detail ESCC	3401/044		Extension	CNES	Mar 1998							
	3401/045		Extension	CNES	Jul 2001							
	3401/062		Extension	CNES	Jun 2005							
			Extension	CNES	Mar 2008							
			Extension	CNES	Mar 2010							
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												
<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> </tbody> </table>		Contact Size	Ratings (A)	12	23.0	16	13.0	20	7.5			
Contact Size	Ratings (A)											
12	23.0											
16	13.0											
20	7.5											
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												
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												
	CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, REMOVABLE CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES II		Current Validity of Qualification		Page							
			Certificate	Valid Until	02-02							
		221 E	March 2012	006								

Types covered by similarity:				Remarks: Maintenance of qualification testing is under-way.				
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	CNES CNES CNES CNES CNES	May 1995 Mar 1998 Jul 2001 Jun 2005 Mar 2008 Mar 2010	
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			Crimp Contact Size 4 8 12 16 20 22	Ratings (A) 80.0 46.0 23.0 13.0 7.5 5.0	PCB Contact Size 16 20 22	Ratings (A) 10.0 5.0 3.0		
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 contact= (layout 09-01 only)								
Operating Temperature Range (°C): -65 to +200								
 			CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE- START SELF-LOCKING COUPLING, SCOOP-PROOF, REMOVABLE AND NON-REMOVABLE CONTACTS BASED ON TYPE MIL-C-38999, SERIES III			Current Validity of Qualification		Page
					Certificate 222 E	Valid Until March 2012	02-02 007-1	

Types covered by similarity:		Remarks: Maintenance of qualification testing is under-way.							
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date				
Generic ESCC 3401		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995				
Detail ESCC 3401/057			Requalification	CNES	Jul 2001				
			Extension	CNES	Jun 2005				
			Extension	CNES	Mar 2008				
			Extension	CNES	Mar 2010				
<p>Characteristics: All variants are qualified</p> <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> <p>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)</p> <p>Receptacle Shell Sizes: 09, 11, 13, 15, 17, 19, 21, 23, 25</p> <p>Receptacle (contacts # 8, 12, 16, 20, 22D) and Feedthrough (contacts # 8, 12, 16, 20, 22D)</p> <p>Operating Temperature Range (°C): -65 to +200</p>		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								
 <p><b>ESCC</b> European Space Components Coordination</p> <p><b>QPL</b></p>		<p>CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF-LOCKING COUPLING, SCOOP-PROOF, HERMETIC RECEPTABLE AND FEEDTHROUGH, BASED ON TYPE MIL-C-38999, SERIES III</p>			Current Validity of Qualification	Page			
					Certificate	Valid Until	02-02		
					223 D	March 2012	008		

Types covered by similarity: Variants 02 and 10		Remarks: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/079		AXON' CABLE S.A. Montmirail France	Qualification	CNES	May 2009
Characteristics: Variants 01 to 16 are qualified  Variants 01 to 08: Plug 3 and 4 Lugs, Straight and Right Angle with pin contact Variants 09 to 16: Bulkhead Jacks, 3 and 4 Lugs, Straight and Right Angle with solder contact  All cables are 77Ω MIL-STD- 1553B Data Bus twisted shielded pairs  Working Voltage: 200 Vrms Rated Current (contact): 1A  Operating Temperature Range (°C): -55 to +150					
	CONNECTORS, ELECTRICAL, TRIAXIAL, BAYONE COUPLING, NON-REMOVABLE CRIMP CONTACTS, MIL-STD-1553B DATABUS, BASED ON TYPE ACB1 SERIES		Current Validity of Qualification		Page
			Certificate 288	Valid Until May 2011	02-02 009

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

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

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401	Detail ESCC 3401/039  Characteristics: 3 rows 26, 44, 62, 80, 98, 144 contacts  Contact Ratings: 2 A (1 contact)  Operating Temperature Range (°C): -55 to +125	HYPERTAC SA Saint-Aubin-Lès-Elbeuf France	Qualification	CNES	Mar 1987
			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
	CONNECTORS, ELECTRICAL, NON-REMOVABLE SOLDER AND WIRE-WRAP CONTACTS AND SAVERS, PRINTED CIRCUIT BOARD, BASED ON TYPE KMC		Current Validity of Qualification		Page
			Certificate	Valid Until	02-03
		149 J	September 2013	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
			Extension	CNES	Jan 2002
			Extension	CNES	Jun 2004
			Extension	CNES	Mar 2007
			Extension	CNES	Sep 2009
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	Nov 2011
	CONNECTORS AND SAVERS, ELECTRICAL, RECTANGULAR, NON-REMOVABLE, PRINTED CIRCUIT BOARD, BASED ON TYPE MHD		Current Validity of Qualification		Page
			Certificate	Valid Until	02-03
			250 E	September 2013	003-1

Types covered by similarity:		Remarks: Maintenance of qualification testing is under-way.				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3401		HYPERTAC SA Saint-Aubin-Les-Elbeuf France	Qualification	CNES	Aug 2007	
Detail ESCC 3401/076			Extension	CNES	Oct 2009	
<p>Characteristics: All design envelops specified in Table 1(a) of ESCC Detail Specification are qualified</p> <p>Max. number of rows 11 Max. number of contacts: 660</p> <p>Locking and Guiding Devices: -Through holes only -M2 studs with locking nuts and washers -Locating pins not available</p> <p>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 Ncm</p> <p>Operating Temperature Range (°C): -55 to +125</p>						
		CONNECTORS, ELECTRICAL, CRIMP CONTACTS, Z-AXIS INTERPOSER, PRINTED CIRCUIT BOARD, BASED ON TYPE RX		Current Validity of Qualification		Page
				Certificate 281 A	Valid Until October 2011	02-03 004-1

Types covered by similarity: - Hermetically sealed receptacle		Remarks: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3402	RADIALL La Verpilliere France	Qualification	CNES	Feb 1981
			Extension	CNES	Apr 1983
Detail ESCC	3402/001		Extension	CNES	Apr 1986
	3402/002		Extension	CNES	Nov 1989
	3402/003		Extension	CNES	Jul 1992
			Extension	CNES	Nov 1994
Characteristics: Frequency Range 0-18 GHz 3402/001 Pin contact (Plug). Variants 01 to 47 3402/002 socket contact (Receptacle). Variants 01 to 85 3402/003 Adapters. Variants 01 to 14 Crimp- or solder-type contact for flexible and semi-rigid cables, contacts for micro strip Shell material and finish: Beryllium copper gold plated, copper or nickel underplate; stainless steel, electro-passivated or gold plated. Operating Temperature Range (°C): See Detail Specifications			Extension	CNES	May 1998
			Extension	CNES	Aug 2002
			Extension	CNES	Jan 2005
			Extension	CNES	Dec 2007
		Extension	CNES	May 2010	
	CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPE SMA		Current Validity of Qualification		Page
			Certificate	Valid Until	02-04
		68 K	December 2011	001	

Types covered by similarity:		Remarks: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC	3402	RADIALL La Verpilliere France	Qualification	CNES	Dec 2007
Detail ESCC	3402/021 3402/022 3402/023		Extension	CNES	May 2010
<p>Characteristics:</p> <p>Frequency Range 0-40 GHz 50 Ohms</p> <p>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.</p> <p>Operating Temperature Range (°C): -65 to +165</p>					
	<p>CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPE SMA 2.9</p>		Current Validity of Qualification		Page
			Certificate	Valid Until	02-04
			283 A	December 2011	002

Types covered by similarity:		Remarks:															
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date												
Generic ESCC 3401	<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	C&K COMPONENTS Dole France	Qualification	CNES	Oct 1986
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														
Detail ESCC 3401/029 3401/041 3401/032		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														
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																	
 <b>ESCC</b> European Space Components Coordination <b>QPL</b>	CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, CRIMP CONTACT, BASED ON TYPE MDM		Current Validity of Qualification		Page												
			Certificate	Valid Until	02-05												
		140 L	September 2013	001-1													

Types covered by similarity:		Remarks:															
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date												
Generic ESCC 3401	Detail ESCC 3401/031  Characteristics:  Shell sizes: 5 through 81 contacts  Non removable crimp contacts  Termination Types: <table border="1" data-bbox="510 874 1361 1129"> <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	C&K COMPONENTS Dole France	Qualification	CNES	Oct 1986
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														
				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												
Operating Temperature Range (°C): -55 to +125																	
	CONNECTORS, ELECTRICAL, MICROMINIATURE, CRIMP CONTACT, SINGLE-IN-LINE, BASED ON TYPE MTB		Current Validity of Qualification		Page												
			Certificate	Valid Until	02-05												
			141 L	September 2013	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	CNES CNES	Jun 2009 Aug 2011
Characteristics: All variants are qualified Range of contacts: 9 - 15 - 21- 25 - 31 - 37  Accepts wires AWG 26 and 28 Max. rating for 1 isolated contact:- uninsulated AWG 25 solid wire: 2.5 A AWG 26 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	
		Certificate	Valid Until	Page	
		290 A	June 2013	02-05 003-1	

Types covered by similarity:  Contact sizes 21, 31		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC      3401  Detail ESCC      3401/081 3401/082 3401/083 3401/084		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Jun 2010
Characteristics: 3401/081: Shell variant 01 (glass-fibre reinforced thermoplastic), variant 02 (aluminium alloy). Contacts arrangements 7, 25, 51, 104 contacts. Contact termination OL3 (straight PCB), 1A7N (90° PCB 2.54mm spacing), 1B7N (90° PCB 2.84mm spacing). 3401/082: Shell variant 01 (glass-fibre reinforced thermoplastic), variant 02 (aluminium alloy). Contacts arrangements 7, 25, 51, 104 contacts. 3401/083: Contact variant 01 (male crimp barrel 26), 02 (female crimp barrel), 03 (male crimp barrel 24), 04 (female crimp barrel 24). 3401/084: Accessory variants 01 to 62. Range of contacts: 7 - 25 - 51 - 104 Accepts wires AWG 26  Nickel or Gold Plated Shells Operating Temperature Range (°C): -55 to +125					
	CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, REMOVABLE AND NON-REMOVABLE, GAUGE 26, PCB PIN CONTACT, BASED ON TYPE 8MCG		Current Validity of Qualification		Page
			Certificate	Valid Until	02-05
			301	June 2012	004-1

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

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

**SECTION 03-\*\*: INDEX OF CRYSTALS****REP005 Updated on 15 Dec 2011**

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		RAKON France Argenteuil France	Qualification Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES	Oct 1979 Jun 1983 Oct 1986 Jul 1989 Jan 1995 Nov 1996 Apr 2000 Nov 2002 Jun 2005 Mar 2008 Jul 2010
Characteristics:           All variants are qualified.  TO-5 Can (T 807)  Frequency Range: 15 - 140 MHz					
		CRYSTALS, TO-5 CAN		Current Validity of Qualification	
				Certificate 33 K	Valid Until March 2012
				Page 03-01 001-1	

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	DLR	Apr 2011
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	April 2013	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 Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES CNES	Oct 1979 Jun 1983 Oct 1986 Jul 1989 Jan 1995 Apr 1997 Apr 2000 Nov 2002 Jun 2005 Mar 2008 Jul 2010
Characteristics:           All variants are qualified. TO-8 Can (T 1507)  Frequency Range: 2.5 - 20 MHz					
	CRYSTALS, TO-8 CAN		Current Validity of Qualification		Page
			Certificate	Valid Until	03-01
			34 K	March 2012	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	DLR	Apr 2011
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	April 2013	002-3			

## Section 04

## Component Type: Diodes

04-01			Switching	
	04-01-003-2	311	Types 1N6640U and 1N6642U	STMicroelectronics
	04-01-003-3	316	Types BAY6642	Infineon
04-02			Power Rectifier	
	04-02-001-3	297	Types 1N5806U and 1N5811U	STMicroelectronics
	04-02-001-4	302	Types 1N5819U and 1N5822U	STMicroelectronics
	04-02-002-1	272 D	Type STPS20100	STMicroelectronics
	04-02-003-1	274 C	Types BYW-81, BYV52, BYV54	STMicroelectronics
04-05			RF/Microwave, Silicon Schottky	
	04-05-001-3	227 C	Schottky, BAS 70	Infineon
04-13			RF/Microwave, Varactors	
	04-13-003 1A-B	200 E	PIN and Varactors	Cobham MAL
	04-13-003-2	225 D	Varactor, DH 267	Cobham Microwave
	04-13-003-3	273 B	Varactor, Tuning, DH 76xxx	Cobham Microwave
04-16			RF/Microwave, PIN	
	04-16-002-2	224 D	PIN, BXY 42	Infineon
	04-16-002-4A-B	259 C	PIN, Fast Switching	Cobham Microwave
	04-16-003	236 D	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	CNES	May 2011																		
Characteristics: <table border="1" data-bbox="91 903 1341 1070"> <thead> <tr> <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> <p>Operating Temperature Range (°C): -65 to +175</p>							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																			
 <p>ESCC European Space Components Coordination QPL</p>		DIODES, SWITCHING, BASED ON TYPES 1N6640U AND 1N6642U			Current Validity of Qualification		Page																	
					Certificate	Valid Until	04-01																	
					311	May 2013	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:								
Type	Variant	$V_{BR}$ (V)	$t_{rr}$ (ns)	$V_{RWM}$ (V <sub>pk</sub> )	$I_R$ (μA)@ $V_{RWM}$	$I_{FSM}$ (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	CNES	Nov 2009	
Characteristics:							
Type	Variants	$V_{BR}$ (V)	$V_{RWM}$ (V)	$I_{FSM}$ (A)	Case		
1N5806U	13, 14	160	150	33	LCC2-B		
1N5811U	11, 12	160	150	100	LCC2-A		
Operating Temperature Range (°C): -65 to +175							
		DIODES, POWER RECTIFIER, BASED ON TYPES 1N5806U AND 1N5811U			Current Validity of Qualification		Page
					Certificate 297	Valid Until November 2011	04-02 001-3

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	CNES	Sep 2010																		
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) @ T<sub>amb</sub></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> <p>Operating Temperature Range (°C): -65 to +150            Package Type: LCC2-B</p>							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) @ T <sub>amb</sub>	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) @ T <sub>amb</sub>																			
1N5819U	40	10 000	15 (DC)	25	1																			
1N5822U	40	10 000	80 (pulse)	80	3																			
		DIODES, POWER SCHOTTKY, BASED ON TYPES 1N5819U AND 1N5822U			Current Validity of Qualification		Page																	
					Certificate 302	Valid Until September 2012	04-02 001-4																	

Types covered by similarity						
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	CNES CNES CNES CNES CNES	Nov 2002 Mar 2006 Jul 2008 Feb 2009 Nov 2010	
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 D	November 2012	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 D

Valid Until

November 2012

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	CNES CNES CNES CNES	Aug 2003 Mar 2006 Jul 2008 Nov 2010	
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 C	July 2012	003-1

Types covered by similarity: Variant 03 ( ~ 40 V)		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010  Detail ESCC 5512/020		INFINEON Technologies AG Neubiberg Germany	Qualification Extension Requalification Requalification	DARA DLR DLR DLR	Sep 1995 Jan 2000 Mar 2008 Nov 2010	
Characteristics: Variants 01 and 03 are qualified Maximum Ratings: BAS 70 $V_{RR}$ : 70 V $I_F$ : 70 mA $I_{FSM}$ : 85 mA <sub>pk</sub> @ t<10ms, duty cycle=10% D.C Parameters: $I_R = 100$ nA max @ $V_R = 56$ V $V_{F1} = 0.44$ V max. @ $I_F = 1.0$ mA At room temp. $V_{BR} = 70$ V min @ $I_R = 10$ μA $V_{F2} = 0.78$ V max. @ $I_F = 10$ mA $V_{F3} = 1.00$ V max. @ $I_F = 15$ mA  Package Type    T1 P <sub>tot</sub> =0.25W @ T <sub>case</sub> = +125 °C Operating Temperature Range (°C): -55 to +150						
		DIODES, MICROWAVE, SILICON, SCHOTTKY, GENERAL PURPOSE, BASED ON TYPE BAS 70		Current Validity of Qualification		Page
				Certificate 227 C	Valid Until March 2012	04-05 001-3

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010  Detail ESCC      See types covered by similarity		Cobham MAL 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
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 E	November 2012	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 E

Valid Until

November 2012

Page

04-13

003-1B

Types covered by similarity: .			Remarks:																																							
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date																																					
Generic ESCC 5010		COBHAM MICROWAVE Les Ulis France	Qualification	CNES	Jun 1995																																					
Detail ESCC 5512/016			Extension	CNES	Aug 1998																																					
			Extension	CNES	Jun 2003																																					
			Extension	CNES	Mar 2007																																					
			Extension	CNES	Mar 2010																																					
<p>Characteristics: The variants are based on the following types</p> <table border="1"> <thead> <tr> <th>Variants</th> <th>CT(max.)</th> <th>Based on Type</th> <th></th> </tr> </thead> <tbody> <tr> <td>10 to 15</td> <td>0.4 pF</td> <td>DH 267</td> <td rowspan="5">           Maximum Ratings: <math>V_R = -15\text{ V to }-45\text{ V}</math>  <math>I_F = 250\text{ to }1000\text{ mA at }T_{amb} = +75\text{ }^\circ\text{C}</math>  <math>P_{tot} = +0.5\text{ to }1.25\text{ W at }T_{amb}</math> </td> </tr> <tr> <td>16</td> <td>0.5 pF</td> <td>DH 267</td> </tr> <tr> <td>20 to 25</td> <td>0.6 pF</td> <td>DH 292</td> </tr> <tr> <td>26</td> <td>0.7 pF</td> <td>DH 292</td> </tr> <tr> <td>30 to 35</td> <td>1.2 pF</td> <td>DH 256</td> </tr> <tr> <td>36</td> <td>1.3 pF</td> <td>DH 256</td> <td rowspan="4">           Operating Temperature Range (<math>^\circ\text{C}</math>): -55 to +150         </td> </tr> <tr> <td>40 to 45</td> <td>2.1 pF</td> <td>DH 252</td> </tr> <tr> <td>46</td> <td>2.2 pF</td> <td>DH 252</td> </tr> <tr> <td>50 to 55</td> <td>7.1 pF</td> <td>DH 294</td> </tr> <tr> <td>56</td> <td>7.2 pF</td> <td>DH 294</td> <td></td> </tr> </tbody> </table>						Variants	CT(max.)	Based on Type		10 to 15	0.4 pF	DH 267	Maximum Ratings: $V_R = -15\text{ V to }-45\text{ V}$ $I_F = 250\text{ to }1000\text{ mA at }T_{amb} = +75\text{ }^\circ\text{C}$ $P_{tot} = +0.5\text{ to }1.25\text{ W at }T_{amb}$	16	0.5 pF	DH 267	20 to 25	0.6 pF	DH 292	26	0.7 pF	DH 292	30 to 35	1.2 pF	DH 256	36	1.3 pF	DH 256	Operating Temperature Range ( $^\circ\text{C}$ ): -55 to +150	40 to 45	2.1 pF	DH 252	46	2.2 pF	DH 252	50 to 55	7.1 pF	DH 294	56	7.2 pF	DH 294	
Variants	CT(max.)	Based on Type																																								
10 to 15	0.4 pF	DH 267	Maximum Ratings: $V_R = -15\text{ V to }-45\text{ V}$ $I_F = 250\text{ to }1000\text{ mA at }T_{amb} = +75\text{ }^\circ\text{C}$ $P_{tot} = +0.5\text{ to }1.25\text{ W at }T_{amb}$																																							
16	0.5 pF	DH 267																																								
20 to 25	0.6 pF	DH 292																																								
26	0.7 pF	DH 292																																								
30 to 35	1.2 pF	DH 256																																								
36	1.3 pF	DH 256	Operating Temperature Range ( $^\circ\text{C}$ ): -55 to +150																																							
40 to 45	2.1 pF	DH 252																																								
46	2.2 pF	DH 252																																								
50 to 55	7.1 pF	DH 294																																								
56	7.2 pF	DH 294																																								
		DIODES, MICROWAVE, SILICON, MULTIPLIER VARACTOR BASED ON TYPES DH 267 AND DH 294		Current Validity of Qualification		Page 04-13 003-2																																				
				Certificate 225 D	Valid Until March 2012																																					

Types covered by similarity: .			Remarks: Maintenance of qualification testing is under-way.																				
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																		
<p>Characteristics: All variants are qualified.</p> <table border="0"> <tr> <td>Maximum Ratings:</td> <td colspan="2"><math>V_R = 20</math> at <math>I_R = 10 \mu A</math> and</td> <td colspan="3"></td> </tr> <tr> <td></td> <td colspan="2"><math>T_{amb} = +25 \text{ }^\circ C</math></td> <td colspan="3"></td> </tr> <tr> <td>Operating Temperature Range (<math>^\circ C</math>):</td> <td colspan="5">-55 to +155</td> </tr> </table>						Maximum Ratings:	$V_R = 20$ at $I_R = 10 \mu A$ and						$T_{amb} = +25 \text{ }^\circ C$					Operating Temperature Range ( $^\circ C$ ):	-55 to +155				
Maximum Ratings:	$V_R = 20$ at $I_R = 10 \mu A$ and																						
	$T_{amb} = +25 \text{ }^\circ C$																						
Operating Temperature Range ( $^\circ C$ ):	-55 to +155																						
Variants	$C_j(\text{typ.}) (-4 V)$	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																					
		DIODES, MICROWAVE, SILICON, HYPER-ABRUPT JUNCTION TUNING VA- RACTOR BASED ON TYPES DH 76xxx		Current Validity of Qualification		Page																	
				Certificate 273 B	Valid Until June 2011	04-13 003-3																	

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	DARA DLR DLR DLR DLR	Jun 1995 Jan 2000 Jan 2004 Mar 2008 Nov 2010	
Characteristics: Variants 01 and 02 are qualified Maximum Ratings: $V_R$ : 50 V $I_{FM}$ : 5.0 A @ $t_p=1.0 \mu s$ , duty cycle = 0.001% D.C Parameters: $I_{R1} = 10 \mu A$ max @ $V_R = 50 V$ $I_{R2} = 5 nA$ max @ $V_R = 40 V$ $V_F = 1.1 V$ max. @ $I_F = 100 mA$ Package Types T1 ( $P_D= 350mW$ ) and T Operating Temperature Range ( $^{\circ}C$ ): -55 to +175						
		DIODES, MICROWAVE, SILICON, PIN, BASED ON TYPE BXY 42- MESA		Current Validity of Qualification		Page
				Certificate	Valid Until	04-16
			224 D	March 2012	002-2	

Types covered by similarity:		Remarks: New package BH 155 introduced				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010		COBHAM MICROWAVE Les Ulis France	Qualification	CNES	Mar 2000	
Detail ESCC Please refer to the next page			Extension	CNES	Dec 2003	
			Extension	CNES	Feb 2008	
			Extension	CNES	Nov 2010	
Characteristics:						
	$V_{Rmax}$ @ $I_R=10\mu A$	$R_{SF}$ (Ω) (max.)	$\tau_L$ (ns)	$C_T$		
DH 50033	~ 30	1.8	40 max.	0.25		
DH 50101	~ 100	1.9	300 max.	0.19		
DH 50151	~ 150	2.0	160 min.	0.19		
DH 50251	~ 250	2.4	265 min.	0.19		
Operating Temperature Range (°C): -55 to +125						
		DIODES, MICROWAVE, SILICON, PIN, FAST AND ULTRA FAST SWITCHING		Current Validity of Qualification		Page
				Certificate	Valid Until	04-16
				259 C	February 2012	002-4A

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



DIODES,  
MICROWAVE, SILICON, PIN, FAST SWITCHING

Current Validity of Qualification

Certificate

259 C

Valid Until

February 2012

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002-4B

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	DARA	Oct 1996			
			Extension	DLR	Jan 2000			
			Extension	DLR	Jan 2004			
			Requalification	DLR	Mar 2008			
			Requalification	DLR	Nov 2010			
Characteristics: Variants 01, 02, 05 and 06 are qualified.  <table border="0" style="width: 100%;"> <tr> <td></td> <td style="text-align: center;">BXY 43 (variants 01-02)</td> <td style="text-align: center;">BXY 44 (variants 05-06)</td> </tr> </table> Maximum Ratings: $V_R = \sim 150\text{ V}$ $\sim 200\text{ V}$  $I_F = 400\text{ mA}$ $P_D = 500\text{ mW}$ D.C Parameters: $I_R = 100\text{ nA max @ } V_R = \sim 150\text{ V}$ $5\text{ nA @ } V_R = \sim 100\text{ V}$ $V_F = 1.0\text{ V max.}$ $1.05\text{ V max. @ } I_F = 100\text{ mA}$  Package Type      T, T1 Operating Temperature Range (°C): $\sim 55$ to $+150$							BXY 43 (variants 01-02)	BXY 44 (variants 05-06)
	BXY 43 (variants 01-02)	BXY 44 (variants 05-06)						
		DIODES, MICROWAVE, SILICON, PIN, PLANAR BASED ON TYPES BXY 43 AND 44		Current Validity of Qualification		Page		
				Certificate	Valid Until	04-16		
				236 D	March 2012	003		

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

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

**SECTION 05-\*\*: INDEX OF FILTERS****REP005 Updated on 15 Dec 2011**

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					
	<p>CAPACITOR FILTERS, FEEDTHROUGH, ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY AND NON-HERMETICALLY SEALED, PI-, C-, AND L- TYPES, BASED ON TYPES SFC, SFL AND SFP</p>	Current Validity of Qualification		Page	
		Certificate	Valid Until	05-01	
		252 E	June 2012	001A	

Types covered by certificate:

Style	Detail Specification	Variants	Capacitance Range (nF)	Rated Current (A)	Rated Voltage (V)
SFP 040	3008/014	01 to 40	0.75 to 44.8	10 (DC 7 LF)	70 to 250
SFP 060	3008/021	01 to 14	2.4 to 89.6	10	35 to 500
SFP 035	3008/025	01 to 20	2.4 to 35.2	10	35 to 200
SFP 100	3008/028	01 to 06	0.16 to 1312.0	10	50 to 300
SFP 060	3008/030	01 to 28	2.4 to 89.6	10	35 to 500
Capacitance Range (pF)					
SFC 030	3008/020	01 to 12	470 to 22000	1.0 to 5.0	25 to 200
SFC 060	3008/026	01 to 06	680 to 220000	10	25 to 200
SFC 100	3008/027	01 to 06	1000 to 1000000	10	25 to 200
SFC 035	3008/031	01 to 06	470 to 22000	10	25 to 200
SFC 040	3008/032	01 to 12	470 to 22000	10	25 to 200
SFC 060	3008/033	01 to 12	680 to 220000	10	25 to 200
Capacitance Range (nF)					
SFL 100	3008/029	01 to 48	17.6 to 1600	5, 10, 15	40 to 300



CAPACITOR FILTERS, FEEDTHROUGH, ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY AND NON-HERMETICALLY SEALED, PI-, C-, AND L- TYPES, BASED ON TYPES SFC, SFL AND SFP

Current Validity of Qualification

Certificate

252 E

Valid Until

June 2012

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 A	Type MGA-S	Schurter

**SECTION 06-\*\*: INDEX OF FUSES****REP005 Updated on 15 Dec 2011**

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	ESTEC  ESTEC	Jun 2008  Oct 2010
<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 A	Valid Until  June 2012	06-01  001

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

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

**SECTION 07-\*\*: INDEX OF INDUCTORS****REP005 Updated on 15 Dec 2011**

Types covered by similarity:				Remarks: The subcontracting of the winding operation is not part of this qualification.			
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							
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 MSCI 10k, 12k, 20k and H01			Current Validity of Qualification		Page
					Certificate 241 E	Valid Until June 2012	07-01 001

Types covered by similarity:					Remarks: Termination finish shall be Sn90Pb10. Maintenance of qualification testing is underway.			
Procurement Specifications			Manufacturer		Nature of Approval	Supervising Authority	Date	
Generic ESCC 3201			MICROSPIRE Illange France		Qualification	CNES	Apr 2004	
Detail ESCC 3201/009 3201/010					Extension	CNES	May 2007	
Characteristics:			3201/009 Variants 01 to 06 are qualified 3201/010 Variants 01, 03 and 05 are qualified		Extension	CNES	Dec 2010	
Series No.	Range (μH)	Tolerance (±%)	Max. DC R, R <sub>dc</sub> (Ω)	Rated DC Current, I <sub>R</sub> (A)	Peak Current, I <sub>P</sub> (A)			
14	3.3 - 330	10, 20	15 - 1575	5.8 - 0.57	8.0 - 0.8			
15, 15W	1.5 - 330	10, 20, 30	5.0 - 630	14 - 0.74	19 - 1.0			
18	6.8 - 330	10, 20	7.5 - 250	110 - 15	13.6 - 1.9			
9.1	1.0 - 1000	10, 20, 30	8.5 - 5865	6.0 - 0.2	11.0 - 0.34			
22	7.0 - 2200	10, 20	5 - 760	0.8 - 18.9	1.2 - 24			
Inductance measured at 0.25V, 100kHz. Peak current is the maximum current for a square pulse of duration <10s Dielectric Withstanding Voltage (DWV): 500 Vrms Operating Temperature Range (°C): -55 to +125								
			INDUCTORS, POWER, MOULDED, SURFACE MOUNT, BASED ON SERIES SESI AND CMC			Current Validity of Qualification		Page
						Certificate 276 B	Valid Until May 2011	07-02 002

**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 M	4000 B Series	ST Microelectronics
	08-80-002-2 A to F	190 H	54HCMOS Series	ST Microelectronics
08-90			Other Functions	
	08-90-001	307	PLL Frequency Synthesizer	Peregrine Semiconductor Europe

**SECTION 08-\*\*: INDEX OF MICROCIRCUITS**

REP005 Updated on 15 Dec 2011

Types covered by similarity: See next pages		Remarks:			
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	
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 M	February 2012	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	Presetable 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



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C-MOS-B, 4000B SERIES

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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



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C-MOS-B, 4000B SERIES

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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



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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



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Types covered by similarity: See next pages		Remarks:			
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
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, MONOLOTHIC, HIGH SPEED CMOS, 54HC AND 54HCT SERIES	Current Validity of Qualification		Page	
		Certificate	Valid Until	08-80	
		190 H	February 2012	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



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HIGH SPEED CMOS, 54HC AND 54HCT SERIES

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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-to4 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



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## 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



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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



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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
9401/055	Hex inverter (single stage) with unbuffered output	54HCU04	1



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Types covered by similarity: .		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 9000  Detail ESCC 9202/077		Peregrine Semiconductor Europe Aix en Provence France	Qualification	ESTEC	Mar 2011
Characteristics: 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 Type: 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	March 2013	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 K	Type GP5	LEACH
	09-01-004	205 C	Type E 215	REL STPI
	09-01-005	239 D	Type E	LEACH
	09-01-006	279 A	Type 317	STPI
09-02			Latching, 28Vdc Contact Rating	
	09-02-001	88 F	Type TL	REL STPI
	09-02-002	13 K	Type GP2	LEACH
	09-02-003	98 E	Type EL415	REL STPI
	09-02-004	167 D	Type EL215	REL STPI
	09-02-004-2	310	Type M302	LEACH
	09-02-006	240 D	Type D	LEACH
	09-02-007	280 A	Type 3*7B	STPI
09-03			Latching, 50Vdc Contact Rating	
	09-03-001	93 J	Type GP250	LEACH



SECTION 09-\*\*: INDEX OF RELAYS

REP005 Updated on 15 Dec 2011

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: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3601	Variants 01 to 08 are qualified	LEACH International Europe Niort France	Qualification	CNES	Apr 1978
Detail ESCC 3601/003			Extension	CNES	Oct 1980
			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
Extension	CNES	Apr 2010			
Characteristics:					
Contact Rating	2 A at 28 Vdc				
Contact Configuration	2 PDT				
Package Type	Half-crystal can				
Coil Voltage	26.5 Vdc				
Operating Temperature Range (°C):	-65 to +125				
 	RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE GP 5		Current Validity of Qualification		Page
			Certificate	Valid Until	09-01
		02 K	April 2012	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	
<p>Characteristics: Variants 03, 04 and 06 are qualified</p> <p>Contact Rating 15 A at 28 Vdc</p> <p>Contact Configuration 2 PDT</p> <p>Package Type Half cubic inch can</p> <p>Coil Voltage 12 and 28 Vdc</p> <p>Operating Temperature Range (°C): -65 to +125</p>						
		RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE E 215		Current Validity of Qualification		Page
				Certificate	Valid Until	09-01
				205 C	December 2012	004

Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks: Maintenance of qualification testing is under-way.			
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 239 D	Valid Until April 2012	09-01 005

Types covered by similarity: Coil voltage 12 Vdc		Remarks: Long term strategy favours 15A relays from STPI-REL. Planning to be confirmed.  Maintenance of qualification testing is underway.				
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	
<p>Characteristics: Variants 01 to 06 are qualified</p> <p>Contact Rating 15 A at 28 Vdc</p> <p>Contact Configuration 2 PDT</p> <p>Size (mm. max.) 26x26x14</p> <p>Package Type 1/2 can</p> <p>Coil Voltage 28 Vdc</p> <p>Operating Temperature Range (°C): -65 to +125</p>						
		<p>RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE 317</p>		Current Validity of Qualification		Page
				Certificate 279 A	Valid Until April 2011	09-01 006

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	3602/002	REL-STPI Saint Jean de la Ruelle France	Qualification	CNES	Jan 1982
Detail ESCC			Extension	CNES	Oct 1983
			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					
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 F	January 2012	001

Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602	Variants 01 to 08 are qualified	LEACH International Europe Niort France	Qualification	CNES	Jan 1979
Detail ESCC 3602/003			Extension	CNES	Feb 1981
			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
Extension	CNES	Apr 2010			
Characteristics: Variants 01 to 08 are qualified  Contact Rating 2 A at 28 Vdc 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 2		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
		13 K	April 2012	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	
Detail ESCC 3602/004		Extension	CNES	Dec 1985	
		Extension	CNES	Nov 1989	
		Extension	CNES	Jan 1994	
		Re-qualification	CNES	Apr 2011	
<p>Characteristics: Variants 04, 06 and 09 and 14, 16 and 19 are qualified</p> <p>Contact Rating 15 A at 28 Vdc</p> <p>Contact Configuration 4PDT</p> <p>Package Type Cubic inch can</p> <p>Coil Voltage 28 Vdc</p> <p>Operating Temperature Range (°C): -65 to +125</p>					
	<p>RELAY, LATCHING, ELECTROMAGNETIC, TYPE EL 415</p>		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
		98 E	April 2013	003	

Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602	3602/009	REL STPI St Jean de la Ruelle France	Qualification	CNES	Feb 1990
Detail			Extension	CNES	Nov 1993
ESCC			Extension	CNES	Dec 1998
			Merged	CNES	Nov 1999
			Re-qualification	CNES	Oct 2010
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 D	October 2012	004

Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602  Detail ESCC 3602/009		LEACH Sarralbe France	Qualification	CNES	Apr 2011
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					
 <b>ESCC</b> European Space Components Coordination <b>QPL</b>	RELAY, LATCHING, ELECTROMAGNETIC, BASED ON TYPE M302		Current Validity of Qualification		Page
			Certificate	Valid Until	09-02
			310	April 2013	004-2

Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602	LEACH International Europe Niort France	Qualification	CNES	Apr 1997	
Detail ESCC 3602/019		Extension	CNES	Sep 2000	
		Extension	CNES	Jan 2004	
		Extension	CNES	Feb 2008	
		Extension	CNES	Apr 2010	
Characteristics:  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 240 D	Valid Until April 2012	09-02 006	

Types covered by similarity: Coil Voltage 12 Vdc				Remarks: Long term strategy favours 15A relays from STPI-REL. Planning to be confirmed.  Maintenance of qualification testing is underway.																														
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Date																												
Generic ESCC	3602	STPI Paris France		Qualification	CNES	Apr 2007																												
Detail ESCC	3602/004 3602/009			Extension	CNES	Oct 2010																												
<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 280 A	Valid Until April 2011	09-02 006																												

Types covered by similarity: Coil Voltage 12 Vdc		Remarks: Maintenance of qualification testing is under-way.			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3602	Variants 01 to 08 are qualified	LEACH International Europe Niort France	Qualification	ESTEC	Feb 1982
Detail ESCC 3602/010			Extension	CNES	Jul 1984
			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
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 93 J	Valid Until April 2012	09-03 001	

## Section 10

## Component Type: Resistors

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



## SECTION 10-\*\*: INDEX OF RESISTORS

REP005 Updated on 15 Dec 2011

Types covered by similarity: Tolerance ( $\pm\%$ ) = 0.02, 0.05, 0.1, 0.2, 0.5, 1%						Remarks: New package fabrication is now located at Nice.																
Procurement Specifications				Manufacturer		Nature of Approval	Supervising Authority	Date														
Generic ESCC 4001  Detail ESCC 4001/011				VISHAY S.A. Division Sfernice Nice France		Qualification	CNES	Dec 1983														
Characteristics: Variants 03, 04, 07 and 08 are qualified						Extension	CNES	Oct 1986														
						Extension	CNES	Nov 1989														
<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\text{ppm}/^\circ\text{C}</math>)</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\text{C}</math> <math>\pm 10, \leq 125^\circ\text{C}</math>  <math>\pm 10, &gt; 125^\circ\text{C}</math> and <math>\leq 175^\circ\text{C}</math></td> <td>0.5 @ <math>70^\circ\text{C}</math> 0.3 @ <math>125^\circ\text{C}</math></td> <td>300</td> </tr> </tbody> </table>				Style	Detail Spec.	Range ( $\Omega$ )	Tol. ( $\pm\%$ )	TC ( $\pm\text{ppm}/^\circ\text{C}$ )	Power Rating (W)	Max. Voltage (V)	RNC 90 (RS92N)	4001/011	50 - 100k	0.02 0.05 0.5 1.0	$\pm 5, \leq 125^\circ\text{C}$ $\pm 10, \leq 125^\circ\text{C}$  $\pm 10, > 125^\circ\text{C}$ and $\leq 175^\circ\text{C}$	0.5 @ $70^\circ\text{C}$ 0.3 @ $125^\circ\text{C}$	300			Extension	CNES	Jul 1992
				Style	Detail Spec.	Range ( $\Omega$ )	Tol. ( $\pm\%$ )	TC ( $\pm\text{ppm}/^\circ\text{C}$ )	Power Rating (W)	Max. Voltage (V)												
RNC 90 (RS92N)	4001/011	50 - 100k	0.02 0.05 0.5 1.0	$\pm 5, \leq 125^\circ\text{C}$ $\pm 10, \leq 125^\circ\text{C}$  $\pm 10, > 125^\circ\text{C}$ and $\leq 175^\circ\text{C}$	0.5 @ $70^\circ\text{C}$ 0.3 @ $125^\circ\text{C}$	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															
Operating Temperature Range, ( $^\circ\text{C}$ ): -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 L	September 2012	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 HEU- SLER GmbH & Co. KG Dillenburg Germany		Qualification  Extension	DLR  DLR	Nov 2008  Jul 2010	
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 A	Valid Until  July 2012	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	DLR	Oct 1999																										
Characteristics:                      Critical R = 160 k $\Omega$  <table border="1"> <thead> <tr> <th>Range (<math>\Omega</math>)</th> <th>Tol. (<math>\pm\%</math>)</th> <th>TC (<math>\pm</math>ppm/<math>^{\circ}</math>C)</th> <th>Value Series</th> </tr> </thead> <tbody> <tr> <td>43.2 - 1.004 M</td> <td>0.1</td> <td rowspan="3">50</td> <td rowspan="3">E96</td> </tr> <tr> <td>10.0 - 1.004 M</td> <td>0.5</td> </tr> <tr> <td>2.20 - 5.114 M</td> <td>1.0</td> </tr> <tr> <td>43.2 - 1.004 M</td> <td>0.1</td> <td rowspan="3">25</td> <td rowspan="3">E96</td> </tr> <tr> <td>10.0 - 1.004 M</td> <td>0.5</td> </tr> <tr> <td>10.0 - 1.004 M</td> <td>1.0</td> </tr> <tr> <td>43.2 - 0.2213 M</td> <td>0.1</td> <td rowspan="2">15</td> <td rowspan="2">E96</td> </tr> <tr> <td>10.0 - 0.5113 M</td> <td>0.5</td> </tr> </tbody> </table>				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	Extension	DLR	Oct 2001
				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																															
Extension	DLR	Oct 2003																														
Extension	DLR	Nov 2005																														
Extension	DLR	Oct 2007																														
Extension	DLR	Oct 2009																														
Extension	DLR	Oct 2011																														
Operating Temperature Range, ( $^{\circ}$ C): -55 to +125				Current Validity of Qualification		Page																										
		RESISTORS, FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE MS1		Certificate	Valid Until	10-08																										
				256 F	October 2013	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		DLR DLR	May 2009 Jun 2011																																				
<p>Characteristics: Variants 01 to 03 inclusive are qualified E96 Series</p> <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 colspan="2">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 colspan="2">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 colspan="2">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 colspan="2">160</td> </tr> </tbody> </table> <p>Operating Temperature Range, (<math>^{\circ}</math>C): -55 to +125</p>										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																																						
			RESISTORS, FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE TNPS					Current Validity of Qualification		Page																																			
								Certificate 289 A	Valid Until May 2013	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	CNES  CNES	Feb 2009  Feb 2011	
Characteristics: Refer to tables on the next page  4001/023    PHR    High Stability and Precision Chip  4001/023    PFRR    High Stability and Precision Chip with Established Reliability Level R  4001/025    PRA/CNWHR    High Stability and Precision Surface Mount Array   Operating Temperature Range, (°C): -55 to +155 Lead material is E with either Type 2 or Type 4 finish						
		RESISTORS, FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR		Current Validity of Qualification		Page
				Certificate 287 B	Valid Until Feb 2013	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)	Tol. (±%)	TC (±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

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10-09

002-B

Characteristics: Type PFRR, Variants 09 to 12 are qualified

Detail Specification	Style	Critical R (kΩ)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	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)
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.



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

Current Validity of Qualification

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Feb 2013

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002-C

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

Detail Specification	Style	Critical R (K $\Omega$ )	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 ( $\Omega$ )	Tolerance ( $\pm\%$ )		Temperature Coefficient TC( $\pm 10^{-6}$ / $^{\circ}$ C)	
		Absolute	Relative	Absolute	Relative
PRA100; PRA135; PRA182	From 100 to 200K	0.1; 0.5; 0.1	0.05; 0.1	10	3; 5
PRA135; PRA182	From 200K to 250K	0.1; 0.5; 0.1	0.05; 0.1	10	3; 5
0603; 0805; 1206; 2010	From 250K to 1M	0.1; 0.5; 0.1	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

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002-D

Types covered by similarity: Temperature Coefficient ( $\pm$ ppm/ $^{\circ}$ C): 200 Tolerance ( $\pm$ % ) = 2, 5					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	CNES	Oct 2011	
Characteristics: Variants 01 to 10 inclusive are qualified								
Variants	Style	Range ( $\Omega$ )			Tol. ( $\pm$ %)	TC ( $\pm$ ppm/ $^{\circ}$ C)	Critical R ( $\Omega$ )	
01, 06	0603	1	-	10M	1	100	25	
02, 07	0805	1	-	10M	1	100	50	
03, 08	1206	1	-	10M	1	100	160	
04, 09	2010	1	-	10M	1	100	180	
05, 10	2512	1	-	10M	1	100	112.5	
Limiting element voltage (V) : 50V to 300 Operating Temperature Range, ( $^{\circ}$ C): -55 to +125								
			RESISTORS, FIXED, CHIP, THICK FILM, BASED ON TYPE CHP			Current Validity of Qualification		Page
						Certificate  314	Valid Until  October 2013	10-09  003

Types covered by similarity:		Remarks:				
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

**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.

**SECTION 11-\*\*: INDEX OF THERMISTORS****REP005 Updated on 15 Dec 2011**

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

## Section 12

## Component Type: Transistors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
12-01			Low Power, NPN	
	12-01-002-3A-B	233 H	Types NPN	STMicroelectronics
12-02			Low Power, PNP	
	12-02-002-3A-B	234 H	Types PNP	STMicroelectronics
12-05			MOSFET, Power, N-Channel	
	12-05-003-01	303	Type STRH100N10FSY3	STMicroelectronics
12-10			RF/Microwave, NPN, Low Power, Low Noise	
	12-10-001	230 D	Types BFY193	Infineon
	12-10-002	245 D	Types BFY405, -420 and -450	Infineon
12-16			Microwave, Gallium Arsenide	
	12-16-001	213 D	Types CFY67, High Electron Mobility, Low Noise	Infineon



SECTION 12-\*\*: INDEX OF TRANSISTORS

REP005 Updated on 15 Dec 2011

Types covered by similarity:											Remarks:																																																					
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="78 901 1393 1193"> <tr> <td></td> <td>2N2222A</td> <td>2N2484</td> <td>2N2219A</td> <td></td> <td>2N5551</td> <td>2N3700</td> <td>2N3019</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>75</td> <td>BV<sub>CB0</sub>(V)</td> <td>180</td> <td>140</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>40</td> <td>BV<sub>CE0</sub>(V)</td> <td>160</td> <td>80</td> <td>80</td> <td>80</td> <td>80</td> <td>60</td> </tr> <tr> <td>Packages:</td> <td colspan="10">TO-18, TO-39, TO-66, TO-77, TO-257, LCCC3, LCCC6 and SMD0.5</td> </tr> <tr> <td colspan="11">Operating Temperature Range (°C), -65 to +200</td> </tr> </table>							2N2222A	2N2484	2N2219A		2N5551	2N3700	2N3019	2N5154	BUX 77	2N2920A	V <sub>CB0</sub> (V):	75	60	75	BV <sub>CB0</sub> (V)	180	140	140	100	100	60	V <sub>CE0</sub> (V):	40	60	40	BV <sub>CE0</sub> (V)	160	80	80	80	80	60	Packages:	TO-18, TO-39, TO-66, TO-77, TO-257, LCCC3, LCCC6 and SMD0.5										Operating Temperature Range (°C), -65 to +200											Extension		CNES	Sep 1997
							2N2222A	2N2484	2N2219A		2N5551	2N3700	2N3019	2N5154	BUX 77	2N2920A																																																
						V <sub>CB0</sub> (V):	75	60	75	BV <sub>CB0</sub> (V)	180	140	140	100	100	60																																																
						V <sub>CE0</sub> (V):	40	60	40	BV <sub>CE0</sub> (V)	160	80	80	80	80	60																																																
						Packages:	TO-18, TO-39, 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																																																													
						TRANSISTORS, LOW AND HIGH POWER, NPN					Current Validity of Qualification			Page																																																		
											Certificate		Valid Until	12-01																																																		
											233 H		July 2012	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, TO-39, LCCC3 +1	01, 02, 04, 05, 06, 07, 08, 09
5201/003	2N 2219 A	TO-39	01, 02
5201/004	2N 3700	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5203/010	2N 5154, BFX 34	TO-39, TO-257, SMD.5	01, 02, 04, 05, 06
5203/016	BUX 77ESY	TO-257	06, 07
5207/002	2N 2920A	TO-77 and LCCC6	03, 06, 12, 15
5201/011	2N3019	TO-39	03, 04



 <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 H	Valid Until  July 2012	

Types covered by similarity:		Remarks:						
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  Extension  Extension  Extension  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES  CNES  CNES  CNES	Sep 1996  Sep 1997  Aug 1998  Nov 1999  Nov 2001  Jan 2004  Mar 2006  Jul 2008  Jul 2010			
Characteristics:								
	2N2905A	2N2907A	2N3350	2N3810	2N4033	2N5153	BUX 78	2N5401
BV <sub>CBO</sub> (V)	60	60	60	60	80	100	100	160
BV <sub>CEO</sub> (V)	60	60	45	60	80	80	80	150
Packages:	TO-18, TO-39, TO-77, TO-78, TO-257, LCCC3, LCCC6 and SMD0.5							
Operating Temperature Range (°C), -65 to +200								
		TRANSISTORS, LOW AND HIGH POWER, PNP			Current Validity of Qualification		Page	
					Certificate	Valid Until	12-02	
					234 H	July 2012	002-3A	

ESCC Specification No.	Component Type	Package	Qualified Variants
5202/002	2N 2905A	TO-39	01, 02
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-39, TO-257, SMD.5	01, 02, 04, 05, 06
5204/006	BUX 78ESY	TO-257	06, 07
5207/005	2N 3810	TO-78, LCCC6	01, 02, 07, 09
5207/003	2N 3350	TO-77, LCCC6	01, 02, 04, 05
5202/008	2N 4033	TO-39, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07

 <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 H	July 2012	002-3B

Types covered by similarity:		Remarks: These devices have a TID tested capability of 70kRADs (Si).													
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Date										
Generic ESCC 5000  Detail ESCC 5205/021		ST Microelectronics Rennes France	Qualification	CNES	Oct 2010										
Characteristics: Variants 01 and 02 are qualified  Maximum Ratings: <table style="margin-left: 20px;"> <tr> <td><math>I_{DS}</math> (A)</td> <td>48, <math>T_{case}</math> (°C)= +25</td> </tr> <tr> <td><math>V_{DS}</math> (<math>V_{dc}</math>):</td> <td>100 over <math>T_{op}</math>, <math>V_{GS}=0</math> V</td> </tr> <tr> <td><math>V_{GS}</math> (<math>V_{dc}</math>):</td> <td>± 20</td> </tr> <tr> <td><math>r_{DS(on)}</math> (m <math>\Omega</math>):</td> <td>35, <math>V_{GS}=12</math>V, <math>I_D=24</math>A</td> </tr> <tr> <td><math>P_{TOT}</math>:</td> <td>170 W at <math>T_{case} \leq +25</math> C</td> </tr> </table> Package Type: TO-254AA Operating Temperature Range (°C): - 55 to +150		$I_{DS}$ (A)	48, $T_{case}$ (°C)= +25	$V_{DS}$ ( $V_{dc}$ ):	100 over $T_{op}$ , $V_{GS}=0$ V	$V_{GS}$ ( $V_{dc}$ ):	± 20	$r_{DS(on)}$ (m $\Omega$ ):	35, $V_{GS}=12$ V, $I_D=24$ A	$P_{TOT}$ :	170 W at $T_{case} \leq +25$ C				
$I_{DS}$ (A)	48, $T_{case}$ (°C)= +25														
$V_{DS}$ ( $V_{dc}$ ):	100 over $T_{op}$ , $V_{GS}=0$ V														
$V_{GS}$ ( $V_{dc}$ ):	± 20														
$r_{DS(on)}$ (m $\Omega$ ):	35, $V_{GS}=12$ V, $I_D=24$ A														
$P_{TOT}$ :	170 W at $T_{case} \leq +25$ C														
	TRANSISTORS, MOSFET, N-CHANNEL, POWER, TYPE STRH100N10FSY3		Current validity of Qualification		Page										
			Certificate	Valid Until	12-05										
			303	October 2012	003-1										



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																				
Characteristics for BFY 450  <table border="0"> <tr> <td><math>V_{CE0}</math> (V) max.</td> <td>4.5</td> <td></td> </tr> <tr> <td><math>V_{CBO}</math> (V) max.</td> <td>15</td> <td></td> </tr> <tr> <td><math>I_C</math> (mA) max.</td> <td>100</td> <td></td> </tr> <tr> <td><math>I_B</math> (mA) max.</td> <td>10</td> <td></td> </tr> <tr> <td><math>h_{FE}</math> min/max.</td> <td>50/150</td> <td>@ <math>V_{CE} = 1.0</math> V, <math>I_C = 20</math> mA</td> </tr> <tr> <td>NF (dB) max.</td> <td>@ 1.8 GHz 2.0</td> <td>@ <math>V_{CE} = 2.0</math> V, <math>I_C = 10</math> mA</td> </tr> <tr> <td><math>f_T</math> (GHz) min.</td> <td>@ 1.0 GHz 18</td> <td>@ <math>V_{CE} = 3.0</math> V, <math>I_C = 90</math> mA</td> </tr> </table>		$V_{CE0}$ (V) max.	4.5		$V_{CBO}$ (V) max.	15		$I_C$ (mA) max.	100		$I_B$ (mA) max.	10		$h_{FE}$ min/max.	50/150	@ $V_{CE} = 1.0$ V, $I_C = 20$ mA	NF (dB) max.	@ 1.8 GHz 2.0	@ $V_{CE} = 2.0$ V, $I_C = 10$ mA	$f_T$ (GHz) min.	@ 1.0 GHz 18	@ $V_{CE} = 3.0$ V, $I_C = 90$ mA	Extension	DLR	Dec 2003
		$V_{CE0}$ (V) max.	4.5																						
$V_{CBO}$ (V) max.	15																								
$I_C$ (mA) max.	100																								
$I_B$ (mA) max.	10																								
$h_{FE}$ min/max.	50/150	@ $V_{CE} = 1.0$ V, $I_C = 20$ mA																							
NF (dB) max.	@ 1.8 GHz 2.0	@ $V_{CE} = 2.0$ V, $I_C = 10$ mA																							
$f_T$ (GHz) min.	@ 1.0 GHz 18	@ $V_{CE} = 3.0$ V, $I_C = 90$ mA																							
		Requalification	DLR	DLR	Mar 2008																				
		Requalification	DLR	DLR	Nov 2010																				
Package: "Micro-X"  Total Power Dissipation ( $P_{tot}$ ) = 450 mW  Operating Temperature Range (°C): $T_{op} = - 65$ to +175																									
  		TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPE BFY 450		Current validity of Qualification		Page																			
				Certificate	Valid Until	12-10																			
		245 D	March 2012	002																					

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		<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	Extension	DLR	Dec 2003
					NFmin. (dB)	Ga (dB)									
5613/004	0.8	11													
pseudo-morphic	1.0	10.5													
				Requalification	DLR	Mar 2008									
				Requalification	DLR	Nov 2010									
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 $+150$															
 <b>ESCC</b> European Space Components Coordination <b>QPL</b>		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 D	March 2012	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 N	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 L	Polyimide, Types 3901002**B	Axon' Cable
	13-01-003	08 N	PTFE, Types MTV-BTV	Nexans
	13-01-003-2	292 A	PTFE/Polyimide, Types 3901013**B	Axon' Cable
	13-01-004-1	138 J	Polyimide, Type SPC	Gore
	13-01-004-2	219 H	Polyimide, Types SPL	Gore
	13-01-004-3	268 D	Polyimide, Types 3901019**B	Axon' Cable
	13-01-004-4	295	Polyimide, Types 3901019	Leoni
	13-01-005-1	159 K	Crosslinked PTFE, Type Silver-Plated Copper	Tyco Electronics
	13-01-005-2	267 E	Crosslinked PTFE, Type Silver-Plated Copper	Axon' Cable
	13-01-008	215 H	PTFE, Polyimide / PFA Insulated, Type SPP	Gore
	13-01-009	216 G	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM	Gore
	13-01-009-2	294	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 G	Polyimide, Insulated, Shielded, Type SPLD, Drain Wire	Gore
	13-01-010-2	293 A	Polyimide, Insulated, Shielded, Drain Wire, Types 3901021**B	Axon' Cable
	13-01-010-3	296	Polyimide, Insultated, Shielded, Drain Wire, Type 3901021	Leoni
	13-01-011-1	257 E	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	Fluoropolymer, Lightweight, Based on Type CSWL	Gore



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

REP005 Updated on 15 Dec 2011

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

Types covered by similarity:		Remarks:			
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901	Draka Fileca Ste-Genevieve France	Qualification	CNES	Jan 1979	
Detail ESCC 3901/001 3901/002		Extension	CNES	Sep 1981	
		Extension	CNES	Jan 1984	
		Extension	CNES	Aug 1986	
		Extension	CNES	Jan 1989	
		Extension	CNES	Apr 1991	
		Extension	CNES	Jun 1993	
		Characteristics:  FA 3901-1 All Variants defined in the Detail Specification are qualified except those based on AWG 12-14 FA 3901-2 All Variants defined in the Detail Specification are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200	Extension	CNES	Jun 1995
			Extension	CNES	Aug 1997
			Extension	CNES	Aug 1999
			Extension	CNES	Jan 2002
			Extension	CNES	Jan 2004
			Extension	CNES	Feb 2006
		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION BASED ON TYPES FA 3901-1, FA 3901-2	Current validity of Qualification		Page
	Certificate  07 N		Valid Until  February 2012	13-01  001-1	



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
Characteristics:  All 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			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			
	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 L	June 2013	001-3	

Types covered by similarity: -MTV - BTV -MTV/G - BTV/G -MTV/BF/G - BTV/BF/G		Remarks:			
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901	Nexans Draveil France	Qualification	CNES	Jan 1979	
Detail ESCC 3901/013		Extension	CNES	Sep 1981	
		Extension	CNES	Dec 1983	
		Extension	CNES	Mar 1987	
		Extension	CNES	Jul 1989	
		Extension	CNES	Sep 1991	
		Extension	CNES	Aug 1993	
		Characteristics:  Variants 01 to 77 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200	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	Jan 2011		
 	WIRES AND CABLES, LOW FREQUENCY, PTFE/POLYIMIDE INSULATION, BASED ON TYPES MTV-BTV	Current validity of Qualification		Page	
		Certificate  08 N	Valid Until  May 2012	13-01  003	

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  Extension	CNES  CNES	Jun 2009  Jun 2011
<p>Characteristics:</p> <p>Variants 01 to 77 are qualified</p> <p>Voltage Rating, maximum (Vrms):600</p> <p>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	
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 138 J	Valid Until May 2013	13-01 004-1

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		
Characteristics:  Variants 01-94 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -200 to +200					
 <b>ESCC</b> European Space Components Coordination  <b>QPL</b>	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES SPL		Current validity of Qualification		Page
			Certificate	Valid Until	13-01
		219 H	November 2012	004-2	

Types covered by similarity:		Remarks :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	AXON' CABLE Montmirail France	Qualification	CNES	Jun 2002
Detail ESCC 3901/019		Extension	CNES	Sep 2004
		Extension	CNES	Mar 2007
		Extension	CNES	Jun 2009
		Extension	CNES	Jun 2011
<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>AWG 12 to 28 inclusive are 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 D	Valid Until June 2013	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	DLR	Oct 2009
Characteristics:  All variants are qualified with the exception of variants 01, 09, 17, 24, 25, 32, 48, 56, 64, 72, and 79  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  Voltage Rating, maximum ( $V_{rms}$ ):600  Temperature Range (°C): -200 to +200				
  	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPE 3901019	Current validity of Qualification		Page
		Certificate 295	Valid Until October 2011	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	AXON' CABLE Montmirail France	Qualification  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES	Mar 2002  Feb 2003  Sep 2004  Mar 2007  Jun 2009  Jun 2011
<p>Characteristics:</p> <p>All variants are qualified except those variants based on AWG 30</p> <p>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 E	Valid Until  June 2013	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
		<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 H	September 2012	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	DARA	Jul 1994
Characteristics:  Variants 01 to 88 are qualified.  Voltage Rating, maximum ( $V^{rms}$ ) : 600 Temperature Range ( $^{\circ}C$ ): $-200$ to $+200$  Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires. Expanded PTFE, extruded polyimide/fluorothermoplast insulated cables, shielded and jacketed.			Extension	DARA	Sep 1997
			Extension	DLR	Aug 1999
			Extension	DLR	Aug 2001
			Extension	DLR	Aug 2003
			Extension	DLR	Nov 2005
			Extension	DLR	Feb 2008
			Extension	DLR	Mar 2010
				Current validity of Qualification	
Certificate	Valid Until			13-01	
216 G	March 2012			009	
WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM					

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	DLR	Oct 2009
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					
	WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE 3901018	Current validity of Qualification		Page	
		Certificate 294	Valid Until October 2011	13-01 009-2	

Types covered by similarity:		Remarks: :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	AXON' CABLE Montmirail France	Qualification	CNES	Dec 2009
Detail ESCC 3901/018		Extension	CNES	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.</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 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
Characteristics:  All variants (01 to 41) are qualified  Voltage Rating, maximum (Vrms) : 600 Temperature Range (°C): -200 to +200  .				
	POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE,  LOW FREQUENCY, BASED ON TYPE SPLD	Current validity of Qualification		Page
		Certificate  229 G	Valid Until  April 2012	13-01  010-1

Types covered by similarity:		Remarks: :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	AXON' CABLE Montmirail France	Qualification	CNES	Jun 2009
Detail ESCC 3901/021		Extension	CNES	Jun 2011
<p>Characteristics:</p> <p>All variants are qualified except those based on AWG 30.</p> <p>Voltage Rating, maximum (Vrms) : 600</p> <p>Temperature Range (°C): -200 to +200</p>				
	POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE, LOW FREQUENCY, BASED ON TYPES 3901021**B	Current validity of Qualification		Page
		Certificate 293 A	Valid Until June 2013	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	DLR	Oct 2009
<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>.</p>				
	<p>POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE, LOW FREQUENCY, BASED ON TYPE 3901021</p>	Current validity of Qualification		Page
		Certificate 296	Valid Until October 2011	13-01 010-3

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/020 ESCC 3901/022</p>	<p>Tyco Electronics Dorcan, Swindon England</p>	<p>Qualification</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p>	<p>DERA</p> <p>QinetiQ</p> <p>QinetiQ</p> <p>BNSC</p> <p>BNSC</p> <p>UK Space Agency</p>	<p>Oct 1999</p> <p>Jan 2002</p> <p>Jan 2005</p> <p>Feb 2007</p> <p>Feb 2009</p> <p>Jan 2011</p>
<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>WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED MODIFIED ETFE, LIGHTWEIGHT</p>	Current validity of Qualification		Page
		Certificate	Valid Until	13-01
		257 E	February 2013	011-1

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	AXON' CABLE Montmirail France	Qualification	CNES	Dec 2009
Detail ESCC 3901/024		Extension	CNES	Jun 2011
<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	DLR	Jan 2011
<p>Characteristics:</p> <p>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.</p> <p>Cable construction: 1, 2, 3 and 4 twisted wires are in one core with or without shield</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 305	Valid Until January 2013	13-01 012-2





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



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	DLR	Jan 2011
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	Valid Until January 2013	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 C	Thermostatic, Bimetallic	COMEPA
14-30-10			Passive Devices, RF	
	14-30-10-002-2	185 E	Coaxial Loads, 0 to 22 GHz	Radiall
	14-30-10-004	178 F	Attenuators, Type R413	Radiall



**SECTION 14-\*\*: INDEX OF MISCELLANEOUS  
REP005 Updated on 15 Dec 2011**

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3702  Detail 3702/001	COMEPA BAGNOLET France	Qualification	CNES	Mar 2004
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 ( $^{\circ}C$ ), $-50$ to $+150$		Requalification	CNES	Aug 2005
		Extension	CNES	Jun 2008
		Extension	CNES	Jul 2010
	SWITCHES, THERMOSTATIC, BIMETALLIC, SPST, OPENING CONTACT, BASED ON TYPE TH 47	Current Validity of Qualification		Page
		Certificate  275 C	Valid Until  June 2012	14-16-99-003

Types covered by similarity:					Remarks:																															
Procurement Specifications			Manufacturer		Nature of Approval	Supervising Authority	Date																													
Generic ESCC 3403  Detail 3403/006			RADIALL La Verpilliere France		Qualification	CNES	Jul 1992																													
Characteristics: All variants are qualified.  <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																											
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					Type	Detail Spec.	Frequency Range ( GHz)	Rated Pin (W)	Impedance (Ω)																											
					3403/006	3403/006	0-22	1	50																											
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2	1.05	1.15	1.20	1.25																																
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					Type	Detail Spec.	Frequency Range ( GHz)	Rated Pin (W)	Impedance (Ω)																											
					3403/006	3403/006	0-22	1	50																											
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					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																																
Characteristics: All variants are qualified.  <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	Sep 2010
					Type	Detail Spec.	Frequency Range ( GHz)	Rated Pin (W)	Impedance (Ω)																											
					3403/006	3403/006	0-22	1	50																											
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1	1.05	1.15	1.20	1.30																																
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PASSIVE DEVICES,  
R.F. COAXIAL LOADS, 0-22 GHZ  
BASED ON TYPE R404

Current Validity of Qualification

Certificate

185 E

Valid Until

March 2012

Page

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002-2

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

Section 18

Component Type: Optoelectronics

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



SECTION 18-\*\*: INDEX OF OPTOELECTRONICS

REP005 Updated on 15 Dec 2011