





## **ESCC QUALIFIED PARTS LIST**


**REP005**


**Updated 15 March 2015**



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



	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-01-007	Index of Capacitors Type II, Types CNC53 to CNC56 from Eurofarad	Amended Extended
Section 04 04-01-003-2 04-13-003-1A-B	Index of Diodes Types 1N6640U and 1N6642U from STMicroelectronics PIN and Varactors from RF2M Microwave	Amended Extended Extended
Section 09 09-02-004-3	Index of Relays Type M302 from Leach (Sarralbe)	Amended Extended
Section 13 13-01-004-1	Index of Wires and Cables Polymide, Type SPC from WL Gore	Amended Extended
 	<b>Qualified Parts List</b>	
	<b>DOCUMENT CHANGES</b>	
		<b>Change Date: 15 March 2015</b>



	General Information	
As affected		
Section/Page No.	Description	
Section 04 04-02-002-1 04-02-003-1	Index of Diodes Type STPS20100 from STMicroelectronics Type BYW-81, BYV52, BYV54 from STMicroelectronics	Amended Revised Revised
Section 10 10-09-002 A to D 10-11-002	Index of Resistors Type PHR;PFRR;PRAHR/CNWHR from Vishay S.A. Sfernice Single & Double Layer from Minco	Amended Extended Extended
Section 12 12-01-002-3A-B 12-02-002-3A-B	Index of Transistors Types NPN from STMicroelectronics Types PNP from STMicroelectronics	Amended Revised Revised
		
<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>		
<b>Change Date: 15 February 2015</b>		



	General Information	
As affected		
Section/Page No.	Description	
Section 01	Index of Capacitors	Amended
01-01-005	Type II, High Capacitance from AVX (N.I.)	Extended
01-01-006	Type II, High Voltage from AVX (N.I.)	Extended
01-02-004-1	Type II, High Voltage from AVX (N.I.)	Extended
01-11-001	Type 101M, 201M, 400M and 401M from Cobham Microwave	Extended
Section 09	Index of Relays	Amended
09-01-004	Type E215 from REL STPI	Extended
09-02-004	Type EL215 from REL STPI	Extended
09-02-006	Type D from LEACH	Deleted
Section 10	Index of Resistors	Amended
10-11-003	Single & Double Layer from IRCA	Added
Section 13	Index of Wires and Cables	Amended
13-01-011-1	Crosslinked, Modified ETFE, Type Silver-Plated Copper, Lightweight from Tyco Electronics UK	Extended
		
<b>Qualified Parts List</b>		
<b>DOCUMENT CHANGES</b>		
<b>Change Date: 15 January 2015</b>		





**QPL**

		General Information	
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Section/Page No.	Description		
Section 04 04-02-002-1 04-02-003-1	Index of Diodes Type STPS20100 from ST Microelectronics Type BYW-81, BYV52, BYV54 from ST Microelectronics	Amended Extended Extended	
Section 14 14-16-99-003	Index of Miscellaneous Switches, Thermostatic, Bimetallic from Comepa	Amended Extended	
 		<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
		<b>Change Date: 15 December 2014</b>	

	<b>General Information</b>	
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<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-02-001-2 01-02-002-2	Index of Capacitors Type I, Types CEC2S to CEC14S from Eurofarad Type II, Types CNC2S to CNC14S from Eurofarad	Amended Extended Extended
Section 04 04-13-003-2A-B	Index of Diodes Multiplier and PIN, DH 2xx and DH 50xxx from Cobham Microwave	Amended Extended
Section 07 07-01-001	Index of Inductors Type MSCI 10K and H01 from Microspire	Amended Extended
Section 10 10-08-007 10-09-002B	Index of Resistors Surface Mount, Type TNPS from Vishay Electronic (Selb) Type PHR; PFRR; PRAHR/CNWHR from Vihsay SA Sfernice	Amended Amended Amended
Section 12 12-05-003-1	Index of Transistors Types STRH100N10, STRH400N6, SRH100N6 and STRH8N10 from STMicroelectronics	Amended Extended
Section 13 13-01-001-1 13-01-012-2 13-02-003-2	Index of Wires and Cables Polyimide Types FA-3901, FA-3901-2 from Draka Fileca Fluoropolymer , Lightweight, Based on Type CSWL from W.L. Gore Symmetric, Quad, Spacewire from W.L. Gore	Amended Extended Extended Extended
 	<b>Qualified Parts List</b>	
	<b>DOCUMENT CHANGES</b>	
<b>Change Date: 15 November 2014</b>		

	<b>General Information</b>	
As affected	All validity dates of each Certificate have been removed as per October 2014. For more information please see ESCC Executive Public Notice ( <b>EEN-2014-2 issue 1</b> ) <a href="https://escies.org/webdocument/showArticle?id=933&amp;groupid=6">https://escies.org/webdocument/showArticle?id=933&amp;groupid=6</a>	
<b>Section/Page No.</b>	<b>Description</b>	
Section 03 03-01-001-1 03-01-002	Index of Crystals TO-5 Can from Rakon (Fr) TO-8 Can from Rakon (Fr)	Amended Extended Extended
Section 10 10-02-001	Index of Resistors Type RNC 90 from Vishay S.A. Sfernice	Amended Deleted
Section 13 13-01-001-1 13-01-004-2 13-01-008	Index of Wires and Cables Polyimide, Types FA-3901-1, FA 3901-2 from Draka Fileca Polyimide, Types SPL from WL Gore PTFE, Polyimide / PFA Insulated, Type SPP from WL Gore	Amended Amended Extended Extended
Section 14 14-30-10-002-2 14-30-10-004	Index of Miscellaneous Coaxial Loads, 0 to 22 GHz from Radiall Attenuators, Type R413 from Radiall	Amended Extended Extended
 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 October 2014</b>	

	<b>General Information</b>	
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Section 02 02-05-004-1	Index of Connectors 8MCG, Rectangular from Souriau	Amended Extended
Section 04 04-02-001-4	Index of Diodes Types 1N5819U and 1N5822U from STMicroelectronics	Amended Extended
Section 05 05-01-001-A-B	Index of Filters Types SFC, SFL, and SFP from Eurofarad	Amended Extended
Section 10 10-07-001	Index of Resistors Types SM*-PW and SM*-PT from Isabellenhütte	Amended Extended
Section 12 12-01-002-3A-B 12-02-002-3A-B	Index of Transistors Types NPN from STMicroelectronics Types PNP from STMicroelectronics	Amended Extended Extended
Section 13 13-01-010-3	Index of Wires and Cables Polyimide, Insulated, Shielded, Drain Wire, Type 3901021 from Leoni	Amended Extended
 	<b>Qualified Parts List</b>	
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<b>Change Date: 15 September 2014</b>		




	General Information	
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Section/Page No.	Description	
Section 04	Index of Diodes	Amended
04-01-003-3	Types BAY6642 from Infineon	Extended
04-05-001-3	Silicon Schottky, BAS 70 from Infineon	Extended
04-16-002-2	PIN, BXY 42 from Infineon	Extended
04-16-003	PIN, BXY 43 and 44 from Infineon	Extended
Section 07	Index of Inductors	Amended
07-02-002	Types SESI and CMS from Microspire	Extended
Section 09	Index of Relays	Amended
09-01-004-3	Type M300 from LEACH Sarralbe	Extended
09-02-003-3	Type M402 from LEACH Sarralbe	Extended
Section 12	Index of Transistors	Amended
12-01-002-3A-B	Types NPN from STMicroelectronics	Amended
12-05-003-2	Type BUY**CS** from Infineon	Extended
12-10-003	Type BFY640 from Infineon	Extended
12-10-004	Types BFY640B and BFY650B from Infineon	Extended
12-10-005	Type BFY740B from Infineon	Extended
12-16-001	Types CFY67, High Electron Mobility, Low Noise from Infineon	Extended
Section 13	Index of Wires and Cables	Amended
13-01-001-1	Polyimide, Types FA-3901-1, FA 3901-2 from Draka Fileca	Amended
13-01-013-1	Extra thin, fluorothermoplastic/polyimide based on Type CSC from WL. Gore	ADDED
13-02-002-1	Coaxial, Triaxial, Balansed Shielded Line from WL Gore	Extended




**Qualified Parts List**

**DOCUMENT CHANGES**

**Change Date: 15 July 2014**

	General Information	
As affected		
Section/Page No.	Description	
Section 02 02-01-001-2 02-02-001-2	Index of Connectors D*M Series, Rectangular from Souriau D*MA Series, Rectangular from Souriau	Amended Extended Extended
Section 06 06-01-001	Index of Fuses Type MGA-S from Schurter	Amended Extended
Section 08 08-80-001-2 A to E 08-80-002-2 A to F	Index of Microcircuits 4000 B Series from ST Microelectronics 54HCMOS Series from ST Microelectronics	Amended Extended Extended
Section 10 10-09-002 A to D	Index of Resistors Type PHR; PFRR; PRAHR/CNWHR from Vishay S.A. Sfernice	Amended
Section 12 12-10-001 12-10-002	Index of Transistors Types BFY193 from Infineon Types BFY405, -420 and -450 from Infineon	Amended Extended Extended
Section 13 13-01-001-1 13-01-003 13-02-001	Index of Wires and Cables Polyimide, Types FA-3901-1, FA3901-2 from Draka Fileca PTFE, Types MTV-BTV from Nexans PTFE/Polyimide, Type 50 CIS from Nexans	Amended Extended Extended Extended
		<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p> <p align="center">Change Date: 15 June 2014</p>

	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-05-001-1	Index of Capacitors Type HT86PS, High Voltage from Eurofard	Amended Extended
Section 08 08-80-001-2 08-80-002-2	Index of Microcircuits 4000 B series from ST Microelectronics 54HCMOS Series from ST Microelectronics	Amended Amended
Section 13 13-01-004-4 13-01-009-2	Index of Wires and Cables Polyimide, Types 3901019 from Leoni PTFE, Polyimide/PFA Insulated, Shielded, type3901018 from Leoni	Amended Extended Extended
		<p align="center"><b>Qualified Parts List</b></p> <p align="center"><b>DOCUMENT CHANGES</b></p> <p align="center">Change Date: 15 May 2014</p>

	General Information	
As affected		
Section/Page No.	Description	
Section 02	Index of Connectors	Amended
02-02-005	Series I, Circular, Crimp from Souriau	Extended
02-02-006	Series II, Circular, Crimp from Souiau	Extended
02-02-007-1	Series III, Circular, Miniature from Souriau	Extended
02-02-008	Series III, Hermetic from Souriau	Extended
Section 03	Index of Crystals	
03-01-001-1	TO-5 Can from Rakon (F)	Amended
03-01-001-3	TO-5 Can from KVG (D)	Amended
03-01-002	TO-8 Can from Rakon (F)	Amended
03-01-002-3	TO-8 Can from KVG (D)	Amended
Section 04	Index of Diodes	Amended
04-13-003-3	Varactor, Tuning, DH 76xxx from Cobham Microwave	Extended
Section 13	Index of Wires and Cables	Amended
13-01-010-1	Polyimide, Insulated, Shielded, Type SPLD, Drain Wire from Gore	Extended



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

**Change Date: 15 April 2014**

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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
<b>01-01</b>			<b>Ceramic, Fixed</b>	
	01-01-005	231 J	Type II, High Capacitance	AVX (N.I.)
	01-01-005-1	315 A	Type II, Types CNC 31 to CNC 34	Eurofarad
	01-01-006	262 F	Type II, High Voltage	AVX (N.I.)
	01-01-007	306 B	Type II, Types CNC 53 to CNC 56	Eurofarad
<b>01-02</b>			<b>Ceramic, Fixed, Chip</b>	
	01-02-001-1	109 L	Type I	AVX/TPC
	01-02-001-2	323 A	Type I, Types CEC2S to CEC14S	Eurofarad
	01-02-002-1	110 L	Type II	AVX/TPC
	01-02-002-2	324 A	Type II, Types CNC2S to CNC14S	Eurofarad
	01-02-004-1	264 F	Type II, High Voltage	AVX (N.I.)
<b>01-03</b>			<b>Tantalum, (Solid), Fixed, Electrolytic</b>	
	01-03-004	196 F	Type TAJ	AVX (CZ)
	01-03-005	327	Low ESR, Type TES	AVX (CZ)
<b>01-05</b>			<b>Fixed, Film</b>	
	01-05-001-1	251 G	Type HT86PS, High Voltage	Eurofarad
	01-05-003-1	270 E	Type PM94S	Eurofarad
<b>01-11</b>			<b>Semiconductor</b>	
	01-11-001	286 C	Type 101M, 201M, 400M and 401M	Cobham Microwave


Types covered by similarity:  ±20% tolerance		Remarks: Capacitors no longer use a varnish finish.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3001  Detail ESCC 3001/030	AVX Limited Coleraine Northern Ireland	Qualification	DRA	Jul 1996
<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>				
	<p>CAPACITORS, CERAMIC, TYPE II, HIGH CAPACITANCE, BASED ON CASE STYLES BR, CV, AND CH</p>		<p>Certificate  231 J</p>	<p>Page  01-01 005</p>

Types covered by similarity:  E6 ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3001  Detail ESCC 3001/037	EUROFARAD Chanteloup en Brie France	Qualification	CNES	Nov 2011
<p>Characteristics: E12 ±10% tolerance</p> <p>Qualified Range: Variants 01 to 16. 16V : 2.2 to 68 µF 25V: 1.2 to 39 µF</p> <p>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</p>				
	<p>CAPACITORS, CERAMIC, TYPE II, MULTIPLE LAYERS, BASED ON TYPES CNC 31 to 34, NE, PE AND PLE</p>		<p>Certificate  315 A</p>	<p>Page  01-01 005-1</p>

Types covered by similarity:  ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3001  Detail ESCC 3001/034	AVX Limited Coleraine Northern Ireland	Qualification	DERA	Sep 2000
<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>		<p>Certificate  262 F</p>	<p>Page  01-01 006</p>

Types covered by similarity:  E6: ±20% tolerance		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification 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>		<p>Certificate  306 B</p>	<p>Page  01-01 007</p>

Types covered by similarity:  Tolerance ( $\pm$ ): 0.5pF; 2, 5, 20%					Remarks:		
Procurement Specifications			Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3009  Detail ESCC 3009/003 3009/004 3009/005 3009/006 3009/022			AVX/TPC St Apollinaire France		Qualification	CNES	Feb 1983
Characteristics: Operating Temp. Range ( $^{\circ}$ C), -55 to +125 Variants 01, 03 and 06 are qualified Values covered by ESCC Specifications defined below.							
Style	Model	Detail Spec.	Variants	Capacitance Range (pF)	Rated Volt. (V)	Tolerance ( $\pm$ %)	TC (ppm/ $^{\circ}$ C)
0805	A_12C	3009/003	01, 03, 06	4.7 to 9.1 10 to 1 500	50, 100 50, 100	0.5pF 1, 2, 5, 10	$\pm$ 30
1206	A_20C	3009/022	01, 03, 06	10 to 3 900	50, 100	1, 2, 5, 10	$\pm$ 30
1210	A_13C	3009/004	01, 03, 06	22 to 6 800 8 200 to 10 000	50, 100 50	1, 2, 5, 10	$\pm$ 30
1812	A_14C	3009/005	01, 03, 06	100 to 15 000	50, 100	1, 2, 5, 10	$\pm$ 30
2220	A_15C	3009/006	01, 03, 06	470 to 33 000	50, 100	1, 2, 5, 10	$\pm$ 30
		CAPACITORS, CERAMIC, FIXED, CHIP, TYPE I			Certificate  109 L		Page  01-02 001-1

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

Characteristics:

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



CAPACITORS,  
CERAMIC, FIXED,  
CHIP, TYPE I


Certificate

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001-2B



Types covered by similarity:  Tolerance ( $\pm\%$ ): 10, 20%		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3009  Detail ESCC 3009/008 3009/009 3009/010 3009/011 3009/023	AVX/TPC St Apollinaire France	Qualification	CNES	Feb 1983
Characteristics:  See Table on next page  Operating Temperature Range ( $^{\circ}\text{C}$ ), -55 to +125				
 <p>ESCC European Space Components Coordination QPL</p>	CAPACITORS, CERAMIC, FIXED, CHIP, TYPE II	Certificate  110 L	Page  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		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		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

Certificate

110 L

Page

01-02  
002-1B

Types covered by similarity:  
Tolerance ( $\pm\%$ ): 10, 20%


Remarks:

Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
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Generic ESCC 3009  Detail 3009/008      3009/009 ESCC      3009/010      3009/011 3009/023      3009/038 3009/039	EUROFARAD Chanteloup en Brie France	Qualification	CNES	Oct 2012
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Characteristics:	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)		Rated Volt. (V)	Tol. ( $\pm\%$ )
	0805	CNC2S	3009/008	06	6 800 to 150 000	100 000	16 25 50 100	5, 10, 20
Table continues on next page				07	6 800 to 220 000	150 000	16 25 50 100	5, 10, 20

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

	CAPACITORS, CERAMIC, FIXED, CHIP, TYPE II	Certificate  324 A	Page  01-02 002-2A
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Characteristics:	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)			Rated Volt. (V)	Tol. (±%)
	0805	CNC2 04S	3009/039	02		6 800 6 800 100 68	to to to to	150 000 100 000 47 000 10 000	16 25 50 100
			14		6 800 6 800 100 68	to to to to	390 000 150 000 100 000 47 000	16 25 50 100	5, 10, 20
1210	CNC4S	3009/009	06		33 000 33 000 2 200 2 200	to to to to	560 000 330 000 220 000 56 000	16 25 50 100	5, 10, 20
	CNC4 04S	3009/039	04						
	CNC4S	3009/009	07		33 000 33 000 2 200 2 200	to to to to	820 000 560 000 390 000 220 000	16 25 50 100	5, 10, 20
	CNC4 04S	3009/039	16						
1812	CNC6S	3009/010	06		100 000 100 000 3 900 3 900	to to to to	1 200 000 680 000 470 000 120 000	16 25 50 100	5, 10, 20
	CNC6 04S	3009/039	05						
	CNC6S	3009/010	07		100 000 100 000 3 900 3 900	to to to to	1 800 000 1 200 000 820 000 470 000	16 25 50 100	5, 10, 20
	CNC6 04S	3009/039	17						
2220	CNC7S	3009/011	06		150 000 150 22 000 22 000	to to to to	2 700 000 1 500 000 1 000 000 270 000	16 25 50 100	5, 10, 20
	CNC7 04S	3009/039	06						
	CNC7S	3009/011	07		150 000 150 000 22 000 22 000	to to to to	3 900 000 2 200 000 1 800 000 1 000 000	16 25 50 100	5, 10, 20
	CNC7 04S	3009/039	18						
1206	CNC12S	3009/023	06		10 000 10 000 470 470	to to to to	270 000 180 000 82 000 27 000	16 25 50 100	5, 10, 20
			07		10 000 10 000 470 470	to to to to	390 000 270 000 180 000 120 000	16 25 50 100	5, 10, 20



CAPACITORS,  
CERAMIC, FIXED,  
CHIP, TYPE II

Certificate  
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Characteristics:


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




CAPACITORS,  
 CERAMIC, FIXED,  
 CHIP, TYPE II

Certificate  
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Types covered by similarity:  ±20% tolerance				Remarks:																									
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification 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"> <thead> <tr> <th>Style</th> <th>Rated Voltage (kV)</th> <th>Capacitance Range (pF)</th> <th>Tol. (±%)</th> </tr> </thead> <tbody> <tr> <td rowspan="3">1812</td> <td>1.0</td> <td>3 900 to 22 000</td> <td>10</td> </tr> <tr> <td>2.0</td> <td>1 500 to 1 800</td> <td>10</td> </tr> <tr> <td>3.0</td> <td>820 to 1 000</td> <td>10</td> </tr> <tr> <td rowspan="3">1825</td> <td>1.0</td> <td>27 000 to 56 000</td> <td>10</td> </tr> <tr> <td>2.0</td> <td>2 200 to 6 800</td> <td>10</td> </tr> <tr> <td>3.0</td> <td>820 to 2 700</td> <td>10</td> </tr> </tbody> </table>				Style	Rated Voltage (kV)	Capacitance Range (pF)	Tol. (±%)	1812	1.0	3 900 to 22 000	10	2.0	1 500 to 1 800	10	3.0	820 to 1 000	10	1825	1.0	27 000 to 56 000	10	2.0	2 200 to 6 800	10	3.0	820 to 2 700	10
Style	Rated Voltage (kV)	Capacitance Range (pF)	Tol. (±%)																										
1812	1.0	3 900 to 22 000	10																										
	2.0	1 500 to 1 800	10																										
	3.0	820 to 1 000	10																										
1825	1.0	27 000 to 56 000	10																										
	2.0	2 200 to 6 800	10																										
	3.0	820 to 2 700	10																										
		<p>CAPACITORS, FIXED, CHIP, CERAMIC, TYPE II, HIGH VOLTAGE, BASED ON 1812 and 1825</p>		<p>Certificate  264 F</p>		<p>Page  01-02 004-1</p>																							

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3012  Detail ESCC 3012/001	AVX Czech Republic sro Tantalum Division Lanskroun Czech Republic	Qualification	DRA	Jun 1993
<p>Characteristics:</p> <p>Variants 01 to 07 and 11 to 17 are qualified</p> <p>Termination finish:</p> <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>				
	<p>CAPACITORS, LEADLESS SURFACE MOUNTED, TANTALUM, SOLID ELECTROLYTE, TYPE TAJ</p>		<p>Certificate  196 F</p>	<p>Page  01-03 004</p>

Types covered by similarity: All CV product combinations allowed in 3012/004 are qualified

Remarks:

Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3012  Detail ESCC 3012/004	AVX Czech Republic sro Tantalum Division Lanskrout Czech Republic	Qualification	ESA	Oct 2013

Variants 01 to 05. Case styles A (1206), B (1210), C (2312), D (2917), E (2917)

Capacitance C <sub>n</sub> (µF)	Rated Voltage U <sub>R</sub>							
	6.3V	10V	12V	16V	20V	25V	35V	50V
1						A 3000		B 2000
3.3					A 2500		B 1000	C 1000
4.7				A 2000		B 1000	C 600	D 200
10		A 1800			B 1000	C 600	D 120	
22	A 900			B 600	C 400		D 100	
33		B 650			C 300	D 65	E 65	
47	B 500			C 350	D 55	E 65		
100		C 200		D 55	E 45			
150	C 300	D 45		E 40				
220		D 35	E 35					
330	D 35	E 35						
470	E 30							





CAPACITORS,  
 LEADLESS SURFACE MOUNTED, TANTALUM,  
 SOLID ELECTROLYTE, LOW ESR, TYPE TES

Certificate  
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 005



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

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

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	Initial Qualification Date
Generic ESCC 5010  Detail ESCC 5711/002	COBHAM MICROWAVE Les Ulis France	Qualification	CNES	Dec 2008

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


Certificate  
  
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## Section 02


## Component Type: Connectors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
<b>02-01</b>			<b>Multipin, Solder Contacts</b>	
	02-01-001-1	71 P	D*M Series, Rectangular	C&K COMPONENTS
	02-01-001-2	155 L	D*M Series, Rectangular	SOURIAU
<b>02-02</b>			<b>Multipin, Crimp Contacts</b>	
	02-02-001-1	72 P	D*MA Series, Rectangular	C&K COMPONENTS
	02-02-001-2	156 K	D*MA Series, Rectangular	SOURIAU
	02-02-003	25 N	DBAS Series, Circular	Deutsch
	02-02-005	220 G	Series I, Circular, Crimp	SOURIAU
	02-02-006	221 G	Series II, Circular, Crimp	SOURIAU
	02-02-007-1	222 G	Series III, Circular, Miniature	SOURIAU
	02-02-008	223 F	Series III, Hermetic	SOURIAU
	02-02-009	288 B	ACB1 Series	Axon' Cables
<b>02-03</b>			<b>Printed Circuit Board</b>	
	02-03-001-1	99 M	HE 801 Series	HYPERTAC
	02-03-002-1	149 K	KMC Series	HYPERTAC
	02-03-003-1	250 F	MHD Series	HYPERTAC
	02-03-004-1	281 C	IHD INTERPOSER	HYPERTAC
<b>02-04</b>			<b>R.F. Coaxial</b>	
	02-04-001	68 M	SMA Series	Radiall
	02-04-002	283 C	SMA 2.9	Radiall
	02-04-003	329	SMA, SMA 2.92, TNC and SMP	Rosenberger
<b>02-05</b>			<b>Micro-miniature, Crimp Contacts</b>	
	02-05-001-1	140 M	MDM Series, Rectangular	C&K COMPONENTS
	02-05-002-1	141 M	MTB Series, Rectangular	C&K COMPONENTS
	02-05-003-1	290 B	MDMA, Rectangular	C&K COMPONENTS
	02-05-004-1	301 B	8MCG, Rectangular	SOURIAU


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/001 3401/004 3401/022 3401/040 3401/072 3401/080		C&K COMPONENTS Dole France	Qualification	CNES	Feb 1981
Characteristics: 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 to 8W8, 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  Range of Connectors: 3401/001: Variants 01 & 02 Range of Contacts: 3401/004: Variants 01 to 25; 3401/022: 01 to 95; 3401/040: 01 to 17; 3401/080: 01 3401/072: Variants 05 to 14, 25 to 39, 46 to 55, 61 to 65, 72, 73, 76 to 80  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					
		CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*M		Certificate  71 P	Page  02-01 001-1


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/001 3401/022 3401/072		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988
Characteristics: Complete range as defined in the Detail Specifications are qualified <u>except</u> for <ul style="list-style-type: none"> <li>• high density 104 contacts arrangement</li> <li>• coaxial and power contacts and arrangement</li> </ul> Range of Connectors: 3401/001: variants 01 to 02  Range of Contacts: Size 20 : 9, 15, 25, 37 and 50 contacts, Size 22: 15, 26, 44, 62, 78 contacts  3401/022: variants 01 to 16 & 44 to 57 & 65 to 80 3401/072: variants 01 to 65  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		Certificate  155 L	Page  02-01 001-2


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/002 3401/005 3401/020 3401/021			Qualification	CNES	Feb 1981
Characteristics: Complete range defined in the corresponding Detail Specifications are qualified Shell Size: E, A, B, C, D, F  Range of Connectors: 3401/002: variants 01 and 02 9, 15, 25, 37 and 50 size 20* contacts for standard density layout  Range of Contacts: *Accepts wire sizes : AWG # 20 to 24 (standard bucket: variants 01 and 02) per 3401/005 3401/005: variants 01 to 08 : AWG # 26 and 28 (reduced bucket: variants 03 and 04) per 3401/005 3401/021 variants 01 & 02 :AWG # 18 and 20 (large bucket: variants 05 to 06) per 3401/005 3401/022: variants 01 & 02 15, 26, 44, 62, 78 and 104 size 22** contacts for high density layout ** Accepts wire sizes AWG # 22 to 26 (standard bucket: variants 07 to 08) per 3401/005  Mounting Type: Blank: standard mounting holes; Y: floating mount; E: captive nuts Gold-plated non-magnetic coating Connector Savers: For usage with above connector range  Operating Temperature Range (°C): -55 to +125					
		CONNECTORS, ELECTRICAL, CRIMP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA		Certificate  72 P	Page  02-02 001-1


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/002 3401/005 3401/020 3401/021 3401/022 3401/072		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988
Characteristics: Complete range as defined in the Detail Specifications <u>except</u> high density 104 contacts arrangement are qualified Accessories variants qualified: 3401/022: variants 01 to 16, 44 to 57, 65 to 80 3401/072: variants 01 to 65  Range of Connectors:- 3401/002: variants 1 & 2 *Accepts wire sizes AWG # 20 to 24 (standard bucket: variants 01 and 02) 3401/005: variants 1 to 8 *Accepts wire sizes AWG # 26 and 28 (reduced bucket: variants 03 and 04) 3401/021 & 22: variants 1 & 2 *Accepts wire size AWG# 18 and 20 (large bucket: variants 05 and 06) *Accepts wire size AWG # 22, 24 and 26 (contact AWG # 22 for high density, contact arrangements, variants 07 and 08)  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 Connector Savers- For usage with connector range defined above  Operating Temperature Range (°C): -55 to +125					
		CONNECTORS AND CONNECTOR SAVER, ELECTRICAL, CRIMP CONTACTS, REMOVABLE RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA		Certificate  156 K  Page 02-02 001-2	





Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/008 3401/009 3401/012 3401/064</p>		Cie DEUTSCH Evreux France	Qualification	CNES	Jul 1979
<p>Characteristics: 3401/008: Variant 01 3401/009: Variants 01 to 20; 3401/012: Variants 01 to 04; 3401/064: Variants 01 to 41</p> <p>Circular Multicontact connectors Standard contact arrangements with 3, 7, 12, 19, 27, 37 or 61 contacts in wire size AWG # 20 Special contact arrangements with contacts size AWG 22, 20, 16, 12 and 8</p> <p>Operating Temperature Range (°C): -65 to +200</p>					
		<p>CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, PUSH-PULL COUPLING, REMOVABLE CRIMP CONTACTS, BASED ON TYPE DBAS</p>		<p>Certificate</p> <p>25 N</p>	<p>Page</p> <p>02-02 003</p>


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


Types covered by similarity:		Remarks:													
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date										
Generic ESCC 3401  Detail ESCC 3401/044 3401/045 3401/062		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995										
Characteristics: For 3401/044, all variants are qualified For 3401/045, variants 01 to 08 are qualified For 3401/062, variants 01 to 27 are qualified		<table border="1"> <thead> <tr> <th>Contact Size</th> <th>Ratings (A)</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>23.0</td> </tr> <tr> <td>16</td> <td>13.0</td> </tr> <tr> <td>20</td> <td>7.5</td> </tr> <tr> <td>22</td> <td>5.0</td> </tr> </tbody> </table>		Contact Size	Ratings (A)	12	23.0	16	13.0	20	7.5	22	5.0		
Contact Size	Ratings (A)														
12	23.0														
16	13.0														
20	7.5														
22	5.0														
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		Certificate  221 G	Page  02-02 006										

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


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


Types covered by similarity:  Variants 01, 03 to 05, 07 to 09, 11 to 13, 15 to 18		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/079	AXON' CABLE S.A. Montmirail France	Qualification	CNES	May 2009
<p>Characteristics:</p> <p>Variants 01 to 18 are qualified</p> <p>Variants 01 to 08: Plug 3 and 4 Lugs, Straight and Right Angle with pin contact Variants 09 to 18: Bulkhead Jacks, 3 and 4 Lugs, Straight and Right Angle with solder contact</p> <p>All cables are 77Ω MIL-STD-1553B Data Bus twisted shielded pairs</p> <p>Working Voltage: 200 Vrms Rated Current (contact): 1A</p> <p>Operating Temperature Range (°C): -55 to +150</p>				
	CONNECTORS, ELECTRICAL, TRIAXIAL, BAYONET COUPLING, NON-REMOVABLE CRIMP CONTACTS, MIL-STD-1553B DATABUS, BASED ON TYPE ACB1 SERIES	Certificate  288 B	Page  02-02 009	


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


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/039	HYPERTAC SA Saint-Aubin-Lès-Elbeuf France	Qualification	CNES	Mar 1987
Characteristics: 3 rows contacts: 26, 44, 62, 80, 98, 144 Contact codes: 10, 30, 31, 40, 50, 51 and 91 Guiding and locking devices codes: 110, 121, 143, 201, 202, 204, 206, 703  Contact Ratings: 2 A (1 contact)  Operating Temperature Range (°C): -55 to +125				
	CONNECTORS, ELECTRICAL, NON-REMOVABLE SOLDER AND WIRE-WRAP CONTACTS AND SAVERS, PRINTED CIRCUIT BOARD, BASED ON TYPE KMC	Certificate  149 K		Page  02-03 002-1





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


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


Types covered by similarity:  - Hermetically sealed receptacle		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3402  Detail ESCC 3402/001 3402/002 3402/003	RADIALL Saint-Quentin-Fallavier France	Qualification	CNES	Feb 1981
Characteristics:  Frequency Range 0-18 GHz 3402/001 Pin contact (Plug). Variants 01 to 47 (except 11, 19, 31 –not in use) 3402/002 socket contact (Receptacle). Variants 01 to 85 (except 33, 35, 52 –not in use) 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				
	CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND  CONNECTING PIECES, BASED ON TYPE SMA		Certificate  68 M	Page  02-04 001

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3402</p> <p>Detail ESCC 3402/021 3402/022 3402/023</p>		RADIALL Saint-Quentin-Fallavier France	Qualification	CNES	Dec 2007
<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. 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>		<p>Certificate 283 C</p>	<p>Page 02-04 002</p>


Types covered by similarity: See below the range of qualified variants for each specification		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3402</p> <p>Detail ESCC 3402/001, 3402/002, 3402/003 (SMA range) 3402/008, 3402/009, 3402/010 (TNC range) 3402/021, 3402/022, 3402/023 (SMA 2.9 range) 3402/024, 3402/025, 3402/026 (SMP range)</p>	Rosenberger Fridolfing Germany	Qualification	DLR	Dec 2013
<p>Qualified variants:</p> <p>3402/001: 1 to 10, 12 to 18, 20 to 30, 32 to 35, 37 to 47  3402/002: 1 to 24, 27 to 32, 34, 36 to 51, 53 to 61, 65 to 71  3402/003: 1 to 6, 8 to 14  3402/008: 1 to 7; 3402/009: 1 to 5; 3402/010: 1 to 5  3402/021: 1 to 5, 7; 3402/022: 1 to 5; 3402/023: 1 to 6  3402/024: 1 to 26, 28 to 35; 3402/025: 1 to 14; 3402/026: 1 to 13</p>				
	CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPES SMA, SMA 2.92 TNC and SMP		Certificate  329	Page  02-04 003

Types covered by similarity:		Remarks:															
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date												
Generic ESCC 3401  Detail ESCC 3401/029 3401/041 3401/032		C&K COMPONENTS Dole France	Qualification	CNES	Oct 1986												
Characteristics:  Layout: 9 - 15 - 21- 25 - 31 - 37 - 51 Contacts  Non removable crimp contacts  Termination types:  Nickel or Gold Plated Shells  Operating Temperature Range (°C): -55 to +125		<table border="1"> <thead> <tr> <th>AWG #</th> <th>ESCC No.</th> <th>Max. Rated (A)</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>Uninsulated rigid wire Bent and straight PCB</td> <td>2.5</td> </tr> <tr> <td>26</td> <td>3901 013 02 3901 002 56</td> <td>2.5</td> </tr> <tr> <td>28</td> <td>3901 013 01 3901 002 61</td> <td>1.5</td> </tr> </tbody> </table>	AWG #	ESCC No.	Max. Rated (A)	25	Uninsulated rigid wire Bent and straight PCB	2.5	26	3901 013 02 3901 002 56	2.5	28	3901 013 01 3901 002 61	1.5			
AWG #	ESCC No.	Max. Rated (A)															
25	Uninsulated rigid wire Bent and straight PCB	2.5															
26	3901 013 02 3901 002 56	2.5															
28	3901 013 01 3901 002 61	1.5															
		CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, CRIMP CONTACT, BASED ON TYPE MDM		Certificate  140 M	Page  02-05 001-1												

Types covered by similarity:		Remarks:															
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date												
Generic ESCC 3401  Detail ESCC 3401/031		C&K COMPONENTS Dole France	Qualification	CNES	Oct 1986												
Characteristics:  Shell sizes: 5 through 81 contacts  Non removable crimp contacts  Termination Types:		<table border="1"> <thead> <tr> <th>AWG #</th> <th>ESCC No.</th> <th>Max. Rated (A)</th> </tr> </thead> <tbody> <tr> <td>25</td> <td>Uninsulated rigid wire Bent PCB</td> <td>2.5</td> </tr> <tr> <td>26</td> <td>3901 013 02</td> <td>2.5</td> </tr> <tr> <td>28</td> <td>3901 013 01</td> <td>1.5</td> </tr> </tbody> </table>				AWG #	ESCC No.	Max. Rated (A)	25	Uninsulated rigid wire Bent PCB	2.5	26	3901 013 02	2.5	28	3901 013 01	1.5
AWG #	ESCC No.	Max. Rated (A)															
25	Uninsulated rigid wire Bent PCB	2.5															
26	3901 013 02	2.5															
28	3901 013 01	1.5															
Operating Temperature Range (°C): -55 to +125																	
		CONNECTORS, ELECTRICAL, MICROMINIATURE, CRIMP CONTACT, SINGLE-IN-LINE, BASED ON TYPE MTB		Certificate  141 M	Page  02-05 002-1												

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





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


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


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

**SECTION 03-\*\*: INDEX OF CRYSTALS****REP005 Updated on 15 Mar 2015**

Types covered by similarity: All variants previously specified in (retired) specifications: 3501/001, 3501/008, 3501/011, 3501/012		Remarks: Upon receipt of a request for any retired Variant, the Manufacturer will allocate a new Specific Crystal Identification Number in accordance with 3501/018. It will have identical crystal characteristics to those of the retired variant.				
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3501  Detail ESCC 3501/018		RAKON France Argenteuil France		Qualification	CNES	Oct 1979
Characteristics: All variants are qualified.  TO-5 Can (T 807)  Frequency Range: 15 - 140 MHz						
		CRYSTALS, TO-5 CAN		Certificate  <b>33 M</b>		Page  03-01 001-1

Types covered by similarity: All variants previously specified in (retired) specifications: 3501/001, 3501/008, 3501/011, 3501/012		Remarks: Upon receipt of a request for any retired Variant, the Manufacturer will allocate a new Specific Crystal Identification Number in accordance with 3501/018. It will have identical crystal characteristics to those of the retired variant.				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date	
Generic ESCC 3501  Detail ESCC 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		Certificate  308 A		Page  03-01 001-3

Types covered by similarity: All variants previously specified in (retired) specifications: 3501/002 and 3501/009		Remarks: Upon receipt of a request for any retired Variant, the Manufacturer will allocate a new Specific Crystal Identification Number in accordance with 3501/019. It will have identical crystal characteristics to those of the retired variant.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3501  Detail ESCC 3501/019	RAKON France Argenteuil France	Qualification	CNES	Oct 1979
Characteristics: All variants are qualified. TO-8 Can (T 1507) Frequency Range: 2.5 - 20 MHz				
 The logo for ESCC (European Space Components Coordination) QPL (Qualified Parts List). It features a globe icon to the left of the text 'ESCC' in large blue letters, with 'European Space Components Coordination' in smaller text below it, and 'QPL' in large blue letters below that.	CRYSTALS, TO-8 CAN	Certificate  34 M		Page  03-01 002

Types covered by similarity: All variants previously specified in (retired) specifications: 3501/002 and 3501/009		Remarks: Upon receipt of a request for any retired Variant, the Manufacturer will allocate a new Specific Crystal Identification Number in accordance with 3501/019. It will have identical crystal characteristics to those of the retired variant.				
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3501  Detail ESCC 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		Certificate  309 A		Page  03-01 002-3

## Section 04

## Component Type: Diodes

04-01			Switching	
	04-01-003-2	311 B	Types 1N6640U and 1N6642U	STMicroelectronics
	04-01-003-3	316 A	Types BAY6642	Infineon
04-02			Power Rectifier	
	04-02-001-3	297 B	Types 1N5806U and 1N5811U	STMicroelectronics
	04-02-001-4	302 B	Types 1N5819U and 1N5822U	STMicroelectronics
	04-02-002-1	272 F rev1	Type STPS20100	STMicroelectronics
	04-02-003-1	274 E rev1	Types BYW-81, BYV52, BYV54	STMicroelectronics
04-05			RF/Microwave, Silicon Schottky	
	04-05-001-3	227 E	Schottky, BAS 70	Infineon
04-13			RF/Microwave, Varactors	
	04-13-003 1A-B	200 G	PIN and Varactors	RF2M Microwave
	04-13-003-2A-B	225 F	Multiplier and PIN, DH 2xx and DH 50xxx	Cobham Microwave
	04-13-003-3	273 D	Varactor, Tuning, DH 76xxx	Cobham Microwave
04-16			RF/Microwave, PIN	
	04-16-002-2	224 F	PIN, BXY 42	Infineon
	04-16-003	236 F	PIN, BXY 43 and 44	Infineon

Types covered by similarity:	Remarks:
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Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
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Generic ESCC 5000  Detail ESCC      5101/026 5101/027	ST Microelectronics Rennes France	Qualification	CNES	May 2011
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Characteristics:


Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case
1N6640U	07, 08	75	75	2	LCC2-D
1N6642U	07, 08	100	100	2	LCC2-D


Operating Temperature Range (°C): -65 to +175


	DIODES, SWITCHING, BASED ON TYPES 1N6640U AND 1N6642U	Certificate  311 B	Page  04-01 003-2
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Types covered by similarity:					Remarks:																						
Procurement Specifications			Manufacturer		Nature of Approval		Supervising Authority	Initial Qualification Date																			
Generic ESCC 5000  Detail ESCC 5101/029			INFINEON Technologies AG Neubiberg Germany		Qualification		DLR	Dec 2011																			
Characteristics: <table border="1" data-bbox="85 890 1400 1053"> <thead> <tr> <th>Type</th> <th>Variant</th> <th>V<sub>BR</sub> (V)</th> <th>t<sub>rr</sub> (ns)</th> <th>V<sub>RWM</sub> (V<sub>pk</sub>)</th> <th>I<sub>R</sub> (μA)@ V<sub>RWM</sub></th> <th>I<sub>FSM</sub> (A<sub>pk</sub>)</th> <th>C (pF)</th> <th>Case</th> </tr> </thead> <tbody> <tr> <td>BAY6642 (ES)</td> <td>01</td> <td>100</td> <td>4</td> <td>75</td> <td>100</td> <td>2.5</td> <td>2.5</td> <td>HSL2-1808</td> </tr> </tbody> </table>										Type	Variant	V <sub>BR</sub> (V)	t <sub>rr</sub> (ns)	V <sub>RWM</sub> (V <sub>pk</sub> )	I <sub>R</sub> (μA)@ V <sub>RWM</sub>	I <sub>FSM</sub> (A <sub>pk</sub> )	C (pF)	Case	BAY6642 (ES)	01	100	4	75	100	2.5	2.5	HSL2-1808
Type	Variant	V <sub>BR</sub> (V)	t <sub>rr</sub> (ns)	V <sub>RWM</sub> (V <sub>pk</sub> )	I <sub>R</sub> (μA)@ V <sub>RWM</sub>	I <sub>FSM</sub> (A <sub>pk</sub> )	C (pF)	Case																			
BAY6642 (ES)	01	100	4	75	100	2.5	2.5	HSL2-1808																			
Operating Temperature Range (°C): -65 to +175																											
			DIODES, SWITCHING, BASED ON TYPES BAY6642(ES)				Certificate 316 A		Page 04-01 003-3																		

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

Types covered by similarity:				Remarks:																				
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification 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) @ Tamb</th> </tr> </thead> <tbody> <tr> <td>1N5819U</td> <td>40</td> <td>10 000</td> <td>15 (DC)</td> <td>25</td> <td>1</td> </tr> <tr> <td>1N5822U</td> <td>40</td> <td>10 000</td> <td>80 (pulse)</td> <td>80</td> <td>3</td> </tr> </tbody> </table>							Type	V <sub>RWM</sub> (V)	dV/dt (V/μs)	I <sub>R</sub> (μA) @ V <sub>R</sub> = 40	I <sub>FSM</sub> (A)	I <sub>O</sub> (A) @ Tamb	1N5819U	40	10 000	15 (DC)	25	1	1N5822U	40	10 000	80 (pulse)	80	3
Type	V <sub>RWM</sub> (V)	dV/dt (V/μs)	I <sub>R</sub> (μA) @ V <sub>R</sub> = 40	I <sub>FSM</sub> (A)	I <sub>O</sub> (A) @ Tamb																			
1N5819U	40	10 000	15 (DC)	25	1																			
1N5822U	40	10 000	80 (pulse)	80	3																			
Operating Temperature Range (°C): -65 to +150 Package Type: LCC2-B																								
		DIODES, POWER SCHOTTKY, BASED ON TYPES 1N5819U AND 1N5822U			Certificate  302 B		Page  04-02 001-4																	

Types covered by similarity <a href="#">see next page</a>		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5000  Detail ESCC      5106/016 5106/017 5106/018 5106/019		ST Microelectronics Rennes France	Qualification	CNES	Nov 2002
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		Certificate  272 <b>F rev1</b>	Page  04-02 002-1A

Types covered by similarity:

ESCC COMP. NO.	VARANTS	RANGE OF COMPONENTS	BASED ON
5106/016	01	TO254	STPS20100FSY
	02	TO254	STPS20100AFSY
	04	TO254	STPS20100SFSY
	05	SMD.5	STPS20100S
	06	SMD1	STPS20100SA
	07	SMD1	STPS20100CSA
	11	TO254	STPS20100C2FYT
5106/017	01	SMD.5	STPS1045S
	02	SMD.5	STPS1045CS
5106/018	01	TO254	STPS6045CFSY
	02	SMD1	STPS6045CSA
5106/019	02	TO254	STPS40100C1FSY
	03	SMD1	STPS40100CSA
	05	TO254	STPS40100C2FYT




DIODES, POWER, SCHOTTKY BARRIER,  
BASED ON TYPE STPS20H100


Certificate


272 F rev1

Page

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002-1B

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5000  Detail ESCC      5103/029 5103/030 5103/031		ST Microelectronics Rennes France	Qualification	CNES	Aug 2003
Characteristics: 5103/029 variants 01, 03, 04, 05 and 07 are qualified (types BYW81-200) 5103/030 variant 03 is qualified (types BYV52-200) 5103/031 variant 02 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		Certificate  274 E rev1	Page  04-02 003-1

Types covered by similarity: Variant 03 ( $\sim 40$ V)		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5010  Detail ESCC 5512/020		INFINEON Technologies AG Neubiberg Germany	Qualification	DARA	Sep 1995
Characteristics: Variants 01 and 03 are qualified  Maximum Ratings: BAS 70 $V_{RR}$ : $\sim 70$ V $I_F$ : 70 mA $I_{FSM}$ : 85 mA <sub>pk</sub> @ $t < 10$ ms, duty cycle=10% D.C Parameters: $I_R = 100$ nA max @ $V_R = \sim 56$ V $V_{F1} = 0.44$ V max. @ $I_F = 1.0$ mA At room temp. $V_{BR} = 70$ V min @ $I_R = \sim 10$ $\mu$ A $V_{F2} = 0.78$ V max. @ $I_F = 10$ mA $V_{F3} = 1.00$ V max. @ $I_F = 15$ mA  Package Type T1 $P_{tot} = 0.25$ W @ $T_{case} = +125$ °C Operating Temperature Range (°C): $\sim 55$ to $+150$					
		DIODES, MICROWAVE, SILICON, SCHOTTKY, GENERAL PURPOSE, BASED ON TYPE BAS 70		Certificate  277 E	Page  04-05 001-3

Types covered by similarity:		Remarks:					
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date	
Generic ESCC 5010  Detail ESCC      See types covered by similarity		RF2M Microwave Milton Keynes England		Qualification	DRA	Dec 1993	
Characteristics:  Operating Temperature Range (°C): -65 to +125 and 150							
		DIODES, MICROWAVE, SILICON, PIN AND VARACTORS			Certificate  200 G		Page  04-13 003-1A



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

Certificate

200 G

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003-1B

Types covered by similarity:		Remarks: Certificate 259C has been merged with this certificate beginning February 2012.			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5010  Detail ESCC Please refer to the next page		COBHAM MICROWAVE Villebon Sur Yvette France	Qualification	CNES	Jun 1995
Characteristics: Refer to the Detail Specifications          Operating Temperature Range (°C): $-55$ to $+125$					
 <p>ESCC European Space Components Coordination QPL</p>		<p>DIODES, MICROWAVE, SILICON, MULTIPLIER AND PIN, BASED ON TYPES DH 2XX AND DH 50XXX</p>		<p>Certificate  225 F</p>	<p>Page  04-13 003-2A</p>

Types covered by similarity:

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




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


Certificate


225 F

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 003-2B

Types covered by similarity: .			Remarks:																											
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date																									
Generic ESCC 5010  Detail ESCC 5512/023		COBHAM MICROWAVE Villebon Sur Yvette France	Qualification	CNES	Jun 2003																									
Characteristics: All variants are qualified.  <table border="0"> <tr> <td>Maximum Ratings:</td> <td><math>V_R = 20</math> at <math>I_R = 10 \mu A</math> and <math>T_{amb} = +25 \text{ }^\circ C</math></td> </tr> <tr> <td>Operating Temperature Range (<math>^\circ C</math>):</td> <td>-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																													
<table border="0"> <tr> <td>Variants</td> <td><math>C_j</math>(typ.) (-4 V)</td> <td>Based on Type</td> </tr> <tr> <td>01 to 09</td> <td>1.0 pF</td> <td>DH 76010</td> </tr> <tr> <td>10 to 18</td> <td>1.50 pF</td> <td>DH 76015</td> </tr> <tr> <td>19 to 27</td> <td>2.20 pF</td> <td>DH 76022</td> </tr> <tr> <td>28 to 36</td> <td>2.30 pF</td> <td>DH 76033</td> </tr> <tr> <td>37 to 45</td> <td>4.70 pF</td> <td>DH 76047</td> </tr> <tr> <td>46 to 54</td> <td>6.80 pF</td> <td>DH 76068</td> </tr> <tr> <td>55 to 63</td> <td>10.00 pF</td> <td>DH 76100</td> </tr> <tr> <td>64 to 72</td> <td>15.00 pF</td> <td>DH 76150</td> </tr> </table>	Variants	$C_j$ (typ.) (-4 V)	Based on Type	01 to 09	1.0 pF	DH 76010	10 to 18	1.50 pF	DH 76015	19 to 27	2.20 pF	DH 76022	28 to 36	2.30 pF	DH 76033	37 to 45	4.70 pF	DH 76047	46 to 54	6.80 pF	DH 76068	55 to 63	10.00 pF	DH 76100	64 to 72	15.00 pF	DH 76150			
Variants	$C_j$ (typ.) (-4 V)	Based on Type																												
01 to 09	1.0 pF	DH 76010																												
10 to 18	1.50 pF	DH 76015																												
19 to 27	2.20 pF	DH 76022																												
28 to 36	2.30 pF	DH 76033																												
37 to 45	4.70 pF	DH 76047																												
46 to 54	6.80 pF	DH 76068																												
55 to 63	10.00 pF	DH 76100																												
64 to 72	15.00 pF	DH 76150																												
		DIODES, MICROWAVE, SILICON, HYPER-ABRUPT JUNCTION TUNING VARACTOR BASED ON TYPES DH 76xxx		Certificate  273 D	Page  04-13 003-3																									

Types covered by similarity: Variant 02		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date	
Generic ESCC 5010  Detail ESCC 5513/017		INFINEON Technologies AG Neubiberg Germany	Qualification	DARA	Jun 1995	
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		Certificate  224 F		Page  04-16 002-2

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


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

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



**SECTION 05-\*\*: INDEX OF FILTERS**

**REP005 Updated on 15 Mar 2015**

Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3008  Detail ESCC      Please refer to the next page		EUROFARAD Chanteloup en Brie France	Qualification	CNES	Aug 1998
Characteristics: All variants specified in the Detail Specifications are qualified. Operating Temperature Range (°C): -55 to +125					
	CAPACITOR FILTERS, PI-, C-, AND L- TYPES, FEEDTHROUGH, ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY AND NON-HERMETICALLY SEALED, BASED ON TYPES SFC, SFL AND SFP		Certificate  252 G		Page  05-01 001-1A



Types covered by certificate:

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



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


Certificate  
252 G

Page  
05-01  
001-1B

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

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


**SECTION 06-\*\*: INDEX OF FUSES****REP005 Updated on 15 Mar 2015**


Types covered by similarity: Variants 02 to 07, 09, 10, 11		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4008  Detail ESCC 4008/001	Schurter Lucerne Switzerland	Qualification	ESTEC	Jun 2008
<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>		<p>Certificate  284 C</p>	<p>Page  06-01 001</p>

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

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


**SECTION 07-\*\*: INDEX OF INDUCTORS****REP005 Updated on 15 Mar 2015**

Types covered by similarity:						Remarks:				
Procurement Specifications				Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date		
Generic ESCC 3201  Detail ESCC 3201/008				MICROSPIRE Illange France		Qualification	CNES	Apr 1997		
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 MSC1 10k, 12k, 20k and H01				Certificate  241 G		Page  07-01 001		

Types covered by similarity:				Remarks: Termination finish shall be Sn90Pb10.																												
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date																										
Generic ESCC 3201  Detail ESCC 3201/009 3201/010		MICROSPIRE Illange France		Qualification	CNES	Apr 2004																										
Characteristics: 3201/009 Variants 01 to 08 are qualified 3201/010 Variants 01, 03 and 05 are qualified  <b>3201/009</b> <table border="0"> <tr> <td><b>SESI</b></td> <td>14</td> <td>15</td> <td>15W</td> <td>18</td> <td>9.1</td> <td>22</td> <td>32WR</td> <td>32PR</td> </tr> <tr> <td>Variant</td> <td>01</td> <td>02</td> <td>03</td> <td>04</td> <td>05</td> <td>06</td> <td>07</td> <td>08</td> </tr> </table> <b>3201/010</b> <table border="0"> <tr> <td><b>CMC</b></td> <td>15</td> <td>18</td> <td>22</td> </tr> <tr> <td>Variant</td> <td>01</td> <td>02</td> <td>03</td> </tr> </table> Operating Temperature Range (°C): -55 to +125							<b>SESI</b>	14	15	15W	18	9.1	22	32WR	32PR	Variant	01	02	03	04	05	06	07	08	<b>CMC</b>	15	18	22	Variant	01	02	03
<b>SESI</b>	14	15	15W	18	9.1	22	32WR	32PR																								
Variant	01	02	03	04	05	06	07	08																								
<b>CMC</b>	15	18	22																													
Variant	01	02	03																													
		INDUCTORS, POWER, MOULDED, SURFACE MOUNT, BASED ON SERIES SESI AND CMC			Certificate  276 D																											
					Page  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 P	4000 B Series	ST Microelectronics
	08-80-002-2 A to F	190 K	54HCMOS Series	ST Microelectronics

Types covered by similarity: See next pages		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 9000  Detail ESCC      See types covered by similarity		ST Microelectronics Rennes France	Qualification	CNES	Apr 1981
Characteristics: Package Types: Ceramic Dual-in-Line Ceramic Flat Pack					
	MICROCIRCUITS, DIGITAL, C-MOS-B, 4000B SERIES		Certificate  73 P		Page  08-80 001-2A



## 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
9204/020	Decade counter/divider	4017B
9204/021	Presettable divide-by-N counter	4018B
9202/051	Quad AND/OR select gate	4019B
9204/022	14-stage ripple carry binary counter/divider	4020B
9306/016	8-stage static shift register	4021B
9204/023	Octal counter/divider	4022B
9201/045	Triple 3-input NAND gates	4023B
9204/024	7-stage ripple carry binary counter/divider	4024B
9201/046	Triple 3-input NOR gate	4025B
9203/022	Dual J-K master slave flip-flop	4027B



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

Certificate

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001-2B

## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type
9205/010	BCD-to-decimal or binary-to-octal decoder	4028B
9204/025	Presettable up/down counter binary or BCD decade	4029B
9201/047	Quad 2-input exclusive OR gates	4030B
9306/025	8-stage static bidirectional parallel/serial input/output bus register with 3 state output	4034B
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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001-2C

Types covered by similarity:		
ESCC Spec. No.	Component Type	Component Type
9408/005	Quad bilateral switch	4066B
9408/009	Analogue multiplexer/demultiplexer	4067B
9201/061	8-input NAND gate	4068B
9401/010	Hex inverter	4069UB
9201/048	Quad exclusive OR gate	4070B
9201/063	Quad 2-input OR gate	4071B
9201/082	Dual 4-input OR gate	4072B
9201/064	Triple 3-input AND gate	4073B
9201/065	Triple 3-input OR gate	4075B
9306/022	4-bit D-type register with 3-state output	4076B
9201/055	Quad exclusive NOR gate	4077B
9201/062	8-input OR/NOR gate	4078B
9201/052	Quad 2-input AND gate	4081B
9201/066	Dual 4-input AND gate	4082B
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



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C-MOS-B, 4000B SERIES

Certificate

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001-2D

## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type
9401/030	Hex non-inverting buffers with 3-state output	4503B
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
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
9203/038	Hex D-type flip-flop	40174B
9204/041	Presettable binary up/down counter (dual clock with reset)	40193B




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

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001-2E

Types covered by similarity: See next pages		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 9000  Detail ESCC      See types covered by similarity		ST Microelectronics Rennes France	Qualification	CNES	Nov 1992
Characteristics: Qualified Packages: <ul style="list-style-type: none"> <li>• Ceramic Dual-in-Line</li> <li>• Ceramic Flat Pack</li> </ul> <b>NOTES</b> 1. These parts have successfully passed radiation testing to 50 kRads.					
		MICROCIRCUITS, DIGITAL, MONOLITHIC, HIGH SPEED CMOS, 54HC AND 54HCT SERIES	Certificate  190 K		Page  08-80 002-2A

## 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
9203/050	Dual D-type flip-flop with preset and clear	74	1
9209/004	4-bit magnitude comparator	85	1
9201/119	Quad 2-input exclusive OR gate	86	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
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
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
9201/120	Quad 2-input NAND gate with Schmitt-trigger input	132	1
9205/013	3-to-8 line decoder/demultiplexer with address latch and inverted output	137	1
9408/046	3-to-8 line decoder/demultiplexer with inverted output	138	1
9205/017	Dual 2-to-4 line decoder/demultiplexer with inverted output	139	1
9410/017	8-line to 3-line priority encoder	148	1
9408/054	8-line to 1-line data selector/multiplexer	151	1
9408/038	Dual 4-line to 1-line data selectors/multiplexer	153	1
9205/023	4-to-16 line decoder/demultiplexer with inverted output	154	1
9408/057	Quad 2-line to 1-line data selector/multiplexer	157	1
9408/059	Quad 2-line to 1-line data selector/multiplexer with inverted output	158	1
9204/062	Synchronous presettable 4-bit decade counter with direct clear	160	1
9204/059	Asynchronous 4-bit binary counter	161	1
9306/041	8-bit SIPO shift register	164	1
9306/042	8-bit PISO shift register	165	1



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

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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
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
9401/048	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
9408/047	Quad 2-line to 1-line data selector/multiplexer with 3-state output	257	1
9203/073	8-bit addressable latch	259	1
9203/053	Octal D-type edge-triggered flip-flop with clear	273	1
9208/003	9-bit odd/even parity generator/checker	280	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
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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
9401/044	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
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
9204/070	Asynchronous negative-edge-triggered 14-bit binary counter	4020	1
9204/069	Asynchronous negative edge-triggered 12-bit binary counter	4040	1
9401/037	Hex buffer/converter with inverted output	4049	1
9401/038	Hex buffer/converter	4050	1



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
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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
9201/123	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
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



MICROCIRCUITS, DIGITAL, MONOLITHIC,  
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## Section 09


## Component Type: Relays


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

Types covered by similarity: Rated Coil Voltages 5, 6, 9, 12 and 18 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3601		REL-STPI St Jean de la Ruelle France	Qualification	CNES	Feb 1983
Detail ESCC 3601/002					
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 **		Certificate  102 G	Page  09-01 001


Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC      3601  Detail ESCC      3601/003		LEACH International Europe Niort France	Qualification	CNES	Apr 1978
Characteristics:      Variants 01 to 08 are qualified  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		Certificate  02 M	Page  09-01 002


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


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


Types covered by similarity: Rated Coil Voltages 5, 6, 9, 12 and 18 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC        3602  Detail ESCC        3602/002		REL-STPI Saint Jean de la Ruelle France	Qualification	CNES	Jan 1982
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		Certificate  88 H	Page  09-02 001





Types covered by similarity: Coil Voltages 6 and 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC      3602  Detail ESCC      3602/003		LEACH International Europe Niort France	Qualification	CNES	Jan 1979
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		Certificate  13 M	Page  09-02 002

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

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

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


Types covered by similarity: Coil voltage : 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC	3602	LEACH Sarralbe France	Qualification	CNES	Apr 2011
Detail ESCC	3602/009				
Characteristics: Variants 03, 04 and 06 and 13, 14 and 16 are qualified  Contact Rating 15 A at 28 Vdc Contact Configuration 2PDT Package Type Half-cubic inch can Coil Voltage 28 Vdc Operating Temperature Range (°C): -65 to +125					
		RELAY, LATCHING, ELECTROMAGNETIC, BASED ON TYPE M302		Certificate  310 B	Page  09-02 004-3

Types covered by similarity: Coil Voltage 12 Vdc		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date	
Generic ESCC      3602  Detail ESCC      3602/010		LEACH International Europe Niort France	Qualification	ESTEC	Feb 1982	
Characteristics:      Variants 01 to 06 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		Certificate  93 L		Page  09-03 001


## Section 10


## Component Type: Resistors


Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
10-07			Shunts	
	10-07-001	285 C	Types SMV-PW and SM*-PT	Isabellenhütte
10-08			Fixed, Film	
	10-08-006	256 G	Surface Mount, Type MS1	Vishay Electronic (Selb)
	10-08-007	289 B	Surface Mount, Type TNPS	Vishay Electronic (Selb)
10-09			Chip	
	10-09-002 A to D	287 D	Type PHR; PFRR; PRAHR/CNWHR	Vishay S.A. Sfernice
	10-09-003	314 A	Type CHP	Vishay S.A. Sfernice
10-11			Flexible, Foil, Heaters	
	10-11-001-1	184 K	Single & Double Layer	IRCA
	10-11-002	325 A	Single & Double Layer	Minco
	10-11-003	330	Single & Double Layer	IRCA

Types covered by similarity: Tolerance (%) = ±1		Remarks: the extension of qualification in 2014 did not maintain in the qualified scope the SMR type due to low sales.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4001  Detail ESCC 4001/027 4001/028	ISABELLENHÜTTE HEUSLER GmbH & Co. KG Dillenburg Germany	Qualification	DLR	Nov 2008
Characteristics: ESCC 4001/027 variants 01, 02 and 03 are qualified (SMP-PW, SMS-PW, SMT-PW) ESCC 4001028 variant 02 is qualified (SMV-PW)   Operating Temperature Range, (°C): -55 to 170C				
	RESISTORS, FIXED, CHIP, METAL FOIL, BASED ON TYPES SMV-PW AND SM*-PT	Certificate  285 C	Page  10-07 001	



Types covered by similarity:  Tolerance ( $\pm\%$ ) = 0.1, 0.5, 1.0				Remarks:			
Procurement Specifications			Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4001  Detail ESCC 4001/022			VISHAY Electronic GmbH Division Draloric Selb Germany		Qualification	DLR	Oct 1999
Characteristics:                      Critical R = 160 k $\Omega$							
Range ( $\Omega$ )		Tol. ( $\pm\%$ )	TC ( $\pm$ ppm/ $^{\circ}$ C)	Value Series			
43.2 - 1.004 M		0.1	50	E96			
10.0 - 1.004 M		0.5					
2.20 - 5.114 M		1.0					
43.2 - 1.004 M		0.1	25	E96			
10.0 - 1.004 M		0.5					
10.0 - 1.004 M		1.0					
43.2 - 0.2213 M		0.1	15	E96			
10.0 - 0.5113 M		0.5					
Operating Temperature Range, ( $^{\circ}$ C): -55 to +125							
			RESISTORS, FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE  MS1			Certificate  256 G	Page  10-08 006

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	Initial Qualification Date																																						
Generic ESCC 4001  Detail ESCC 4001/029			VISHAY Electronic Division Draloric Selb Germany		Qualification	DLR	May 2009																																						
<p>Characteristics: Variants 01 to 03 inclusive are qualified E96 Series</p> <table border="1"> <thead> <tr> <th rowspan="2">Variant Number</th> <th rowspan="2">Style (Note 1)</th> <th colspan="2">Resistance Range <math>R_n</math></th> <th rowspan="2">Tolerance (<math>\pm</math> %)</th> <th rowspan="2">Value Series</th> <th rowspan="2">Temperature Coefficient TC (<math>\pm 10^{-6}/^{\circ}</math>C)</th> <th rowspan="2">Critical Resistance (k<math>\Omega</math>)</th> <th rowspan="2">Weight max (g)</th> </tr> <tr> <th>Min (<math>\Omega</math>)</th> <th>Max (M<math>\Omega</math>)</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>0603</td> <td>10</td> <td>0.221</td> <td>0.1, 0.5, 1</td> <td>E96</td> <td>15, 25, 50</td> <td>56.25</td> <td>0.002</td> </tr> <tr> <td>02</td> <td>0805</td> <td>10</td> <td>0.422</td> <td>0.1, 0.5, 1</td> <td>E96</td> <td>15, 25, 50</td> <td>180</td> <td>0.006</td> </tr> <tr> <td>03</td> <td>1206</td> <td>10</td> <td>1</td> <td>0.1, 0.5, 1</td> <td>E96</td> <td>15, 25, 50</td> <td>160</td> <td>0.008</td> </tr> </tbody> </table> <p>Operating Temperature Range, (<math>^{\circ}</math>C): -55 to +125</p>								Variant Number	Style (Note 1)	Resistance Range $R_n$		Tolerance ( $\pm$ %)	Value Series	Temperature Coefficient TC ( $\pm 10^{-6}/^{\circ}$ C)	Critical Resistance (k $\Omega$ )	Weight max (g)	Min ( $\Omega$ )	Max (M $\Omega$ )	01	0603	10	0.221	0.1, 0.5, 1	E96	15, 25, 50	56.25	0.002	02	0805	10	0.422	0.1, 0.5, 1	E96	15, 25, 50	180	0.006	03	1206	10	1	0.1, 0.5, 1	E96	15, 25, 50	160	0.008
Variant Number	Style (Note 1)	Resistance Range $R_n$		Tolerance ( $\pm$ %)	Value Series	Temperature Coefficient TC ( $\pm 10^{-6}/^{\circ}$ C)	Critical Resistance (k $\Omega$ )			Weight max (g)																																			
		Min ( $\Omega$ )	Max (M $\Omega$ )																																										
01	0603	10	0.221	0.1, 0.5, 1	E96	15, 25, 50	56.25	0.002																																					
02	0805	10	0.422	0.1, 0.5, 1	E96	15, 25, 50	180	0.006																																					
03	1206	10	1	0.1, 0.5, 1	E96	15, 25, 50	160	0.008																																					
			<p>RESISTORS, FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE TNPS</p>			<p>Certificate 289 B</p>		<p>Page 10-08 007</p>																																					

Types covered by similarity:		Remarks: Components under ESCC QML qualification. Refer to Technology Flow description in REF006.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4001  Detail ESCC 4001/023 ESCC 4001/025	VISHAY S.A. Division Sfernice Nice France	Qualification	CNES	Feb 2009
<p>Characteristics and qualified variants: Refer to tables on the next page.</p> <p>4001/023    PHR    High Stability and Precision Chip</p> <p>4001/023    PFRR    High Stability and Precision Chip with Established Reliability Level R</p> <p>4001/025    PRA/CNWHR    High Stability and Precision Surface Mount Array</p> <p>Operating Temperature Range, (°C): -55 to +155 Lead material is E with either Type 2 or Type 4 finish. The terminal material and finish of some of these variants makes them unsuitable for solder assembly methods . They shall be assembled using glue or wire bond techniques. See Detail specifications.</p>				
		RESISTORS, FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR		Certificate  287 D  Page  10-09 002A

Characteristics: Type PHR, Variants 01 to 08, 13 and 14 are qualified:

Detail Specification	Style	Critical R (kΩ)	Rated Dissipation (W)	Limiting Element Voltage (V)	Type Variant
4001/023	0402	18	0.050	30	13; 14
	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

Variant	Style	Resistance Range (Note 1)		Tolerance (±%) (Note 2)	Temperature Coefficient (10 <sup>-6</sup> /°C) (Note 2)	Weight (g)
		Min (Ω)	Max (MΩ)			
01, 05	0603	10	0.200 (0.160 for TC « C »)	0.01; 0.02; 0.05; 0.1	±5; ±10; ±25	0.003
02, 06	0805	10	0.250	0.01; 0.02; 0.05; 0.1	±5; ±10; ±25	0.004
03, 07	1206	10	1.000	0.01; 0.02; 0.05; 0.1	±5; ±10; ±25	0.01
04, 08	2010	10	3.000	0.01; 0.02; 0.05; 0.1	±5; ±10; ±25	0.03
13, 14	0402	10	0.100 (0.067 for TC « C »)	0.01; 0.02; 0.05; 0.1	±5; ±10; ±25	0.002

### NOTES

1.

Variant	Style	Critical Resistance (KΩ)
01 – 05	0603	12.25
02 – 06	0805	45
03 – 07	1206	40
04 – 08	2010	45
13 - 14	0402	18

2.

Resistance (Ω)	Available Tolerances (±%)	Series
10 ≤ R < 50	0,1	Any value in the resistance range
50 ≤ R < 100	0,05 and 0,1	
100 ≤ R < 250	0,02; 0,05 and 0,1	
R ≥ 250	0,01; 0,02; 0,05 and 0,1	

Resistance (Ω)	Temperature Coefficient (ppm/°C)	Series
10 ≤ R < 20	E: 25 (-55 °C; +155 °C)	Any value in the resistance range
20 ≤ R < 50	Y: 10 (-55 °C; +155 °C)	
20 ≤ R < 50	Z: 5 (+22 °C; +70 °C)	
R ≥ 50	C: 5 (-55 °C; +155 °C)	



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

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002B

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

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

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

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



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

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002C

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

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

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


Number of Resistors per Array: 2 to 8




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


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10-09  
002D

Types covered by similarity:				Remarks:																																
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date																														
Generic ESCC 4001  Detail ESCC 4001/026		VISHAY S.A. Division Sfernice Nice France		Qualification	CNES	Oct 2011																														
Characteristics: Type CHPHR, Variants 01 to 10 are qualified. Type CHPFR, variants 11 to 20 are qualified. The qualified is range restricted as below:																																				
<table border="1"> <thead> <tr> <th>Style</th> <th>Critica R (K<math>\Omega</math>)</th> <th>Rated Dissipation</th> <th>Limited Element Voltage (V)</th> <th>Type Variant</th> </tr> </thead> <tbody> <tr> <td>0603</td> <td>25</td> <td>0.100</td> <td>50</td> <td>01;06; 11, 16</td> </tr> <tr> <td>0805</td> <td>50</td> <td>0.200</td> <td>100</td> <td>02;07; 12, 17</td> </tr> <tr> <td>1206</td> <td>160</td> <td>0.250</td> <td>200</td> <td>03;08; 13, 18</td> </tr> <tr> <td>2010</td> <td>180</td> <td>0.500</td> <td>300</td> <td>04;09; 14, 19</td> </tr> <tr> <td>2512</td> <td>112.5</td> <td>0.800</td> <td>300</td> <td>05;10; 15, 20</td> </tr> </tbody> </table>							Style	Critica R (K $\Omega$ )	Rated Dissipation	Limited Element Voltage (V)	Type Variant	0603	25	0.100	50	01;06; 11, 16	0805	50	0.200	100	02;07; 12, 17	1206	160	0.250	200	03;08; 13, 18	2010	180	0.500	300	04;09; 14, 19	2512	112.5	0.800	300	05;10; 15, 20
Style	Critica R (K $\Omega$ )	Rated Dissipation	Limited Element Voltage (V)	Type Variant																																
0603	25	0.100	50	01;06; 11, 16																																
0805	50	0.200	100	02;07; 12, 17																																
1206	160	0.250	200	03;08; 13, 18																																
2010	180	0.500	300	04;09; 14, 19																																
2512	112.5	0.800	300	05;10; 15, 20																																
<table border="1"> <thead> <tr> <th>Style</th> <th>Range(<math>\Omega</math>)</th> <th>Tol. (<math>\pm\%</math>)</th> <th>TC(<math>\pm</math>ppm/<math>^{\circ}</math>C)</th> </tr> </thead> <tbody> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 1 to &lt; 10</td> <td>2; 5</td> <td>200</td> </tr> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 10 to &lt; 1M</td> <td>1; 2; 5</td> <td>100; 200</td> </tr> <tr> <td>0603;0805;1206;2010;2512</td> <td>From 1M to <math>\leq</math> 10M</td> <td>2; 5</td> <td>200</td> </tr> </tbody> </table>							Style	Range( $\Omega$ )	Tol. ( $\pm\%$ )	TC( $\pm$ ppm/ $^{\circ}$ C)	0603;0805;1206;2010;2512	From 1 to < 10	2; 5	200	0603;0805;1206;2010;2512	From 10 to < 1M	1; 2; 5	100; 200	0603;0805;1206;2010;2512	From 1M to $\leq$ 10M	2; 5	200														
Style	Range( $\Omega$ )	Tol. ( $\pm\%$ )	TC( $\pm$ ppm/ $^{\circ}$ C)																																	
0603;0805;1206;2010;2512	From 1 to < 10	2; 5	200																																	
0603;0805;1206;2010;2512	From 10 to < 1M	1; 2; 5	100; 200																																	
0603;0805;1206;2010;2512	From 1M to $\leq$ 10M	2; 5	200																																	
Operating Temperature Range, ( $^{\circ}$ C): -55 to +155. Lead material is E with either Type 2 or Type 4 finish																																				
		RESISTORS, FIXED, CHIP, THICK FILM, BASED ON TYPE CHP			Certificate  314 A																															
					Page  10-09 003																															

Types covered by similarity: Variants 01 through 48 are qualified		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4009  Detail ESCC 4009/002	IRCA RICA Division Vitorio Veneto Italy	Qualification	ESTEC	Apr 1992
<p>Characteristics:</p> <p>Single, double layer and magnetically compensated heaters</p> <p>Maximum Ohmic density      200 <math>\Omega/\text{cm}^2</math></p> <p>Tolerances                      <math>\pm 2, 3, 5, 10 \%</math></p> <p>Resistance                        1 to 5000 <math>\Omega</math></p> <p>Heating Area                    1.6 to 1300 <math>\text{cm}^2</math></p> <p>Terminal Lead                  20, 22, 24, 26, 28, 30 AWG</p> <p>Temperature coefficient      (<math>10^{-6}/^{\circ}\text{C}</math>): 175</p> <p>Operating Temperature Range, (<math>^{\circ}\text{C}</math>): <math>-65</math> to <math>+200</math></p>				
	<p>RESISTORS, HEATERS, FLEXIBLE SINGLE AND DOUBLE LAYER</p>	<p>Certificate  184 K</p>	<p>Page  10-11 001-1</p>	




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

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4009  Detail ESCC 4009/004	IRCA RICA Division Vitorio Veneto Italy	Qualification	ESTEC	Jan 2015
<p>Characteristics: All variants are qualified</p> <p>Single, double layer heaters</p> <p>Maximum Ohmic density      200 <math>\Omega/\text{cm}^2</math></p> <p>Rated power density        0.38</p> <p>Resistance                      1 to 5000 <math>\Omega</math></p> <p>Heating Area                  1.66 to 1300 <math>\text{cm}^2</math></p> <p>Terminal Lead                 20 to 30 AWG</p> <p>Resistance Tolerance        (%): <math>\pm 2</math> to <math>\pm 10</math></p> <p>Operating Temperature Range, (<math>^{\circ}\text{C}</math>): <math>-65</math> to <math>+150</math></p>				
	<p>RESISTORS, HEATERS, FLEXIBLE SINGLE AND DOUBLE LAYER</p>	Certificate		Page
		330		10-11 003

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


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

Types covered by similarity:		Remarks: Refer to variants table 1(a) in the Detail Specifications for resistance to temperature characteristics.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4006  Detail ESCC 4006/013 4006/014	MEAS Ireland (Betatherm) Galway Ireland	Qualification	ESTEC	Jul 2001
Characteristics:  4006/013: Variants 01 to 05 and 06 to 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.				
 <p>ESCC European Space Components Coordination QPL</p>	THERMISTORS, (THERMALLY SENSITIVE RESISTORS), NTC, BASED ON TYPES G15K4D489 AND *K3A35*	Certificate  266 G	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 K rev 1	Types NPN	STMicroelectronics
12-02			Low Power, PNP	
	12-02-002-3A-B	234 K rev 1	Types PNP	STMicroelectronics
12-05			MOSFET, Power, N-Channel	
	12-05-003-1	303 B	Types STRH100N10, STRH40N6, SRH100N6 and STRH8N10	STMicroelectronics
	12-05-003-2	319 A	Type BUY**CS**	Infineon
12-06			MOSFET, Power, P-Channel	
	12-06-003-1	326	Type STRH40P10	STMicroelectronics
12-10			RF/Microwave, NPN, Low Power, Low Noise	
	12-10-001	230 F	Types BFY193	Infineon
	12-10-002	245 F	Types BFY405, -420 and -450	Infineon
	12-10-003	320 A	Type BFY640	Infineon
	12-10-004	321 A	Types BFY640B and BFY650B	Infineon
	12-10-005	322 A	Type BFY740B	Infineon
12-16			Microwave, Gallium Arsenide	
	12-16-001	213 F	Types CFY67, High Electron Mobility, Low Noise	Infineon

Types covered by similarity:				Remarks:						
Procurement Specifications				Manufacturer		Nature of Approval		Supervising Authority	Initial Qualification Date	
Generic ESCC 5000  Detail ESCC Please refer to the next page				ST Microelectronics Rennes France		Qualification		CNES	Sep 1996	
Characteristics:  Maximum Rating:										
	2N2222A	2N2484		2N5551	2N3700	2N5154	BUX 77	2N2920A		
V <sub>CB0</sub> (V):	75	60	BV <sub>CB0</sub> (V)	180	140	100	100	60		
V <sub>CE0</sub> (V):	40	60	BV <sub>CE0</sub> (V)	160	80	80	80	60		
Packages:	<a href="#">See next page</a>									
Operating Temperature Range (°C), -65 to +200										
				TRANSISTORS, LOW AND HIGH POWER, NPN				Certificate  233 K <a href="#">rev1</a>		Page  12-01 002-3A


ESCC Specification No.	Component Type	Package	Qualified Variants
5201/001	2N 2484	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5201/002	2N 2222A	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 11, 12
5201/019	2N 5551	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 08, 09
5201/004	2N 3700	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5203/010	2N 5154	TO-257, SMD.5	04, 05, 06, 07
5203/016	BUX 77ESY	TO-257	06, 07
5207/002	2N 2920A	TO-77, LCCC6, <a href="#">FP-8</a>	03, 06, 12, 15, <a href="#">16, 17</a>



TRANSISTORS,  
LOW AND HIGH POWER,  
NPN

Certificate  
  
233 K [rev1](#)

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12-01  
002-3B

Types covered by similarity:						Remarks:						
Procurement Specifications						Manufacturer		Nature of Approval		Supervising Authority	Initial Qualification Date	
Generic ESCC 5000  Detail ESCC Please refer to the next page						ST Microelectronics Rennes France		Qualification		CNES	Sep 1996	
Characteristics:												
	2N2907A	2N3810	2N5153	BUX 78	2N5401							
BV <sub>CBO</sub> (V)	60	60	100	100	160							
BV <sub>CEO</sub> (V)	60	60	80	80	150							
Packages:	<a href="#">See next page</a>											
Operating Temperature Range (°C), -65 to +200												
						TRANSISTORS, LOW AND HIGH POWER, PNP				Certificate  234 K <a href="#">rev1</a>		Page  12-02 002-3A



ESCC Specification No.	Component Type	Package	Qualified Variants
5202/001	2N 2907A	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05,06, 07
5202/014	2N 5401	TO-18, LCCC3, LCCC3 +1	01, 02, 04, 05, 06, 07
5204/002	2N 5153	TO-257, SMD.5	04, 05, 06, 07
5204/006	BUX 78ESY	TO-257	06, 07
5207/005	2N 3810	TO-78, LCCC6, <a href="#">FP-8</a>	01, 02, 07, 09, <a href="#">10</a> , <a href="#">11</a>




TRANSISTORS,  
LOW AND HIGH POWER,  
PNP


Certificate


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002-3B


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5000  Detail    ESCC 5205/021, ESCC 5205/022 ESCC 5205/023, ESCC 5205/024		STMicroelectronics Rennes France	Qualification	CNES	Oct 2010
Characteristics:        5205/021 & 5205/022    Variants 01 and 02 are qualified 5205/023 & 5205/024    Variant 01 is qualified  Maximum Ratings for: $V_{GS(th)}$ 2 -4.5 min/max, $I_D=1$ mA 5205/021 $r_{DS(on)}$ (m $\Omega$ ):    35, $V_{GS}=12V$ , $I_D=24A$ $I_{DS}$ (A)    48, $T_{case}$ ( $^{\circ}C$ )= +25 $V_{DS}$ ( $V_{dc}$ ):    100 over $T_{op}$ , $V_{GS}=0$ V $V_{GS}$ ( $V_{dc}$ ): $\pm 20$ $P_{TOT}$ :    170 W at $T_{case} \leq +25$ C  Package Types:                TO-254AA, SMD.5 for STRH40N6 and STRH8N10  Operating Temperature Range ( $^{\circ}C$ ): $-55$ to $+150$					
		TRANSISTORS, MOSFET, N-CHANNEL, POWER, BASED ON TYPES STRH100N10, STRH40N6, STRH100N6 AND STRH8N10		Certificate  303 B	Page  12-05 003-1


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

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


Types covered by similarity: Variants 01 to 08.		Remarks:																										
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date																							
Generic ESCC 5010  Detail ESCC 5611/006		Infineon Technologies AG Neubiberg Germany	Qualification	DARA	Jun 1996																							
<p>Characteristics for BFY 193</p> <table border="0"> <tr> <td><math>V_{CE0}</math> (V) max.</td> <td></td> <td>12</td> <td></td> </tr> <tr> <td><math>V_{CBO}</math> (V) max.</td> <td></td> <td>20</td> <td></td> </tr> <tr> <td><math>h_{FE}</math> min/max.</td> <td></td> <td>50/175</td> <td>@ <math>V_{CE} = 8.0</math> V, <math>I_C = 30</math> mA</td> </tr> <tr> <td>NF (dB) max.</td> <td>@ 2 GHz</td> <td>2.9</td> <td>@ <math>V_{CE} = 5.0</math> V, <math>I_C = 15</math> mA</td> </tr> <tr> <td>MAG/MSG (dB) min.</td> <td>@ 2 GHz</td> <td>12.5</td> <td>@ <math>V_{CE} = 5.0</math> V, <math>I_C = 40</math> mA</td> </tr> <tr> <td><math>f_T</math> (GHz) min.</td> <td>@ 500 MHz</td> <td>6.5</td> <td>@ <math>V_{CE} = 5.0</math> V, <math>I_C = 40</math> mA</td> </tr> </table> <p>Package: " Micro-X1"</p> <p>Total Power Dissipation (<math>P_{tot}</math>) = 580 mW</p> <p>Operating Temperature Range (°C): <math>T_{op} = - 65</math> to +200</p>		$V_{CE0}$ (V) max.		12		$V_{CBO}$ (V) max.		20		$h_{FE}$ min/max.		50/175	@ $V_{CE} = 8.0$ V, $I_C = 30$ mA	NF (dB) max.	@ 2 GHz	2.9	@ $V_{CE} = 5.0$ V, $I_C = 15$ mA	MAG/MSG (dB) min.	@ 2 GHz	12.5	@ $V_{CE} = 5.0$ V, $I_C = 40$ mA	$f_T$ (GHz) min.	@ 500 MHz	6.5	@ $V_{CE} = 5.0$ V, $I_C = 40$ mA			
$V_{CE0}$ (V) max.		12																										
$V_{CBO}$ (V) max.		20																										
$h_{FE}$ min/max.		50/175	@ $V_{CE} = 8.0$ V, $I_C = 30$ mA																									
NF (dB) max.	@ 2 GHz	2.9	@ $V_{CE} = 5.0$ V, $I_C = 15$ mA																									
MAG/MSG (dB) min.	@ 2 GHz	12.5	@ $V_{CE} = 5.0$ V, $I_C = 40$ mA																									
$f_T$ (GHz) min.	@ 500 MHz	6.5	@ $V_{CE} = 5.0$ V, $I_C = 40$ mA																									
		<p>TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPE BFY 193</p>		<p>Certificate  230 F</p>	<p>Page  12-10 001</p>																							


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

Types covered by similarity: Variants 01, 02 and 03 are qualified.		Remarks: -																														
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date																											
Generic ESCC 5010  Detail ESCC 5611/009		Infineon Technologies AG Neubiberg Germany	Qualification	DLR	Sep 2012																											
Characteristics for BFY 640 Variant 03 <table border="0"> <tr> <td><math>V_{CE0}</math> (V) max.</td> <td></td> <td>4.0</td> </tr> <tr> <td><math>V_{CB0}</math> (V) max.</td> <td></td> <td>13</td> </tr> <tr> <td><math>I_C</math> (mA) max.</td> <td></td> <td>50.0</td> </tr> <tr> <td><math>I_B</math> (mA) max.</td> <td></td> <td>3.0</td> </tr> <tr> <td><math>h_{FE}</math> min/max</td> <td></td> <td>135/250 @ <math>V_{ce}=3V</math> &amp; <math>I_C=30mA</math></td> </tr> <tr> <td>MSG/MAG min (dB)</td> <td>@ 1.8GHz</td> <td>23 @ <math>V_{ce}=3V</math> &amp; <math>I_C= 30mA</math></td> </tr> <tr> <td></td> <td>@ 6.0 GHz</td> <td>12 @ <math>V_{ce}=3V</math> &amp; <math>I_C= 30mA</math></td> </tr> <tr> <td><math>NF_{max}</math> (dB)</td> <td>@ 1.8 GHz</td> <td>&lt; 0.8 @ <math>V_{ce}=3V</math> &amp; <math>I_C=5mA</math></td> </tr> <tr> <td><math>NF_{max}</math> (dB)</td> <td>@ 6.0 GHz</td> <td>&lt; 1.4 @ <math>V_{ce}=3V</math> &amp; <math>I_C=5mA</math></td> </tr> </table> Package: "Micro-X" Total Power Dissipation ( $P_{tot}$ ) max. = 200 mW Operating Temperature Range (°C): $T_{op}$ = - 65 to +175		$V_{CE0}$ (V) max.		4.0	$V_{CB0}$ (V) max.		13	$I_C$ (mA) max.		50.0	$I_B$ (mA) max.		3.0	$h_{FE}$ min/max		135/250 @ $V_{ce}=3V$ & $I_C=30mA$	MSG/MAG min (dB)	@ 1.8GHz	23 @ $V_{ce}=3V$ & $I_C= 30mA$		@ 6.0 GHz	12 @ $V_{ce}=3V$ & $I_C= 30mA$	$NF_{max}$ (dB)	@ 1.8 GHz	< 0.8 @ $V_{ce}=3V$ & $I_C=5mA$	$NF_{max}$ (dB)	@ 6.0 GHz	< 1.4 @ $V_{ce}=3V$ & $I_C=5mA$				
$V_{CE0}$ (V) max.		4.0																														
$V_{CB0}$ (V) max.		13																														
$I_C$ (mA) max.		50.0																														
$I_B$ (mA) max.		3.0																														
$h_{FE}$ min/max		135/250 @ $V_{ce}=3V$ & $I_C=30mA$																														
MSG/MAG min (dB)	@ 1.8GHz	23 @ $V_{ce}=3V$ & $I_C= 30mA$																														
	@ 6.0 GHz	12 @ $V_{ce}=3V$ & $I_C= 30mA$																														
$NF_{max}$ (dB)	@ 1.8 GHz	< 0.8 @ $V_{ce}=3V$ & $I_C=5mA$																														
$NF_{max}$ (dB)	@ 6.0 GHz	< 1.4 @ $V_{ce}=3V$ & $I_C=5mA$																														
		TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR, BASED ON TYPE BFY 640		Certificate 320 A Page 12-10 003																												

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



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

Types covered by similarity:				Remarks:		
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5010  Detail ESCC 5613/004		Infineon Technologies AG Neubiberg Germany		Qualification	DARA	Apr 1994
Characteristics (@ 12 GHz): All variants are qualified						
		NFmin. (dB)	Ga (dB)			
5613/004	variants 1 & 3	0.8	11			
pseudo-morphic	Variants 2 & 4	1.0	10.5			
Package: Micro-X Total Power Dissipation ( $P_{tot}$ ) = 200 mW derated from $+31\text{ }^{\circ}\text{C } T_{amb}$ Operating Temperature Range ( $^{\circ}\text{C}$ ): $T_{stg} = -65$ to $+150$						
		TRANSISTORS, HIGH ELECTRON MOBILITY, GALLIUM ARSENIDE, MICROWAVE, LOW NOISE, SMALL SIGNAL, BASED ON TYPE CFY 67			Certificate  213 F	
					Page  12-16 001	

## 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 Q	Polyimide, Types FA-3901-1, FA 3901-2	Draka Fileca
	13-01-001-2	09 P	Polyimide, Types 1871-1872	Nexans
	13-01-001-3	132 M	Polyimide, Types 3901002**B	Axon' Cable
	13-01-003	08 Q	PTFE, Types MTV-BTV	Nexans
	13-01-003-2	292 B	PTFE/Polyimide, Types 3901013**B	Axon' Cable
	13-01-004-1	138 L	Polyimide, Type SPC	Gore
	13-01-004-2	219 K	Polyimide, Types SPL	Gore
	13-01-004-3	268 E	Polyimide, Types 3901019**B	Axon' Cable
	13-01-004-4	295 B	Polyimide, Types 3901019	Leoni
	13-01-005-1	159 L	Crosslinked PTFE, Type Silver-Plated Copper	Tyco Electronics
	13-01-005-2	267 F	Crosslinked PTFE, Type Silver-Plated Copper	Axon' Cable
	13-01-008	215 K	PTFE, Polyimide / PFA Insulated, Type SPP	Gore
	13-01-009	216 J	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM	Gore
	13-01-009-2	294 B	PTFE, Polyimide/PFA Insulated, Shielded, Type 3901018	Leoni
	13-01-009-3	300 B	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM	Axon' Cable
	13-01-010-1	229 J	Polyimide, Insulated, Shielded, Type SPLD, Drain Wire	Gore
	13-01-010-2	293 B	Polyimide, Insulated, Shielded, Drain Wire, Types 3901021**B	Axon' Cable
	13-01-010-3	296 B	Polyimide, Insulated, Shielded, Drain Wire, Type 3901021	Leoni
	13-01-011-1	257 G	Crosslinked, Modified ETFE, Type Silver-Plated Copper, Lightweight	Tyco Electronics
	13-01-012-1	299 B	Fluoropolymer, Lightweight, Based on Type CSWL	Axon' Cable
	13-01-012-2	305 B	Fluoropolymer, Lightweight, Based on Type CSWL	Gore
	13-01-013-1	328	Extra thin, fluorothermoplastic / polyimide, Based on Type CSC	Gore




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


REP005 Updated on 15 Mar 2015


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


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

**SECTION 13-\*\*: INDEX OF WIRES AND CABLES****REP005 Updated on 15 Mar 2015**


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/001 3901/002	Draka Fileca Ste-Genevieve France	Qualification	CNES	Jan 1979
Characteristics:  FA 3901-1 All Variants defined in the Detail Specification 3901/001 are qualified except those based on AWG 12-14 FA 3901-2 Variants 31 to 73 and 74 to 91 as defined in the Detail Specification 3901/002 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200				
	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION BASED ON TYPES FA 3901-1, FA 3901-2		Certificate  07 Q	Page  13-01 001-1


Types covered by similarity:		Remarks:					
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date	
Generic ESCC 3901  Detail ESCC 3901/001 3901/002		Nexans Draveil France		Qualification	CNES	Jan 1979	
Characteristics:  Medium weight 1871 - n/1871 - 871 (3901/001) Variants 24 to 47 are qualified Light weight 1872 - n/1872 - 872 (3901/002) Variants 31 to 73 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200							
		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION BASED ON TYPES 1871 - 1872			Certificate  09 P		Page  13-01 001-2


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/001 3901/002	AXON' CABLE Montmirail France	Qualification	ESTEC	Dec 1985
Characteristics:  The following variants are qualified: 3009/001: variants 24 to 47 3009/002: variants 31 to 73  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200				
	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES 3901001**B and 3901002**B		Certificate  132 M	Page  13-01 001-3


Types covered by similarity: -MTV - BTV -MTV/G - BTV/G -MTV/BF/G - BTV/BF/G Procurement Specifications		Remarks:		
	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/013	Nexans Draveil France	Qualification	CNES	Jan 1979
<p>Characteristics:</p> <p>Variants 01 to 77 are qualified</p> <p>Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, PTFE/POLYIMIDE INSULATION, BASED ON TYPES MTV-BTV</p>		<p>Certificate  08 Q</p>	<p>Page  13-01 003</p>





Types covered by similarity:		Remarks: :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/013	AXON' CABLE Montmirail France	Qualification	CNES	Jun 2009
<p>Characteristics:</p> <p>Variants 01 to 77 are qualified</p> <p>Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, PTFE/POLYIMIDE INSULATION, BASED ON TYPES 3901013**B</p>		<p>Certificate  292 B</p>	<p>Page  13-01 003-2</p>


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/009	W.L. Gore & Co Pleinfeld Germany	Qualification	DLR	Aug 1986
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	Certificate  138 L	Page  13-01 004-1	


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/019	W.L. Gore & Co Pleinfeld Germany	Qualification	DARA	Nov 1994
<p>Characteristics:</p> <p>Variants 01-94 are qualified</p> <p>Voltage Rating, maximum (Vrms):600</p> <p>Temperature Range (°C): -200 to +200</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></p>	<p>WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES SPL</p>		<p>Certificate</p> <p>219 K</p>	<p>Page</p> <p>13-01 004-2</p>

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


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification 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	Certificate  295 B		Page  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	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/012	Tyco Electronics Dorcan, Swindon England	Qualification	RAE	Feb 1989
<p>Characteristics:</p> <p>Variants 01 to 80 are qualified</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 FLUOROPOLYMER INSULATION, BASED ON TYPE 55/995X</p>		<p>Certificate  159 L</p>	<p>Page  13-01 005-1</p>


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


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/017</p>	<p>W.L. Gore &amp; Co. Pleinfeld Germany</p>	Qualification	DARA	Jul 1994
<p>Characteristics:</p> <p>All variants are qualified</p> <p>Voltage Rating, maximum (V<sub>rms</sub>) : 600 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>ESCC European Space Components Coordination QPL</p>	<p>POWER WIRES FOR CRIMPING, LOW FREQUENCY, BASED ON TYPE SPP</p>		<p>Certificate</p> <p>215 K</p>	<p>Page</p> <p>13-01 008</p>





Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification 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.				
	WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM	Certificate  216 J		Page  13-01 009


Types covered by similarity: .		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification 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	Certificate  294 B		Page  13-01 009-2


Types covered by similarity:		Remarks: :		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/018	AXON' CABLE Montmirail France	Qualification	CNES	Dec 2009
<p>Characteristics:</p> <p>Variants 03 to 09, 12 to 38, 41 to 56, 59 to 65, 68 to 74, 77 to 81, 84 to 88 are qualified AWG 30 and 32 variants are not qualified.</p> <p>Voltage Rating, maximum (<math>V_{rms}</math>) : 600</p> <p>Temperature Range (°C): -200 to +200</p> <p>Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires. Expanded PTFE, extruded polyimide/fluorothermoplast insulated cables, shielded and jacketed.</p>				
	<p>WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM</p>	<p>Certificate</p> <p>300 B</p>		<p>Page</p> <p>13-01 009-3</p>

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/021	W.L. Gore & Co. Pleinfeld Germany	Qualification	DARA	Feb1996
<p>Characteristics:</p> <p>All variants (01 to 41) are qualified</p> <p>Voltage Rating, maximum (Vrms) : 600</p> <p>Temperature Range (°C): -200 to +200</p> <p>.</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></p>	<p>POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE,  LOW FREQUENCY, BASED ON TYPE SPLD</p>	<p>Certificate  229 J</p>	<p>Page  13-01 010-1</p>	


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


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/021	LEONI Special Cables GmbH Friesoythe Germany	Qualification	DLR	Oct 2009
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 3901021	Certificate  296 B		Page  13-01 010-3


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/020 ESCC 3901/022</p>	<p>Tyco Electronics Dorcan, Swindon England</p>	Qualification	DERA	Oct 1999
<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>	<p>Certificate 257 G</p>		<p>Page 13-01 011-1</p>


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/024	AXON' CABLE Montmirail France	Qualification	CNES	Dec 2009
Characteristics:  Variants 02 to 08, 10 to 16, 18 to 24, 26 to 32, 34 to 40, 42 to 48, 50 to 56, 58 to 64 are qualified AWG 30 variants are not qualified  Wires and Cables variants consist of 1, 2, 3 and 4 cores with and without jackets and shields  Maximum voltage: 600 Vrms Operating temperature range (°C): -200 to +200				
	WIRES AND CABLES, LOW FREQUENCY, FLUROPOLYMER INSULATION, 600V, BASED ON TYPE CSWL	Certificate  299 B	Page  13-01 012-1	





Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification 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>		<p>Certificate  305 B</p>	<p>Page  13-01 012-2</p>


Types covered by similarity: All variants 01 to 21 are qualified		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/025	W.L. Gore Pleinfeld Germany	Qualification	DLR	June 2014
<p>Characteristics:</p> <p>The specification contains 21 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, LIGHTWEIGHT, EXTRA THIN, FLUORTHHERMOPLASTIC / POLYIMIDE INSULATED WIRES AND CABLES BASED ON TYPE CSC</p>		<p>Certificate  328</p>	<p>Page  13-01 013-1</p>

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3902  Detail ESCC 3902/001	Nexans Draveil France	Qualification	CNES	July 1979
<p>Characteristics:</p> <p>Variants 01, 02, and 03 are qualified Miniature flexible 50 ohm coaxial cable PTFE Dielectric Polyimide Jacketed, Double Shield and Shielded / Jacketed</p> <p>Maximum voltage: 900 Vrms Operating temperature range (°C): -80 to +200 (-100 for variant 01)</p>				
	<p>WIRES AND CABLES, RF COAXIAL,  PTFE/POLYIMIDE INSULATION,  BASED ON TYPE 50 CIS</p>		<p>Certificate  24 R</p>	<p>Page  13-02 001</p>

Types covered by similarity:		Remarks:										
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date								
Generic ESCC 3902  Detail ESCC 3902/002	W.L. Gore Pleinfeld Germany	Qualification	DLR	Jan 1999								
<p>Characteristics:</p> <p>Variants 03 to 06, 10 to 13 and 20 to 30 are qualified</p> <p>Variants encompass coaxial, triaxial, and balanced shielded line</p> <p>Operating Voltage (Continuous), maximum ratings, (Vrms):</p> <table> <tr> <td>Variants 03</td> <td>180</td> </tr> <tr> <td>Variants 04, 10, 21, 22, 23, 24</td> <td>200</td> </tr> <tr> <td>Variants 06, 25</td> <td>250</td> </tr> <tr> <td>All Other Variants</td> <td>300</td> </tr> </table> <p>AWG Range: 20, 22, 24, 26, 28, 30 dependent on variant</p> <p>Temperature range (°C): -200 to +180</p>		Variants 03	180	Variants 04, 10, 21, 22, 23, 24	200	Variants 06, 25	250	All Other Variants	300			
Variants 03	180											
Variants 04, 10, 21, 22, 23, 24	200											
Variants 06, 25	250											
All Other Variants	300											
	<p>WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAXIAL AND SYMMETRIC, BASED ON TYPES GCX, GTX, GSC AND GBL</p>	<p>Certificate  255 H</p>	<p>Page  13-02 002-1</p>									

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3902  Detail ESCC 3902/002	AXON' CABLE Montmirail France	Qualification	CNES	Dec 2009
Characteristics: Variants encompass coaxial, triaxial, and balanced shielded line Variants 03 to 06, 10 to 12 and 20 to 25 are qualified Operating Voltage (Continuous), maximum ratings, (Vrms): Variants 03                                    180 Variants 04, 10, 21 to 24                    200 Variants 06, 25                                250 Variants 05, 11, 12, 20                    300 AWG Range: 20, 22, 24, 26, 28 dependent on variant  Temperature range (°C): -200 to +180				
	WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAXIAL AND SYMMETRIC, BASED ON TYPE 3902/002	Certificate  298 B		Page  13-02 002-2


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


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification 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		Certificate  304 B	Page  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 E	Thermostatic, Bimetallic	COMEPA
14-30-10			Passive Devices, RF	
	14-30-10-002-2	185 G	Coaxial Loads, 0 to 22 GHz	Radiall
	14-30-10-004	178 H	Attenuators, Type R413	Radiall



Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3702  Detail 3702/001	COMEPA BAGNOLET France	Qualification	CNES	Mar 2004
<p>Characteristics:</p> <p>Variants 01 to 03 are qualified</p> <p>Range of Components: Grade 1 and Grade Y</p> <p>Maximum Ratings:</p> <p>Rated Current (<math>I_R</math>): 4 A (30 Vdc resistive)</p> <p>Operating Temperature Range (<math>^{\circ}\text{C}</math>), <math>-50</math> to <math>+150</math></p>				
 <p>ESCC European Space Components Coordination QPL</p>	<p>SWITCHES, THERMOSTATIC, BIMETALLIC, SPST, OPENING CONTACT, BASED ON TYPE TH 47</p>		<p>Certificate</p> <p>275 E</p>	<p>Page</p> <p>14-16 99-003</p>

Types covered by similarity:				Remarks:																					
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date																			
Generic ESCC 3403  Detail 3403/006		RADIALL Saint-Quentin-Fallavier France		Qualification	CNES	Jul 1992																			
Characteristics: All variants are qualified. 50 ohms DC to 22 GHz																									
<table border="1"> <thead> <tr> <th>Type</th> <th>Detail Spec.</th> <th>Frequency Range (GHz)</th> <th>Rated Pin (W)</th> <th>Impedance (<math>\Omega</math>)</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>							Type	Detail Spec.	Frequency Range (GHz)	Rated Pin (W)	Impedance ( $\Omega$ )	3403/006	3403/006	0-22	1	50									
Type	Detail Spec.	Frequency Range (GHz)	Rated Pin (W)	Impedance ( $\Omega$ )																					
3403/006	3403/006	0-22	1	50																					
<table border="1"> <thead> <tr> <th rowspan="2">Type</th> <th colspan="4">VSWR max</th> </tr> <tr> <th><math>0 &lt; f(\text{GHz}) \leq 4</math></th> <th><math>4 &lt; f(\text{GHz}) \leq 12.4</math></th> <th><math>12.4 &lt; f(\text{GHz}) \leq 18</math></th> <th><math>18 &lt; f(\text{GHz}) \leq 22</math></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>							Type	VSWR max				$0 < f(\text{GHz}) \leq 4$	$4 < f(\text{GHz}) \leq 12.4$	$12.4 < f(\text{GHz}) \leq 18$	$18 < f(\text{GHz}) \leq 22$	1	1.05	1.15	1.20	1.30	2	1.05	1.15	1.20	1.25
Type	VSWR max																								
	$0 < f(\text{GHz}) \leq 4$	$4 < f(\text{GHz}) \leq 12.4$	$12.4 < f(\text{GHz}) \leq 18$	$18 < f(\text{GHz}) \leq 22$																					
1	1.05	1.15	1.20	1.30																					
2	1.05	1.15	1.20	1.25																					
Operating Temperature Range ( $^{\circ}\text{C}$ ), -55 to +125																									
		PASSIVE DEVICES, R.F. COAXIAL LOADS, 0-22 GHz BASED ON TYPE R404			Certificate  185 G																				
					Page  14-30 10-002-2																				

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3403  Detail 3403/005	RADIALL Saint-Quentin-Fallavier 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				
	R.F. ATTENUATORS  FIXED, COAXIAL  BASED ON TYPE R413		Certificate  178 H	Page  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 Mar 2015**