




## **ESCC QUALIFIED PARTS LIST**

**REP005**

**Updated 15 January 2016**



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 01-01-005-1	Index of Capacitors Type II, Types CNC31 to CNC34 from Exxelia Technologies	Amended Extended
Section 02 02-02-010 02-03-001-1 02-03-002-1 02-03-003-1 02-03-004-1	Index of Connectors Fast+locking screw Lock Assemblies from C&K Technologies HE 801 Series from Smiths Connectors - Hypertac KMC from Smiths Connectors - Hypertac MHD Series from Smiths Connectors - Hypertac IHD Interposer from Smiths Connectors - Hypertac	Amended Added Amended Amended Amended Amended
Section 06 06-01-002	Index of Fuses Type HCSF from Schurter	Amended Added
		
<b>Qualified Parts List</b>		
<b>DOCUMENT CHANGES</b>		
Change Date: 15 January 2016		





**QPL**

**Qualified Parts List**



**DOCUMENT CHANGES**



Change Date: 15 January 2016

	General Information	
As affected		
Section/Page No.	Description	
Section 02 02-04-001 02-04-002 02-05-001-1	Index of Connectors SMA Series from Radiall SMA 2.9 from Radiall MDM Series, Rectangular from C&K Components	Amended Extended Extended Revised
Section 04 04-02-001-3	Index of Diodes Types 1N5806U and 1N5811Y from STMicroelectronics	Amended Extended
Section 13 13-01-009-3 13-01-012-1 13-02-002-3	Index of Wires and Cables PTFE, Polyimide/PFA Insulated,Shielded, Type SPM from Axon Fluoropolymer, Lightweight, based on type CSWL from Axon Cable Coaxial, Triaxial, Balanced Shielded line from Axon Cable	Amended Amended Amended
 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 December 2015</b>	

	<b>General Information</b>	
As affected		
<b>Section/Page No.</b>	<b>Description</b>	
Section 11 11-01-001	Index of Thermistors Types G15K4D489 and *K3A35* from TE Connectivity	Amended Extended
Section 13 13-01-004-4	Index of Wires and Cables Polyimide, Types 3901019 from Leoni	Amended Extended
13-01-009-2	PTFE, Polyimide/PFA Insulated, Shielded, Type 3901018 from Leoni	Extended
13-01-009-3	PTFE, Polyimide/PFA Insulated,Shielded, Type SPM from Axon	Extended
13-01-010-3	Polyimide, Insulated, Shielded, Drain Wire, Type 3901021 from- Leoni	Extended
13-01-012-1	Fluoropolymer, Lightweight, based on type CSWL from Axon Cable	Extended
13-02-002-3	Coaxial, Triaxial, Balanced Shielded line from Axon Cable	Extended

 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>
	<b>Change Date: 15 November 2015</b>


	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-03-005	Index of Capacitors Low ESR, Type TES from AVX (CZ)	Amended Extended
Section 10 10-08-006 10-09-003 10-11-011-1	Index of Resistors Surface Mount, Type MS1 from Vishay (Selb) Type CHP from Vishay Sfernice (Fr) Single & Double Layer from IRCA	Amended Extended Extended Extended
Section 13 13-02-003-1 13-02-004	Index of Wires and Cables Symmetric Quad Spacewire from Axon Cable Symmetric Quad Spacewire from Axon Cable	Amended Amended Added
 	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 October 2015</b>	


	General Information	
As affected		
Section/Page No.	Description	
Section 02	Index of Connectors	Amended
02-01-001-1	D*M Series, Rectangular from C&K Components	Extended
02-02-001-1	D*MA Series, Rectangular from C&K Components	Extended
02-03-001-1	HE 801 Series from Hypertac	Extended
02-03-002-1	KMC Series from Hypertac	Extended
02-03-002-1	MHD Series from Hypertac	Extended
02-03-004-1	IHD Interposer from Hypertac	Extended
02-05-001-1	MDM Series, Rectangular from C&K Components	Extended
02-05-002-1	MTB Series, Rectangular from C&K Components	Extended
02-05-003-1	MDMA, Rectangular from C&K Components	Extended
Section 03	Index of Crystals	Amended
03-01-001-1	TO-5 Can from Rakon Fr	Amended
03-01-001-2	TO-5 Can from Rakon Fr	Added
03-01-002	TO-8 Can from Rakon Fr	Amended
03-01-002-2	TO-8 Can from Rakon Fr	Added
Section 09	Index of Relays	Amended
09-02-001	Type TL from REL STPI	Amended
09-02-006	Type D from Leach (Niort)	Re-qualified
Section 13	Index of Wires and Cables	Amended
13-01-005-1	Crosslinked PFTE, Type Silver-Plated Copper from Tyco Electronics	Extended




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


**Change Date: 15 September 2015**


	<b>General Information</b>	
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<b>Section/Page No.</b>	<b>Description</b>	
Section 01 01-05-003-1	Index of Capacitors Type PM94S from Exxelia Technologies	Amended Extended
Section 02 02-02-003 02-02-009	Index of Connectors DBAS Series, Circular from Deutsch ACB1 Series from Axon' Cable	Amended Extended Extended
Section 03 03-01-001-3 03-01-002-3	Index of Crystals TO-5 Can from KVG(D) TO-8 Can from KVG (D)	Amended Extended Extended
Section 04 04-13-003-3	Index of Diodes Varactor, Tuning, DH 76xxx from Cobham Microwave	Amended Extended
Section 13 13-01-001-2	Index of Wires and Cables Polyimide, Types 1871-1872 from Nexans	Amended Extended
		
		<b>Qualified Parts List</b>
		<b>DOCUMENT CHANGES</b>
		<b>Change Date: 15 Aug 2015</b>


	<b>General Information</b>
As affected	<i>This is the current QPL for July 2015</i>
<b>Section/Page No.</b>	<b>Description</b>
 <b>ESCC</b> <small>European Space Components Coordination</small> <b>QPL</b>	<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>
	<b>Change Date: 15 July 2015</b>




		General Information	
As affected			
Section/Page No.	Description		
Section 01 01-02-001-1 01-02-002-1	Index of Capacitors Type I from AVX/TPC Type II from AVX/TPC	Amended Extended Extended	
Section 07 07-02-002	Index of Inductors Types SESI and CMC from Microspire	Amended Extended	
Section 10 10-08-007	Index of Resistors Surface Mount, Type TNPS from Vishay Electronic (Selb)	Amended Extended	
Section 12 12-01-002-3A-B 12-02-002-3A-B 12-05-003-2 12-06-03-1	Index of Transistors Types NPN from STMicroelectronics Types PNP from STMicroelectronics Types BUY**SC*** from Infineon Type STRH40P10 from STMicroelectronics	Amended Revised Revised Extended Revised	
Section 13 13-01-001-3 13-01-003-2 13-01-004-3 13-01-005-2 13-01-010-2 13-02-003-2	Index of Wires and Cables Polyimide, Types 3901002**B from Axon' Cable PTFE/Polyimide, Types 3901013**B from Axon' Cable Polyimide, Types 3901019**B from Axon' Cable Crosslinked PTFE, Type Silver-Plated Copper from Axon' Cable Polyimide, Insulated, Shielded, Drain Wire,Types 3901021**B from Axon' Cable Symmertric, Quad, Spacewire from Axon' Cable	Amended Extended Extended Extended Extended Extended Extended	
		Qualified Parts List	
		DOCUMENT CHANGES	
		Change Date: 15 June 2015	

	<b>General Information</b>
As affected	<i>This is the current QPL for May 2015</i>
<b>Section/Page No.</b>	<b>Description</b>
	
<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>	
<b>QPL</b>	
<b>Change Date: 15 May 2015</b>	

	<b>General Information</b>	
As affected	<i>Eurofarad is now known as Exxelia Technologies</i> <i>RF2M Microwave s now known as API Technologies</i>	
<b>Section/Page No.</b>	<b>Description</b>	
Section 01	Index of Capacitors	Amended
01-01-005-1	Type II, Types CNC31 to CHC34 from Exxelia Technologies	Amended
01-01-007	Type II, Types CNC53 to CNC56 from Exxelia Technologies	Amended
01-02-001-2	Type I, Types CEC2S to CEC14S from Exxelia Technologies	Amended
01-02-002-2	Type II, Types CNC23 to CNC14S from Exxelia Technologies	Amended
01-02-004-2	Type II, Types TTP , 0603,0805, 1206,1210,1812 from AVX N.I.	Added
01-05-001-1	Type HT86PS, High Voltage from Exxelia Technologies	Amended
01-05-003-1	Type PM94S from Exxelia Technologies	Amended
Section 04	Index of Diodes	Amended
04-13-003-1A-B	PIN and Varactors from API Technologies	Amended
Section 05	Index of Filters	Amended
05-01-001-A	Types SFC, SFL, SFP from Exxelia Technologies	Amended
Section 12	Index of Transistors	Amended
12-06-003-1	Type STRH40P10 from STMicroelectronics	Extended
	<b>Qualified Parts List</b>	
	<b>DOCUMENT CHANGES</b>	
	<b>Change Date: 15 April 2015</b>	

	<b>General Information</b>	
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<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	
		Qualified Parts List	
		DOCUMENT CHANGES	
		Change Date: 15 February 2015	

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'A' Qualified Components List	4

## 1. FOREWORD

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

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

## 2. PROCURORS' RESPONSIBILITY

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

## 3. USE OF TABLES

### 3.1 Publication

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

### 3.2 Type Designation

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

### 3.3 Components Characteristics

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

### 3.4 Manufacturer

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

## 4. REVISION PROCEDURE

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



**5. TABLE OF QUALIFIED COMPONENTS**

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

**TABLE 5.1**

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





**APPENDIX A**


**Qualified Components List**


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


Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
<b>01-01</b>			<b>Ceramic, Fixed</b>	
	01-01-005	231 J	Type II, High Capacitance	AVX (N.I.)
	01-01-005-1	315 B	Type II, Types CNC 31 to CNC 34	Exxelia Technologies
	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	Exxelia Technologies
<b>01-02</b>			<b>Ceramic, Fixed, Chip</b>	
	01-02-001-1	109 M	Type I	AVX/TPC
	01-02-001-2	323 A	Type I, Types CEC2S to CEC14S	Exxelia Technologies
	01-02-002-1	110 M	Type II	AVX/TPC
	01-02-002-2	324 A	Type II, Types CNC2S to CNC14S	Exxelia Technologies
	01-02-004-1	264 F	Type II, High Voltage	AVX (N.I.)
	01-02-004-3	331	Type II, Types TTP 0603, 0805, 1206, 1210, 1812	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 A	Low ESR, Type TES	AVX (CZ)
<b>01-05</b>			<b>Fixed, Film</b>	
	01-05-001-1	251 G	Type HT86PS, High Voltage	Exxelia Technologies
	01-05-003-1	270 F	Type PM94S	Exxelia Technologies
<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	UK Space Agency	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	Exxelia Technologies Chanteloup en Brie France	Qualification	CNES	Nov 2011
Characteristics: E12 ±10% tolerance  Qualified Range: Variants 01 to 16. 16V : 2.2 to 68 µF 25V: 1.2 to 39 µF  DIL format with equal number of leads per side Lead material : type A with type 10 finish (electro-deposited 98% Ag min.) Operating Temperature Range (°C): -55 to +125				
 <p>ESCC European Space Components Coordination QPL</p>	CAPACITORS, CERAMIC, TYPE II, MULTIPLE LAYERS, BASED ON TYPES CNC 31 to 34, NE, PE AND PLE		Certificate  315 B	Page  01-01 005-1

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	UK Space Agency	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>ESCC European Space Components Coordination QPL</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	Exxelia Technologies Chanteloup en Brie France	Qualification	CNES	Mar 2011
Characteristics:  Qualified Range:  Variants 01 to 04, 08 to 11, 15 to 18 and 22 to 25 are qualified All values 50V to 500V E12: ±10% tolerance  Operating Temperature Range (°C): -55 to +125				
	CAPACITORS, CERAMIC, TYPE II, 50V TO 500V, BASED ON TYPES CNC53 TO CNC56		Certificate  306 B	Page  01-01 007

Types covered by similarity: Tolerance ( $\pm$ ): 0.5pF; 2, 5, 20%					Remarks: Variant 01 removed			
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 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	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	03, 06	10 to 3 900	50, 100	1, 2, 5, 10	$\pm$ 30	
1210	A_13C	3009/004	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	03, 06	100 to 15 000	50, 100	1, 2, 5, 10	$\pm$ 30	
2220	A_15C	3009/006	03, 06	470 to 33 000	50, 100	1, 2, 5, 10	$\pm$ 30	
			CAPACITORS, CERAMIC, FIXED, CHIP, TYPE I			Certificate  109 M		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	Exxelia Technologies 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				
 <p>ESCC European Space Components Coordination QPL</p>	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		≥10pF 1, 2, 5, 10	
				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

323 A

Page

01-02  
001-2B

Types covered by similarity:  Tolerance ( $\pm\%$ ): 10, 20%		Remarks: Variant 01 deleted		
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 M	Page  01-02 002-1A

Characteristics:	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)			Rated Volt. (V)	Tol. (±%)
	0805	A_12G	3009/008	03, 06	820	to	47 000	25	5, 10, 20
					820	to	27 000	50	5, 10, 20
					820	to	10 000	100	5, 10, 20
	0805	A612Z	3009/008	07	2 700	to	100 000	25	5, 10, 20
					2 700	to	68 000	50	
					2 700	to	47 000	100	
	1210	A_13G	3009/009	03, 06	3 900	to	220 000	25	5, 10, 20
					3 900	to	120 000	50	5, 10, 20
					3 900	to	47 000	100	5, 10, 20
1210	A613Z	3009/009	07	3 900	to	470 000	25	5, 10, 20	
				3 900	to	330 000	50		
				3 900	to	220 000	100		
1812	A_14G	3009/010	03, 06	6 800	to	470 000	25	5, 10, 20	
				6 800	to	270 000	50	5, 10, 20	
				6 800	to	82 000	100	5, 10, 20	
1812	A614Z	3009/010	07	22 000	to	1 000 000	25	5, 10, 20	
				22 000	to	680 000	50		
				22 000		470 000	100		
2220	A_15G	3009/011	03, 06	18 000	to	1 000 000	25	5, 10, 20	
				18 000	to	680 000	50	5, 10, 20	
				18 000	to	180 000	100	5, 10, 20	
2220	A615Z	3009/011	07	100 000	to	2 200 000	25	5, 10, 20	
				100 000	to	1 500 000	50		
				100 000		1 000 000	100		
1206	A_20G	3009/023	03, 06	2 200	to	100 000	25	5, 10, 20	
				2 200	to	68 000	50	5, 10, 20	
				2 200	to	22 000	100	5, 10, 20	
1206	A620Z	3009/023	07	3 300	to	220 000	25	5, 10, 20	
				3 300	to	150 000	50		
				3 300	to	100 000	100		




CAPACITORS,  
CERAMIC, FIXED,  
CHIP, TYPE II

Certificate

110 M

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
Generic ESCC 3009  Detail ESCC    3009/008        3009/009 3009/010        3009/011 3009/023        3009/038 3009/039				Exxelia Technologies Chanteloup en Brie France		Qualification		CNES	Oct 2012
Characteristics:	Style	Model	Detail Spec.	Variants	Capacitance Range (pF)		Rated Volt. (V)	Tol. ( $\pm\%$ )	
	0805	CNC2S	3009/008	06	6 800 to 150 000 6 800 to 100 000 100 to 47 000 68 to 10 000		16 25 50 100	5, 10, 20	
Table continues on next page				07	6 800 to 220 000 6 800 to 150 000 100 to 100 000 68 to 47 000		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

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



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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 002-2C

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	UK Space Agency	Feb 2001																								
Characteristics: E12 series  Qualified Range: Variants 01 to 12 are qualified Terminations: Variants 01 to 12: metallised pads  Operating Temperature Range (°C):-55 to +125				<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																											
		CAPACITORS, FIXED, CHIP, CERAMIC, TYPE II, HIGH VOLTAGE, BASED ON 1812 and 1825		Certificate  264 F		Page  01-02 004-1																								


Types covered by similarity: Capacitance tolerances 5%, 10%, 20%		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3009  Detail ESCC 3009/041	AVX Limited Coleraine Northern Ireland	Qualification	ESA	April 2015
<p>Characteristics: E12 value series</p> <p>Qualified Range: Variant 02 0603, Cn as in Detail specification, 5%, 10%, 20% tolerances, 16V, 25V, 50V, 100V rated Variant 03 0805, Cn as in Detail specification, 5%, 10%, 20% tolerances, 16V, 25V, 50V, 100V rated Variant 04 1206, Cn as in Detail specification, 5%, 10%, 20% tolerances, 16V, 25V, 50V, 100V rated Variant 05 1210, Cn as in Detail specification, 5%, 10%, 20% tolerances, 16V, 25V, 50V, 100V rated Variant 06 1812, Cn as in Detail specification, 5%, 10%, 20% tolerances, 16V, 25V, 50V, 100V rated</p> <p>Terminations: Cu and Ag-loaded epoxy + Ni barrier+ Sn/Pb plating finish (10% Pb minimum) Operating Temperature Range (°C):-55 to +125</p>				
	<p>CAPACITORS, FIXED, CHIP, BASE METAL ELECTRODE, CERAMIC DIELECTRIC TYPE II, BASED ON TYPE TTP, 0603, 0805, 1206, 1210, 1812</p>		<p>Certificate  331</p>	<p>Page  01-02 004-2</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	ESA	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>ESCC European Space Components Coordination QPL</p>	<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)																																																																																																																																			
<table border="1"> <thead> <tr> <th rowspan="2">Capacitance <math>C_n</math> (<math>\mu</math>F)</th> <th colspan="8">Rated Voltage <math>U_R</math></th> </tr> <tr> <th>6.3V</th> <th>10V</th> <th>12V</th> <th>16V</th> <th>20V</th> <th>25V</th> <th>35V</th> <th>50V</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>A 3000</td> <td></td> <td>B 2000</td> </tr> <tr> <td>3.3</td> <td></td> <td></td> <td></td> <td></td> <td>A 2500</td> <td></td> <td>B 1000</td> <td>C 1000</td> </tr> <tr> <td>4.7</td> <td></td> <td></td> <td></td> <td>A 2000</td> <td></td> <td>B 1000</td> <td>C 600</td> <td>D 200</td> </tr> <tr> <td>10</td> <td></td> <td>A 1800</td> <td></td> <td></td> <td>B 1000</td> <td>C 600</td> <td>D 120</td> <td></td> </tr> <tr> <td>22</td> <td>A 900</td> <td></td> <td></td> <td>B 600</td> <td>C 400</td> <td></td> <td>D 100</td> <td></td> </tr> <tr> <td>33</td> <td></td> <td>B 650</td> <td></td> <td></td> <td>C 300</td> <td>D 65</td> <td>E 65</td> <td></td> </tr> <tr> <td>47</td> <td>B 500</td> <td></td> <td></td> <td>C 350</td> <td>D 55</td> <td>E 65</td> <td></td> <td></td> </tr> <tr> <td>100</td> <td></td> <td>C 200</td> <td></td> <td>D 55</td> <td>E 45</td> <td></td> <td></td> <td></td> </tr> <tr> <td>150</td> <td>C 300</td> <td>D 45</td> <td></td> <td>E 40</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>220</td> <td></td> <td>D 35</td> <td>E 35</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>330</td> <td>D 35</td> <td>E 35</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>470</td> <td>E 30</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>							Capacitance $C_n$ ( $\mu$ F)	Rated Voltage $U_R$								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							
Capacitance $C_n$ ( $\mu$ F)	Rated Voltage $U_R$																																																																																																																																		
	6.3V	10V	12V	16V	20V	25V	35V	50V																																																																																																																											
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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  327 A		Page  01-03 005																																																																																																																												



Types covered by similarity:  All values defined by the ESCC Detail Specification ±20% (E6 Series) tolerance by variant where applicable		Remarks:																														
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date																												
Generic ESCC 3006 Detail ESCC 3006/024	Exxelia Technologies Marmoutier France	Qualification	CNES	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="2">Capacitance Range (µF)</th> <th>Tol. (±%)</th> <th>U<sub>R</sub>(V)</th> </tr> </thead> <tbody> <tr> <td>2.2</td> <td>to 47</td> <td>10</td> <td>50</td> </tr> <tr> <td>1.5</td> <td>to 22</td> <td>10</td> <td>63</td> </tr> <tr> <td>0.56</td> <td>to 12</td> <td>10</td> <td>100</td> </tr> <tr> <td>0.33</td> <td>to 5.6</td> <td>10</td> <td>200</td> </tr> <tr> <td>0.22</td> <td>to 4.7</td> <td>10</td> <td>250</td> </tr> <tr> <td>0.10</td> <td>to 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																													
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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 F	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															
<p>Characteristics: Operating Temperature Range, (°C): -55 to +150 All variants defined by the ESCC Detail Specification.</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Capacitance Range (pF)</th> <th>U<sub>R</sub>(V)</th> </tr> </thead> <tbody> <tr> <td>400M106A &amp; C 400M10xA &amp; 107C 400M108A &amp; C 400M110A &amp; C 400M113J &amp; 114J</td> <td>8.2, 10, 12, 15 18, 22, 27, 33, 39 47, 56, 68 81, 100 10</td> <td>40</td> </tr> <tr> <td>101M106A &amp; C 101M10xA &amp; 107C 101M108A &amp; C</td> <td>3.9, 4.7, 5.6, 6.8 10, 12, 15 22, 27, 33, 39</td> <td>100</td> </tr> <tr> <td>201M106C 201M106A 201M10xA &amp; 107C 201M108A &amp; C 201M111J &amp; 112J</td> <td>2.2, 2.7, 3.3 0.1X (201M106C, -107C, -108C) + 210M106C 3.9, 4.7, 5.6, 6.8, 8.2 10, 12, 15, 18 0.25 &amp; 0.4</td> <td>200</td> </tr> <tr> <td>401M111J 401M112J</td> <td>0.125 0.2</td> <td>400</td> </tr> </tbody> </table>						Type	Capacitance Range (pF)	U <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
Type	Capacitance Range (pF)	U <sub>R</sub> (V)																		
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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																		
		<p>CAPACITORS, MICROWAVE, SILICON, NAKED DIE, MOS, BASED ON TYPES 101M, 201M, 400M AND 401M</p>		<p>Certificate  286 C</p>	<p>Page  01-11 001</p>															

## 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 Q	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 Q	D*MA Series, Rectangular	C&K COMPONENTS
	02-02-001-2	156 K	D*MA Series, Rectangular	SOURIAU
	02-02-003	25 P	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 C	ACB1 Series	Axon' Cables
	02-02-010	337	Fast-locking Screw Lock Assemblies	C&K COMPONENTS
<b>02-03</b>			<b>Printed Circuit Board</b>	
	02-03-001-1	99 N	HE 801 Series	Smiths Connectors Hypertac
	02-03-002-1	149 L	KMC Series	Smiths Connectors Hypertac
	02-03-003-1	250 G	MHD Series	Smiths Connectors Hypertac
	02-03-004-1	281 D	IHD INTERPOSER	Smiths Connectors Hypertac
<b>02-04</b>			<b>R.F. Coaxial</b>	
	02-04-001	68 N	SMA Series	Radiall
	02-04-002	283 D	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 N Rev 1	MDM Series, Rectangular	C&K COMPONENTS
	02-05-002-1	141 N	MTB Series, Rectangular	C&K COMPONENTS
	02-05-003-1	290 C	MDMA, Rectangular	C&K COMPONENTS
	02-05-004-1	301 B	8MCG, Rectangular	SOURIAU




## SECTION 02-\*\*: INDEX OF CONNECTORS


REP005 Updated on 15 Jan 2016


Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/001 3401/004 3401/022 3401/040 3401/072 3401/080</p>		C&K COMPONENTS Dole France	Qualification	CNES	Feb 1981
<p>Characteristics: Shell Size: E, A, B, C, D, F</p> <p>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</p> <p>Mounting Type: Blank: standard mounting holes; Y: floating mount; E: captive nuts</p> <p>Range of Connectors: 3401/001: Variants 01 &amp; 02</p> <p>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</p> <p>Termination contacts: solder bucket, straight PCB, 90° PCB</p> <p>Gold-plated non-magnetic coating</p> <p>Coaxial contact arrangements: 3401/004 variants 01 to 25: Power contact arrangements: 3401/040 variants 01 to 17</p> <p>Operating Temperature Range (°C): -55 to +125</p>					
		<p>CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*M</p>		<p>Certificate  71 Q</p>	<p>Page  02-01 001-1</p>


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





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


Types covered by similarity:		Remarks:				
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date	
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/002 3401/005 3401/020 3401/021 3401/022 3401/072</p>		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988	
<p>Characteristics: Complete range as defined in the Detail Specifications <u>except</u> high density 104 contacts arrangement are qualified</p> <p>Accessories variants qualified: 3401/022: variants 01 to 16, 44 to 57, 65 to 80 3401/072: variants 01 to 65</p> <p>Range of Connectors:- 3401/002: variants 1 &amp; 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 &amp; 22: variants 1 &amp; 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)</p> <p>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</p> <p>Gold-plated non-magnetic coating Connector Savers- For usage with connector range defined above</p> <p>Operating Temperature Range (°C): -55 to +125</p>						
		<p>CONNECTORS AND CONNECTOR SAVER, ELECTRICAL, CRIMP CONTACTS, REMOVABLE RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA</p>		<p>Certificate  156 K</p>		<p>Page  02-02 001-2</p>


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 25 P</p>	<p>Page 02-02 003</p>

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


Types covered by similarity:		Remarks:													
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date										
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/044 3401/045 3401/062</p>		<p>SOURIAU Connection Technology Marolles en Brie France</p>	Qualification	CNES	May 1995										
<p>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</p> <p>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</p> <p>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</p>		<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)														
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16	13.0														
20	7.5														
22	5.0														
		<p>CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, REMOVABLE CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES II</p>		<p>Certificate 221 G</p>	<p>Page 02-02 006</p>										


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- teristics: 3401/056 all variants are qualified 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)																														
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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		Page																												
			222 G		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  RECEPTABLE 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 Operating Temperature Range (°C): -55 to +150</p>				
	<p>CONNECTORS, ELECTRICAL, TRIAXIAL, BAYONET COUPLING, NON-REMOVABLE CRIMP CONTACTS, MIL-STD-1553B DATABUS, BASED ON TYPE ACB1 SERIES</p>		<p>Certificate 288 C</p>	<p>Page 02-02 009</p>





Types covered by similarity: Variants 01 TO 06. Variant 06 is mandatory where applicable		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/085	C&K Components Dole France	Qualification	CNES	Jan 2016
Characteristics: Variants All Variants are qualified. Variant 06 is mandatory where applicable          Operating Temperature Range (°C): -55 to +125				
 The logo for ESCC QPL (European Space Components Coordination) features a stylized globe with the text 'ESCC' in large blue letters, 'European Space Components Coordination' in smaller text below it, and 'QPL' in large blue letters at the bottom.	FAST LOCKING SCREW LOCK ASSEMBLIES FOR RECTANGULAR CONNECTORS 3401/001, 3401/002 AND CONNECTOR SAVERS 3401/020, 3401/080	Certificate  337		Page  02-02 010


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


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

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3401  Detail ESCC 3401/065	Smiths Connectors - Hypertac 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 G		Page  02-03 003-1


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


Types covered by similarity: - Hermetically sealed receptacle		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</p>	RADIALL Saint-Quentin-Fallavier France	Qualification	CNES	Feb 1981
<p>Characteristics:</p> <p>Frequency Range 0-18 GHz</p> <p>3402/001 Pin contact (Plug). Variants 01 to 47 (except 11, 19, 31 –not in use)</p> <p>3402/002 socket contact (Receptacle). Variants 01 to 85 (except 33, 35, 52 –not in use)</p> <p>3402/003 Adapters. Variants 01 to 14</p> <p>Crimp– or solder-type contact for flexible and semi-rigid cables, contacts for micro strip</p> <p>Shell material and finish: Beryllium copper gold plated, copper or nickel underplate; stainless steel, electro-passivated or gold plated.</p> <p>Operating Temperature Range (°C): See Detail Specifications</p>				
	<p>CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPE SMA</p>		<p>Certificate  68 N</p>	<p>Page  02-04 001</p>


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 D</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>				
	<p>CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPES SMA, SMA 2.92 TNC and SMP</p>		<p>Certificate 329</p>	<p>Page 02-04 003</p>



Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/029 3401/041 3401/032 <a href="#">3401/087</a></p>	<p>C&amp;K COMPONENTS Dole France</p>	Qualification	CNES	Oct 1986
<p>Characteristics:</p> <p>Layout: 9 - 15 - 21- 25 - 31 - 37 - 51 Contacts, Non removable crimp contacts</p> <p>Variants: 3401/029: 01 and 02 3401/041: 01 to 07 3401/032: 03, 04, 07 to 17 <a href="#">3401/087: 01 to 56</a></p> <p>Termination types: AWG 25: Uninsulated rigid wire. Bent and straight PCB - Max rated: 2.5 A AWG 26: ESCC 390101302, ESCC 390100256 - Max rated: 2.5 A AWG 28: ESCC 390101301, ESCC 390100261 - Max rated: 1.5 A</p> <p>Nickel or Gold Plated Shells, Operating Temperature Range (°C): -55 to +125</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></p>	<p>CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, CRIMP CONTACT, BASED ON TYPE MDM</p>		<p>Certificate 140 N rev1</p>	<p>Page 02-05 001-1</p>

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/031</p>	<p>C&amp;K COMPONENTS Dole France</p>	Qualification	CNES	Oct 1986
<p>Characteristics:</p> <p>Shell sizes: 5 through 81 contacts, Non removable crimp contacts</p> <p>Variants: 3401/031: 01&amp;02</p> <p>Termination Types:            AWG 25: Uninsulated rigid wire. Bent PCB - Max rated: 2.5 A            AWG 26: ESCC 390101302 - Max rated: 2.5 A            AWG 28: ESCC 390101301 - Max rated: 1.5 A</p> <p>Operating Temperature Range (°C): -55 to +125</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></p>	<p>CONNECTORS, ELECTRICAL, MICROMINIATURE, CRIMP CONTACT, SINGLE-IN-LINE, BASED ON TYPE MTB</p>		<p>Certificate</p> <p>141 N</p>	<p>Page</p> <p>02-05 002-1</p>


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 C	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)
	03-01-001-2	333	TO-5 Can	RAKON (F)
	03-01-001-3	308 B	TO-5 Can	KVG (D)
	03-01-002	34 M	TO-8 Can	RAKON (F)
	03-01-002-2	334	TO-8 Can	RAKON (F)
	03-01-002-3	309 B	TO-8 Can	KVG (D)


**SECTION 03-\*\*: INDEX OF CRYSTALS****REP005 Updated on 15 Jan 2016**


Types covered by similarity: All variants previously specified in (retired) specifications: 3501/001, 3501/008, 3501/011, 3501/012		Remarks: The production of ESCC parts has stopped in Argenteuil. The latest qualified manufactured Lot is identified with DC 1525.		
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: 2.5 - 26 MHz				
 The logo for ESCC (European Space Components Coordination) QPL (Qualified Parts List). It features a globe on the left, the text 'ESCC' in large blue letters, 'European Space Components Coordination' in smaller text below it, and 'QPL' in large blue letters at the bottom.	CRYSTALS, TO-5 CAN	Certificate  33 M	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		RAKON France Pont Sainte Marie France	Qualification  (Previously qualified in Argenteuil site)	CNES	Sept 2015  (Oct 1979)												
Characteristics: TO-5 Can (T 807)  All variants are qualified.  Frequency Ranges: <table border="1" data-bbox="405 997 898 1182"> <thead> <tr> <th></th> <th>AT (MHz)</th> <th>SC (MHz)</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>14 to 35</td> <td>15 to 38</td> </tr> <tr> <td>P3</td> <td>20 to 100</td> <td>22 to 110</td> </tr> <tr> <td>P5</td> <td>45 to 140</td> <td>55 to 140</td> </tr> </tbody> </table>				AT (MHz)	SC (MHz)	P1	14 to 35	15 to 38	P3	20 to 100	22 to 110	P5	45 to 140	55 to 140			
	AT (MHz)	SC (MHz)															
P1	14 to 35	15 to 38															
P3	20 to 100	22 to 110															
P5	45 to 140	55 to 140															
		CRYSTALS, TO-5 CAN	Certificate  333		Page  03-01 001-2												

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				
 The logo for ESCC QPL (European Space Components Coordination Quality Performance Level) 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-5 CAN	Certificate  308 B		Page  03-01 001-3



Types covered by similarity: All variants previously specified in (retired) specifications: 3501/002 and 3501/009		Remarks: The production of ESCC parts has stopped in Argenteuil. The latest qualified manufactured Lot is identified with DC 1525.		
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 QPL (European Space Components Coordination) features a globe on the left, the text 'ESCC' in large blue letters, 'European Space Components Coordination' in smaller text below it, and 'QPL' in large blue letters at the bottom.	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		RAKON France Pont Sainte Marie France	Qualification (Previously qualified in Argenteuil site)	CNES	Sept 2015  Oct 1979
Characteristics: All variants are qualified.					
TO-8 Can (T 1507)					
Frequency Ranges:					
		AT (MHz)	SC (MHz)		
P1		3 to 20	3 to 22		
P3		10 to 30	10 to 33		
P5		15 to 65	16 to 71		
		CRYSTALS, TO-8 CAN		Certificate  334	Page  03-01 002-2


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				
 ESCC European Space Components Coordination QPL	CRYSTALS, TO-8 CAN	Certificate  309 B	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 C	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	API Technologies - RF2M Division
	04-13-003-2A-B	225 F	Multiplier and PIN, DH 2xx and DH 50xxx	Cobham Microwave
	04-13-003-3	273 E	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:																				
Procurement Specifications		Manufacturer		Nature of Approval	Supervising Authority	Initial Qualification Date																		
Generic ESCC 5000  Detail ESCC 5101/026 5101/027		ST Microelectronics Rennes France		Qualification	CNES	May 2011																		
Characteristics: <table border="1" data-bbox="91 903 1341 1070"> <thead> <tr> <th>Type</th> <th>Variants</th> <th>V<sub>BR</sub> (V)</th> <th>V<sub>RWM</sub> (V)</th> <th>I<sub>FSM</sub> (A)</th> <th>Case</th> </tr> </thead> <tbody> <tr> <td>1N6640U</td> <td>07, 08</td> <td>75</td> <td>75</td> <td>2</td> <td>LCC2-D</td> </tr> <tr> <td>1N6642U</td> <td>07, 08</td> <td>100</td> <td>100</td> <td>2</td> <td>LCC2-D</td> </tr> </tbody> </table> <p>Operating Temperature Range (°C): -65 to +175</p>							Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case	1N6640U	07, 08	75	75	2	LCC2-D	1N6642U	07, 08	100	100	2	LCC2-D
Type	Variants	V <sub>BR</sub> (V)	V <sub>RWM</sub> (V)	I <sub>FSM</sub> (A)	Case																			
1N6640U	07, 08	75	75	2	LCC2-D																			
1N6642U	07, 08	100	100	2	LCC2-D																			
		DIODES, SWITCHING,  BASED ON  TYPES 1N6640U AND 1N6642U			Certificate  311 B		Page  04-01 003-2																	

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 1082"> <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> <p>Operating Temperature Range (°C): -65 to +175</p>											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																				
				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><math>V_{BR}</math> (V)</th> <th><math>V_{RWM}</math> (V)</th> <th><math>I_{FSM}</math> (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> <p>Operating Temperature Range (°C): -65 to +175</p>							ESCC	Type	Variants	$V_{BR}$ (V)	$V_{RWM}$ (V)	$I_{FSM}$ (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	$V_{BR}$ (V)	$V_{RWM}$ (V)	$I_{FSM}$ (A)	Case																					
5101/014	1N5806U	13, 14	160	150	33	LCC2-A																					
5101/013	1N5811U	11, 12	160	150	100	LCC2-B																					
		DIODES, POWER RECTIFIER, BASED ON TYPES 1N5806U AND 1N5811U			Certificate 297 C		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><math>V_{RWM}</math> (V)</th> <th><math>dV/dt</math> (V/<math>\mu</math>s)</th> <th><math>I_R</math> (<math>\mu</math>A) @ <math>V_R=40</math></th> <th><math>I_{FSM}</math> (A)</th> <th><math>I_O</math> (A) @ <math>T_{amb}</math></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	$V_{RWM}$ (V)	$dV/dt$ (V/ $\mu$ s)	$I_R$ ( $\mu$ A) @ $V_R=40$	$I_{FSM}$ (A)	$I_O$ (A) @ $T_{amb}$	1N5819U	40	10 000	15 (DC)	25	1	1N5822U	40	10 000	80 (pulse)	80	3
Type	$V_{RWM}$ (V)	$dV/dt$ (V/ $\mu$ s)	$I_R$ ( $\mu$ A) @ $V_R=40$	$I_{FSM}$ (A)	$I_O$ (A) @ $T_{amb}$																		
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 F rev1		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  
04-02  
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 ( $\bar{}$ 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	DLR	Sep 1995
Characteristics: Variants 01 and 03 are qualified  Maximum Ratings: BAS 70 $V_{RR}$ : $\bar{}$ 70 V $I_F$ : 70 mA $I_{FSM}$ : 85 mA <sub>pk</sub> @ t<10ms, duty cycle=10% D.C Parameters: $I_R$ = 100 nA max @ $V_R$ = $\bar{}$ 56 V $V_{F1}$ = 0.44 V max. @ $I_F$ = 1.0 mA At room temp. $V_{BR}$ = 70V min @ $I_R$ = $\bar{}$ 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 <sub>tot</sub> =0.25W @ T <sub>case</sub> = $\bar{}$ 125 $\circ$ C Operating Temperature Range ( $\circ$ C): $\bar{}$ 55 to $\bar{}$ 150					
		DIODES,  MICROWAVE, SILICON, SCHOTTKY, GENERAL PURPOSE,  BASED ON TYPE BAS 70		Certificate  227 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	API Technologies - RF2M Milton Keynes England	Qualification	UK Space Agency	Dec 1993
Characteristics:  Operating Temperature Range (°C): -65 to +125 and 150				
 <p>ESCC European Space Components Coordination QPL</p>	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

Page  
04-13  
003-1B

Types covered by similarity:		Remarks: Certificate 259C has been merged with this certificate beginning February 2012.		
Procurement Specifications	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 style="text-align: center;">DIODES, MICROWAVE, SILICON, MULTIPLIER AND PIN, BASED ON TYPES DH 2XX AND DH 50XXX</p>	<p style="text-align: center;">Certificate 225 F</p>	<p style="text-align: center;">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

Page  
04-13  
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 E		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	DLR	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	DLR	Oct 1996
Characteristics: Variants 01, 02, 05 and 06 are qualified.  Maximum Ratings: BXY 43 (variants 01-02)      BXY 44 (variants 05-06) $V_R = \overset{-}{\sim} 150 \text{ V}$ $\overset{-}{\sim} 200 \text{ V}$ $I_F = 400 \text{ mA}$ $P_D = 500 \text{ mW}$					
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): $\overset{-}{\sim} 55$ 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	Exxelia Technologies

**SECTION 05-\*\*: INDEX OF FILTERS****REP005 Updated on 15 Jan 2016**

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	Exxelia Technologies 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				
	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


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 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
	06-01-002	336	Type HCSF	Schurter

**SECTION 06-\*\*: INDEX OF FUSES****REP005 Updated on 15 Jan 2016**

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	ESA	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>





Types covered by similarity: Variants 24, 26, 28 are qualified (5A, 7.5A, 10A)		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 4008  Detail ESCC 4008/002	Schurter Lucerne Switzerland	Qualification	ESA	Jan 2016
<p>Characteristics: Variants 24, 26, 28 are qualified.</p> <p>Variant 32 (15A) is not qualified</p> <p>Operating Temperature Range, (°C): -50 to +125 (T<sub>amb</sub> 106% I<sub>R</sub> to 80% I<sub>R</sub>)</p>				
	<p>FUSES, SOLID STATE, THIN FILM, BASED ON TYPE HCSF</p>		<p>Certificate  336</p>	<p>Page  06-01 002</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 E	Types SESI and CMC	Microspire

**SECTION 07-\*\*: INDEX OF INDUCTORS****REP005 Updated on 15 Jan 2016**


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 ( $\mu\text{H}$ )	Tolerance ( $\pm\%$ )	Q min.	Min. SRF $f_r$ (MHz)	Max. DCR, $R_{dc}$ ( $\Omega$ )	Rated DC Current, $I_R$ (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 ( $^{\circ}\text{C}$ ): -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  3201/009 SESI 14 15 15W 18 9.1 22 32WR 32PR Variant 01 02 03 04 05 06 07 08  3201/010 CMC 15 18 22 Variant 01 02 03  Operating Temperature Range (°C): -55 to +125					
		INDUCTORS, POWER, MOULDED, SURFACE MOUNT, BASED ON SERIES SESI AND CMC		Certificate  276 E	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

**SECTION 08-\*\*: INDEX OF MICROCIRCUITS****REP005 Updated on 15 Jan 2016**

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					
 <p>ESCC European Space Components Coordination QPL</p>	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



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## Types covered by similarity:

ESCC Spec. No.	Component Type	Component Type
9205/010	BCD-to-decimal or binary-to-octal decoder	4028B
9204/025	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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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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## 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




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Types covered by similarity: See next pages		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 9000	ST Microelectronics Rennes France	Qualification	CNES	Nov 1992
Detail ESCC See types covered by similarity				
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,  
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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,  
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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
<b>09-01</b>			<b>Non-Latching, 28Vdc Contact Rating</b>	
	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
<b>09-02</b>			<b>Latching, 28Vdc Contact Rating</b>	
	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
	09-02-006	240 F	Type D	LEACH Niort
<b>09-03</b>			<b>Latching, 50Vdc Contact Rating</b>	
	09-03-001	93 L	Type GP250	LEACH





SECTION 09-\*\*: INDEX OF RELAYS


REP005 Updated on 15 Jan 2016


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  Detail ESCC        3601/002		REL-STPI St Jean de la Ruelle France	Qualification	CNES	Feb 1983	
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: As from September 2015, in relation to NCCS 2STPI501 , each delivery of TL26 parts shall be subject to an official prior agreement by the ESCC Executive during a MRB.			
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 Voltages 6 and 12 Vdc		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC        3602  Detail ESCC        3602/019		LEACH International Europe Niort France	Qualification	CNES	Apr 1997
Characteristics:                Variants 01 to 11 are qualified  Contact Rating                    1 A at 28 Vdc Contact Configuration          2 PDT Package Type                    1/6 crystal can Coil Voltage                      26.5 Vdc Operating Temperature Range (°C): -65 to +125					
		RELAY, LATCHING, ELECTROMAGNETIC, TYPE D		Certificate  240 F	Page  09-02 006

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	CNES	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 H	Surface Mount, Type MS1	Vishay Electronic (Selb)
	10-08-007	289 C	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 B	Type CHP	Vishay S.A. Sfernice
10-11			Flexible, Foil, Heaters	
	10-11-001-1	184 L	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
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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 H

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																																					
			RESISTORS, FILM, FIXED, SURFACE MOUNT, NON-HERMETICALLY SEALED, BASED ON TYPE  TNPS			Certificate  289 C		Page  10-08 007																																					

Types covered by similarity:		Remarks: Components under ESCC QML qualification. Refer to Technology Flow description in REP006.		
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>				
	<p>RESISTORS, FILM, FIXED, CHIP AND ARRAY, THIN FILM, BASED ON TYPES PHR; PFRR; PRAHR/CNWHR</p>	<p>Certificate  287 D</p>	<p>Page  10-09 002A</p>	

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

Certificate

287 D

Page

10-09  
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

Certificate

287 D

Page

10-09  
002C

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

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

Style	Resistance Range ( $\Omega$ )	Tolerance ( $\pm\%$ )		Temperature Coefficient TC( $\pm 10^{-6}$ / $^{\circ}$ C)	
		Absolute	Relative	Absolute	Relative
PRA100; PRA135; PRA182	From 100 to 200K	0.1; 0.5; 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

Certificate  
287 D


Page  
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 B																															
					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	ESA	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>ESCC European Space Components Coordination QPL</p>	RESISTORS, HEATERS, FLEXIBLE SINGLE AND DOUBLE LAYER	Certificate  184 L	Page  10-11 001-1	

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
Characteristics: Variants 01, 02 and 03 are qualified  Single, double layer heaters  Maximum Ohmic density $70 \Omega/\text{cm}^2$ Rated power density $0.38$ (variants 01, 03), $0.54$ (variant 02) $\text{W}/\text{cm}^2$ Resistance $1$ to $5000 \Omega$ Heating Area $0.26$ to $1000 \text{ cm}^2$ Terminal Lead $20$ to $30 \text{ AWG}$ Resistance Tolerance      (%): $\pm 1$ to $\pm 10$  Operating Temperature Range, ( $^{\circ}\text{C}$ ): $-65$ to $+150$ for variants 01 and 03; $65$ to $+200$ for variant 02					
 <p>ESCC European Space Components Coordination QPL</p>		RESISTORS, HEATERS, FLEXIBLE SINGLE AND DOUBLE LAYER		Certificate  325 A	Page  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	ESA	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>	<p>Certificate  330</p>	<p>Page  10-11 003</p>	

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

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

**SECTION 11-\*\*: INDEX OF THERMISTORS**


REP005 Updated 15 Jan 2016

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
<p>Generic ESCC 4006</p> <p>Detail ESCC 4006/013 4006/014</p>		<p>TE Connectivity MEAS (Betatherm) Galway Ireland</p>	Qualification	ESA	Jul 2001
<p>Characteristics:</p> <p>4006/013: Variants 01 to 05 and 06 to 07 are qualified.</p> <p>4006/014: Variants 08, 09 and 13 are qualified.</p> <p>Operating Temperature Range, (°C): 4006/013 : -55 to +115 4006/014 : -60 to +160</p> <p>Please refer to the relevant Detail Specification for complete information on the qualified variants.</p>					
		<p>THERMISTORS, (THERMALLY SENSITIVE RESISTORS), NTC, BASED ON TYPES G15K4D489 AND *K3A35*</p>		<p>Certificate</p> <p>266 H</p>	<p>Page</p> <p>11-01 001</p>

## 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 2	Types NPN	STMicroelectronics
12-02			Low Power, PNP	
	12-02-002-3A-B	234 K rev 2	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 B	Type BUY**CS***	Infineon
12-06			MOSFET, Power, P-Channel	
	12-06-003-1	326 A Rev 1	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 rev2		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</a> , <a href="#">17</a>



TRANSISTORS,  
LOW AND HIGH POWER,  
NPN

Certificate  
233 K rev2

Page  
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												
						<p>TRANSISTORS, LOW AND HIGH POWER, PNP</p>				<p>Certificate 234 K rev2</p>		<p>Page 12-02 002-3A</p>

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  
234 K rev2


Page  
12-02  
002-3B





Types covered by similarity:		Remarks:			
Procurement Specifications		Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 5000		STMicroelectronics Rennes France	Qualification	CNES	Oct 2010
Detail ESCC 5205/021, ESCC 5205/022 ESCC 5205/023, ESCC 5205/024					
<p>Characteristics: 5205/021 &amp; 5205/022 Variants 01 and 02 are qualified 5205/023 &amp; 5205/024 Variant 01 is qualified</p> <p>Maximum Ratings for: <math>V_{GS(th)}</math> 2 -4.5 min/max, <math>I_D=1</math> mA 5205/021 <math>r_{DS(on)}</math> (m <math>\Omega</math>): 35, <math>V_{GS}=12V</math>, <math>I_D=24A</math> <math>I_{DS}</math> (A) 48, <math>T_{case}</math> (<math>^{\circ}C</math>)= <math>+25</math> <math>V_{DS}</math> (<math>V_{dc}</math>): 100 over <math>T_{op}</math> , <math>V_{GS}= 0 V</math> <math>V_{GS}</math> (<math>V_{dc}</math>): <math>\pm 20</math> <math>P_{TOT}</math>: 170 W at <math>T_{case} \leq +25 C</math></p> <p>Package Types: TO-254AA, SMD.5 for STRH40N6 and STRH8N10 Operating Temperature Range (<math>^{\circ}C</math>): <math>- 55</math> to <math>+150</math></p>					
 <p>ESCC European Space Components Coordination QPL</p>		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					Infineon Technologies AG Neubiberg Germany					Qualification					DLR					Aug 2012				
Detail ESCC 5205/026 5205/027 5205/028, 5205/030																								
Characteristics: ESCC No.					5205/026					5205/027					5205/028					5205/030				
r <sub>DS(ON)</sub> (mΩ) @ 25 °C					130					30					130					130				
Maximum Ratings:																								
I <sub>DS</sub> (A)					12.4					54					12.4					12.4				
V <sub>DS</sub> (V) max.					250					250					100					250				
V <sub>GS</sub> (V) max.					± 20					± 20					± 20					± 20				
P <sub>tot</sub> (W)					75					250					75					75				
R <sub>th(j-c)</sub> (°C/W)					1.66					0.5					1.66					1.66				
Package:					SMD0.5					SMD2					SMD0.5					TO-257AA				
Operating Temperature Range (°C): T <sub>op</sub> = - 55 to +150																								
					<p style="text-align: center;">TRANSISTORS, POWER, MOSFET, N-CHANNEL, BASED ON TYPE BUY **CS***</p>										<p style="text-align: center;">Certificate  319 B</p>					<p style="text-align: center;">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, 5205/029		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 TO-257AA Operating Temperature Range ( $^{\circ}C$ ): -55 to +150					
		TRANSISTORS, MOSFET, P-CHANNEL, POWER, TYPE STRH40P10 AND STRH12P10		Certificate 326 Arev1	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	DLR	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> <td></td> <td></td> </tr> <tr> <td><math>V_{CBO}</math> (V) max.</td> <td></td> <td>20</td> <td></td> <td></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> <td></td> <td></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> <td></td> <td></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> <td></td> <td></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> <td></td> <td></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	DLR	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>V<sub>CE0</sub> (V) max.</td> <td></td> <td>4.0</td> </tr> <tr> <td>V<sub>CB0</sub> (V) max.</td> <td></td> <td>13</td> </tr> <tr> <td>I<sub>C</sub> (mA) max.</td> <td></td> <td>50.0</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>135/250 @ V<sub>ce</sub>=3V &amp; I<sub>C</sub>=30mA</td> </tr> <tr> <td>MSG/MAG min (dB)</td> <td>@ 1.8GHz</td> <td>23 @ V<sub>ce</sub>=3V &amp; I<sub>C</sub>= 30mA</td> </tr> <tr> <td></td> <td>@ 6.0 GHz</td> <td>12 V<sub>ce</sub>=3V &amp; I<sub>C</sub>= 30mA</td> </tr> <tr> <td>NF<sub>max</sub> (dB)</td> <td>@ 1.8 GHz</td> <td>&lt; 0.8 @ V<sub>ce</sub>=3V &amp; I<sub>C</sub>=5mA</td> </tr> <tr> <td>NF<sub>max</sub> (dB)</td> <td>@ 6.0 GHz</td> <td>&lt; 1.4 @ V<sub>ce</sub>=3V &amp; I<sub>C</sub>=5mA</td> </tr> </table> Package: "Micro-X"  Total Power Dissipation (P <sub>tot</sub> ) max. = 200 mW Operating Temperature Range (°C): T <sub>op</sub> = - 65 to +175		V <sub>CE0</sub> (V) max.		4.0	V <sub>CB0</sub> (V) max.		13	I <sub>C</sub> (mA) max.		50.0	I <sub>B</sub> (mA) max.		3.0	h <sub>FE</sub> min/max		135/250 @ V <sub>ce</sub> =3V & I <sub>C</sub> =30mA	MSG/MAG min (dB)	@ 1.8GHz	23 @ V <sub>ce</sub> =3V & I <sub>C</sub> = 30mA		@ 6.0 GHz	12 V <sub>ce</sub> =3V & I <sub>C</sub> = 30mA	NF <sub>max</sub> (dB)	@ 1.8 GHz	< 0.8 @ V <sub>ce</sub> =3V & I <sub>C</sub> =5mA	NF <sub>max</sub> (dB)	@ 6.0 GHz	< 1.4 @ V <sub>ce</sub> =3V & I <sub>C</sub> =5mA				
V <sub>CE0</sub> (V) max.		4.0																														
V <sub>CB0</sub> (V) max.		13																														
I <sub>C</sub> (mA) max.		50.0																														
I <sub>B</sub> (mA) max.		3.0																														
h <sub>FE</sub> min/max		135/250 @ V <sub>ce</sub> =3V & I <sub>C</sub> =30mA																														
MSG/MAG min (dB)	@ 1.8GHz	23 @ V <sub>ce</sub> =3V & I <sub>C</sub> = 30mA																														
	@ 6.0 GHz	12 V <sub>ce</sub> =3V & I <sub>C</sub> = 30mA																														
NF <sub>max</sub> (dB)	@ 1.8 GHz	< 0.8 @ V <sub>ce</sub> =3V & I <sub>C</sub> =5mA																														
NF <sub>max</sub> (dB)	@ 6.0 GHz	< 1.4 @ V <sub>ce</sub> =3V & I <sub>C</sub> =5mA																														
		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> <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>150</td> </tr> <tr> <td><math>I_B</math> (mA) max.</td> <td></td> <td>10</td> </tr> <tr> <td><math>h_{FE}</math> min/max</td> <td></td> <td>100/250 @ <math>V_{CE}=3V</math> &amp; <math>I_C=80mA</math></td> </tr> <tr> <td>MSG/MAG min (dB)</td> <td>@1.8 GHz</td> <td>18 @ <math>V_{CE}=3V</math> &amp; <math>I_C=80mA</math></td> </tr> <tr> <td>Pout (dBm)</td> <td>@ 1.8 GHz</td> <td>16</td> </tr> </table> <p>Package: "Micro-X"</p> <p>Total Power Dissipation (<math>P_{tot}</math>) max. = 600 mW</p> <p>Operating Temperature Range (°C): <math>T_{op} = -65</math> to <math>+175</math></p>		$V_{CE0}$ (V) max.		4.0	$V_{CB0}$ (V) max.		13	$I_C$ (mA) max.		150	$I_B$ (mA) max.		10	$h_{FE}$ min/max		100/250 @ $V_{CE}=3V$ & $I_C=80mA$	MSG/MAG min (dB)	@1.8 GHz	18 @ $V_{CE}=3V$ & $I_C=80mA$	Pout (dBm)	@ 1.8 GHz	16				
$V_{CE0}$ (V) max.		4.0																								
$V_{CB0}$ (V) max.		13																								
$I_C$ (mA) max.		150																								
$I_B$ (mA) max.		10																								
$h_{FE}$ min/max		100/250 @ $V_{CE}=3V$ & $I_C=80mA$																								
MSG/MAG min (dB)	@1.8 GHz	18 @ $V_{CE}=3V$ & $I_C=80mA$																								
Pout (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	DLR	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 Q	Polyimide, Types 1871-1872	Nexans
	13-01-001-3	132 N	Polyimide, Types 3901002**B	Axon' Cable
	13-01-003	08 Q	PTFE, Types MTV-BTV	Nexans
	13-01-003-2	292 C	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 F	Polyimide, Types 3901019**B	Axon' Cable
	13-01-004-4	295 C	Polyimide, Types 3901019	Leoni
	13-01-005-1	159 M	Crosslinked PTFE, Type Silver-Plated Copper	Tyco Electronics
	13-01-005-2	267 G	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 C	PTFE, Polyimide/PFA Insulated, Shielded, Type 3901018	Leoni
	13-01-009-3	300 C	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 C	Polyimide, Insulated, Shielded, Drain Wire, Types 3901021**B	Axon' Cable
	13-01-010-3	296 C	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 C	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 Jan 2016

## 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 C	Coaxial, Triaxial, Balanced Shielded Line	Axon' Cable
	13-02-003-1	291 C	Symmetric, Quad, Spacewire	Axon' Cable
	13-02-003-2	304 B	Symmetric, Quad, Spacewire	Gore
	13-02-003-3	335	Symmetric, Quad, Spacewire	Axon' Cable





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


REP005 Updated on 15 Jan 2016

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
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/001 3901/002</p>	<p>Nexans Draveil France</p>	<p>Qualification</p>	<p>CNES</p>	<p>Jan 1979</p>
<p>Characteristics:</p> <p>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</p> <p>Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 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 1871 - 1872</p>		<p>Certificate  09 Q</p>	<p>Page  13-01 001-2</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 3901/001 3901/002</p>	<p>AXON' CABLE Montmirail France</p>	Qualification	CNES	Dec 1985
<p>Characteristics:</p> <p>The following variants are qualified: 3901/001: variants 24 to 47 3901/002: variants 31 to 73</p> <p>Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 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 3901001**B and 3901002**B</p>		<p>Certificate  132 N</p>	<p>Page  13-01 001-3</p>


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


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
Characteristics:  <a href="#">All variants are qualified</a>  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -100 to +200				
	WIRES AND CABLES, LOW FREQUENCY, PTFE/POLYIMIDE INSULATION, BASED ON TYPES 3901013**B	Certificate  292 C	Page  13-01 003-2	





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				
 <p>ESCC European Space Components Coordination QPL</p>	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	DLR	Nov 1994
Characteristics:  Variants 01-94 are qualified  Voltage Rating, maximum (Vrms):600 Temperature Range (°C): -200 to +200				
 <p>ESCC European Space Components Coordination QPL</p>	WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES SPL		Certificate  219 K	Page  13-01 004-2


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:  <a href="#">All variants are qualified</a>  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 F	Page  13-01 004-3	

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/019</p>	<p>LEONI Special Cables GmbH Friesoythe Germany</p>	Qualification	DLR	Oct 2009
<p>Characteristics:</p> <p>All variants are qualified with the exception of variants 01, 09, 17, 24, 25, 32, 48, 56, 64, 72, and 79</p> <p>Conductor according to ISO 2635 (except AWG 28) AWG 12 to 28 inclusive are qualified For silver coated strands the silver thickness shall be 2.0µm minimum</p> <p>Voltage Rating, maximum (<math>V_{rms}</math>):600</p>				
 <p>ESCC European Space Components Coordination QPL</p>	<p>WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPE 3901019</p>		<p>Certificate 295 C</p>	<p>Page 13-01 004-4</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	Tyco Electronics Dorcan, Swindon England	Qualification	UK Space Agency	Feb 1989
Characteristics:  Variants 01 to 80 are qualified  Maximum voltage: 600 Vrms Operating temperature range (°C): -100 to +200				
	WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED FLUOROPOLYMER INSULATION, BASED ON TYPE 55/995X		Certificate  159 M	Page  13-01 005-1


Types covered by similarity:		Remarks:  This product is not intended for human space flight applications.		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/012	AXON' CABLE Montmirail France	Qualification	CNES	Mar 2002
Characteristics:  <a href="#">All variants are qualified</a> Wire code ISO 2635  Voltage Rating, maximum (Vrms) : 600  Temperature Range (°C): -100 to +200				
	WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED FLUOROPOLYMER INSULATION, BASED ON TYPE 3901012**B		Certificate  267 G	Page  13-01 005-2


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3901  Detail ESCC 3901/017	W.L. Gore & Co. Pleinfeld Germany	Qualification	DLR	Jul 1994
Characteristics:  All variants are qualified  Voltage Rating, maximum (Vrms) : 600 Temperature Range (°C): -200 to +200  $I_{max}$ (A): 45, 81 and 133 for AWG: 0, 4 and 8, respectively				
 <p>ESCC European Space Components Coordination QPL</p>	POWER WIRES FOR CRIMPING, LOW FREQUENCY, BASED ON TYPE SPP		Certificate  215 K	Page  13-01 008


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/018</p>	<p>W.L. Gore &amp; Co. Pleinfeld Germany</p>	Qualification	DLR	Jul 1994
<p>Characteristics:</p> <p>Variants 01 to 88 are qualified.</p> <p>Voltage Rating, maximum (<math>V^{rms}</math>) : 600 Temperature Range (<math>^{\circ}C</math>): <math>-200</math> to <math>+200</math></p> <p>Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires. Expanded PTFE, extruded polyimide/fluorothermoplast insulated cables, shielded and jacketed.</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></p>	<p>WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM</p>	<p>Certificate</p> <p>216 J</p>	<p>Page</p> <p>13-01 009</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 3901/018</p>	<p>LEONI Special Cables GmbH Friesoythe Germany</p>	Qualification	DLR	Oct 2009
<p>Characteristics:</p> <p>Variants 01 to 88 are qualified.</p> <p>Voltage Rating, maximum (<math>V_{rms}</math>) : 600 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>Conductor silver thickness shall be 2.0µm minimum</p>				
 <p>ESCC European Space Components Coordination QPL</p>	<p>WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE 3901018</p>		<p>Certificate</p> <p>294 C</p>	<p>Page</p> <p>13-01 009-2</p>


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
Characteristics:  Variants 01 to 88 are qualified AWG 30 and 32 variants are qualified.  Voltage Rating, maximum ( $V_{rms}$ ) : 600  Temperature Range (°C): -200 to +200  Expanded PTFE, extruded polyimide/ FEP, sintered PTFE insulated wires.				
 <p>ESCC European Space Components Coordination QPL</p>	WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM		Certificate  300 C	Page  13-01 009-3


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	DLR	Feb 1996
Characteristics:  All variants (01 to 41) are 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 TYPE SPLD	Certificate  229 J	Page  13-01 010-1	

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:  <a href="#">All variants are qualified</a>  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 C	Page  13-01 010-2	


Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
<p>Generic ESCC 3901</p> <p>Detail ESCC 3901/021</p>	<p>LEONI Special Cables GmbH Friesoythe Germany</p>	Qualification	DLR	Oct 2009
<p>Characteristics:</p> <p>All variants 01 to 41 are qualified</p> <p>Voltage Rating, maximum (Vrms) : 600 Temperature Range (°C): -200 to +200</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></p>	<p>POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE, LOW FREQUENCY, BASED ON TYPE 3901021</p>	<p>Certificate 296 C</p>	<p>Page 13-01 010-3</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 3901/020 ESCC 3901/022</p>	<p>Tyco Electronics Dorcan, Swindon England</p>	Qualification	UK Space Agency	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</p> <p>257 G</p>	<p>Page</p> <p>13-01 011-1</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 3901/024</p>	<p>AXON' CABLE Montmirail France</p>	Qualification	CNES	Dec 2009
<p>Characteristics: Variants 01 to 64 are qualified (AWG 30 variants are qualified)</p> <p>Wires and Cables variants consist of 1, 2, 3 and 4 cores with and without jackets and shields NOTE: The high strength toughened fluoropolymer PTFE tape (HST-F) use for the manufacturing of the primary insulation of the wire is named "ART tape".</p> <p>Maximum voltage: 600 Vrms Operating temperature range (°C): -200 to +200</p>				
 <p>ESCC European Space Components Coordination QPL</p>	<p>WIRES AND CABLES, LOW FREQUENCY, FLUROPOLYMER INSULATION, 600V, BASED ON TYPE CSWL</p>		<p>Certificate 299 C</p>	<p>Page 13-01 012-1</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 3901/024</p>	<p>W.L. Gore Pleinfeld Germany</p>	<p>Qualification</p>	<p>DLR</p>	<p>Jan 2011</p>
<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</p>				
 <p><b>ESCC</b> European Space Components Coordination <b>QPL</b></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</p> <p>328</p>		<p>Page</p> <p>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
Characteristics:  Variants 01, 02, and 03 are qualified Miniature flexible 50 ohm coaxial cable PTFE Dielectric Polyimide Jacketed, Double Shield and Shielded / Jacketed  Maximum voltage: 900 Vrms Operating temperature range (°C): -80 to +200 (-100 for variant 01)				
	WIRES AND CABLES, RF COAXIAL,  PTFE/POLYIMIDE INSULATION,  BASED ON TYPE 50 CIS	Certificate  24 R		Page  13-02 001

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
Characteristics: Variants 03 to 06, 10 to 13 and 20 to 30 are qualified Variants encompass coaxial, triaxial, and balanced shielded line Operating Voltage (Continuous), maximum ratings, (Vrms): Variants 03                                  180 Variants 04, 10, 21, 22, 23, 24         200 Variants 06, 25                                250 All Other Variants                            300 AWG Range: 20, 22, 24, 26, 28, 30 dependent on variant				
	WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAXIAL AND SYMMETRIC, BASED ON TYPES GCX, GTX, GSC AND GBL		Certificate  255 H	Page  13-02 002-1

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 13 and 20 to 30 are qualified  Temperature range (°C): -200 to +180				
 <p>ESCC European Space Components Coordination QPL</p>	WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAXIAL AND SYMMETRIC, BASED ON TYPE 3902/002	Certificate  298 C		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																	
Temperature range (°C): $-200$ to $+180$		<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>2.5</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	2.5
Variant	Data Rate	Operating Voltage (Continuous), (Vrms)	Current (A)														
01	100Mb/s—400MHz	200	1.5														
02	200Mb/s—400MHz	200	2.5														
		WIRES AND CABLES, SPACEWIRE, ROUND, QUAD SYMMETRIC, FLEXIBLE, BASED ON TYPE SPACEWIRE		Certificate  291 C		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

Types covered by similarity:		Remarks:		
Procurement Specifications	Manufacturer	Nature of Approval	Supervising Authority	Initial Qualification Date
Generic ESCC 3902  Detail ESCC 3902/004	AXON' CABLE Montmirail France	Qualification	CNES	October 2015
Characteristics:  Temperature range (°C): -100 to +150				
	WIRES AND CABLES, SPACEWIRE, ROUND, QUAD SYMMETRIC, FLEXIBLE, BASED ON TYPE SPACEWIRE	Certificate  335	Page  13-02 003-3	


**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




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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 (°C), <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  275 E</p>	<p>Page  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**

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