

## ESCC QUALIFIED PARTS LIST

REP005

Updated 15-Sep-2004



**QPL**

General Information	
As affected	
Section/Page No.	Description
Section 11 11-01-001	Index of Thermistors Type G*D* and *K3A from Betatherm Amended Extended
Section 13 13-01-001-3	Index of Wires and Cables Polyimide, Types 3901002**B from Axon Cable Amended Extended
13-01-004-3	Polyimide, Type 3901019**B from Axon Cable Extended
13-01-005-2	Crosslinked PTFE, Type Silver-Plated Copper from Axon Cable Extended



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

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**Changes of : 15-Sep-04**



General Information	
As affected	
Section/Page No.	Description
Section 01 01-08-001-1A-E	Index of Capacitors Trimmer, Variable, Concentric, Air from TEMEX Amended Deleted
Section 04 04-05-003-3	Index of Diodes Varactor, Tuning, DH 76xxx Amended



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

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**Changes of : 15-Jul-04**

General Information	
As affected	
Section/Page No.	Description
Section 02	Index of Connectors
02-03-001-1	HE 801 Series from HYPERTAC
02-03-002-1	KMC Series from HYPERTAC
02-03-003-1	MHD Series from HYPERTAC
Section 08	Index of Microcircuits
08-07-004-A	MMIC, GaAs standard cell from Bookham



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

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**Changes of : 15-Jun-04**

	<b>General Information</b>
As affected	This is the current QPL for May 2004
<b>Section/Page No.</b>	<b>Description</b>



<b>Qualified Parts List</b> <b>DOCUMENT CHANGES</b>
<b>Changes of : 15-May-04</b>

General Information	
As affected	
Section/Page No.	Description
Section 07 07-01-002	Index of Inductors Power Fixed, RF Series SESI from Microspire
Section 14 14-03-003	Index of Miscellaneous Switches, Thermostatic, Bimetallic from COMEPA



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

**Changes of : 15-Apr-04**







	General Information	
As affected		
Section/Page No.	Description	
Section 01 01-02-003-1	Index of Capacitors Type I, High Frequency from TEMEX	Amended Extended
Section 04 04-05-002-2 04-05-003 04-05-002-3A-B	Index of Diodes PIN, BXY 42 from Infineon PIN, BXY 43 and 44 from Infineon PIN, Ultra Fast Switching from TEMEX	Amended Extended Extended Deleted
Section 09 09-01-005 09-02-006	Index of Relays Type E from LEACH Type D from LEACH	Amended Extended Extended
Section 10 10-05-002-1	Index of Resistors Types RWR 80, 81 from Vishay S.A. Sfernice	Amended Deleted
Section 12 12-02-002-3A-B	Index of Transistors Types PNP from ST	Amended Extended
Section 13 13-01-001-1	Index of Wires and Cables Types FA-3901-1, FA 3901 from DRAKA FILECA	Amended Extended



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

**Changes of : 15-Jan-04**

General Information	
As affected	
Section/Page No.	Description
Section 04 04-05-002-3A 04-05-002-4A-B	Index of Diodes PIN, Ultra Fast Switching from TEMEX PIN, Fast Switching from TEMEX
	Amended Amended Extended
Section 09 09-01-005 09-02-006	Index of Relays Type E from Leach Type D from Leach
	Amended Amended
Section 10 10-10-001	Index of Resistors Network, Single-in-line from Vishay SA Sfernice
	Amended Extended
Section 11 11-01-001	Index of Thermsistors Types *G*D and *K3A* from Betatherm
	Amended
Section 12 12-01-002-3A-B 12-01-003-1 12-02-003-1 12-03-001-2 12-03-006-1 12-10-002 12-16-001	Index of Transistors Types NPN from ST Type 2N2369A from ST Type 2N2894 from ST Type 2N3440 from ST Type 2N5672 from ST Types BFY 405-450 from Infineon Types CFY66 & 67 High Electron from Infineon
	Amended Extended Extended Deleted Deleted Deleted Extended Extended



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

**Changes of : 15-Dec-03**

General Information	
As affected	
Section/Page No.	Description
Section 05 05-01-001 A-B	Index of Feedthrough Filters Types SFC, SPL, SFP from Eurofarad Amended Extended
Section 08 08-02-001-2A 08-02-002-2A	Index of Microcircuits CMOS, 4000 B Series from ST Microelectronics 54HCMOS Series from ST Microelectronics Amended Amended
Section 10 10-04-001	Index of Resistors Type RNC 90 from Vishay Amended Extended
Section 13 13-01-005-1	Index of Wires and Cables Type 55/995X from Tyco Electronics Amended Extended



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

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**Changes of : 15-Nov-03**

General Information	
As affected	
Section/Page No.	Description
Section 01 01-01-005	Index of Capacitors Type II, High Capacitance from AVX (N.I.)
Section 10 10-02-006	Index of Resistors Surface Mount, Type MS1 from Vishay Electronic (Selb)
10-08-002	Chip, Type P HR from Vishay Sfernice



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

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**Changes of : 15-Oct-03**

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4	Revision Procedure	2
5	Table of Qualified Component Types	3
Appendices		
'A'	Qualified Components List	4

## 1. FOREWORD

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

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 procuror is responsible for ensuring that the qualification or capability approval status is valid and that delivered components fulfil the specified requirements of the applicable ESCC specifications. The procuror 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, the starting point for which is:

**<https://escies.org/public/escq/qpl/>**

### 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 Component 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 listings; contact information is given in full on the appropriate web pages accessed from:

**<https://escies.org/public/escq/qpl/>**

## 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 provide the changes over a one year period. (The same issue date appears on the table at the start of each Section of the Appendix irrespective of whether changes have been made in a particular section. This indicates the information has been reviewed and is current.) The ESA/SCC System is superseded by the ESCC (European Space Components Coordination) System and in consequence this issue of the ESCC QPL is the first one.



**Qualified Parts List**

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	Wire and Cables
14	Miscellaneous



**APPENDIX A**  
**Qualified Components List**



**ESCC**  
European Space Components Coordination



**QPL**



**Qualified Parts List**

## Section 01

## Component Type: Capacitors

Sub -Section	Page No.	Cert.	Type Designation	Manufacturer
01-01			Ceramic, Fixed	
	01-01-005	231 C	Type II, High Capacitance	AVX (N.I.)
	01-01-006	262 A	Type II, High Voltage	AVX (N.I.)
01-02			Ceramic, Fixed, Chip	
	01-02-001-1	109 F	Type I	AVX/TPC
	01-02-002-1	110 F	Type II	AVX/TPC
	01-02-003-1	249 B	Type I, High Frequency	TEMEX
	01-02-004-1	264 A	Type II, High Voltage	AVX (N.I.)
01-03			Tantalum,(Solid), Fixed , Electrolytic	
	01-03-004	196 B	Type TAJ	AVX (GB)
01-04			Tantalum, (Non-Solid), Fixed, Electrolytic, Hermetically Sealed	
	01-04-001-2	173 D	Type CLR 79	Arcotronics
01-05			Fixed, Film	
	01-05-001-1	251 B	Type HT86PS, High Voltage	Eurofarad
	01-05-002-1	269	Type KM94S	Eurofarad
	01-05-003-1	270	Type PM94S	Eurofarad

Types covered by similarity :  ± 20% tolerance		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3001		AVX Limited Coleraine Northern Ireland	Qualification	DRA	Jul 1996	
Detail ESCC 3001/030			Extension	DERA	Jul 1999	
			Extension	DERA	Jul 2001	
			Extension	QinetiQ	Oct 2003	
Characteristics : E12 series						
Qualified Range:						
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						
Operating Temperature Range (°C): -55 to +125						
 		CAPACITORS, CERAMIC, TYPE II, HIGH CAPACITANCE, BASED ON CASE STYLES BR, CV, AND CH			Current Validity of Qualification	
		Certificate No.  231 C	Valid Until  October 2005	Page 01-01 005		

Types covered by similarity :  ± 20% tolerance		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3001		AVX Limited Larne Northern Ireland	Qualification	DERA	Sep 2000	
Detail ESCC 3001/034			Extension	QinetiQ	Aug 2002	
Characteristics : E12 series  Qualified Range:  Variants 01 to 22 are qualified ± 10% tolerance  Operating Temperature Range (°C): -55 to +125						
 		CAPACITORS, CERAMIC, TYPE II, HIGH VOLTAGE, 1.0 TO 5.0 KV, BASED ON CASE STYLES VR, CV, AND CH			Current Validity of Qualification	Page
		Certificate No.  262 A		Valid Until  August 2004	01-01  006	

Types covered by similarity  
 Variants 01 and 06 are qualified

Remarks :  
 New process is under evaluation and qualification.

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3009	AVX/TPC St Apollinaire France	Qualification	CNES	Feb 1983
Detail ESCC 3009/003		Extension	CNES	Sep 1986
3009/004		Requalification	CNES	Apr 1992
3009/005		Extension	CNES	Jan 1995
3009/006		Extension	CNES	Jun 1998
3009/022		Extension	CNES	Nov 2000
		Extension	CNES	Jun 2003

Characteristics : Operating Temp Range (°C), -55 to +125

Style	Model	Detail Spec.	Capacitance Range (pF)	Rated Volt. (V)	Tolerance(±%)	TC(ppm/°C)
0805	A112C	3009/003	4.7 to 9 100 10 to 1 000 1 000 to 1 500	25,50,100 25,50,100 25, 50	0.25 & 0.5 pF 1, 2, 5,10 1, 2, 5,10	±30
1206	A120C	3009/022	10 to 1 500 1 600 to 3 900	25,50,100 25, 50	1, 2, 5,10 1, 2, 5,10	±30
1210	A113C	3009/004	22 to 4 300 4 700 to 10 000	25,50,100 25, 50	1, 2, 5,10 1, 2, 5,10	±30
1812	A114C	3009/005	100 to 8 200 9 100 to 18 000	25,50,100 25, 50	1, 2, 5,10 1, 2, 5,10	±30
2220	A115C	3009/006	470 to 18 000 20 000 to 33 000	25,50,100 25, 50	1, 2, 5,10 1, 2, 5,10	±30



CAPACITORS,  
 CERAMIC, FIXED,  
 CHIP, TYPE I

Current Validity of Qualification		Page
Certificate No. 109 F	Valid Until June 2004	01-02 001-1

Types covered by similarity :  
 Variants 01 and 06 are qualified

Remarks :  
 New process and 5XP type II ceramic under evaluation and qualification

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3009	AVX/TPC St Apollinaire France	Qualification	CNES	Feb 1983
Detail ESCC 3009/008		Extension	CNES	Sep 1986
3009/009		Requalification	CNES	Oct 1992
3009/010		Extension	CNES	Mar 1995
3009/011		Extension	CNES	Jun 1998
3009/023		Extension	CNES	Nov 2000
		Extension	CNES	Jun 2003

Characteristics:

Style	Model	Detail Spec.	Capacitance Range (pF)	Tol. (±%)	Rated Volt. (V)
0805	A112G	3009/008	390 to 3 300	5,10,20	100
			390 to 27 000	5,10,20	50
			390 to 47 000	5,10,20	25
1210	A113G	3009/009	1 000 to 33 000	5,10,20	100
			15 000 to 100 000	5,10,20	50
			15 000 to 220 000	5,10,20	25
1812	A114G	3009/010	2 700 to 68 000	5,10,20	100
			47 000 to 220 000	5,10,20	50
			47 000 to 470 000	5,10,20	25
2220	A115G	3009/011	10 000 to 150 000	5,10,20	100
			100 000 to 470 000	5,10,20	50
			100 000 to 1 000 000	5,10,20	25
1206	A120G	3009/023	1000 to 10 000	5,10,20	100
			1000 to 47 000	5,10,20	50
			1000 to 68 000	5,10,20	25

OperatingTemp.  
 Range (°C):  
 -55 to +125



CAPACITORS,  
 CERAMIC, FIXED,  
 CHIP, TYPE II

Current Validity of Qualification

Certificate No.

110 F

Valid Until

June 2004

Page

01-02

002-1

Types covered by similarity :  
 3009/035: variants 04 ,05  
 3009/036: variants 04 ,05, 06, 07

Remarks :  
 variants 01, 02, 03 are no longer qualified

Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3009		TEMEX Pessac France	Qualification	CNES	Aug 1998
Detail ESCC 3009/035			Extension	CNES	Jan 2001
3009/036			Extension	CNES	Jan 2004

Characteristics: OperatingTemp. Range (°C): -55 to +125

Capacitance Range (pF)	Tol.(±)	TC (ppm/°C)	3009/036 U <sub>R</sub>	3009/035 U <sub>R</sub>
0.1 to 0.2	0.1 pF	100± 30	500	50
0.3	0.1, 0.25 pF		500	-
0.3 to 0.4	0.1, 0.25 pF		-	50
0.4 to 6.2	0.1, 0.25, 0.5 pF		500	-
0.5 to 6.2	0.1, 0.25, 0.5 pF		-	50
6.8 to 9.1	0.1,0.25 pF; 5,10, 20 %	100± 30	500	50
10 to 100	1, 2, 5,10, 20%		500	50
110 to 200	1, 2, 5,10, 20%	100± 30	300	-
220 to 470	1, 2, 5,10, 20%		200	
510 to 620	1, 2, 5,10, 20 %	100± 30	100	-
680 to 1000	1, 2, 5,10, 20 %		50	



CAPACITORS,  
 CERAMIC, FIXED, CHIP,  
 TYPE I, MULTIPLE LAYER, HIGH FREQUENCY,  
 BASED ON TYPES CHA AND CHB

Current Validity of Qualification

Certificate No.

249 B

Valid Until

January 2006

Page

01-02



003-1

Types covered by similarity :  
± 20% tolerance



Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3009 Detail ESCC 3009/034	AVX Limited Larne Northern Ireland	Qualification  Extension	DERA  QinetiQ	Feb 2001  Apr 2003

Characteristics : E12 series  Qualified Range: Variants 01 to 24 are qualified Terminations: Variants 01 to 12: metallised pads Variants 13 to 24: solder coating (62/36/2 Sn/Pb/Ag)	Style	Rated Voltage (kV)	Capacitance Range (pF)	Tol. (±%)
	1812	1.0 2.0 3.0	3 900 to 22 000 1 500 to 1 800 820 to 1 000	10 10 10
Operating Temperature Range (°C): -55 to +125	1825	1.0 2.0 3.0	27 000 to 56 000 2 200 to 6 800 820 to 2 700	10 10 10

 <b>ESCC</b> <small>European Space Components Coordination</small>  <b>QPL</b>	CAPACITORS, FIXED, CHIP, CERAMIC, TYPE II, HIGH VOLTAGE, BASED ON 1812 AND 1825	Current Validity of Qualification		Page
		Certificate No.  264 A	Valid Until  April 2005	01-02  004-1



Types covered by similarity :		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3012  Detail ESCC 3012/001		AVX Ltd Paignton England	Qualification  Extension  Extension	DRA  DERA  QinetiQ	Jun 1993  Apr 2001  Apr 2003
Characteristics  Variants 01 to 07 and 11 to 17 are qualified					
 	CAPACITORS, LEADLESS SURFACE MOUNTED, TANTALUM,  SOLID ELECTROLYTE, TYPE TAJ	Current Validity of Qualification		Page	
		Certificate No. 196 B	Valid Until April 2005	01-03 004	

Types covered by similarity : 20 % tolerance



Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3003  Detail ESCC 3003/005	ARCOTRONICS Towcester England	Qualification  Extension  Extension  Extension  Extension	RAE  DRA  DERA  DERA  QinetiQ	Sep 1990  Aug 1993  Nov 1997  Feb 2000  Aug 2002

Characteristics

Detail Spec.	Capacitance Range (µF)		Rated Volt.(V)	Capacitance Range (µF)		Rated Volt.(V)
3003/005	30	to 2 200	6	12	to 470	40
	68	to 2 200	6.3	5	to 430	50
	25	to 850	8	8.2	to 330	60
	20	to 1 800	10	10	to 330	63
	15	to 1 200	15	3.5	to 250	75
	33	to 1 200	16	4.7	to 100	100
	10	to 850	25	2.7	to 82	125
	8	to 560	30			

Operating Temperature Range, (°C): -55 to +125,  
Case sizes: A, B, C and D

 <p><b>ESCC</b> European Space Components Coordination</p>  <p><b>QPL</b></p>	<p>CAPACITORS,  TANTALUM, NON-SOLID, ELECTROLYTIC, FIXED,  CLR 79</p>	Current Validity of Qualification		Page
		Certificate No.  173 D	Valid Until  August 2004	01-04  001-2

Types covered by similarity :

All values defined by the ESA/SCC Detail Specification  
20% tolerance by variant where applicable

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3006	EUROFARAD Lagny sur Marne France	Qualification	CNES	Aug 1998
Detail ESCC 3006/022		Extension	CNES	Jan 2001
		Extension	CNES	Aug 2003

Characteristics: Operating Temp. Range (°C): -55 to +125

Capacitance Range (pF)	Tol.(± %)	U <sub>R</sub> (V)
33 000 to 2 200 000	10	1 500
15 000 to 1 500 000	10	2 500
15 000 to 1 000 000	10	3 500
6 800 to 470 000	10	5 000
2 200 to 220 000	10	7 500
1 000 to 100 000	10	10 000
3 300 to 68 000	10	12 500
1 500 to 33 000	10	15 000
680 to 15 000	10	20 000



CAPACITORS, FIXED, RECONSTITUTED MICA, HIGH VOLTAGE,  
BASED ON TYPE HT86PS

Current Validity of Qualification

Certificate No.

251 B

Valid Until

August 2005

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01-05

001-1

Types covered by similarity :

All values defined by the ESA/SCC Detail Specification  
 ± 2% (E48 Series), 5% (E24 Series), 10% (E12 Series) tolerance by variant where applicable

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3006  Detail ESCC 3006/023	EUROFARAD Lagny sur Marne France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Aug 2002

Characteristics: E96 Series

Capacitance Range (nF)	Tol.(± %)	U <sub>R</sub> (V)
4.64 to 1 000	1.0	50
1.0 to 470	1.0	100

Sizes 01, 02, 03 available  
 Maximum dimensions (mm) :  
 01: 8.0 x 7.5 x 4.5  
 02: 8.5 x 8.5 x 7.5  
 03: 10.7 x 10.7 x 7.5

Operating Temp. Range (°C): -55 to +125



CAPACITORS, FIXED, SURFACE MOUNT, D.C. SELF-HEALING,  
 NON-INDUCTIVE, POLYPHENYLENE SULPHIDE DIELECTRIC,  
 BASED ON TYPE KM94S

Current Validity of Qualification		Page
Certificate No.	Valid Until	01-05
269	August 2004	002-1

Types covered by similarity :

All values defined by the ESA/SCC Detail Specification  
± 20% (E6 Series) tolerance by variant where applicable

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3006  Detail ESCC 3006/024	EUROFARAD Lagny sur Marne 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 11.5 x B

03: 16.5 x 15.5 x B

04: 18.5 x 17.0 x B

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

where B= 6,8,10,12,14,15 depending on  
capacitance value

Operating Temp. Range (°C): -55 to +125



CAPACITORS, FIXED, SURFACE MOUNT, D.C. SELF-HEALING,  
NON-INDUCTIVE, POLYTEREPHALATE DIELECTRIC,  
BASED ON TYPE PM94S

Current Validity of Qualification

Certificate No.

270

Valid Until

August 2004

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01-05



003-1

## Section 02


## Component Type: Connectors


Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
02-01			Multipin, Solder Contacts	
	02-01-001-1	71 J	D*M Series, Rectangular	ITT Cannon
	02-01-001-2	155 F	D*M Series, Rectangular	SOURIAU
02-02			Multipin, Crimp Contacts	
	02-02-001-1	72 J	D*MA Series, Rectangular	ITT Cannon
	02-02-001-2	156 E	D*MA Series, Rectangular	SOURIAU
	02-02-003	25 H	DBAS Series, Circular	Deutsch
	02-02-005	220 B	Series I, Circular, Crimp	SOURIAU
	02-02-006	221 B	Series II, Circular, Crimp	SOURIAU
	02-02-007-1	222 B	Series III, Circular, Miniature	SOURIAU
	02-02-008	223 A	Series III, Hermatic	SOURIAU
02-03			Printed Circuit Board	
	02-03-001-1	99 H	HE 801 Series	HYPERTAC
	02-03-001-2	217 C	HE 801 Series	HYPERTAC UK
	02-03-002-1	149 F	KMC Series	HYPERTAC
	02-03-003-1	250 B	MHD Series	HYPERTAC
02-04			R.F. Coaxial	
	02-04-001	68 G	SMA Series	Radiall
02-05			Micro-miniature, Crimp Contacts	
	02-05-001-1	140 G	MDM Series, Rectangular	ITT Cannon
	02-05-002-1	141 G	MTB Series, Rectangular	ITT Cannon

Types covered by similarity : Range defined in the corresponding Detail Specifications.		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/001 3401/004 3401/022 3401/040		ITT CANNON Dole France	Qualification  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES	Feb 1981  Jun 1983  Sep 1986  Oct 1988  Jun 1989  Sep 1991  Apr 1994  Jan 1997  Jan 2000  Apr 2003
Characteristics  Range of Contacts: 9, 15, 25, 37 and 50 contacts size 20 for standard arrangements 3W3, 5W1 to 47W1 combined contact arrangements 15,26,44,62,78 and 104 contacts size 22 for high density contact arrangements Mounting Type: Blank: standard mounting holes Y: floating mount E: captive nuts Gold-plated non-magnetic coating Coaxial contact arrangements: 3401/004 variants 01 to 20 Power contact arrangements: 3401/040 variants 01 to 12 Operating Temperature Range (°C): -55 to +125			Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES	Sep 1991  Apr 1994  Jan 1997  Jan 2000  Apr 2003
		CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*M		Current Validity of Qualification	
				Certificate No.  71 J	Valid Until  April 2005
				Page  02-01  001-1	

Types covered by similarity : Complete range as defined in the Detail Specifications		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3401		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	Sep 1988	
Detail ESCC 3401/001			Extension	CNES	Apr 1991	
			Extension	CNES	Jan 1994	
			Extension	CNES	Jul 1996	
			Extension	CNES	Oct 1997	
			Extension	CNES	Mar 2000	
			Extension	CNES	Apr 2003	
Characteristics  Range of Contacts: 9, 15, 25, 37, 50 contacts. Size 20. Range of Contacts: 15, 26, 44, 62, 78 contacts. Size 22 Mounting type= blank: standard mounting holes y: floating mount E: captive nuts  Gold-plated non-magnetic coating Operating Temperature Range (°C): -55 to +125						
 		CONNECTORS, ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS, NON-REMOVABLE, RECTANGULAR RECEPTACLE AND PLUG BASED ON TYPE D*M			Current Validity of Qualification	Page
		Certificate No.  155 F		Valid Until  April 2005	02-01  001-2	



Types covered by similarity : Range defined in the corresponding Detail Specification		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3401		ITT CANNON Dole France	Qualification	CNES	Feb 1981		
Detail ESCC 3401/002			Extension	CNES	Jun 1983		
3401/005			Extension	CNES	Sep 1986		
3401/020			Extension	CNES	Oct 1988		
3401/021			Extension	CNES	Jun 1989		
Characteristics			Extension	CNES	Sep 1991		
Range of contacts: 9, 15, 25, 37, and 50 contacts size 20* for standard contact arrangements			Extension	CNES	Apr 1994		
*Accepts wire sizes AWG # 20 to 24 (standard bucket: variants 01 and 02)			Extension	CNES	Jan 1997		
*Accepts wire size AWG # 26 and 28 (reduced bucket : variants 03 and 04)			Extension	CNES	Jan 2000		
*Accepts wire size AWG # 18 and 20 (large bucket: variants 05 to 06)			Extension	CNES	Apr 2003		
15, 26, 44, 62,78 and 104 contacts size 22** for high density contact arrangements		Extension	CNES				
**Accepts wire sizes AWG # 22 to 26 (standard bucket: variants 07 to 08)		Extension	CNES				
Gold-plated non-magnetic coating		Extension	CNES				
Operating Temperature Range (°C): -55 to +125		Extension	CNES				
Connector Savers: For usage with above connector range		Extension	CNES				
 <b>QPL</b>		CONNECTORS, ELECTRICAL, CRIMP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA			Current Validity of Qualification		Page
		Certificate No. 72 J		Valid Until April 2005		02-02 001-1	

Types covered by similarity :  Complete range as defined in the Detail Specifications		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/002 3401/005 3401/020 3401/021		SOURIAU Connection Technology Marolles en Brie France	Qualification  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES	Sep 1988  Apr 1991  Jan 1994  Jul 1996  Mar 2000  Apr 2003
Characteristics Connectors:- Accepts wire sizes AWG # 20 to 24 (standard bucket, variants 01 and 02) Accepts wire sizes AWG # 26 and 28 (reduced bucket, variants 03 and 04) Accepts wire sizes AWG # 22, 24 and 26 (contact AWG # 22 for high density, contact arrangements, variants 07 and 08) Range of Contacts: 9, 15, 25, 37, 50 contacts size 20 for standard contact arrangements. 15, 26, 44, 62, 78 contacts size 22 for high density contact arrangements. Gold-plated non-magnetic coating Operating Temperature Range (°C): -55 to +125  Connector Savers:- For usage with above connector range					
		CONNECTORS AND CONNECTOR SAVER, ELECTRICAL, CRIMP CONTACTS, REMOVABLE, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA		Current Validity of Qualification	
				Certificate No.  156 E	Valid Until  April 2005
				Page  02-02  001-2	

Types covered by similarity :  
See Detail Specification 3401/008,3401/009

Remarks :  
Maximum Ratings are stated for one isolated contact.

Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date																
Generic ESCC 3401		Cie DEUTSCH Evreux France	Qualification	CNES	Jul 1979																
Detail ESCC 3401/008 3401/009			Extension	CNES	Nov 1982																
			Extension	CNES	Nov 1985																
			Extension	CNES	Oct 1989																
			Extension	CNES	Apr 1992																
			Extension	CNES	Aug 1994																
			Extension	CNES	Feb 1997																
			Extension	CNES	May 1999																
			Extension	CNES	Aug 2001																
Characteristics <table border="1"> <tr> <td>Wire Sizes (AWG)#</td> <td>8</td> <td>10</td> <td>12, 14</td> <td>16, 20</td> <td>20, 24</td> <td>18, 22</td> <td>26, 30</td> </tr> <tr> <td>Max Rating (A)</td> <td>46</td> <td>33</td> <td>23</td> <td>13</td> <td>7.5</td> <td>10</td> <td>2.0</td> </tr> </table> <p>Variants 01 to 20 are qualified</p> <p>Cylindrical Multicontacts Range of shell sizes: 3, 7, 12, 19, 27, 37, 61 contacts in wire size AWG # 20 and solder gauge 8 Other arrangements with contacts size AWG 20, 16, 12 and 8 Operating Temperature Range (°C): -65 to +200</p>			Wire Sizes (AWG)#	8	10	12, 14	16, 20	20, 24	18, 22	26, 30	Max Rating (A)	46	33	23	13	7.5	10	2.0			
Wire Sizes (AWG)#	8	10	12, 14	16, 20	20, 24	18, 22	26, 30														
Max Rating (A)	46	33	23	13	7.5	10	2.0														





CONNECTORS, MINIATURE,  
ELECTRICAL, CIRCULAR, PUSH-PULL COUPLING,  
REMOVABLE CRIMP CONTACTS,  
BASED ON TYPE DBAS

Current Validity of Qualification

Certificate No.  
25 H

Valid Until  
August 2003

Page  
02-02  
003

Types covered by similarity :  For contact, variants 01 to 14 are qualified		Remarks :													
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date										
Generic ESCC 3401  Detail ESCC 3401/052 3401/058		SOURIAU Connection Technology Marolles en Brie France	Qualification  Extension  Extension	CNES  CNES  CNES	May 1995  Mar 1998  Jul 2001										
Characteristics Range: # 20 with standard contact arrangements 3,6,10,19,26,32,41,53,61 #22 with high density arrangements 6,13,22,37,55,66,79,100,128 Other arrangements with contact sizes: 20, 16, 12, 8 Receptacle and Plug Shell Sizes: 09,11,13,15,17,19,21,23,25  <table border="0"> <tr> <td><u>Contact Size</u></td> <td><u>Ratings (A)</u></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> </table> Operating temperature range (° C): -65 to +200 °C						<u>Contact Size</u>	<u>Ratings (A)</u>	8	46.0	12	23.0	16	13.0	20	7.5
<u>Contact Size</u>	<u>Ratings (A)</u>														
8	46.0														
12	23.0														
16	13.0														
20	7.5														
 		CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, SCOOP-PROOF, REMOVABLE CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES I		Current Validity of Qualification		Page									
				Certificate No.	Valid Until	02-02									
				220 B	July 2003	005									

Types covered by similarity :

For contact, variants 01 to 08 are qualified

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401	SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995
Detail ESCC 3401/044		Extension	CNES	Mar 1998
3401/045		Extension	CNES	Jul 2001

Characteristics

Range: # 20 with standard contact arrangements 3,6,10,18,26,32,41,55,61  
 #22 with high density arrangements 6,13,22,37,55,66,79,100,128

Other arrangements with contact sizes: 20, 16, 12,

Receptacle and Plug shell sizes: 08,10,12,14,16,18,20,22,24



Contact Size	Ratings (A)
12	23.0
16	13.0
20	7.5



Operating temperature range (° C): -65 to +200 °C



Current Validity of Qualification		Page
Certificate No.	Valid Until	02-02
221 B	July 2003	006





CONNECTORS,  
 ELECTRICAL, CIRCULAR, BAYONET COUPLING,  
 REMOVABLE CRIMP CONTACTS,  
 BASED ON TYPE MIL-C-38999, SERIES II



Types covered by similarity :  3401/058 crimp contacts and 3401/066 triax contacts to be mounted in 3401/056 connectors 3401/070 connector receptacles with PCB contacts		Remarks :																															
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date																												
Generic ESCC 3401		SOURIAU Connection Technology Marolles en Brie France	Qualification	CNES	May 1995																												
Detail ESCC 3401/056			Extension	CNES	Mar 1998																												
3401/058 3401/066 3401/070			Extension	CNES	Jul 2001																												
<p>Characteristics</p> <p>Range: #20 with standard contact arrangements (3,6,10,19,26,32,41,53,61 contacts) #22 with high density arrangements (6,13,22,37,55,66,79,100,128 contacts)</p> <p>Other arrangements with contact sizes # 20, 16, 12, 8, 4</p> <p>Receptacle and Plug Shell Sizes: 09,11,13,15,17,19,21,23,25</p> <p>Triax contact= (layout 09-01 only)</p> <table border="1"> <thead> <tr> <th><u>Crimp Contact Size</u></th> <th><u>Ratings (A)</u></th> <th><u>PCB Contact Size</u></th> <th><u>Ratings (A)</u></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> <p>Operating temperature range (° C): -65 to +200 °C</p>						<u>Crimp Contact Size</u>	<u>Ratings (A)</u>	<u>PCB Contact Size</u>	<u>Ratings (A)</u>	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		
<u>Crimp Contact Size</u>	<u>Ratings (A)</u>	<u>PCB Contact Size</u>	<u>Ratings (A)</u>																														
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																																
 		<p>CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF-LOCKING COUPLING, SCOOP-PROOF, REMOVABLE &amp; NON-REMOVABLE CRIMP CONTACTS BASED ON TYPE MIL-C-38999, SERIES III</p>		Current Validity of Qualification		Page																											
				Certificate No.	Valid Until	02-02																											
				222 B	July 2003	007-1																											



Types covered by similarity :		Remarks :									
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date						
Generic ESCC 3401  Detail ESCC 3401/057		SOURIAU Connection Technology Marolles en Brie France	Qualification  Requalification	CNES  CNES	May 1995  Jul 2001						
Characteristics  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  <table border="0"> <tr> <td>Contact Size</td> <td>Ratings (A)</td> </tr> <tr> <td>20</td> <td>5.0</td> </tr> <tr> <td>22D</td> <td>3.0</td> </tr> </table> Receptacle ( contacts # 8, 12, 16, 20, 22D) and Feedthrough ( contacts # 8, 12, 16) Operating temperature range (° C): -65 to +200 oC						Contact Size	Ratings (A)	20	5.0	22D	3.0
Contact Size	Ratings (A)										
20	5.0										
22D	3.0										
 		CONNECTORS,  MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF- LOCKING COUPLING, SCOOP-PROOF, HERMETIC RECEPTACLE  AND FEEDTHROUGH, TYPE MIL-C-38999, SERIES III		Current Validity of Qualification		Page					
				Certificate No.	Valid Until	02-02					
			223 A	July 2003	008						


Types covered by similarity : All variants are qualified		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/016 3401/017</p>		<p>HYPERTAC Saint-Aubin-Lès-Elbeuf France</p>	<p>Qualification</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p>	<p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p>	<p>Nov 1982</p> <p>May 1985</p> <p>May 1988</p> <p>Apr 1991</p> <p>Jan 1994</p> <p>Mar 1996</p> <p>Mar 1998</p> <p>Jan 2002</p> <p>Jun 2004</p>	
<p>Characteristics</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 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>CONNECTORS, ELECTRICAL, REMOVABLE CONTACTS, CRIMP WIRE-WRAP SOLDER AND SAVER, PRINTED CIRCUIT BOARD, BASED ON TYPE HE 801</p>		Current Validity of Qualification		Page
				Certificate No.	Valid Until	02-03
			99 H	June 2006	001-1	







Types covered by similarity : See ESCC Detail Specifications listed below		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3401  Detail ESCC 3401/016 3401/017		HYPERTAC LTD London England	Qualification  Extension  Extension  Extension	DRA  DRA  DERA  QinetiQ	Jul 1994  Nov 1996  Nov 1998  Apr 2002		
Characteristics  Shell specifications and sizes: 3401/016 Range of components: 17 to 160 way connectors PCB, 90°, crimp, wire-wrap and saver contacts Guiding/locking device numbers: 26, 27, 28, 29, 33, 34, 35, 36, 40, 41, 43, 46 54, 55, 71, 72, 76, 77, 78  Contact Ratings:    5 A (1 contact AWG 22) 1.5 A (> 31 contacts, AWG 22) Operating Temperature Range (°C): -55 to +125							
 		CONNECTORS, ELECTRICAL, REMOVABLE CONTACTS, CRIMP WIRE-WRAP SOLDER AND SAVER, PRINTED CIRCUIT BOARD, BASED ON TYPE HE 801			Current Validity of Qualification		Page
					Certificate No.	Valid Until	02-03
					217 C	April 2004	001-2

Types covered by similarity : As defined in Table 1(a) of ESCC Detail Specifications listed below		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/039		HYPERTAC Saint-Aubin-Lès-Elbeuf France	Qualification	CNES	Mar 1987
Characteristics			Extension	CNES	May 1990
3 rows 26, 44, 62, 80, 98, 144 contacts			Extension	CNES	Jan 1993
Contact Ratings: 2 A (1 contact)			Extension	CNES	Oct 1995
Operating Temperature Range (°C): -55 to +125			Extension	CNES	Mar 1998
			Extension	CNES	Jan 2002
			Extension	CNES	Jun 2004
 	CONNECTORS, ELECTRICAL, NON-REMOVABLE SOLDER AND WIRE-WRAP CONTACTS AND SAVERS, PRINTED CIRCUIT BOARD, BASED ON TYPE KMC		Current Validity of Qualification		Page
			Certificate No.	Valid Until	02-03
		149 F	June 2006	002-1	

Types covered by similarity : As defined in Table 1(a) of ESCC Detail Specification		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3401  Detail ESCC 3401/065		HYPERTAC Saint-Aubin-Lès-Elbeuf France	Qualification	CNES	Aug 1998
			Extension	CNES	Jan 2002
			Extension	CNES	Jun 2004
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 CONTACTS, BASED ON TYPE MHD		Current Validity of Qualification		Page
			Certificate No. 250 B	Valid Until June 2006	02-03 003-1

Types covered by similarity : See ESCC detail specifications  - Hermetically sealed receptacle		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3402  Detail ESCC 3402/001 3402/002 3402/003		RADIALL La Verpilliere France	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES  CNES	Feb 1981  Apr 1983  Apr 1986  Nov 1989  Jul 1992  Nov 1994  May 1998  Aug 2002	
Characteristics  Frequency Range 0-18 GHz 3402/001 Pin contact (Plug) 3402/002 Socket contact (Receptacle) 3402/003 Adapters  Crimp- or solder-type contact for flexible and semi-rigid cables, contacts for micro strip Gold-plated beryllium copper non-magnetic or stainless steel  Operating temperature range (° C): See Detail Specifications						
		CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPE SMA		Current Validity of Qualification		Page
			Certificate No.  68 G	Valid Until  August 2004	02-04  001	

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3401  Detail ESCC 3401/029 3401/041 3401/032		ITT CANNON Dole France	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES  CNES	Oct 1986  Oct 1988  Jun 1989  Sep 1991  Apr 1994  Jan 1997  Oct 1999  Apr 2003	
Characteristics  9 - 15 - 21 - 25 - 31 - 37 - 51 Contacts  Terminations : Wire sizes AWG 26 and 28 and uninsulated solid gold-plated wire AWG 25 Max. rating for 1 isolated contact:- AWG 26 and uninsulated wire terminal: 2.5 A AWG 28 : 1.5 A  Nickel or Gold Plated Shells Operating Temperature Range (°C): -55 to +125						
 		CONNECTORS, ELECTRICAL, CRIMP CONTACT, RECTANGULAR, MICROMINIATURE, BASED ON TYPE MDM		Current Validity of Qualification		Page
			Certificate No.  140 G	Valid Until  April 2005	02-05  001-1	

Types covered by similarity :		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3401		ITT CANNON Dole France	Qualification	CNES	Oct 1986		
Detail ESCC 3401/031			Extension	CNES	Oct 1988		
			Extension	CNES	Jun 1989		
			Extension	CNES	Sep 1991		
			Extension	CNES	Apr 1994		
			Extension	CNES	Jan 1997		
Characteristics  Shell sizes : 5 through 81 Terminations : Wire sizes AWG 26 and 28 and AWG 25, uninsulated solid gold-plated wire  Max. rating for 1 isolated contact:- AWG 26 and uninsulated wire terminal: 2.5 A AWG 28 : 1.5 A  Operating Temperature Range (°C): -55 to +125			Extension	CNES	Oct 1999		
			Extension	CNES	Apr 2003		
 		CONNECTORS, ELECTRICAL, CRIMP CONTACTS, SINGLE-IN-LINE, MICROMINIATURE, BASED ON TYPE MTB			Current Validity of Qualification		Page
					Certificate No.	Valid Until	02-05
					141 G	April 2005	002-1

## Section 03



## Component Type: Crystals

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
03-01			Crystals	
	03-01-001-1	33 G	TO-5 Can	C-MAC (F)
	03-01-002	34 G	TO-8 Can	C-MAC (F)



**QPL**

SECTION 03-\*\*: INDEX OF CRYSTALS

REP005 Updated on 15-Sep-04

Types covered by similarity :		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3501  Detail ESCC 3501/018		C-MAC Frequency Products Argenteuil France	Qualification  Extension Extension Extension Extension Extension Extension Extension	CNES  CNES CNES CNES CNES CNES CNES CNES	Oct 1979  Jun 1983 Oct 1986 Jul 1989 Jan 1995 Nov 1996 Apr 2000 Nov 2002
Characteristics  TO-5 Can (T 807)  Frequency Range: 15 - 140 MHz					
  		CRYSTALS,  TO-5 CAN	Current Validity of Qualification		Page
			Certificate No.  33 G	Valid Until  November 2004	03-01  001-1







Types covered by similarity :		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3501  Detail ESCC 3501/019		C-MAC Frequency Products Argenteuil France	Qualification	CNES	Oct 1979
			Extension	CNES	Jun 1983
			Extension	CNES	Oct 1986
			Extension	CNES	Jul 1989
			Extension	CNES	Jan 1995
			Extension	CNES	Apr 1997
			Extension	CNES	Apr 2000
			Extension	CNES	Nov 2002
Characteristics  TO-8 Can (T 1507)  Frequency Range: 2.5 - 20 MHz					
 		CRYSTALS,  TO-8 CAN		Current Validity of Qualification	
		Certificate No.  34 G		Valid Until  November 2004	
				Page  03-01  002	



## Section 04



## Component Type: Diodes



Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
04-01			Small Signal	
	04-01-002-2	197 D	Switching, 1N4148-1, 1N4150-1	Microsemi
	04-01-003-1	247 C	Switching, 1N6638 et al, 1N3595-1	Microsemi
	04-01-004-1	261 B	Switching, 1N5802, 1N5804, 1N5806	Microsemi
			Power	
	04-02-002-1	272	Type STPS20H100	STMicroelectronic
	04-02-003-1	274	Types BYW-81, BYV52, BYV54	STMicroelectronic
04-05			Microwave, Silicon	
	04-05-001-3	227 A	Schottky, BAS 70	Infineon
	04-05-002-2	224 B	PIN, BXY 42	Infineon
	04-05-002-4A-B	259 A	PIN, Fast Switching	TEMEX
	04-05-003	236 B	PIN, BXY 43 and 44	Infineon
	04-05-003-1A-B	200 B	PIN and Varactors	Tyco M/A Com
	04-05-003-2	225 B	Varactor, DH 267	TEMEX
	04-05-003-3	273	Varactor, Tuning, DH 76xxx	TEMEX

Types covered by similarity :  1N4151-1		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000  Detail ESCC 5101/023 ESCC 5101/024 ESCC 5101/025		Microsemi Ireland Ennis Ireland	Qualification  Extension  Extension  Extension  Extension	ESTEC  ESTEC  ESTEC  ESTEC  ESTEC	Nov 1993  Jan 1996  Jan 1998  Apr 2000  Jun 2002
Characteristics  Variants 02 are qualified					
 		DIODES,  SILICON, SWITCHING,  BASED ON TYPES 1N4148-1, 1N4150-1		Current Validity of Qualification	
		Certificate No.  197 D	Valid Until  June 2004	Page  04-01  002-2	

Types covered by similarity :  1N6639, 1N6640, 1N6641, 1N6642, 1N6643, and 1N6639US, 1N6640US, 1N6641US0, 1N6642US, 1N6643US, and 1N3595US-1		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5000  Detail ESCC 5101/026 ESCC 5101/027 ESCC 5101/028		Microsemi Ireland Ennis Ireland	Qualification  Extension  Extension  Extension	ESTEC  ESTEC  ESTEC  ESTEC	Jan 1998  Apr 2000  Jun 2000  Jun 2002	
Characteristics  For 5101/026: Variants 01, 02, and 03 in DO 35 package are qualified Variants 04, 05, and 06 in MELF package are qualified For 5101/027: Variants 01, 02, and 03 in DO 35 package are qualified Variants 04, 05, and 06 in MELF package are qualified For 5101/028: Variant 01 in DO 35 package is qualified Variant 02 in MELF package is qualified						
 		DIODES,  SILICON, SWITCHING,  BASED ON TYPES 1N6638 AND 1N3595-1		Current Validity of Qualification		Page
				Certificate No.  247 C	Valid Until  June 2004	04-01  003-1



Types covered by similarity : 1N5802, 1N5804, and 1N5802US, 1N5804US		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5000		Microsemi Ireland Ennis Ireland	Qualification	ESTEC	May 2000	
Detail ESCC 5101/014			Extension	ESTEC	Jun 2000	
			Extension	ESTEC	Jun 2002	
Characteristics  Variants 07, 08 and 09 in A packages are qualified  Variants 10, 11 and 12 in MELF packages are qualified          Operating Temperature (°C): - 65 to +175						
 		DIODES,  SILICON, SWITCHING,  BASED ON TYPES 1N5806 AND 1N5806US		Current Validity of Qualification		Page
				Certificate No.  261 B	Valid Until  June 2004	04-01  004-1



Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5000  Detail ESCC 5106/016		ST Microelectronics Rennes France	Qualification	CNES	Nov 2002	
Characteristics  Variants 01 to 04 are qualified  Maximum Ratings:  $V_{RRM}$ : 100 V; $I_O$ : 2x 20 A $T_J$ : + 175° C; Package Type: TO254 Case  Operating Temperature Range (°C): -55 to +175						
 		DIODES, POWER, SCHOTTKY BARRIER,  BASED ON TYPE STPS20H100		Current Validity of Qualification		Page
				Certificate No.	Valid Until	04-02
			272	November 2004	002-1	

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	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 to 04 are qualified 5103/030 variant 01 is qualified 5103/031 variant 01 is qualified  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 Type: TO254 Case  Operating Temperature Range (°C): -55 to +150						
 		DIODES, SILICON, POWER RECTIFIER,  HIGH EFFICIENCY, FAST RECOVERY,  BASED ON TYPES BYW81, BYV 52 AND BYV54		Current Validity of Qualification		Page
				Certificate No.  274	Valid Until  August 2005	04-02  003-1





Types covered by similarity : Variant 02		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 5010  Detail ESCC 5513/017		Infineon Technologies AG München Germany	Qualification  Extension  Extension	DARA  DLR  DLR	Jun 1995  Jan 2000  Jan 2004		
Characteristics  Maximum Ratings: $V_{R=}$ -50V $I_{FM=}$ 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: T1  Operating Temperature Range (°C): -55 to +175							
 		DIODES,  MICROWAVE, SILICON, PIN  BASED ON TYPE BXY 42- MESA			Current Validity of Qualification		Page
					Certificate No.	Valid Until	04-05
					224 B	January 2006	002-2

Types covered by similarity : See next page				Remarks : New package BH155 introduced			
Procurement Specifications Issues in effect on certification date		Manufacturer		Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010		TEMEX Les Ulis France		Qualification	CNES	Mar 2000	
Detail ESCC: See types covered by similarity.				Extension		Dec 2003	
Characteristics							
	<u>DH 50151</u>	<u>DH 50201</u>	<u>DH 50251</u>				
V <sub>Rmax.</sub>	150 V	200 V	250 V				
R <sub>SF</sub> (Ω) <sub>(max.)</sub>	< 2.0	< 2.3	< 2.4				
τ <sub>L</sub> (ns) <sub>(min.)</sub>	> 160	> 240	> 265				
Operating Temperature Range: -55 to +125 °C							
 		DIODES, MICROWAVE, SILICON, PIN, FAST SWITCHING			Current Validity of Qualification		Page
					Certificate No.	Valid Until	04-05
					259 A	December 2005	002-4A

Types covered by similarity

ESCC Spec. No.	Component Type
5513/031	DH 50151 to DH 50157, variants 01 to 49
5513/033	DH 50201 to DH 50209, variants 01 to 63
5513/034	DH 50251 to DH 50256, variants 01 to 36



DIODES,  
MICROWAVE, SILICON,  
PIN, FAST SWITCHING

Current Validity of Qualification

Certificate No.

259 A



Valid Until

December 2005

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002-4B

Types covered by similarity : Variants 01-08 are qualified		Remarks :																																																			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date																																																
Generic ESCC 5010  Detail ESCC 5513/030		Infineon Technologies AG München Germany	Qualification  Extension  Extension	DARA  DLR  DLR	Oct 1996  Jan 2000  Jan 2004																																																
Characteristics <table border="0" style="width: 100%;"> <tr> <td></td> <td style="text-align: center;"><u>BXY 43</u></td> <td style="text-align: center;"><u>BXY 44</u></td> <td colspan="3"></td> </tr> <tr> <td>Maximum Ratings:</td> <td><math>V_R = -150</math> V (variants 01-04),</td> <td><math>-200</math> V (variants 05-08)</td> <td colspan="3"></td> </tr> <tr> <td></td> <td><math>I_F = 400</math> mA</td> <td></td> <td colspan="3"></td> </tr> <tr> <td></td> <td><math>P_D = 500</math> mW</td> <td></td> <td colspan="3"></td> </tr> <tr> <td>D.C Parameters:</td> <td><math>I_R = 10</math> nA max.</td> <td><math>5</math> nA max. @ <math>V_R = -100</math> V</td> <td colspan="3"></td> </tr> <tr> <td></td> <td><math>V_F = 1.0</math> V max.</td> <td><math>1.05</math> V max. @ <math>I_F = 100</math> mA</td> <td colspan="3"></td> </tr> <tr> <td>Packages:</td> <td colspan="5">T, T1, Teller, Pill, Flatpack</td> </tr> <tr> <td colspan="6">Operating Temperature Range: <math>-55</math> to <math>+150</math> °C</td> </tr> </table>							<u>BXY 43</u>	<u>BXY 44</u>				Maximum Ratings:	$V_R = -150$ V (variants 01-04),	$-200$ V (variants 05-08)					$I_F = 400$ mA						$P_D = 500$ mW					D.C Parameters:	$I_R = 10$ nA max.	$5$ nA max. @ $V_R = -100$ V					$V_F = 1.0$ V max.	$1.05$ V max. @ $I_F = 100$ mA				Packages:	T, T1, Teller, Pill, Flatpack					Operating Temperature Range: $-55$ to $+150$ °C					
	<u>BXY 43</u>	<u>BXY 44</u>																																																			
Maximum Ratings:	$V_R = -150$ V (variants 01-04),	$-200$ V (variants 05-08)																																																			
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	$P_D = 500$ mW																																																				
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	$V_F = 1.0$ V max.	$1.05$ V max. @ $I_F = 100$ mA																																																			
Packages:	T, T1, Teller, Pill, Flatpack																																																				
Operating Temperature Range: $-55$ to $+150$ °C																																																					
 		DIODES,  MICROWAVE, SILICON, PIN, PLANAR  BASED ON TYPES BXY 43 AND 44			Current Validity of Qualification																																																
		Certificate No.  236 B		Valid Until  January 2006		Page  04-05  003																																															

Types covered by similarity : See next page

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010  Detail ESCC: See types covered by similarity.	Tyco Electronics Ltd. M/A - COM Division Milton Keynes England	Qualification  Extension  Extension	DRA  DERA  QinetiQ	Dec 1993  Oct 1997  Mar 2002

Characteristics

Operating Temperature Range (°C): -65 to +125 and 150



DIODES,  
 MICROWAVE, SILICON,  
 PIN AND VARACTORS

Current Validity of Qualification		Page
Certificate No.  200 B	Valid Until  March 2004	04-05  003-1A

Types covered by similarity

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



DIODES,  
MICROWAVE, SILICON,  
PIN AND VARACTORS



Current Validity of Qualification



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200 B

Valid Until  
March 2004

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003-1B

Types covered by similarity : The variants are based on the following types		Remarks :		
Variants 10 to 16: DH 267 Variants 30 to 36: DH 256 Variants 50 to 56: DH 294		Variants 20 to 26: DH 292 Variants 40 to 46: DH 252		
Procurement Specifications Issues in effect on certification date		Manufacturer		Date
Generic ESCC 5010  Detail ESCC: 5512/016		TEMEX Les Ulis France		Jun 1995  Aug 1998  Jun 2003
Characteristics  Maximum Ratings : $V_R = -15$ to $+45$ V $I_F = 250$ to $1000$ mA at $T_{amb} = +75$ °C $P_{tot} = 0.5$ to $1.25$ W at $T_{amb}$  $C_{j\ max.}$ ranges from 0.4 pF to 7.2 pF Six new variants of packages introduced (M206)  Operating Temperature Range (°C): $-55$ to $+150$				
 		DIODES, MICROWAVE, SILICON, MULTIPLIER VARACTOR BASED ON TYPES DH 267 AND DH 294		Page
		Current Validity of Qualification		
		Certificate No. 225 B	Valid Until June 2005	04-05 003-2

Types covered by similarity :		Remarks :																														
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date																											
Generic ESCC      5010  Detail ESCC:     5512/023		TEMEX Les Ulis France	Qualification	CNES	Jun 2003																											
Characteristics:    Operating Temperature Range (°C): -55 to +155  Maximum Ratings : $V_R = -20$ at $I_R=10\mu A$ and $T_{amb}= +25$ °C																																
<table border="1"> <thead> <tr> <th><u>Variants</u></th> <th><u>CT(typ.) (-4V)</u></th> <th><u>Based on Type</u></th> </tr> </thead> <tbody> <tr><td>01 to 09</td><td>1 pF</td><td>DH 76010</td></tr> <tr><td>10 to 18</td><td>1.5 pF</td><td>DH 76015</td></tr> <tr><td>19 to 27</td><td>2.2 pF</td><td>DH 76022</td></tr> <tr><td>28 to 36</td><td>3.3 pF</td><td>DH 76033</td></tr> <tr><td>37 to 45</td><td>4.7 pF</td><td>DH 76047</td></tr> <tr><td>46 to 54</td><td>6.8 pF</td><td>DH 76068</td></tr> <tr><td>55 to 63</td><td>10 pF</td><td>DH 76100</td></tr> <tr><td>64 to 72</td><td>15 pF</td><td>DH 76150</td></tr> </tbody> </table>						<u>Variants</u>	<u>CT(typ.) (-4V)</u>	<u>Based on Type</u>	01 to 09	1 pF	DH 76010	10 to 18	1.5 pF	DH 76015	19 to 27	2.2 pF	DH 76022	28 to 36	3.3 pF	DH 76033	37 to 45	4.7 pF	DH 76047	46 to 54	6.8 pF	DH 76068	55 to 63	10 pF	DH 76100	64 to 72	15 pF	DH 76150
<u>Variants</u>	<u>CT(typ.) (-4V)</u>	<u>Based on Type</u>																														
01 to 09	1 pF	DH 76010																														
10 to 18	1.5 pF	DH 76015																														
19 to 27	2.2 pF	DH 76022																														
28 to 36	3.3 pF	DH 76033																														
37 to 45	4.7 pF	DH 76047																														
46 to 54	6.8 pF	DH 76068																														
55 to 63	10 pF	DH 76100																														
64 to 72	15 pF	DH 76150																														
 		DIODES,  MICROWAVE, SILICON, HYPER-ABRUPT JUNCTION TUNING  VARACTOR, BASED ON TYPES DH 76xxx			Current Validity of Qualification		Page																									
					Certificate No.	Valid Until	04-05																									
			273	June 2005	003-3																											



## Section 05

## Component Type: Filters

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



Types covered by certificate

Style	Detail Spec.	Variants	Capacitance Range (nF)	Rated Current (A)	Rated Voltage (V)
SFP 040	3008/014	01 to 40	0.75, 0.16, 1.6, 2.4, 4.32, 44.8	10 (DC & LF)	70 to 250
SFP 060	3008/021	01 to 14	2.4 to 89.6	10	35 to 500
SFP 035	3008/025	01 to 20	2.4 to 35.20	10	35 to 200
SFP 100	3008/028	01 to 06	0.16 to 1 312.0	10	50 to 300
SFP 060	3008/030	01 to 28	2.4 to 89.6	10	35 to 500

Style	Detail Spec.	Variants	Capacitance Range (pF)	Rated Current (A)	Rated Voltage (V)
SFC 030	3008/020	01 to 12	470 to 22 000	1.0 to 5.0	25 to 200
SFC 060	3008/026	01 to 06	680 to 220 000	10	25 to 200
SFC 100	3008/027	01 to 06	1000 to 1 000 000	10	25 to 200
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

Style	Detail Spec.	Variants	Capacitance Range (nF)	Rated Current (A)	Rated Voltage (V)
SFL 100	3008/029	01 to 48	17.6 to 1 600	5, 10, 15	40 to 300



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

Current Validity of Qualification

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252 B

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05-01  
001 B

Section 06

Component Type: Fuses

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

## Section 07

## Component Type: Inductors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
07			PowerFixed, RF	
	07-01-001	241 B	Types MSCI 10000, 12000, 20000	Microspire
	07-01-002	276	Types SESI	Microspire



Types covered by similarity : Remarks :

Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3201		Microspire Illange France	Qualification	CNES	Apr 1997
Detail ESCC 3201/008			Extension	CNES	Nov 2000
			Extension	CNES	Mar 2003

Characteristics Variants 01 to 04 are qualified

Series No.	Range (µH)	Tolerance (±%)	Q <sub>min.</sub>	Min. SRF f <sub>r</sub> (MHz)	Max. DCR, R <sub>dc</sub> (Ω)	Rated DC Current, I <sub>R</sub> (mA)	Case Size
10k	0.0101 - 10	2.0, 5.0, 10	60 - 42	1000- 33	0.025 - 3.3	750 - 87	A
12k	12 - 1000	10	42 - 12	26 - 1.5	2.0 - 120	110 - 15	B
20K	0.010 - 1000	10	60 - 30	1000 - 1.7	0.04 - 80	1000 - 25	C

Dielectric Withstanding Voltage (DWV): 200 Vrms  
Operating Temperature Range (°C): -55 to +125

 	<b>INDUCTORS, FIXED, RF, MINIATURE, MOULDED, SURFACE MOUNT, BASED ON SERIES MSC1 10K, 12K, AND 20K</b>	Current Validity of Qualification		Page 07-01 001
		Certificate No.  241 B	Valid Until  March 2005	



Types covered by similarity : Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3201  Detail ESCC 3201/009	Microspire Illange France	Qualification	CNES	Apr 2004

Characteristics Variants 01 to 05 are qualified

Series No.	Range (µH)	Tolerance (±%)	Max. DC Resistance, R <sub>dc</sub> (mΩ)	Rated DC Current, I <sub>R</sub> (A)	Peak Current I <sub>P</sub> (A)
14	3.3 - 330	10, 20	15 - 1575	5.8 - 0.57	8.0 - 0.8
15, 15W	1.5 - 330	10, 20, 30	5.0 - 630	14 - 0.74	19 - 1.0
18	6.8 - 330	10, 20	7.5 - 250	110 - 15	13.6 - 1.9
9.1	1.0 - 1000	10, 20, 30	8.5 - 5865	6.0 - 0.2	11.0 - 0.34

Inductance measured at 0.25V, 100KHz.  
 Peak current is the maximum current for a square pulse of duration <10s  
 Dielectric Withstanding Voltage (DWV): 500 Vrms  
 Operating Temperature Range (°C): -55 to +125



 <b>ESCC</b> <small>European Space Components Coordination</small> 	<b>INDUCTORS, POWER,          MOULDED, SURFACE MOUNT,          BASED ON SERIES SESI</b>	Current Validity of Qualification		Page
		Certificate No.  276	Valid Until  April 2006	

## Section 08

## Component Type: Microcircuits

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
08-02			Digital C-MOS	
	08-02-001-2 A to E	73 J	4000 B Series	ST Microelectronics
	08-02-002-2 A to F	190 E	54HCMOS Series	ST Microelectronics
08-07			Capability Approval	
	08-07-004-A to D	248	MMIC, GaAs Standard Cell	Bookham



Types covered by similarity : See next pages		Remarks : Refer to: <a href="https://escies.org/public/escs/comp_no.html">https://escies.org/public/escs/comp_no.html</a> for information concerning the ESCC Component Number and its marking.				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 9000  Detail ESCC: See types covered by similarity		ST Microelectronics Rennes France	Qualification	ESTEC	Apr 1981	
			Extension	CNES	Jan 1981	
			Extension	CNES	Dec 1984	
			Extension	CNES	May 1987	
			Extension	CNES	Apr 1990	
			Extension	CNES	Oct 1992	
			Extension	CNES	Apr 1995	
			Extension	CNES	Apr 1997	
			Extension	CNES	Apr 1999	
			Extension	CNES	May 2001	
			Extension	CNES	Nov 2002	
Characteristics  Package Types:  Ceramic Dual-in-Line  Ceramic Flat Pack  Leadless Chip Carrier  SOIC 14, 16, 24						
 		MICROCIRCUITS, DIGITAL, C-MOS-B, 4000 B SERIES		Current Validity of Qualification		Page
				Certificate No.	Valid Until	08-02
				73 J	November 2004	001-2A

## Types covered by similarity

ESCC Spec. No.	Description	Component Type
9201/041	Quad 2-input NOR gate	4001B
9201/042	Dual 4-input NOR gate	4002B
9202/039	4-bit full adder	4008B
9201/043	Quad 2-input NAND gate	4011B
9201/044	Dual 4-input NAND gate	4012B
9203/023	Dual 'D'-type flip-flop	4013B
9306/014	8-stage synchronous static shift register	4014B
9306/015	Dual 4-stage static shift register with serial input/parallel input	4015B
9202/050	Quad bilateral switch	4016B
9204/020	Decade counter/divider	4017B
9204/021	Presetable divide-by-N counter	4018B
9202/051	Quad AND/OR select gate	4019B
9204/022	14-stage ripple carry binary counter/divider	4020B
9306/016	8-stage static shift register	4021B
9204/023	Octal counter/divider	4022B
9201/045	Triple 3-input NAND gates	4023B
9204/024	7-stage ripple carry binary counter/divider	4024B
9201/046	Triple 3-input NOR gate	4025B
9406/001	Ripple carry decade counter/divider	4026B
9203/022	Dual J-K master slave flip-flop	4027B
9205/010	BCD-to-decimal or binary-to-octal decoder	4028B
9204/025	Presetable up/down counter binary or BCD decade	4029B
9201/047	Quad 2-input exclusive OR gates	4030B
9306/017	64-stage static shift register	4031B



**QPL**

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

## Current Validity of Qualification

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08-02

001-2B

Types covered by similarity

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



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

Current Validity of Qualification

Certificate No.

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08-02

001-2C

Types covered by similarity

ESCC Spec. No.	Description	Component Type
9201/065	Triple 3-input OR gate	4075B
9306/022	4-bit "D"-type register with 3-state output	4076B
9201/055	Quad exclusive NOR gate	4077B
9201/062	8-input OR/NOR gate	4078B
9201/052	Quad 2-input AND gate	4081B
9201/066	Dual 4-input AND gate	4082B
9201/067	Dual 2-wide 2-input AND/OR inverter gate	4085B
9409/002	Quad 2-input NAND gate with Schmitt trigger input	4093B
9306/026	8-stage shift and store bus register with synchronous serial outputs and 3-state parallel output	4094B
9206/003	Dual monostable multivibrator	4098B
9202/058	8-bit addressable latch	4099B
9401/006	Strobed hex inverter/buffer	4502B
9401/030	Hex non-inverting buffers with 3-state output	4503B
9202/063	Dual 4-bit latch with 3-state output	4508B
9408/006	8-channel multiplexer with 3-state output	4512B
9408/012	4-bit latch/4-to-16 decoder	4514B
9205/011	4-bit latch /4-to-16 line decoder	4515B
9204/045	Synchronous quad presettable up/down binary counter	4516B
9204/028	Dual binary up counter	4520B
9202/065	8-bit priority encoder	4532B
9207/007	Dual monostable multivibrator with reset	4538B



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

Current Validity of Qualification

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001-2D

Types covered by similarity

ESCC Spec. No.	Description	Component Type
9408/011	Dual 1-of-4 decoder/demultiplexer	4555B
9408/025	Dual 1-of-4 decoder/demultiplexers (output low on select)	4556B
9204/036	Presettable 8-bit synchronous down-counter	40103B
9306/033	FIFO register with 3-state output	40105B
9409/005	Hex Schmitt-trigger	40106B
9401/013	Dual 2-input NAND buffer/driver	40107B
9407/003	Quad low-to-high 3-state voltage level shifter	40109B
9204/054	Programmable 4-bit binary counter with asynchronous clear	40161B
9204/046	Programmable 4-bit binary counter with synchronous clear	40163B
9203/038	Hex 'D'-type flip-flop	40174B
9204/041	Presettable binary up/down counter (dual clock with reset)	40193B
9408/017	Quad 2-line-to-1-line data selector/multiplexer with 3-state output	40257B



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

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001-2E

Types covered by similarity : See next pages		Remarks : Refer to: <a href="https://escies.org/public/escs/comp_no.html">https://escies.org/public/escs/comp_no.html</a> for information concerning the ESCC Component Number and its marking.				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 9000  Detail ESCC: See types covered by similarity.		ST Microelectronics Rennes France	Qualification	CNES	Nov 1992	
			Extension	CNES	Apr 1995	
			Extension	CNES	Apr 1997	
			Extension	CNES	Apr 1999	
			Extension	CNES	May 2001	
			Extension	CNES	Nov 2002	
Characteristics  Qualified Packages: - Ceramic Dual In Line - Ceramic Flat Pack - Leadless Chip Carrier - SOIC 14, 16, 20, 24  <b>NOTES</b> 1. These parts have successfully passed radiation testing to 50 krad.						
 		MICROCIRCUITS, DIGITAL, MONOLITHIC, HIGH SPEED CMOS, 54HC AND 54HCT SERIES		Current Validity of Qualification		Page
				Certificate No.  190 E	Valid Until  November 2004	08-02  002-2A

Types covered by similarity

ESCC Spec. No.	Description	Component Type	Note
9201/105	Quad 2-input NAND gate	54HC00	1
9201/113	Quad 2-input NOR gate	02	1
9201/114	Quad 2-input NAND gate with open drain output	03	1
9401/033	Hex inverter	04	1
9201/106	Quad 2-input positive AND gate	08	1
9201/107	Triple 3-input NAND gate	10	1
9201/117	Triple 3-input AND gate	11	1
9409/007	Hex Schmitt trigger inverter	14	1
9201/118	Dual 4-input NAND gate	20	1
9201/108	Dual 4-input AND gate	21	1
9201/109	Triple 3-input NOR gate	27	1
9201/110	8-input NAND gate	30	1
9201/111	Quad 2-input OR gate	32	1
9203/071	Dual negative-edge triggered J-K flip-flops with clear	73	1
9203/050	Dual D-type flip-flop with preset and clear	74	1
9203/065	Quad 4-bit bistable D-Type latch	75	1
9209/004	4-bit magnitude comparator	85	1
9201/119	Quad 2-input exclusive OR gate	86	1
9203/072	Dual J-K negative-edge triggered flip-flop with direct clear	107	1



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

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002-2B

Types covered by similarity

ESCC Spec. No.	Description	Component Type	Note
9306/048	Dual J-K positive edge triggered flip-flop with preset and clear	54HC109	1
9203/051	Dual J-K negative edge triggered flip-flop with preset and clear	112	1
9207/006	Dual positive or negative edge Schmitt-retriggerable monostable multivibrator with clear	123	1
9401/039	Quad bus buffer with 3 state output	125	1
9401/046	Quad bus buffer with 3 state output	126	1
9201/120	Quad 2-input NAND gate with Schmitt-trigger input	132	1
9205/013	3-to-8 line decoder/demultiplexer with address latch and inverted output	137	1
9408/046	3-to-8 line decoder/demultiplexer with inverted output	138	1
9205/017	Dual 2 to 4 line decoder/demultiplexer with inverted output	139	1
9410/017	8-line to 3-line priority encoder	148	1
9408/054	8-line to 1-line data selector/multiplexer	151	1
9408/038	Dual 4-line to 1-line data selectors/multiplexer	153	1
9205/023	4-to-16 line decoder/demultiplexer with inverted output	154	1
9408/057	Quad 2-line to 1-line data selector/multiplexer	157	1
9408/059	Quad 2-line to 1-line data selector/multiplexer with inverted output	158	1
9204/062	Synchronous presettable 4-bit decade counter with direct clear	160	1
9204/059	Asynchronous 4-bit binary counter	161	1
9204/073	Synchronous 4-bit binary counter	163	1
9306/041	8-bit SIPO shift register	164	1
9306/042	8-bit PISO shift register	165	1
9306/043	8-bit PISO shift register	166	1
9306/052	Hex D-type edge-triggered flip-flop with clear	174	1



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DIGITAL,  
MONOLITHIC, HIGH SPEED CMOS,  
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Types covered by similarity

ESCC Spec. No.	Description	Component Type	Note
9203/052	Quad D-type edge-triggered flip-flop with clear	54HC175	1
9204/066	Synchronous 4-bit up/down binary counter	191	1
9204/065	Synchronous 4-bit up/down binary counter (dual clock with clear)	193	1
9306/047	4-bit PIPO shift register	194	1
9306/053	4-bit PIPO shift register with overriding clear	195	1
9205/021	3-line to 8-line decoder/demultiplexer with address latch	237	1
9401/034	Octal bus buffer with inverted 3-state output	240	1
9401/035	Octal bus buffer with 3-state output	241	1
9405/011	Quad bus transceiver with inverted 3-state output	242	1
9405/012	Quad bus transceiver with 3-state output	243	1
9401/048	Octal bus buffer with 3-state output	244	1
9405/013	Octal bus transceiver with 3-state output	245	1
9408/048	1-to-8 data selector/multiplexer with 3-state output	251	1
9408/058	Dual 4-line to 1-line data selector/multiplexer with 3-state output	253	1
9408/047	Quad 2-line to 1-line data selector/multiplexer with 3-state output	257	1
9203/073	8-bit addressable latch	259	1
9203/053	Octal D-type edge-triggered flip-flop with clear	273	1
9208/003	9-bit odd/even parity generator/checker	280	1
9202/075	4-bit binary full adder with fast carry	283	1
9401/052	Hex bus buffer with 3-state output	365	1



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002-2D

Types covered by similarity

ESCC Spec. No.	Description	Component Type	Note
9401/044	Hex bus buffer with 3-state output	54HC367	1
9203/059	Octal D-type transparent latch with 3-state output	373	1
9203/060	Octal D-type edge-triggered flip-flop with 3-state output	374	1
9201/121	Quad 2-input exclusive OR-gate	386	1
9204/074	Dual 4-bit negative edge-triggered binary counter	393	1
9401/049	Octal bus buffer with inverted 3-state output	540	1
9401/047	Octal bus buffer with 3-state output	541	1
9202/072	Octal D-type transparent latch with 3-state output	573	1
9203/054	Octal D-type edge-triggered flip-flop with 3-state output	574	1
9204/071	8-bit binary counter with 3-state output register	590	1
9306/051	8-bit shift register with 3-state output register	595	1
9306/054	8-bit PISO shift register	597	1
9209/005	8-bit identify comparator	688	1
9201/130	Dual 4-input NOR gate	4002	1
9204/070	Asynchronous negative-edge-triggered 14-bit binary counter	4020	1
9204/069	Asynchronous negative edge-triggered 12-bit binary counter	4040	1



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DIGITAL,  
MONOLITHIC, HIGH SPEED CMOS,  
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Types covered by similarity

ESCC Spec. No.	Description	Component Type	Note
9401/037	Hex buffer/converter with inverted output	54HC4049	1
9401/038	Hex buffer/converter	4050	1
9408/064	Analogue multiplexer/demultiplexer	4051	1
9408/065	Analogue multiplexer/demultiplexer (triple 2-channel)	4053	1
9204/076	Asynchronous negative-edge-triggered 14-bit binary counter and oscillator	4060	1
9408/052	Quad bilateral switch	4066	1
9201/124	Dual 4-input OR gate	4072	1
9201/129	Triple 3-input OR gate	4075	1
9201/123	8-input OR/NOR gate	4078	1
9306/050	8-bit SIPO shift latch register with 3-state output	4094	1
9205/019	4-to-16 line decoder/latch	4514	1
9203/070	Dual D-type flip-flop with preset and clear	54HCT74	1
9401/045	Octal buffer with inverted 3-state output	240	1
9402/009	Octal bus buffer with 3-state output	244	1
9405/014	Octal bus transceiver with 3-state output	245	1
9203/064	Octal D-type transparent latch with 3-state output	373	1
9203/066	Octal D-type edge-triggered flip-flop with 3-state output	374	1
9401/055	Hex inverter (single stage) with unbuffered output	54HCU04	



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

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Types covered by similarity :		Remarks : Closure of the Caswell facility has been announced by Bookham. Last time orders are in effect.			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 9010  Detail ESCC (see remarks)		Bookham Technologies Plc Caswell England	Capability Approval	DERA	Jun 1998
Characteristics  See Capability Abstract					
 	MICROCIRCUITS, ANALOGUE, GAAS, MMIC, STANDARD CELL, F20 PROCESS, CAPABILITY APPROVAL		Current Validity of Qualification		Page
			Certificate No.	Valid Until	08-07
		248	June 2000	004 A	

## CAPABILITY ABSTRACT

The F20 (IS and IG) analogue standard cell MMIC process is based on direct ion implantation of semi-insulating GaAs substrates. FETs are fabricated utilising 0.5  $\mu\text{m}$  gate lengths and TiPtAu gate metal. A composite silicon nitride/polyimide dielectric system combines with two levels of interconnect metal to form complex components and circuit topologies without the need for air bridges. Through GaAs vias are used for device grounding. The F20 process is suitable for microwave applications in radiation intensive environments.

### BASIC F20 TECHNOLOGY INFORMATION

Two Level Metal and dielectric, ion implant substrates

Operating Temperature	: $T_{ch \text{ max. }} +150 \text{ }^\circ\text{C}$
Storage Temperature	: $-65 \text{ }^\circ\text{C}$ to $+150 \text{ }^\circ\text{C}$
Max. Operating Frequency	: $> 200 \text{ GHz}$
RF Output Power	: 250 mW/mm gate width (IG)
	: 300 mW/mm gate width (IS)
Max. Power Dissipation (FET)	: 1 W/mm gate width (IG)
	: 2 W/mm gate width (IS)
Max. Power Dissipation (die)	: $0.5 \text{ W/mm}^2$
Max. Die Size	: 12.7 mm x 12.7 mm
Total Dose Tolerance	: $< 100 \text{ kRad(Si)}$
	: simulation supported to 80 kRad(Si)
Radiation Latch-up	: $\leq 140 \text{ MeV}/(\text{mg}/\text{cm}^2)$
SEU Tolerance	: $\text{LET} \geq 54 \text{ MeV}/(\text{mg}/\text{cm}^2)$
ESD protection	: $\leq 1\text{kV}$
Design Style	: Standard cell
Cell Library	: F20 Foundry 3
Application	: Small signal analogue
Design Systems	: CADENCE, WAVEMAKER
Simulators	: LIBRA, LINMIC, HARMONICA, HPMDS, MMICAD
Packages	: Custom, ceramic, metal



MICROCIRCUITS,  
ANALOGUE,  
GAAS, MMIC, STANDARD CELL, F20 PROCESS,  
CAPABILITY APPROVAL

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08-07

004 B

## F20 CELL LIBRARY

FETs: (pie) gate 1, 2, 4 or 6 finger. Finger widths 50  $\mu\text{m}$  to 175  $\mu\text{m}$  in 1  $\mu\text{m}$  steps

Maximum ratings:

IG:  $V_{ds} 6V/V_{gs} -8V$  or  $V_{ds} 6V/V_{gd} -8V$ ; 1 W/mm gate width;  $T_{ch.} 150^\circ\text{C}$

IS:  $V_{ds} 6V/V_{gs} -10V$  or  $V_{ds} 6V/V_{gd} -10V$ ; 2 W/mm gate width;  $T_{ch.} 150^\circ\text{C}$

Inductors: 1-10 turn planar, 1-5 turn stacked; 18 nH maximum

Maximum current rating: 10A/mm line width (Planar)

Capacitors: Silicon nitride dielectric 0.5 to 59 pF, silicon nitride/polyimide composite dielectric 0.06 - 2.5 pF.

Maximum rating: 15V

Resistors: Implanted 10 Ohm to 10K Ohm

Transmission: Characteristic impedance 40 Ohm to 110 Ohm

Lines: Maximum current rating: 10A/mm line width

## RADIATION RESISTANCE

There is no discernible change in device performance during or following irradiation from either a 3 MeV electron source at a maximum rate of  $5 \times 10^4 \text{ Gy (Si) } \cdot \text{ s}^{-1}$  to a total dose of 1 KGy or a 300 MeV proton source to a total dose of 1 KGy or following irradiation using a 1.2 MeV gamma-photon source at  $1.5 \text{ Gy (Si) } \cdot \text{ s}^{-1}$  to a total dose of 10 KGy. Irradiation from a 4 MeV electron source at  $5 \times 10^2 \text{ Gy (Si) } \cdot \text{ min}^{-1}$  to a total dose of 10 KGy results in less than 0.8% change in device performance.



MICROCIRCUITS,  
ANALOGUE,  
GAAS, MMIC, STANDARD CELL, F20 PROCESS,  
CAPABILITY APPROVAL

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004 C

### PACKING DENSITY AND CHIP SIZES

The packing density depends on circuit function but is ultimately limited by the need to maintain the minimum layer spacing defined in the Design Manual and the maximum  $T_{ch}$  of 150 ° C. The maximum circuit array size is 127 mm x 127 mm which is also the maximum chip size. Chip size is also limited by a maximum aspect ratio of 3:1.

### DIE ATTACH, WIRE BONDING AND PACKAGING

Dieattach is by Au/Sn (80:20) eutectic solder bonding. The maximum permissible time/temperature exposure of a chip during die or wire bonding is 2 minutes at 310 ° C.

Wire bonding is by gold wire and thermocompression bonding with a maximum bond tool loading for 1" Au wire of 50g.

Packaging, die attach and wire bonding are carried out in an inert gas atmosphere. The maximum die size utilised to date is 6.9 x 2.3 mm. Package types used for either test vehicles or MMICs have included 16 pin side-brazed DILs, 20-way metal/ceramic microwave packages and 14-way Cu/Mo/ceramic packages.



MICROCIRCUITS,  
ANALOGUE,  
GAAS, MMIC, STANDARD CELL, F20 PROCESS,  
CAPABILITY APPROVAL

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004 D



## Section 09



## Component Type: Relays



Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
09-01			Non-Latching, 28Vdc Contact Rating	
	09-01-002	02 G	Type GP5	LEACH
	09-01-005	239 B	Type E	LEACH
09-02			Latching, 28Vdc Contact Rating	
	09-02-002	13 G	Type GP2	LEACH
	09-02-006	240 B	Type D	LEACH
09-03			Latching, 50Vdc Contact Rating	
	09-03-001	93 F	Type GP250	LEACH
	09-03-002	04 H	Type GP3A	LEACH







Types covered by similarity : ariants 01 to 08 are qualified Coil Voltages 6 and 12 Vdc		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3601		LEACH International Europe Niort France	Qualification	CNES	Apr 1978	
Detail ESCC 3601/003			Extension	CNES	Oct 1980	
			Extension	CNES	Jan 1984	
			Extension	CNES	Oct 1986	
			Extension	CNES	Jul 1992	
			Extension	CNES	Jun 1995	
			Extension	CNES	Dec 1998	
			Extension	CNES	Nov 2001	
Characteristics  Contact Rating : 2 A at 28 Vdc Contact Configuration: 2PDT Package Type: Half-crystal can Coil Voltage 26.5 Vdc Operating Temperature Range (°C): -65 to +125						
 		RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE GP 5		Current Validity of Qualification		Page
				Certificate No.	Valid Until	09-01
			02 G	November 2003	002	

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3601  Detail ESCC 3601/012		LEACH International Europe Niort France	Qualification  Extension  Extension	CNES  CNES  CNES	Apr 1997  Sep 2000  Dec 2003	
Characteristics: Variants 01 to 11 are qualified  Contact Rating : 1 A at 28 Vdc Contact Configuration: 2PDT Package Type: 1/6 crystal can Coil Voltage: 6, 12, 26.5 Vdc Operating Temperature Range (°C): -65 to +125						
 		RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE E		Current Validity of Qualification		Page
				Certificate No.	Valid Until	09-01
			239 B	December 2002	005	

Types covered by similarity : Variants 01 to 08 are qualified Coil Voltages 6 and 12 Vdc		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3602		LEACH International Europe Niort France	Qualification	CNES	Jan 1979	
Detail ESCC 3602/003			Extension	CNES	Feb 1981	
			Extension	CNES	Jan 1984	
			Extension	CNES	Oct 1986	
			Extension	CNES	Jul 1992	
			Extension	CNES	Jun 1995	
			Extension	CNES	Dec 1998	
			Extension	CNES	Nov 2001	
Characteristics  Contact Rating : 2 A at 28 Vdc Contact Configuration: 2PDT Package Type: half-size crystal can Coil Voltage: 26.5 Vdc Operating Temperature Range (°C): -65 to +125						
 		RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 2		Current Validity of Qualification		Page
				Certificate No.	Valid Until	09-02
			13 G	November 2003	002	

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3602  Detail ESCC 3602/019		LEACH International Europe Niort France	Qualification  Extension  Extension	CNES  CNES  CNES	Apr 1997  Sep 2000  Dec 2003	
Characteristics: Variants 01-11 are qualified  Contact Rating: 1 A at 28 Vdc Contact Configuration: 2PDT Package Type: 1/6 crystal can Coil Voltage: 6, 12 and 26.5 Vdc Operating Temperature Range (°C): -65 to +125						
 		RELAY, LATCHING, ELECTROMAGNETIC, TYPE D		Current Validity of Qualification		Page
				Certificate No.	Valid Until	09-02
			240 B	December 2005	006	

Types covered by similarity : Variants 01 to 08 are qualified Coil Voltage 12 Vdc		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3602		LEACH International Europe Niort France	Qualification	ESTEC	Feb 1982		
Detail ESCC 3602/010			Extension	CNES	Jul 1984		
			Extension	CNES	Sep 1987		
			Extension	CNES	Jul 1992		
			Extension	CNES	Jun 1995		
			Extension	CNES	Dec 1998		
			Extension	CNES	Nov 2001		
Characteristics  Contact Rating: 2 A at 50 Vdc (50 000 ops) 4 A pp, 56 Vrms, 20 kHz (50 000 ops) Contact Configuration: 2PDT Package Type: half-crystal can Coil Voltage: 26.5 Vdc Operating Temperature Range (°C): -65 to +125							
 		<p style="text-align: center;">RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 250</p>			Current Validity of Qualification		Page
					Certificate No.	Valid Until	09-03
			93 F	November 2003	001		

Types covered by similarity : Variants 01 to 08 are qualified Coil Voltages 6 and 12 Vdc		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3602		LEACH International Europe Niort France	Qualification	ESTEC	Apr 1978		
Detail ESCC 3602/005			Extension	ESTEC	Feb 1981		
			Extension	ESTEC	Feb 1983		
			Extension	ESTEC	Dec 1985		
			Extension	CNES	Jul 1989		
			Extension	CNES	Jul 1992		
			Extension	CNES	Sep 1995		
			Extension	CNES	Oct 1999		
Characteristics  Contact Rating: 10 A 50 Vdc (100 000 ops) 50 A 50 Vdc (500 ops)  Contact Configuration: 2PDT Coil Voltage: 26 Vdc  Operating Temperature Range (°C): -65 to +125			Extension	CNES	Apr 2003		
 		RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 3A			Current Validity of Qualification		Page
					Certificate No.  04 H	Valid Until  April 2005	09-03  002

## Section 10

## Component Type: Resistors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
10-02			Fixed, Film	
	10-02-006	256 B	Surface Mount, Type MS1	Vishay Electronic (Selb)
10-04			Fixed, Film, High Precision	
	10-04-001	116 H	Type RNC 90	Vishay S.A. Sfernice
10-05			Fixed ,Wirewound	
	10-05-004-1	263 A	Types MSP B HR	Vishay S.A. Sfernice
10-08			Chip	
	10-08-002	265 A	Type P HR	Vishay S.A. Sfernice
10-09			Flexible, Foil, Heaters	
	10-09-001-1	184 E	Single & Double Layer	IRCA
10-10			Network	
	10-10-001	235 C	Single-in-Line	Vishay S.A. Sfernice





Types covered by similarity :  
 Tolerances:  $\pm 0.02, 0.05, 0.1, 0.2, 0.5, 1\%$   
 Variants 03, 04, 08

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4001	Vishay S.A. Division Sfernice Nice France	Qualification	CNES	Dec 1983
Detail ESCC 4001/011		Extension	CNES	Oct 1986
		Extension	CNES	Nov 1989
		Extension	CNES	Jul 1992
		Requalification	CNES	Apr 1994
		Extension	CNES	Sep 1996
		Extension	CNES	Jan 1999
Extension	CNES	Jul 2001		
Extension	CNES	Nov 2003		

Characteristics: Variants 03, 04, 07, 08 are qualified Values: E192 series

Style	Detail Spec.	Variant	Range ( $\Omega$ )	Tol. (%)	TC (ppm/ $^{\circ}\text{C}$ )	Power Rating (W)	Max. Voltage (V)
RNC 90 (RS92N)	4001/011	07	33 - 100k	0.02 0.05 0.1 0.2 0.5 1.0	$\pm 5, \leq 125^{\circ}\text{C}$ $\pm 10, \leq 125^{\circ}\text{C}$ $\pm 10, >125^{\circ}\text{C}$ and $\leq 175^{\circ}\text{C}$	0.5 @ $70^{\circ}\text{C}$ 0.3 @ $125^{\circ}\text{C}$	300

Operating Temperature Range ( $^{\circ}\text{C}$ ): - 55 to + 175



RESISTORS,  
 FIXED, FILM,  
 NON HERMETICALLY SEALED,  
 BASED ON TYPE RNC 90

Current Validity of Qualification		Page
Certificate No.	Valid Until	10-04
116 H	November 2005	001

Types covered by similarity :  
 Variants 01, 02, 03 (inductively wound) are qualified

Tolerances: 1, 2, and 5%.  
 Temperature Coefficient to  $\pm 50$  and 100 ppm/°C for values less than 5.0  $\Omega$  (for information only)

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 4002	Vishay S.A. Division Sfernice Nice France
Detail ESCC 4002/009	

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Sep 2000
Extension	CNES	Mar 2003

Characteristics

Inductively wound, precision, surface mount

Style	Range ( $\Omega$ )	Tol. (%)	TC (ppm/°C)	Power Rating (W)	Max. Voltage (V)	Type Variant
MSP 1 B	0.5 - 1.0 K	0.5	30, >10 $\Omega$	1.0	50	01
MSP 2 B	0.5 - 2.2 K	0.5	30, >10 $\Omega$	2.0	120	02
MSP 3 B	0.1 - 4.12 K	0.5	30, >10 $\Omega$	2.5	200	03

Operating Temperature Range (°C): -55 to +200



RESISTORS,  
 WIRE-WOUND, FIXED, SURFACE MOUNT,  
 BASED ON TYPE MSPB HR

Current Validity of Qualification		Page
Certificate No. 263 A	Valid Until March 2005	10-05 004-1

Types covered by similarity :  
 Variants 01, 02, and 03 are qualified

Tolerances:  $R \leq 100\Omega$   $\pm 0.05, 0.1 \%$  TC :  $\pm 25 \text{ ppm}/^\circ\text{C}$   
 $100 < R \leq 250\Omega$   $\pm 0.05, 0.02, 0.1 \%$   
 $R > 250\Omega$   $\pm 0.01, 0.05, 0.02, 0.1 \%$ .

Remarks :

Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4001		Vishay S.A. Division Sfernice Nice France	Qualification	CNES	May 2001
Detail ESCC 4001/023			Extension	CNES	Oct 2003

Characteristics

Style	Range ( $\Omega$ )	Tol. ( $\pm\%$ )	TC (ppm/ $^\circ\text{C}$ )	Critical R ( $\Omega$ )	Limiting Voltage (V)	Type Variant
0603	50 - 0.2M	0.01, 0.02 and 0.05	$\pm 10$	12.25k	35	01
0805	50 - 0.25M	0.01, 0.02 and 0.05	$\pm 10$	45k	75	02
1206	50 - 1.0M	0.01, 0.02 and 0.05	$\pm 10$	40k	100	03

Operating Temperature Range ( $^\circ\text{C}$ ): -55 to 155

Lead material is Type 'E' with Type '4' finish



RESISTORS,  
 FILM, FIXED, CHIP, THIN FILM  
 BASED ON TYPE P HR

Current Validity of Qualification

Certificate No.

265 A



Valid Until

October 2005

Page

10-08

002

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 4009  Detail ESCC 4009/002		IRCA RICA Division Vittorio Veneto Italy	Qualification  Extension  Extension  Extension  Extension  Extension	ESTEC  ESTEC  ESTEC  ESTEC  ESTEC  ESTEC	Apr 1992  May 1994  Mar 1996  Feb 1998  Apr 2000  Aug 2002	
Characteristics  Single layer and double layer heaters Maximum Ohmic density: 200 /cm <sup>2</sup> Tolerances: ±2, 3, 5, 10 % Resistance range: 1 Ω to 5000 Heating Area: 1.6 to 1300 cm <sup>2</sup> Terminal Lead: 20, 22, 24, 26, 28, 30 AWG Temperature coefficient: (10-6/°C) : 175  Operating temperature range (°C): -65 to +200						
 		RESISTORS, HEATERS, FLEXIBLE SINGLE AND DOUBLE LAYER		Current Validity of Qualification		Page
				Certificate No.  184 E	Valid Until  August 2004	10-09  001-1

Types covered by similarity : Remarks :



Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4005		Vishay S.A. Division Sfernice Nice France	Qualification	CNES	Oct 1996
Detail ESCC 4005/003			Extension	CNES	Apr 1999
			Extension	CNES	Jul 2001
			Extension	CNES	Dec 2003

Characteristics: Variants 01 to 07 in 6, 8, 9 and 10 pin packages are qualified

Detail Spec.	Range ( $\Omega$ )	Tolerance	TC ( $10^{-6}/^{\circ}\text{C}$ )	Power Rating of Resistors (mW)	Limiting Element Voltage ( $U_L$ )
4005/003	46.4 to 1.0 M	$R \leq 100\Omega, \pm 2.0\%$ $R > 100\Omega, \pm 2.0\%$	$\pm 150$	180 for individual R  100 for parallel Rs	100 V

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

Values: E48 series

 	<b>RESISTORS, NETWORKS, THICK FILM, SINGLE-IN-LINE PACKAGES</b>	Current Validity of Qualification		Page 10-10 001
		Certificate No. 235 C	Valid Until December 2005	

## Section 11

## Component Type: Thermistors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
11-01			NTC	
	11-01-001	266 B	Type G*D* and *K3A*	Betatherm





## Section 12

## Component Type: Transistors

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
12-01			Low Power, NPN	
	12-01-002-3A-B	233 E	Types NPN	ST Microelectronics
	12-01-003-1	106 J	Type 2N2369A	ST Microelectronics
12-02			Low Power, PNP	
	12-02-002-3A-B	234 E	Types PNP	ST Microelectronics
12-03			High Power, NPN	
	12-03-007	253	Type 2N2880	SEMELAB
12-10			RF/Microwave, NPN, Low Power, Low Noise	
	12-10-001	230 A	Types BFY 193	Infineon
	12-10-002	245 B	Types BFY 405-450	Infineon
12-15			Microwave, Gallium Arsenide, Power	
	12-15-001	246 A	Types CLY 32	Infineon
12-16			Microwave, Gallium Arsenide	
	12-16-001	213 B	Types CFY66 & 67, High Electron Mobility, Low Noise	Infineon



Types covered by similarity :  2N3019		Remarks :																														
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date																											
Generic ESCC 5000  Detail Please refer to the next page.		ST Microelectronics Rennes France	Qualification	CNES	Sep 1996																											
			Extension	CNES	Sep 1997																											
			Extension	CNES	Aug 1998																											
			Extension	CNES	Nov 1999																											
			Extension	CNES	Nov 2001																											
			Extension	CNES	Dec 2003																											
Characteristics  Maximum Ratings:  <table border="0"> <tr> <td><u>2N2222A</u></td> <td><u>2N2484</u></td> <td><u>2N2219A</u></td> <td><u>2N5551</u></td> <td><u>2N3700</u></td> <td><u>2N3019</u></td> <td><u>2N5154</u></td> <td><u>BUX 77</u></td> <td><u>2N 2920A</u></td> </tr> <tr> <td>V<sub>CBO</sub> (V): 75</td> <td>60</td> <td>75</td> <td>BV<sub>CBO</sub> (V): 180</td> <td>140</td> <td>140</td> <td>100</td> <td>100</td> <td>60</td> </tr> <tr> <td>V<sub>CEO</sub> (V): 40</td> <td>60</td> <td>40</td> <td>BV<sub>CEO</sub> (V): 160</td> <td>80</td> <td>80</td> <td>80</td> <td>80</td> <td>60</td> </tr> </table> Packages : TO-18, TO-39, TO-66, TO-77, TO-257, LCCC3 and LCCC6  Operating Temperature Range (°C): - 65 to + 200		<u>2N2222A</u>	<u>2N2484</u>	<u>2N2219A</u>	<u>2N5551</u>	<u>2N3700</u>	<u>2N3019</u>	<u>2N5154</u>	<u>BUX 77</u>	<u>2N 2920A</u>	V <sub>CBO</sub> (V): 75	60	75	BV <sub>CBO</sub> (V): 180	140	140	100	100	60	V <sub>CEO</sub> (V): 40	60	40	BV <sub>CEO</sub> (V): 160	80	80	80	80	60				
<u>2N2222A</u>	<u>2N2484</u>	<u>2N2219A</u>	<u>2N5551</u>	<u>2N3700</u>	<u>2N3019</u>	<u>2N5154</u>	<u>BUX 77</u>	<u>2N 2920A</u>																								
V <sub>CBO</sub> (V): 75	60	75	BV <sub>CBO</sub> (V): 180	140	140	100	100	60																								
V <sub>CEO</sub> (V): 40	60	40	BV <sub>CEO</sub> (V): 160	80	80	80	80	60																								
 		TRANSISTORS,  LOW AND HIGH POWER,  NPN		Current Validity of Qualification		Page																										
				Certificate No.	Valid Until	12-01																										
			233 E	December 2005	002-3 A																											

Types covered by this certificate

ESCC Spec. No.	Component Type	Package	Qualified Variants
5201/001	2N 2484	TO-18, LCCC3	01, 02, 04, 05
5201/002	2N 2222A	TO-18, LCCC3	01, 02, 04, 05
5201/019	2N 5551	TO-18, LCCC3, TO-39	01, 02, 04, 05, 06, 07
5201/003	2N 2219 A	TO-39	01, 02
5201/004	2N 3700	TO-18, LCCC3	01, 02, 04, 05
5203/010	2N 5154, BFX 34	TO-39, TO-257	01, 02, 04, 05
5203/016	BUX 77ESY	TO-257	06, 07
5207/002	2N 2920A	TO-77, and LCCC6	06, 09, 12, 15
5201/011	2N3019	TO-39	03, 04



TRANSISTORS,  
LOW AND HIGH POWER,  
NPN

Current Validity of Qualification

Certificate No.

233 E



Valid Until

December 2005

Page

12-01

002-3 B

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5000  Detail ESCC 5201/006		ST Microelectronics Rennes France	Qualification  Requalification  Extension  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES  CNES	Feb 1983  Jul 1987  Apr 1990  Aug 1992  Jun 1995  Sep 1996  Sep 1997  Nov 1999  Nov 2001  Dec 2003	
Characteristics  $h_{FE}$ min/max: 40/120 at $I_C = 10$ mA $t_{on}$ : 12 ns $V_{CE SAT}$ : 0.5V at $I_C = 100$ mA $t_{off}$ : 18 ns Maximum Ratings: $P_D$ : 360 mW at $T_{amb} + 25^\circ C$ ; $BV_{CBO}$ : 40 V; $BV_{CEO}$ : 15 V; $I_C$ : 500 mA, 10 $\mu$ sec pulse Package Types: TO-18 and LCCC3 Operating Temperature Range ( $^\circ C$ ): -65 to +200						
 		TRANSISTORS,  LOW POWER, NPN,  TYPE 2N 2369A		Current Validity of Qualification		Page
				Certificate No.	Valid Until	12-01
				106 J	December 2005	003-1



Types covered by this certificate

ESCC Spec. No.	Component Type	Package	Qualified Variants
5202/002	2N 2905A	TO-39	01, 02
5202/001	2N 2907A	TO-18 and LCCC3	01, 02, 04, 05
5202/014	2N 5401	TO-18 and LCCC3	01, 02, 04, 05
5204/002	2N 5153	TO-39, TO-257	01, 02, 04, 05
5204/006	BUX 78ESY	TO-257	06, 07
5207/005	2N 3810	TO-78, and LCCC6	02, 05, 07, 09
5207/003	2N 3350	TO-77, and LCCC6	02, 03, 04, 05
5202/008	2N4033	TO-39, and LCCC3	01, 02, 04, 05



TRANSISTORS,  
LOW AND HIGH POWER,  
PNP

Current Validity of Qualification

Certificate No.

234 E



Valid Until

January 2006



Page

12-02



002-3 B

Types covered by similarity :		Remarks : Maintenance activities underway				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5000  Detail ESCC 5203/025		SEMELAB Lutterworth England	Qualification	DERA	Dec 1998	
Characteristics  Variants 09, 10, 11, and 12 are qualified  Maximum Ratings: $P_{tot}$ : 20 W at $T_{case} + 100^{\circ} C$ ; $R_{TH(J-C)}$ 5 ° C/W $V_{CB}$ : 150 V; $V_{CE}$ : 80 V; $I_C$ : 5 A, d.c. continuous Package Type: T0-257 Case  Operating Temperature Range (°C): -55 to +200						
 		TRANSISTORS,  POWER, NPN,  TYPE 2N 2880		Current Validity of Qualification		Page
				Certificate No.	Valid Until	12-03
			253	December 2000	007	



Types covered by similarity : All variants are qualified (BFY 405, 420, and 450)		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010		Infineon Technologies AG München Germany	Qualification	DARA	Jun 1997	
Detail ESCC 5611/008			Extension	DLR	Jan 2000	
			Extension	DLR	Dec 2003	
Characteristics for BFY 450:						
$V_{CEO}$ (V)max. 4.5 $V_{CBO}$ (V)max.: 15 $I_C$ (mA)max.: 100 $I_B$ (mA)max.: 10 $h_{fe}$ min./max. 50/150 @ $V_{CE}= 1.0$ V, $I_C= 20$ mA NF (dB) max. @ 1.8 GHz 2.0 @ $V_{CE}= 2.0$ V, $I_C= 10$ mA $f_T$ (GHz) min. @ 1.0 GHz 18 @ $V_{CE}= 3.0$ V, $I_C= 90$ mA						
Package: "Micro-X" Total Power Dissipation ( $P_{tot}$ )= 450 mW Operating Temperature Range (°C): $T_{op} = - 65$ to + 175						
 European Space Components Coordination 		TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR BASED ON TYPE BFY 450			Current Validity of Qualification	Page
		Certificate No. 245 B	Valid Until December 2005	12-10	002	



Types covered by similarity :		Remarks : Maintenance activities to be initiated.				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 5010  Detail ESCC 5614/006		Infineon Technologies AG München Germany	Qualification  Extension	DLR  DLR	Nov 1997  Jan 2000	
Characteristics for CLY 32:  $V_{DS}$ (V) max. 14 $V_{DG}$ (V) max.: 16 $V_{GS}$ (V) max.: -6.0  $P_O$ (dBm) min. 32 @ $V_{DS}=9.0$ V, $f=2.0$ GHz, $P_{IN}=21$ dBm, power matched $\eta_{add}$ (%) min. 45 @ $V_{DS}=9.0$ V, $f=2.0$ GHz, $P_{IN}=21$ dBm, power matched  Package: "MWP 25" Total Power Dissipation ( $P_{tot}$ )= 7.5 W Channel Temperature Range (°C): $T_{ch} = -65$ to $+175$						
  		TRANSISTORS, MICROWAVE, METAL SEMICONDUCTOR FIELD EFFECT, POWER, GALLIUM ARSENIDE BASED ON TYPE CLY 32			Current Validity of Qualification	
		Certificate No.  246 A	Valid Until  January 2002	Page  12-15  001-1		

Types covered by similarity :  
 All variants are qualified

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010	Infineon Technologies AG München Germany	Qualification	DARA	Apr 1994
Detail ESCC 5613/002		Extension	DLR	Jan 2000
ESCC 5613/004		Extension	DLR	Dec 2003



Characteristics (@ 12 GHz):

		NFmin.(dB)	Ga (dB)
5613/002	variants 1 & 3	0.8	10
lattice matched	variants 2 & 4	1.0	9.5
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 °C



Storage Temperature Range (°C):  $T_{stg} = -65$  to +150



 	TRANSISTORS, HIGH ELECTRON MOBILITY, GALLIUM ARSENIDE, MICROWAVE, LOW NOISE, SMALL SIGNAL, BASED ON TYPES CFY 66 and CFY 67	Current Validity of Qualification		Page
		Certificate No.  213 B	Valid Until  December 2005	12-16  001



## Section 13



## Component Type: Wires and Cables



Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
13-01			Low Frequency	
	13-01-001-1	07 K	Polyimide, Types FA-3901-1, FA 3901-2	Draka Fileca
	13-01-001-2	09 K	Polyimide, Types 1871-1872	Nexans
	13-01-001-3	132 G	Polyimide, Types 3901002**B	Axon' Cable
	13-01-003	08 K	PTFE, Types MTV-BTV	Nexans
	13-01-004-2	219 D	Polyimide, Type SPL	Gore
	13-01-004-3	268 A	Polyimide, Type 3901019**B	Axon' Cable
	13-01-005-1	159 F	Crosslinked PTFE, Type Silver-Plated Copper	Tyco Electronics
	13-01-005-2	267 B	Crosslinked PTFE, Type Silver-Plated Copper	Axon' Cable
	13-01-008	215 D	PTFE, Polyimide / PFA Insulated, Type SPP	Gore
	13-01-009	216 D	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM	Gore
	13-01-010-1	229 D	Polyimide, Insulated, Shielded, Type SPLD, Drain Wire	Gore
	13-01-011-1	257 A	Crosslinked Modified ETFE, Type Silver-Plated Copper, Lightweight	Tyco Electronics
13-02			Coaxial, RF, Flexible	
	13-02-001	24 L	PTFE/Polyimide, Type 50 CIS	Nexans
	13-02-002-1	255 B	Coaxial, Triaxial, Balanced Shielded Line	Gore

Types covered by similarity :  FA 3901-1 Variants 24 to 47 are qualified FA 3901-2 Variants 31 to 73 are qualified		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901		Draka Fileca Ste-Genevieve France	Qualification	CNES	Jan 1979
Detail ESCC 3901/001			Extension	CNES	Sep 1981
3901/002			Extension	CNES	Jan 1984
Characteristics			Extension	CNES	Aug 1986
Voltage Rating, maximum (Vrms): 600			Extension	CNES	Jan 1989
Temperature Range (°C): -100 to +200			Extension	CNES	Apr 1991
			Extension	CNES	Jun 1993
			Extension	CNES	Jun 1995
			Extension	CNES	Aug 1997
			Extension	CNES	Aug 1999
		Extension	CNES	Jan 2002	
		Extension	CNES	Jan 2004	
 		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES FA 3901-1, FA 3901-2		Current Validity of Qualification	
		Certificate No.	Valid Until	Page	
		07 K	January 2006	13-01 001-1	



Types covered by similarity :		Remarks :			
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			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	
Generic ESCC 3901		Nexans Draveil France	Qualification	CNES	Jan 1979
Detail ESCC 3901/001			Extension	CNES	Sep 1981
3901/002			Extension	CNES	Dec 1983
			Extension	CNES	Mar 1987
			Extension	CNES	Jul 1989
Characteristics			Extension	CNES	Sep 1991
Voltage Rating, maximum (Vrms) : 600			Extension	CNES	Aug 1993
Temperature Range (°C): -100 to +200			Extension	CNES	Sep 1995
			Extension	CNES	Aug 1997
			Extension	CNES	Aug 1999
		Extension	CNES	Aug 2001	
		Extension	CNES	Aug 2003	
 		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES 1871 - 1872		Current Validity of Qualification	
		Certificate No.	Valid Until	Page	
		09 K	August 2005	13-01 001-2	



Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901  Detail ESCC 3901/002		AXON' CABLE Montmirail France	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension  Extension	ESTEC  ESTEC  ESTEC  ESTEC  ESTEC  ESTEC  CNES  CNES	Dec 1985  Jul 1988  Jul 1990  Nov 1993  Jan 1996  May 1999  Jun 2002  Sep 2004	
Characteristics  Voltage Rating, maximum (Vrms) : 600 Temperature Range(°C): -100 to +200						
 		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPE 3901002**B		Current Validity of Qualification		Page
				Certificate No.	Valid Until	13-01
			132 G	September 2006	001-3	



Types covered by similarity : Variants 01 to 78 are qualified - MTV - BTV - MTV/G - BTV/G - MTV/BF/G - BTV/BF/G		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		Nexans Draveil France	Qualification	CNES	Jan 1979	
Detail ESCC 3901/013			Extension	CNES	Sep 1981	
Characteristics  Voltage Rating, maximum, (Vrms): 600 Temperature Range, (°C): -100 to +200			Extension	CNES	Dec 1983	
			Extension	CNES	Mar 1987	
			Extension	CNES	Jul 1989	
			Extension	CNES	Sep 1991	
			Extension	CNES	Aug 1993	
			Extension	CNES	Sep 1995	
			Extension	CNES	Aug 1997	
			Extension	CNES	Aug 1999	
			Extension	CNES	Aug 2001	
			Extension	CNES	Aug 2003	
 		WIRES AND CABLES, LOW FREQUENCY, PTFE/POLYIMIDE INSULATION, BASED ON TYPES MTV-BTV			Current Validity of Qualification	Page
		Certificate No.  08 K		Valid Until  August 2005		13-01  003



Types covered by similarity : Variants 1-94 are qualified		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		W.L. Gore & Co Pleinfeld Germany	Qualification	DARA	Nov 1994	
Detail ESCC 3901/019			Extension	DARA	Nov 1996	
			Extension	DLR	Oct 1998	
			Extension	DLR	Oct 2000	
			Extension	DLR	Nov 2002	
Characteristics  Voltage Rating, maximum, (Vrms): 600 Temperature Range, (°C): -200 to +200						
 		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION BASED ON TYPE SPL			Current Validity of Qualification	Page
		Certificate No.  219 D		Valid Until  November 2004		13-01  004-2







Types covered by similarity : Variants of construction AWG 12 to 28		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		AXON' CABLE Montmirail France	Qualification	CNES	Jun 2002	
Detail ESCC 3901/019			Extension	CNES	Sep 2004	
Characteristics  AWG 12 to 28 inclusive are qualified          Voltage Rating, maximum, (Vrms): 600 Temperature Range, (°C): -200 to +200						
 		WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION BASED ON TYPE 3901019**B			Current Validity of Qualification	Page
		Certificate No.  268 A		Valid Until  September 2006		13-01  004-3



Types covered by similarity : All variants listed in Detail Specification		Remarks :  This product is not intended for manned space applications.				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		Tyco Electronics Dorcan, Swindon England	Qualification	RAE	Feb 1989	
Detail ESCC 3901/012			Extension	RAE	Jul 1992	
			Extension	DRA	Mar 1995	
			Extension	DERA	Sep 1997	
			Extension	DERA	Oct 1999	
			Extension	QinetiQ	Nov 2001	
			Extension	QinetiQ	Nov 2003	
Characteristics  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		Current Validity of Qualification		Page
				Certificate No.	Valid Until	13-01
			159 F	November 2005	005-1	

Types covered by similarity : All variants based on qualified variants		Remarks : This product is not intended for manned space applications.				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		AXON' CABLE Montmirail France	Qualification	CNES	Mar 2002	
Detail ESCC 3901/012			Extension	CNES	Feb 2003	
			Extension	CNES	Sep 2004	
Characteristics  Variant 03 (AWG 26), 06 (AWG 20), and 54 (2 cores AWG 24 with shield) are qualified  Wire code ISO 2635, 006  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 P515643A			Current Validity of Qualification	
		Certificate No.  267 B		Valid Until  September 2006		Page 13-01 005-2

Types covered by similarity :		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901  Detail ESCC 3901/017		W.L. Gore & Co Pleinfeld Germany	Qualification	DARA	Jul 1994	
Characteristics			Extension	DARA	Sep 1996	
Voltage Rating, maximum, (Vrms): 600V Temperature Range, (°C): -200 to +200  Expanded PTFE, extruded polyimide/fluorthermoplast insulation			Extension	DLR	Aug 1998	
			Extension	DLR	Aug 2000	
			Extension	DLR	Aug 2002	
 		POWER WIRES FOR CRIMPING, LOW FREQUENCY,  BASED ON TYPE SPP		Current Validity of Qualification Certificate No. 215 D Valid Until August 2004		Page 13-01 008



Types covered by similarity : Variants 01 to 88 are qualified.		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		W.L. Gore & Co Pleinfeld Germany	Qualification	DARA	Jul 1994	
Detail ESCC 3901/018			Extension	DARA	Sep 1997	
			Extension	DLR	Aug 1999	
			Extension	DLR	Aug 2001	
			Extension	DLR	Aug 2003	
Characteristics  Voltage Rating, maximum, (Vrms): 600 Temperature Range, (°C): -200 to +200  Expanded PTFE, polyimide / FEP, sintered PTFE insulated wires. Expanded PTFE, extruded polyimide / fluorothermoplast insulated cables, shielded and jacketed.						
 		WIRES AND CABLES, LOW FREQUENCY, INSULATED, POLYIMIDE/FLUOROTHERMOPLAST, BASED ON TYPE SPM		Current Validity of Qualification		Page
				Certificate No.  216 D	Valid Until  August 2005	13-01  009

Types covered by similarity : All variants are qualified		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901		W.L. Gore & Co Pleinfeld Germany	Qualification	DARA	Feb 1996	
Detail ESCC 3901/021			Extension	DLR	Feb 1998	
			Extension	DLR	Feb 2000	
			Extension	DLR	Feb 2002	
			Extension	DLR	Feb 2004	
Characteristics  Voltage Rating, maximum, (Vrms): 600 Temperature Range, (°C): -200 to +200						
 		POLYIMIDE INSULATED SHIELDED CABLES WITH DRAIN WIRE,  LOW FREQUENCY, BASED ON TYPE SPLD			Current Validity of Qualification	Page
		Certificate No.  229 D		Valid Until  February 2006		13-01  010-1

Types covered by similarity : 3901/020: All variants (01 - 80) 3901/022: All variants (01 - 24)		Remarks :				
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3901  Detail ESCC 3901/020 ESCC 3901/022		Tyco Electronics Dorcan, Swindon England	Qualification  Extension	DERA  QinetiQ	Oct 1999  Jan 2002	
Characteristics  Wires and Cables variants consists of 1, 2, 3, and 4 cores with and without jackets and shields  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.  Maximum voltage: 600 Vrms Operating temperature range (°C): -100 to +200						
 		WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED MODIFIED ETFE, LIGHTWEIGHT		Current Validity of Qualification		Page
				Certificate No.  257 A	Valid Until  January 2004	13-01  011-1





Types covered by similarity :  Variants 03 to 06, 10 to 13, and 20 to 25 are qualified		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3902  Detail ESCC 3902/002		W.L. Gore & Co Pleinfeld Germany	Qualification  Extension  Extension	DLR  DLR  DLR	Jan 1999  Feb 2001  Feb 2003		
Characteristics  Variants encompass coaxial, triaxial, and balanced shielded line  Operating Voltage (Continuous), maximum ratings, (Vrms): Variant 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  Temperature Range, (°C): -200 to +180							
 		WIRES AND CABLES,  RADIO FREQUENCY, FLEXIBLE, COAXIAL,  TRIAXIAL AND SYMMETRIC			Current Validity of Qualification		Page
					Certificate No.	Valid Until	13-02
			255 B	February 2005	002-1		

## Section 14

## Component Type: Miscellaneous

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
14-01			Passive Devices, RF	
	14-01-002-2	185 B	Coaxial Loads, to 22 GHz	Radiall
	14-01-004	178 C	Attenuators, Type R413	Radiall
14-03			Switches	
	14-03-003	275	Thermostatic, Bimetallic	COMEPA

Types covered by similarity : Remarks :



Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3403		RADIALL La Verpilliere France	Qualification	CNES	Jul 1992
Detail ESCC 3403/006			Extension	CNES	Jun 1997
			Extension	CNES	Jan 2002



Characteristics

Type	Detail Spec.	Frequency Range (GHz)	Rated Pin (W)	Impedance ( $\Omega$ )
3403/006	3403/006	0 - 22	1	50

Type	VSWR max			
	0<f(GHz)≤4	4<f(GHz)≤12.4	12.4<f(GHz)≤18.4	18.4<f(GHz)≤22
1	1.05	1.10	1.15	1.20
2	1.05	1.15	1.20	1.25

Operating Temperature Range, (°C): -55 to +125

 <p><b>ESCC</b> European Space Components Coordination</p> 	<p>PASSIVE DEVICES, RF, COAXIAL, LOADS, 0 - 22GHz, BASED ON TYPE R404</p>	Current Validity of Qualification		Page
		Certificate No. 185 B	Valid Until March 2004	14-01 002-2

Types covered by similarity : Variants 01 to 31		Remarks :					
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date		
Generic ESCC 3403  Detail ESCC 3403/005		RADIALL La Verpilliere France	Qualification  Extension  Extension  Extension	CNES  CNES  CNES  CNES	Jan 1991  Jan 1994  Jun 1997  Mar 2002		
Characteristics  Frequency range (GHz): 0 - 22 Attenuation (dB): 0 - 20 Temperature range (°C): -55 to +125							
  		R.F. ATTENUATORS FIXED, COAXIAL BASED ON TYPE R413			Current Validity of Qualification		Page
					Certificate No.	Valid Until	14-01
			178 C	March 2004	004		

Types covered by similarity :

Variants 01 to 06 are qualified

Remarks : Facility closure announced. Transfer underway.

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3702  Detail ESCC 3702/001	COMEPA SAINT-DENIS France	Qualification	CNES	March 2004



Characteristics

Range Of Components: Grade 1 and Grade Y

Maximum Ratings:

Rated Current (I<sub>R</sub>): 4 A (30 V<sub>dc</sub> resistive)

Operating Temperature Range (°C): -50 to +150

 	SWITCHES, THERMOSTATIC, BIMETALLIC, SPST,  OPENING CONTACT, BASED ON TYPE Th 47	Current Validity of Qualification		Page
		Certificate No.  275	Valid Until  March 2006	14-03  003