

# ESCC QUALIFIED PARTS LIST

REP005

Updated 15-Oct-2003



**General Information**

As affected

**Section/Page No.**

**Description**

Section 01 01-01-005	Index of Capacitors Type II, High Capacitance from AVX (N.I.)	Amended Extended
Section 10 10-02-006 10-08-002	Index of Resistors Surface Mount, Type MS1 from Vishay Electronic (Selb) Chip, Type P HR from Vishay Sfernice	Amended Extended Extended



**Qualified Parts List  
DOCUMENT CHANGES**

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

**General Information**

As affected

This is the current QPL for September 2003.

**Section/Page No.**

**Description**



**ESCC**

European Space Components Coordination

**QPL**

**Qualified Parts List**

**DOCUMENT CHANGES**

**Changes of : 15-Sep-03**

**General Information**

As affected

**Section/Page No.****Description**

Section 01 01-05-001-1	Index of Capacitors Type HT86PS, High Voltage from Eurofarad	Amended Extended
Section 04 04-02-003-1	Index of Diodes Types BYW-81, BYV52, BYV54 from STMicroelectronics	Amended Added
Section 13 13-01-001-2	Index of Wires and Cables Polyimide, Types 1871-1872 from Nexans	Amended Extended
13-01-003	PTFE, Types MTV-BTV from Nexans	Extended
13-01-009	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM from Gore	Extended
13-02-001	PTFE/Polyimide, Type 50 CIS from Nexans	Extended

**QPL****Qualified Parts List****DOCUMENT CHANGES****Changes of : 15-Aug-03**

As affected

**Section/Page No.**

**Description**

Section 10  
10-02-001  
10-03-002-4

Index of Resistors  
Solid Core, Types RLR 05,07,20 from Vishay Sfernice  
Solid Core, Types RNC 50,55,60 from Vishay Sfernice

Amended  
Deleted  
Deleted



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

**Changes of : 15-Jul-03**

**General Information**

As affected	Tekelec Temex is now known as Temex Components
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Section/Page No.	Description	
Section 01	Index of Capacitors	Amended
01-02-001-1	Type I from AVX/TPC	Extended
01-02-002-1	Type II from AVX/TPC	Extended
01-02-003-1	Type I, High Frequency from TEMEX	Amended
01-08-001-1A	Concentric, Air from TEMEX	Amended
Section 04	Index of Diodes	Amended
04-05-001-3	Schottky, BAS 70 from Infineon	Amended
04-05-002-2	PIN, BXY 42 from Infineon	Amended
04-05-003	PIN, BXY 43 and 42 from Infineon	Amended
04-05-003-2	Varactor, DH 267 from TEMEX	Extended
04-05-003-3	Varactor, Tuning, DH 76xxx from TEMEX	Added
Section 08	Index of Microcircuits	
08-07-004A-D	MMIC, GaAs standard Cell from Bookham	Amended
Section 10	Index of Resistors	Amended
10-05-002-1	Types RWR 80,81 from Vishay SA	Amended
10-05-003-1	Types RER from Vishay SA	Deleted
10-09-001-2	Single & Double layer from Nicolitch	Deleted



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

**Changes of : 15-Jun-03**

**General Information**

As affected	Framatome Connectors is now known as SOURIAU Connection Technology
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Section/Page No.	Description	
Section 02	Index of Connectors	Amended
02-01-001-1	D*M Series, Rectangular from ITT Cannon	Amended
02-01-001-2	D*M Series, Rectangular from SOURIAU	Amended
02-02-001-2	D*M Series Rectangular from SOURIAU	Amended
02-02-005	Series I, Circular, Crimp from SOURIAU	Amended
02-02-006	Series II, Circular, Crimp from SOURIAU	Amended
02-02-007-1	Series III, Circular, Crimp, Miniature from SOURIAU	Amended
02-02-008	Series III, Hermatic from SOURIAU	Amended
02-05-001-1	MDM Series, Rectangular from ITT Cannon	Amended
Section 10	Index of Resistors	
10-05-003-1	Types RER from Vishay SA	Amended
10-09-001-2	Single and Double layers from Nicolitch	Amended



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

**Changes of : 15-May-03**

**General Information**

As affected

**Section/Page No.**

**Description**

Section 01	Index of Capacitors	Amended
01-01-001	Type I, CLC from AVX/TPC	Deleted
01-01-003-1	Type II, CKR 05, CKR 06 from AVX/TPC	Deleted
01-01-004-3	Type I, CCR 05, CCR 06 from AVX/TPC	Deleted
01-02-001-1	Type I from AVX/TPC	Amended
01-02-002-1	Type II from AVX/TPC	Amended
01-02-004-1	Type II, High Voltage from AVX (N.I.)	Extended
01-03-004	Type TAJ from AVX (GB)	Extended
Section 02	Index of Connectors	Amended
02-01-001-1	D*M Series, Rectangular from ITT Cannon	Extended
02-01-001-2	D*M Series, Rectangular from Framatome Connectors	Extended
02-02-001-1	D*MA Series, Rectangular from ITT Cannon	Extended
02-02-001-2	D*MA Series, Rectangular from Framatome Connectors	Extended
02-05-001-1	MDM Series, Rectangular from ITT Cannon	Extended
02-05-002-1	MTB Series, Rectangular from ITT Cannon	Extended
Section 09	Index of Relays	Amended
09-03-002	Type GP3A from LEACH	Extended
Section 13	Index of Wires and Cables	
13-01-009	PTFE, Polyimide / PFA Insulated, Shielded, Type SPM from Gore	Amended



**Qualified Parts List  
DOCUMENT CHANGES**

**Changes of : 15-Apr-03**



**General Information**

As affected

**Section/Page No.**

**Description**

Section 02	Index of Connectors	
02-01-001-2	D*M Series, Rectangular from FCI	Amended
02-02-001-2	D*MA Series, Rectangular from FCI	Amended
Section 07	Index of Inductors	Amended
07-01-001	Type MSC1 10000, 12000 from Microspire	Extended
Section 10	Index of Resistors	Amended
10-02-001	Solid Core, Types RLR 05, 07, 20 from Vishay S.A. Sfernice	Amended
10-03-002-4	Solid Core, Types RNC 50, 55, 60 from Vishay S.A. Sfernice	Amended
10-05-003-1	Types RER 60, 65 from Vishay Sfernice	Amended
10-05-004-1	Types MSPB HR from Vishay Sfernice	Extended
10-08-001	Type CH*P HR from Vishay Sfernice	Deleted
Section 11	Index of Thermistors	
11-01-001	Types G*D and *K3A* from Betatherm	Amended
Section 12	Index of Transistors	
12-01-002-3A	Types NPN from ST Microelectronics	Amended
12-02-002-3A	Types PNP from ST Microelectronics	Amended



**Qualified Parts List  
DOCUMENT CHANGES**

**Changes of : 15-Mar-03**

**General Information**

As affected

**Section/Page No.**

**Description**

Section 01	Index of Capacitors	
01-02-001-1	Type I from AVX/TPC	Amended
01-02-002-1	Type II from AVX/TPC	Amended
Section 02	Index of Connectors	
02-01-001-1	D*M Series, Rectangular from ITT Cannon	Amended
02-02-001-1	D*MA Series, Rectangular from ITT Cannon	Amended
02-05-001-1	MDM Series, Rectangular from ITT Cannon	Amended
02-05-002-1	MTB Series, Rectangular from ITT Cannon	Amended
Section 10	Index of Resistors	
10-02-001	Solid Core, Types RLR 05, 07, 20 from Vishay S.A. Sfernice	Amended
10-03-002-4	Solid Core, Types RNC 50, 55, 60 from Vishay S.A. Sfernice	Amended
10-05-003-1	Types RER 60, 65 from Vishay Sfernice	Amended
Section 13	Index of Wires and Cables	Amended
13-01-005-2	Crosslinked PTFE, Type Silver-Plated Copper from AXON CABLE	Extended
13-02-002-1	Coaxial, Triaxial, Balanced Shielded Line from GORE	Extended



**Qualified Parts List  
DOCUMENT CHANGES**

**Changes of : 15-Feb-03**

**General Information**

As affected

This is the first issue of the ESCC QPL

**Section/Page No.****Description**

Section 03	Index of Crystals	Amended
03-01-001	Type TO-5 from C-MAC Frequency Products	Extended
03-01-002	Type TO-8 from C-MAC Frequency Products	Extended
Section 04	Index of Diodes	Amended
04-02-002-1	Type STPS20H100 from ST Microelectronics	Added
Section 08	Index of Microcircuits	Amended
08-02-001-2A-E	4000 B Series from ST Microelectronics	Extended
08-02-002-2A-F	54HCMOS Series from ST Microelectronics	Extended
Section 13	Index of Wires and Cables	Amended
13-01-004-2	Polymide, Type SPL from W.L. Gore	Extended

**QPL**

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

**Changes of : 15-Jan-03**

## TABLE OF CONTENTS

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3	Use of Tables	2
4	Revision Procedure	2
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Appendices		
'A'	Qualified Components List	4



**QPL**

**Qualified Parts List**

## 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/escqpl/>**

### 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/escqpl/>**

## 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.



**QPL**

**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



**Qualified Parts List**

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



**Qualified Parts List**

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 A	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
01-08			Trimmer, Variable	
	01-08-001-1A to 1E	129 F	Concentric, Air	TEMEX



Types covered by similarity :  ± 20% tolerance	Remarks :
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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

 	<p>CAPACITORS,          CERAMIC, TYPE II, HIGH CAPACITANCE,          BASED ON CASE STYLES BR, CV, AND CH</p>	Current Validity of Qualification		Page
		Certificate No.  231 C	Valid Until  October 2005	01-01  005

Types covered by similarity :  
  
± 20% tolerance

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3001  Detail ESCC 3001/034	AVX Limited Larne Northern Ireland

Nature of Approval	Supervising Authority	Date
Qualification	DERA	Sep 2000
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	
Certificate No.	Valid Until
262 A	August 2004

Page  
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
Generic ESCC 3009  Detail ESCC 3009/008 3009/009 3009/010 3009/011 3009/023	AVX/TPC St Apollinaire France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Feb 1983
Extension	CNES	Sep 1986
Requalification	CNES	Oct 1992
Extension	CNES	Mar 1995
Extension	CNES	Jun 1998
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		Page
Certificate No.	Valid Until	01-02
110 F	June 2004	002-1

Types covered by similarity :  
 3009/035: variants 01, 02, 03, 04 ,05  
 3009/036: variants 01, 02, 03, 04 ,05, 06, 07

Remarks : Maintenance activities initiated.

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3009  Detail ESCC 3009/035 3009/036	TEMEX Pessac France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Aug 1998
Extension	CNES	Jan 2001

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 to 0.4	0.1, 0.25 pF		500	-
0.4 to 0.5	0.1, 0.25 pF		-	50
0.4 to 0.5	0.1, 0.25, 0.5 pF		500	-
0.5 to 0.6	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%			
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		Page
Certificate No.	Valid Until	01-02
249 A	January 2003	003-1

Types covered by similarity :  
± 20% tolerance

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3009 Detail ESCC 3009/034	AVX Limited Larne Northern Ireland

Nature of Approval	Supervising Authority	Date
Qualification	DERA	Feb 2001
Extension	QinetiQ	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)



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

Style	Rated Voltage (kV)	Capacitance Range (pF)	Tol. (±%)
1812	1.0	3 900 to 22 000	10
	2.0	1 500 to 1 800	10
	3.0	820 to 1 000	10
1825	1.0	27 000 to 56 000	10
	2.0	2 200 to 6 800	10
	3.0	820 to 2 700	10



CAPACITORS, FIXED, CHIP,  
CERAMIC, TYPE II, HIGH VOLTAGE,  
BASED ON 1812 AND 1825

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.	Valid Until	01-03
				196 B	April 2005	004

Types covered by similarity : 20 % tolerance

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3003  Detail ESCC 3003/005	ARCOTRONICS Towcester England

Nature of Approval	Supervising Authority	Date
Qualification	RAE	Sep 1990
Extension	DRA	Aug 1993
Extension	DERA	Nov 1997
Extension	DERA	Feb 2000
Extension	QinetiQ	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



CAPACITORS,  
TANTALUM, NON-SOLID, ELECTROLYTIC, FIXED,  
CLR 79

Current Validity of Qualification		Page
Certificate No.	Valid Until	
173 D	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
Generic ESCC 3006	EUROFARAD Lagny sur Marne France
Detail ESCC 3006/022	

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Aug 1998
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		Page
Certificate No. 251 B	Valid Until August 2005	01-05 001-1

Types covered by similarity :

All values defined by the ESA/SCC Detail Specification  
 $\pm 2\%$  (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.( $\pm$ %)	$U_R$ (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 ( $^{\circ}$ 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	
Certificate No. 269	Valid Until August 2004

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01-05  
002-1

Types covered by similarity :

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

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3006  Detail ESCC 3006/024	EUROFARAD Lagny sur Marne France

Nature of Approval	Supervising Authority	Date
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

where B= 6,8,10,12,14,15 depending on  
 capacitance value  
 Operating Temp. Range (°C): -55 to +125

Capacitance Range ( $\mu\text{F}$ )		Tol.( $\pm \%$ )	$U_R$ (V)
2.2 to	47	10	50
1.5 to	22	10	63
0.56 to	12	10	100
0.33 to	5.6	10	200
0.22 to	4.7	10	250
0.10 to	1.8	10	400



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

Current Validity of Qualification		Page 01-05 003-1
Certificate No. 270	Valid Until August 2004	

Types covered by similarity : As described by ESA/SCC Detail Specification 3010/004

Remarks :

<u>Variants</u>	<u>Mfr Designation</u>	<u>Variants</u>	<u>Mfr Designation</u>
01	AT 5200	04	AT 8052
02	AT 5202	05	AT 5276
03	AT 5201	06	AT 5205

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3010  Detail ESCC 3010/004	TEMEX Pessac France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Nov 1985
Extension	CNES	Dec 1988
Extension	CNES	May 1991
Extension	CNES	Nov 1993
Extension	CNES	Sep 1996
Extension	CNES	Jan 1999
Extension	CNES	Dec 2001

Characteristics

Detail Spec.	Capacitance Range (pF)	Body Diameter (mm)	Temp Coeff. (ppm/°C)
3010/004	1 to 10	7.6	±15

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



CAPACITORS,  
CONCENTRIC TRIMMERS, VARIABLE

Current Validity of Qualification		Page
Certificate No.	Valid Until	01-08
129 F	December 2003	001-1A

Types covered by similarity : As described by ESA/SCC Detail Specification 3010/008

<u>Variants</u>	<u>Mfr. Designation</u>
01	AT 5500
02	AT 5502
03	AT 5501

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3010	TEMEX Pessac France
Detail ESCC 3010/008	

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Nov 1985
Extension	CNES	Dec 1988
Extension	CNES	May 1991
Extension	CNES	Nov 1993
Extension	CNES	Sep 1996
Extension	CNES	Jan 1999
Extension	CNES	Dec 2001

Characteristics

Detail Spec.	Capacitance Range (pF)	Body Diameter (mm)	Temp Coeff. (ppm/°C)
3010/008	1 to 20	8	±30

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



CAPACITORS,  
CONCENTRIC, TRIMMERS, VARIABLE

Current Validity of Qualification		Page
Certificate No.	Valid Until	
129 F	December 2003	01-08 001-1C

Types covered by similarity : As described by ESA/SCC Detail Specification 3010/010 (left),3010/011 (right)

Remarks :

Variants	Mfr Designation	Variants	Mfr Designation
01	AT 5700	01	AT 5750
02	AT 5702	02	AT 5752
03	AT 5701	03	AT 5751
04	AT 8050	04	AT 5753

Procurement Specifications  
Issues in effect on certification date

Manufacturer

Nature of Approval      Supervising Authority      Date

Generic ESCC	3010	TEMEX Pessac France
Detail ESCC	3010/010 3010/011	

Qualification  
Extension  
Extension  
Extension  
Extension  
Extension  
Extension  
Extension

CNES	Nov 1985
CNES	Dec 1988
CNES	May 1991
CNES	Nov 1993
CNES	Sep 1996
CNES	Jan 1999
CNES	Dec 2001

Characteristics

Detail Spec.	Capacitance Range (pF)		Body Diameter (mm)	Temp. Coeff. (ppm/°C)
3010/010	0.8	to 6	6.2	±15
3010/011	1	to 10	6.2	±50

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



CAPACITORS,  
CONCENTRIC, TRIMMERS, VARIABLE

Current Validity of Qualification

Certificate No.	Valid Until	Page
129 F	December 2003	01-08 001-1D

Types covered by similarity : As described by ESA/SCC Detail Specifications 3010/012 (left), 3010/013 (right)

<u>Variants</u>	<u>Mfr Design</u>	<u>Variants</u>	<u>Mfr Design</u>
01	AT 5800	01	AT 5850
02	AT 5802	02	AT 5852
03	AT 5801	03	AT 5851
04	AT 8051	04	AT 5853
05	AT 5805	05	AT 5855

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3010  Detail ESCC 3010/012 3010/013	TEMEX Pessac France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Nov 1985
Extension	CNES	Dec 1988
Extension	CNES	May 1991
Extension	CNES	Nov 1993
Extension	CNES	Sep 1996
Extension	CNES	Jan 1999
Extension	CNES	Dec 2001

Characteristics

Detail Spec.	Capacitance Range (pF)		Body Diameter (mm)	Temp. Coeff. (ppm/°C)
3010/012	0.6	to 3.5	4.6	±50
3010/013	0.6	to 5	4.6	±50

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



CAPACITORS,  
CONCENTRIC, TRIMMERS, VARIABLE

Current Validity of Qualification		Page
Certificate No.	Valid Until	01-08
129 F	December 2003	001-1E

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 G	HE 801 Series	HYPERTAC
	02-03-001-2	217 C	HE 801 Series	HYPERTAC UK
	02-03-002-1	149 E	KMC Series	HYPERTAC
	02-03-003-1	250 A	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



**ESCC**  
European Space Components Coordination

**QPL**

SECTION 02-\*\*: INDEX OF CONNECTORS

REP005 Updated on 15-Oct-03



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	Feb 1981  Jun 1983  Sep 1986  Oct 1988  Jun 1989
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	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		Page
Certificate No.	Valid Until	02-01
71 J	April 2005	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 3401/001	SOURIAU Connection Technology Marolles en Brie France	Qualification  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES	Sep 1988  Apr 1991  Jan 1994  Jul 1996  Oct 1997
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		Extension  Extension	CNES  CNES	Mar 2000  Apr 2003





CONNECTORS,  
 ELECTRICAL, SOLDER AND WIRE WRAP CONTACTS,  
 NON-REMOVABLE, RECTANGULAR RECEPTACLE AND PLUG  
 BASED ON TYPE D\*M

Current Validity of Qualification	
Certificate No.  155 F	Valid Until  April 2005

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02-01  
001-2



Types covered by similarity : Range defined in the corresponding Detail Specification	Remarks :
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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 3401/005 3401/020 3401/021		Extension	CNES	Jun 1983
		Extension	CNES	Sep 1986
		Extension	CNES	Oct 1988
		Extension	CNES	Jun 1989
		Extension	CNES	Sep 1991
		Extension	CNES	Apr 1994
		Extension	CNES	Jan 1997
Extension	CNES	Jan 2000		
Extension	CNES	Apr 2003		
Characteristics  Range of contacts: 9, 15, 25, 37, and 50 contacts size 20* for standard contact arrangements *Accepts wire sizes AWG # 20 to 24 (standard bucket: variants 01 and 02) *Accepts wire size AWG # 26 and 28 (reduced bucket : variants 03 and 04) *Accepts wire size AWG # 18 and 20 (large bucket: variants 05 to 06) 15, 26, 44, 62,78 and 104 contacts size 22** for high density contact arrangements **Accepts wire sizes AWG # 22 to 26 (standard bucket: variants 07 to 08) Gold-plated non-magnetic coating Operating Temperature Range (°C): -55 to +125 Connector Savers: For usage with above connector range				

 	<p style="text-align: center;">CONNECTORS, ELECTRICAL, CRIMP CONTACTS, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA</p>	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 :
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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 3401/002		Extension	CNES	Apr 1991
3401/005		Extension	CNES	Jan 1994
3401/020		Extension	CNES	Jul 1996
3401/021		Extension	CNES	Mar 2000
		Extension	CNES	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		Page
		Certificate No. 156 E	Valid Until April 2005	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
Generic ESCC 3401  Detail ESCC 3401/008 3401/009	Cie DEUTSCH Evreux France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Jul 1979
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

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

Variants 01 to 20 are qualified

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



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

Current Validity of Qualification		Page
Certificate No.	Valid Until	
25 H	August 2003	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

<u>Contact Size</u>	<u>Ratings (A)</u>
8	46.0
12	23.0
16	13.0
20	7.5

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



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.  220 B	Valid Until  July 2003	02-02  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  Detail ESCC 3401/044 3401/045	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 3,6,10,18,26,32,41,55,61  
 #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

<u>Contact Size</u>	<u>Ratings (A)</u>
12	23.0
16	13.0
20	7.5

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



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

Current Validity of Qualification	
Certificate No.	Valid Until
221 B	July 2003

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02-02  
006

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  Detail ESCC 3401/056 3401/058 3401/066 3401/070	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 contacts)  
 #22 with high density arrangements (6,13,22,37,55,66,79,100,128 contacts)

Other arrangements with contact sizes # 20, 16, 12, 8, 4

Receptacle and Plug Shell Sizes: 09,11,13,15,17,19,21,23,25

Triax contact= (layout 09-01 only)

<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		

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



CONNECTORS,  
 MINIATURE, ELECTRICAL, CIRCULAR,  
 TRIPLE-START SELF-LOCKING COUPLING, SCOOP-PROOF,  
 REMOVABLE & NON-REMOVABLE CRIMP CONTACTS  
 BASED ON TYPE MIL-C-38999, SERIES III

Current Validity of Qualification		Page
Certificate No.	Valid Until	02-02
222 B	July 2003	007-1



Types covered by similarity :	Remarks :
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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 3401/057		Requalification	CNES	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



Contact Size	Ratings (A)
20	5.0
22D	3.0



Receptacle ( contacts # 8, 12, 16, 20, 22D) and Feedthrough ( contacts # 8, 12, 16)  
Operating temperature range (° C): -65 to +200 oC

Current Validity of Qualification		Page
Certificate No.	Valid Until	02-02
223 A	July 2003	008



CONNECTORS,  
MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF-  
LOCKING COUPLING, SCOOP-PROOF, HERMETIC RECEPTACLE  
AND FEEDTHROUGH, TYPE MIL-C-38999, SERIES III

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 3401  Detail ESCC 3401/016 3401/017		HYPERTAC Saint-Aubin-Lès-Elbeuf France	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES	Nov 1982  May 1985  May 1988  Apr 1991  Jan 1994  Mar 1996  Mar 1998  Jan 2002	
Characteristics  Shell specifications and sizes: 3401/016 Contact: 3401/017 Crimp wire-wrap solder and savers, 1 to 22 and 64 to 70  2 rows: 17, 29, 41, 53, 65, 72, 84, 96, 120 contacts 3 rows: 62, 80, 98, 160 contacts  Contact Ratings: 5 A (1 contact AWG 22) 1.5 A (> 31 contacts, AWG 22)  Operating Temperature Range (°C): -55 to +125						
 		CONNECTORS, ELECTRICAL, REMOVABLE CONTACTS, CRIMP WIRE-WRAP SOLDER AND SAVER, PRINTED CIRCUIT BOARD, BASED ON TYPE HE 801		Current Validity of Qualification		Page
		Certificate No.  99 G	Valid Until  January 2004	02-03  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	
<p>Generic ESCC 3401</p> <p>Detail ESCC 3401/016 3401/017</p>		<p>HYPERTAC LTD London England</p>	<p>Qualification</p> <p>Extension</p> <p>Extension</p> <p>Extension</p>	<p>DRA</p> <p>DRA</p> <p>DERA</p> <p>QinetiQ</p>	<p>Jul 1994</p> <p>Nov 1996</p> <p>Nov 1998</p> <p>Apr 2002</p>	
<p>Characteristics</p> <p>Shell specifications and sizes: 3401/016</p> <p>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</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
			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  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES	Mar 1987  May 1990  Jan 1993  Oct 1995  Mar 1998
Characteristics  3 rows 26, 44, 62, 80, 98, 144 contacts  Contact Ratings: 2 A (1 contact)          Operating Temperature Range (°C): -55 to +125		Extension  Extension	CNES  CNES	Jan 2002



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.  149 E	Valid Until  January 2004	02-03  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  Extension	CNES  CNES	Aug 1998  Jan 2002
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 A	Valid Until January 2004	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	CNES  CNES  CNES  CNES	Feb 1981  Apr 1983  Apr 1986  Nov 1989  Jul 1992
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		Extension  Extension  Extension	CNES  CNES  CNES	Nov 1994  May 1998  Aug 2002





CONNECTORS,  
 RF, COAXIAL, SOLDER AND CRIMP CONTACTS,  
 MALE, FEMALE ADAPTORS AND CONNECTING PIECES,  
 BASED ON TYPE SMA

Current Validity of Qualification	
Certificate No.  68 G	Valid Until  August 2004

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02-04  
001

Types covered by similarity :	Remarks :
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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 3401/029 3401/041 3401/032		Extension	CNES	Oct 1988
		Extension	CNES	Jun 1989
		Extension	CNES	Sep 1991
		Extension	CNES	Apr 1994
		Extension	CNES	Jan 1997
		Extension	CNES	Oct 1999
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		Extension	CNES	Apr 2003

 	<p style="text-align: center;">CONNECTORS, ELECTRICAL, CRIMP CONTACT, RECTANGULAR, MICROMINIATURE, BASED ON TYPE MDM</p>	Current Validity of Qualification		Page 02-05 001-1
		Certificate No.  140 G	Valid Until  April 2005	







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)



Types covered by similarity :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3501	C-MAC Frequency Products Argenteuil France	Qualification	CNES	Oct 1979	
Detail		Extension	CNES	Jun 1983	
ESCC 3501/018		Extension	CNES	Oct 1986	
		Extension	CNES	Jul 1989	
		Extension	CNES	Jan 1995	
		Extension	CNES	Nov 1996	
		Extension	CNES	Apr 2000	
		Extension	CNES	Nov 2002	
Characteristics TO-5 Can (T 807) Frequency Range: 15 - 140 MHz					

 	<p>CRYSTALS, TO-5 CAN</p>	Current Validity of Qualification		Page
		Certificate No. 33 G	Valid Until November 2004	03-01 001-1

Types covered by similarity :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date	
Generic ESCC 3501	C-MAC Frequency Products Argenteuil France	Qualification	CNES	Oct 1979	
Detail		Extension	CNES	Jun 1983	
ESCC 3501/019		Extension	CNES	Oct 1986	
		Extension	CNES	Jul 1989	
		Extension	CNES	Jan 1995	
Characteristics		Extension	CNES	Apr 1997	
TO-8 Can (T 1507)		Extension	CNES	Apr 2000	
Frequency Range: 2.5 - 20 MHz		Extension	CNES	Nov 2002	



 	CRYSTALS,  TO-8 CAN	Current Validity of Qualification		Page
		Certificate No.	Valid Until	03-01
		34 G	November 2004	002

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 A	PIN, BXY 42	Infineon
	04-05-002-3A-B	258	PIN, Ultra Fast Switching	TEMEX
	04-05-002-4A-B	259	PIN, Fast Switching	TEMEX
	04-05-003	236 A	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 :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000	Microsemi Ireland Ennis Ireland	Qualification	ESTEC	Nov 1993
Detail ESCC 5101/023		Extension	ESTEC	Jan 1996
ESCC 5101/024		Extension	ESTEC	Jan 1998
ESCC 5101/025		Extension	ESTEC	Apr 2000
		Extension	ESTEC	Jun 2002
Characteristics  Variants 02 are qualified				

 	DIODES,  SILICON, SWITCHING,  BASED ON TYPES 1N4148-1, 1N4150-1	Current Validity of Qualification		Page
		Certificate No.  197 D	Valid Until  June 2004	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					
<p>Generic ESCC 5000</p> <p>Detail ESCC 5101/026 ESCC 5101/027 ESCC 5101/028</p>		Microsemi Ireland Ennis Ireland	Qualification Extension Extension Extension	ESTEC ESTEC ESTEC ESTEC	Jan 1998 Apr 2000 Jun 2000 Jun 2002					
<p>Characteristics</p> <p>For 5101/026: Variants 01, 02, and 03 in DO 35 package are qualified Variants 04, 05, and 06 in MELF package are qualified</p> <p>For 5101/027: Variants 01, 02, and 03 in DO 35 package are qualified Variants 04, 05, and 06 in MELF package are qualified</p> <p>For 5101/028: Variant 01 in DO 35 package is qualified Variant 02 in MELF package is qualified</p>										
 		<p>DIODES, SILICON, SWITCHING, BASED ON TYPES 1N6638 AND 1N3595-1</p>		<p>Current Validity of Qualification</p> <table border="1"> <tr> <td>Certificate No.</td> <td>Valid Until</td> <td rowspan="2">Page 04-01 003-1</td> </tr> <tr> <td>247 C</td> <td>June 2004</td> </tr> </table>		Certificate No.	Valid Until	Page 04-01 003-1	247 C	June 2004
Certificate No.	Valid Until	Page 04-01 003-1								
247 C	June 2004									

Types covered by similarity : 1N5802, 1N5804, and 1N5802US, 1N5804US	Remarks :
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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		Jun 2000
		Extension		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 :
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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<sub>RRM</sub>: 100 V;  
 I<sub>O</sub>: 2x 20 A  
 T<sub>J</sub>: + 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. 272	Valid Until November 2004	04-02 002-1



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 <sub>RRM</sub> : 200 V; I <sub>O</sub> : 40 A for BYV 54-200, 30 A for BYV52-200, 15 and 30 A for BYW-81-200 T <sub>J</sub> : + 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 : Maintenance activities to be initiated
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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 1995
Detail ESCC 5513/017		Extension	DLR	Jan 2000



Characteristics

Maximum Ratings:  $V_R = -50V$   
 $I_{FM} = 5.0 A @ t_p = 1.0 \mu s, \text{ duty cycle} = 0.001\%$

D.C Parameters:  $I_{R1} = 10 \mu A \text{ max. @ } V_R = -50 V$   
 $I_{R2} = 5 nA \text{ max. @ } V_R = -40 V$   
 $V_F = 1.1 V \text{ max. @ } I_F = 100 mA$

Package: T1

Operating Temperature Range (°C): -55 to +175

 	DIODES,  MICROWAVE, SILICON, PIN  BASED ON TYPE BXY 42- MESA	Current Validity of Qualification		Page 04-05 002-2
		Certificate No. 224 A	Valid Until January 2002	



Types covered by similarity : See next page	Remarks : Maintenance activities initiated.
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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.	TEMEX Les Ulis France	Qualification	CNES	Mar 2000

Characteristics

	<u>DH 50033</u>	<u>DH 50052</u>	<u>DH 50071</u>	<u>DH 50101</u>
$V_{Rmax.}$	30 V	50 V	70 V	100 V
$R_{SF} (\Omega)_{(max.)}$	< 1.8	< 1.6	< 2.0	< 1.9
$\tau_L (ns)_{(max.)}$	> 40	> 60	> 100	> 300

Operating Temperature Range: -55 to +125 °C

  	DIODES, MICROWAVE, SILICON, PIN, ULTRA FAST SWITCHING	Current Validity of Qualification		Page
		Certificate No.  258	Valid Until  March 2002	04-05  002-3A

Types covered by similarity

ESCC Spec. No.	Component Type
5513/032	DH 50033 to DH 50037, variants 01 to 35
5513/036	DH 50052 to DH 50057, variants 01 to 42
5513/037	DH 50071 to DH 5077, variants 01 to 49
5513/038	DH 50101 to DH 50107, variants 01 to 49



DIODES,  
MICROWAVE, SILICON,  
PIN, ULTRA FAST SWITCHING

Current Validity of Qualification		Page
Certificate No.	Valid Until	
258	March 2002	002-3B



Types covered by similarity : See next page	Remarks : Maintenance activities initiated.
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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.	TEMEX Les Ulis France	Qualification	CNES	Mar 2000

Characteristics

	<u>DH 50151</u>	<u>DH 50201</u>	<u>DH 50251</u>	<u>DH 50401</u>
$V_{Rmax.}$	150 V	200 V	250 V	400 V
$R_{SF} (\Omega)_{(max.)}$	< 2.0	< 2.3	< 2.4	< 2.5
$\tau_L$ (ns) (min.)	> 160	> 240	> 265	> 560

Operating Temperature Range: -55 to +125 °C

  	DIODES, MICROWAVE, SILICON, PIN, FAST SWITCHING	Current Validity of Qualification		Page
		Certificate No.  259	Valid Until  March 2002	04-05  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
5513/035	DH 50401 to DH 50405, variants 01 to 23



DIODES,  
MICROWAVE, SILICON,  
PIN, FAST SWITCHING

Current Validity of Qualification		Page
Certificate No.	Valid Until	
259	March 2002	04-05 002-4B

Types covered by similarity :  
 Variants 01-08 are qualified

Remarks : Maintenance activities to be initiated.

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	Oct 1996
Detail ESCC 5513/030		Extension	DLR	Jan 2000

Characteristics

	<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

Current Validity of Qualification		Page
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236 A	January 2002	04-05 003



DIODES,  
 MICROWAVE, SILICON, PIN, PLANAR  
 BASED ON TYPES BXY 43 AND 44





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

Certificate No.

200 B

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March 2004

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04-05

003-1B

Types covered by similarity : The variants are based on the following types

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

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 5010  Detail ESCC: 5512/016	TEMEX Les Ulis France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Jun 1995
Extension	CNES	Aug 1998
Extension	CNES	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

Current Validity of Qualification	
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04-05  
003-2

Types covered by similarity :

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 5010  Detail ESCC: 5512/016	TEMEX Les Ulis France

Nature of Approval	Supervising Authority	Date
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

Variants	CT(typ.) (4V)	Based on Type
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	
Certificate No.  273	Valid Until  June 2005

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04-05  
003-3

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

**ESCC**

European Space Components Coordination

**QPL**

SECTION 05-\*\*: INDEX OF FILTERS

REP005 Updated on 15-Oct-03

Types covered by similarity : Refer to next page

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3008  Detail Refer to types covered by similarity	EUROFARAD Lagny sur Marne France	Qualification  Extension	CNES  CNES	Aug 1998  Apr 2001

Characteristics

All variants specified in the Detail Specifications are qualified

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

Current Validity of Qualification

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Certificate No.  252 A	Valid Until  April 2003
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05-01  
001 A



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

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

Certificate No.  
252 A

Valid Until  
April 2003

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001 B

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



Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
07			Fixed, RF	
	07-01-001	241 B	Type MSCI 10000, 12000	Microspire

**ESCC**

European Space Components Coordination

**QPL**

SECTION 07-\*\*: INDEX OF INDUCTORS

REP005 Updated on 15-Oct-03

Types covered by similarity :

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3201  Detail ESCC 3201/008	Microspire Illange France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Apr 1997
Extension	CNES	Nov 2000
Extension	CNES	Mar 2003

Characteristics Variants 01 to 04 are qualified

Series No.	Range ( $\mu$ H)	Tolerance ( $\pm\%$ )	$Q_{min.}$	Min. SRF $f_r$ (MHz)	Max. DCR, $R_{dc}$ ( $\Omega$ )	Rated DC Current, $I_R$ (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 ( $^{\circ}$ C):  $-55$  to  $+125$





INDUCTORS,  
FIXED, RF, MINIATURE,  
MOULDED, SURFACE MOUNT,  
BASED ON SERIES MSC1 10K, 12K, AND 20K

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001

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 :			
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  Extension  Extension  Extension  Extension	ESTEC  CNES  CNES  CNES  CNES	Apr 1981  Jan 1981  Dec 1984  May 1987  Apr 1990
Characteristics  Package Types:  Ceramic Dual-in-Line  Ceramic Flat Pack  Leadless Chip Carrier  SOIC 14, 16, 24			Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES	Oct 1992  Apr 1995  Apr 1997  Apr 1999  May 2001  Nov 2002
  		MICROCIRCUITS, DIGITAL, C-MOS-B, 4000 B SERIES		Current Validity of Qualification	
				Certificate No.  73 J	Valid Until  November 2004
				Page  08-02  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	Pre-settable 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	Pre-settable 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



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

Current Validity of Qualification

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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

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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

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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	Presetable 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	Presetable 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 :
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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  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES	Nov 1992  Apr 1995  Apr 1997  Apr 1999  May 2001  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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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



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

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002-2C

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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DIGITAL,  
MONOLITHIC, HIGH SPEED CMOS,  
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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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002-2E

## 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 : Detail Specifications to be developed according to device design.  Maintenance activities initiated.			
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	: $T_{\text{ch max.}} +150\text{ }^{\circ}\text{C}$
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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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: Vds 6V/Vgs -8V or Vds 6V/Vgd -8V; 1 W/mm gate width; T<sub>ch</sub>. 150 ° C

IS: Vds 6V/Vgs -10V or Vds 6V/Vgd -10V; 2 W/mm gate width; T<sub>ch</sub>. 150 ° 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 1 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



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 A	Type E	LEACH
09-02			Latching, 28Vdc Contact Rating	
	09-02-002	13 G	Type GP2	LEACH
	09-02-006	240 A	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  Detail ESCC 3601/003		LEACH International Europe Niort France	Qualification  Extension  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES	Apr 1978  Oct 1980  Jan 1984  Oct 1986  Jul 1992  Jun 1995  Dec 1998  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	
			Certificate No.  02 G	Valid Until  November 2003	Page  09-01  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 3601  Detail ESCC 3601/012		LEACH International Europe Niort France	Qualification  Extension	CNES  CNES	Apr 1997  Sep 2000	
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 A	September 2002	005

Types covered by similarity : Variants 01 to 08 are qualified Coil Voltages 6 and 12 Vdc	Remarks :
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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		



 	<p style="text-align: center;">RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 2</p>	Current Validity of Qualification		Page 09-02 002
		Certificate No. 13 G	Valid Until November 2003	



Types covered by similarity :	Remarks : Maintenance activities to be initiated.
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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	Apr 1997
Detail ESCC 3602/019		Extension	CNES	Sep 2000



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. 240 A	Valid Until September 2002	09-02 006

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>		<p style="text-align: center;">Current Validity of Qualification</p>	
		Certificate No.	Valid Until	Page	
		93 F	November 2003	09-03 001	



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  Detail ESCC 3602/005		LEACH International Europe Niort France	Qualification	ESTEC	Apr 1978
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	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
		Extension	CNES	Apr 2003	
 		RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 3A		Current Validity of Qualification	
		Certificate No. 04 H		Valid Until April 2005	
				Page 09-03 002	

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 G	Type RNC 90	Vishay S.A. Sfernice
10-05			Fixed ,Wirewound	
	10-05-002-1	147 E	Types RWR 80, 81	Vishay S.A. Sfernice
	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 B	Single-in-Line	Vishay S.A. Sfernice

Types covered by similarity :  
 Tolerance ( ± %) = 0.1, 0.5, 1.0

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4001	VISHAY ELECTRONIC Division DRALORIC Selb Germany	Qualification	DLR	Oct 1999
Detail ESCC 4001/022		Extension	DLR	Oct 2001
		Extension	DLR	Oct 2003

Characteristics : Critical R= 160 kΩ

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

Range (Ω)	Tol. (±%)	TC (±ppm/°C)	Value Series
43.2 - 1.0 M	0.1	50	E96
10.0 - 1.0 M	0.5		
2.2 - 5.11 M	1.0		
43.2 - 1.0 M	0.1	25	E96
10.0 - 1.0 M	0.5		
10.0 - 1.0 M	1.0		
43.2 - 0.221 M	0.1	15	E96
10.0 - 0.511 M	0.5		



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

Current Validity of Qualification		Page
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256 B	October 2005	10-02 006

Types covered by similarity :  
 Tolerances: ± 0.02, 0.05, 0.1, 0.2, 0.5, 1%

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 4001  Detail ESCC 4001/011	Vishay S.A. Division Sfernice Nice France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Dec 1983
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

Characteristics: Variants 03, 04, 07, 08 are qualified

Style	Detail Spec.	Variant	Range (Ω)	Tol. (%)	TC (ppm/°C)	Power Rating (W)	Max. Voltage (V)
RNC 90 (RS92N)	4001/011	03	33 - 100k	0.02	±5, ≤ 125°C	0.5 @70°C 0.3 @125°C	300
		04	33 - 100k	0.05	±10, ≤ 125°C		
		07	33 - 100k	0.5	±10, >125°C		
		08	33 - 100k	1.0	±10, ≤175°C		

Operating Temperature Range (°C): - 55 to + 175  
 Values: E192 series



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

Current Validity of Qualification		Page
Certificate No.  116 G	Valid Until  July 2003	

Types covered by similarity :

Variant 05 of 4002/003 and 4002/005 are qualified.  
Tolerances: ( $\pm$ ) 1, 2 and 5%.  
Temperature Coefficient :  $\pm 50$  ppm/ $^{\circ}$ C for  $1.0 < R_n < 10$ , and  $\pm 100$  ppm/ $^{\circ}$ C for  $R_n \leq 1.0$

Remarks : This Certificate will no longer be maintained.  
\*\*Last order to be received before end of September 2003.

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 4002  Detail ESCC 4002/003 4002/005	Vishay S.A. Division Sfernice Nice France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Dec 1986
Extension	CNES	Jan 1991
Extension	CNES	Nov 1993
Extension	CNES	Feb 1996
Extension	CNES	Apr 1999
Extension	CNES	Jan 2002

Characteristics

Inductively wound: coated and moulded variants for 4002/003 and 4002/005

Style	Detail Spec.	Range ( $\Omega$ )	Tol. (%)	TC (ppm/ $^{\circ}$ C)	Power Rating (W)	Max. Voltage (V)	Type Variants
RWR 80 (RLP 2)	4002/003	0.5 - 2.2 K	0.5	$30, \geq 10 \Omega$	2	120	05
RWR 81 (RLP 1)	4002/005	0.5 - 1 K	0.5	$30, \geq 10 \Omega$	1	50	05

Operating Temperature Range ( $^{\circ}$ C): -55 to +275



RESISTORS,  
WIRE-WOUND POWER, FIXED,  
BASED ON TYPES RWR 80, 81

Current Validity of Qualification		Page
Certificate No. 147 E	Valid Until January 2004	10-05 002-1

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

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

Remarks :

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

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/ $^\circ\text{C}$ )	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 ( $^\circ\text{C}$ ): -55 to +200





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

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



Types covered by similarity :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4009	IRCA RICA Division Vittorio Veneto Italy	Qualification	ESTEC	Apr 1992
Detail ESCC 4009/002		Extension	ESTEC	May 1994
		Extension	ESTEC	Mar 1996
		Extension	ESTEC	Feb 1998
		Extension	ESTEC	Apr 2000
		Extension	ESTEC	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 <sup>-6</sup> /°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





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

Types covered by similarity :		Remarks :			
Procurement Specifications Issues in effect on certification date		Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 4006  Detail ESCC 4006/013 ESCC 4006/014		Betatherm Ireland Galway Ireland	Qualification  Extension	ESTEC  ESTEC	July 2001  Jan 2002
Characteristics  4006/013: Variants 01 to 05 are qualified  4006/014: Variants 01 to 05 are qualified          Operating Temperature Range (°C): -55 to 115 for 4006/013 and -40 to 160 for 4006/014					
 		THERMISTORS, (THERMALLY SENSITIVE RESISTORS), NTC,  BASED ON TYPES *G*D AND *K3A*		Current Validity of Qualification	
			Certificate No.  266 A	Valid Until  July 2003	Page  11-01  001

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
12-01			Low Power, NPN	
	12-01-002-3A-B	233 D	Types NPN	ST Microelectronics
	12-01-003-1	106 H	Type 2N2369A	ST Microelectronics
12-02			Low Power, PNP	
	12-02-002-3A-B	234 D	Types PNP	ST Microelectronics
	12-02-003-1	142 G	Type 2N2894	ST Microelectronics
12-03			High Power, NPN	
	12-03-001-2	107 G	Type 2N3440	ST Microelectronics
	12-03-006-1	143 E	Type 2N5672	ST Microelectronics
	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 A	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 A	Types CFY66 & 67, High Electron Mobility, Low Noise	Infineon



SECTION: 12-\*\*: INDEX OF TRANSISTORS

REP005 Updated on 15-Oct-03

Types covered by similarity :  
2N3019

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 5000  Detail Please refer to the next page.	ST Microelectronics Rennes France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Sep 1996
Extension	CNES	Sep 1997
Extension	CNES	Aug 1998
Extension	CNES	Nov 1999
Extension	CNES	Nov 2001

Characteristics

Maximum Ratings:

	<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

Packages : TO-18, TO-39, TO-66, TO-77, TO-257, LCCC3 and LCCC6

Operating Temperature Range (°C): - 65 to + 200



TRANSISTORS,  
LOW AND HIGH POWER,  
NPN

Current Validity of Qualification	
Certificate No.	Valid Until
233 D	November 2003

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12-01  
002-3 A

Types covered by this certificate

ESCC Spec. No.	Component Type	Package
5201/001	2N 2484	TO-18, LCCC3
5201/002	2N 2222A	TO-18, LCCC3
5201/019	2N 5551	TO-18, LCCC3
5201/003	2N 2219 A	TO-39
5201/004	2N 3700	TO-18, LCCC3
5203/010	2N 5154, BFX 34	TO-39, TO-257
5203/016	BUX 77	TO-66, gold or nickel plated, TO-257
5207/002	2N 2920A	TO-77, and LCCC6
5201/011	2N3019	TO-39



TRANSISTORS,  
 LOW AND HIGH POWER,  
 NPN

Current Validity of Qualification

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 233 D



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 November 2003

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 12-01  
 002-3 B

Types covered by similarity :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000	ST Microelectronics Rennes France	Qualification	CNES	Feb 1983
Detail ESCC 5201/006		Requalification	CNES	Jul 1987
		Extension	CNES	Apr 1990
		Extension	CNES	Aug 1992
		Extension	CNES	Jun 1995
		Extension	CNES	Sep 1996
		Extension	CNES	Sep 1997

<p>Characteristics</p> <p><math>h_{FE}</math> min/max: 40/120 at <math>I_C = 10</math> mA</p> <p><math>t_{on}</math>: 12 ns</p> <p><math>V_{CE SAT}</math>: 0.5V at <math>I_C = 100</math> mA</p> <p><math>t_{off}</math> : 18 ns</p> <p>Maximum Ratings:</p> <p><math>P_D</math>: 360 mW at <math>T_{amb} + 25^\circ C</math>;</p> <p><math>BV_{CBO}</math>: 40 V;</p> <p><math>BV_{CEO}</math> : 15 V;</p> <p><math>I_C</math> : 500 mA, 10 <math>\mu</math>sec pulse</p> <p>Package Types: TO-18 and LCCC3</p> <p>Operating Temperature Range (<math>^\circ C</math>): -65 to +200</p>	<p>Extension</p>	CNES	Nov 1999
	Extension	CNES	Nov 2001

 	<p>TRANSISTORS, LOW POWER, NPN, TYPE 2N 2369A</p>	Current Validity of Qualification		Page
		Certificate No.	Valid Until	12-01
		106 H	November 2003	003-1

Types covered by similarity :  
2N3350, 2N4033

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  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES	Sep 1996  Sep 1997  Aug 1998  Nov 1999  Nov 2001																											
<p>Characteristics</p> <p>Maximum Ratings:</p> <table border="1" data-bbox="73 893 1323 1039"> <thead> <tr> <th></th> <th><u>2N2905A</u></th> <th><u>2N2907A</u></th> <th><u>2N3350</u></th> <th><u>2N3810</u></th> <th><u>2N4033</u></th> <th><u>2N5153</u></th> <th><u>BUX 78</u></th> <th><u>2N5401</u></th> </tr> </thead> <tbody> <tr> <td>BV<sub>CBO</sub> (V):</td> <td>60</td> <td>60</td> <td>60</td> <td>60</td> <td>80</td> <td>100</td> <td>100</td> <td>160</td> </tr> <tr> <td>BV<sub>CEO</sub> (V):</td> <td>60</td> <td>60</td> <td>45</td> <td>60</td> <td>80</td> <td>80</td> <td>80</td> <td>150</td> </tr> </tbody> </table> <p>Packages : TO-78, TO-66, TO-39, TO-18, TO-257, LCCC3 and LCCC6            Operating Temperature Range (°C): -65 to +200</p>						<u>2N2905A</u>	<u>2N2907A</u>	<u>2N3350</u>	<u>2N3810</u>	<u>2N4033</u>	<u>2N5153</u>	<u>BUX 78</u>	<u>2N5401</u>	BV <sub>CBO</sub> (V):	60	60	60	60	80	100	100	160	BV <sub>CEO</sub> (V):	60	60	45	60	80	80	80	150
	<u>2N2905A</u>	<u>2N2907A</u>	<u>2N3350</u>	<u>2N3810</u>	<u>2N4033</u>	<u>2N5153</u>	<u>BUX 78</u>	<u>2N5401</u>																							
BV <sub>CBO</sub> (V):	60	60	60	60	80	100	100	160																							
BV <sub>CEO</sub> (V):	60	60	45	60	80	80	80	150																							



TRANSISTORS,  
LOW AND HIGH POWER,  
PNP

Current Validity of Qualification	
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234 D	November 2003

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002-3 A



Types covered by this certificate

ESCC Spec. No.	Component Type	Package
5202/002	2N 2905A	TO-39
5202/001	2N 2907A	TO-18 and LCCC3
5202/014	2N 5401	TO-18 and LCCC3
5204/002	2N 5153	TO-39, TO-257
5204/006	BUX 78	TO-66, gold or nickel plated, TO-257
5207/005	2N 3810	TO-78, and LCCC6
5207/003	2N 3350	TO-77, and LCCC6
5202/008	2N4033	TO-39, and LCCC3



TRANSISTORS,  
 LOW AND HIGH POWER,  
 PNP

Current Validity of Qualification

Certificate No.  
 234 D



Valid Until  
 November 2003



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 12-02  
 002-3 B

Types covered by similarity :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000	ST Microelectronics Rennes France	Qualification	CNES	Jul 1987
Detail ESCC 5202/004		Extension	CNES	Apr 1990
		Extension	CNES	Aug 1992
		Extension	CNES	Jun 1995
		Extension	CNES	Sep 1996
		Extension	CNES	Sep 1997
		Extension	CNES	Nov 1999
Extension	CNES	Nov 2001		



<p>Characteristics</p> <p><math>h_{FE}</math> min/max: 40/150 at <math>I_C = -30</math> mA</p> <p><math>t_{on}</math>: 60 ns</p> <p><math>V_{CE SAT}</math>: -0.2 V at <math>I_C = -3</math> mA</p> <p><math>t_{off}</math> : 90 ns</p> <p>Maximum Ratings:</p> <p><math>P_D</math>: 360 mW at <math>T_{amb} + 25^\circ</math> C;</p> <p><math>BV_{CBO}</math>: -12 V;</p> <p><math>BV_{CEO}</math> : -12 V;</p> <p><math>I_C</math> : -0.2 A continuous</p> <p>Package Types: T0-18 and LCCC3</p> <p>Operating Temperature Range (<math>^\circ</math>C): -55 to +175</p>
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 	<p>TRANSISTORS, LOW POWER, PNP, TYPE 2N 2894</p>	Current Validity of Qualification		Page
		Certificate No. 142 G	Valid Until November 2003	12-02 003-1

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 5203/011		ST Microelectronics Rennes France	Qualification  Requalification  Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES  CNES  CNES	Feb 1983  Jul 1987  Apr 1990  Mar 1993  Jun 1995  Sep 1997  Nov 1999  Nov 2001
Characteristics  $h_{FE(dc)}$ min/max: 40/160 at $I_C = 20$ mA $V_{CE SAT}$ : 0.5 V at $I_C = 50$ mA Maximum Ratings: $P_D$ : 5 W at $T_{case} + 25^\circ C$ ; $BV_{CBO}$ : 300 V; $BV_{CEO}$ : 250 V; $I_C$ : 1 A Package Type: TO-39 Case Operating Temperature Range ( $^\circ C$ ): -65 to +200					
  	TRANSISTORS,  HIGH POWER, NPN,  TYPE 2N 3440		Current Validity of Qualification		Page
			Certificate No.	Valid Until	12-03
		107 G  November 2003		001-2	

Types covered by similarity :	Remarks : Maintenance activities to be initiated.
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5000	ST Microelectronics Rennes France	Qualification	CNES	Jul 1987
Detail ESCC 5203/004		Extension	CNES	Apr 1990
		Extension	CNES	Aug 1992
		Extension	CNES	Jun 1995
		Extension	CNES	Sep 1997
		Extension	CNES	Jun 2000
Characteristics  $h_{FE}$ min/max: 20/100 at $I_C = 15$ A $V_{CE SAT}$ (max): 0.75 V at $I_C = 15$ A Maximum Ratings: $P_D$ : 140 W at $T_{case} + 25^\circ$ C; $BV_{CBO}$ : 150 V; $BV_{CEO}$ : 120 V; $I_C$ : 30 A Package Type: T0-3 Case, gold lead Operating Temperature Range ( $^\circ$ C): -65 to +200				

 	TRANSISTORS, HIGH POWER, NPN, TYPE 2N 5672	Current Validity of Qualification		Page
		Certificate No. 143 E	Valid Until June 2002	12-03 006-1

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.  253	Valid Until  December 2000	12-03  007



Types covered by similarity : All variants are qualified (BFY 180, 181, 182, 183, 193, and 280)	Remarks : Maintenance activities to be initiated.
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010  Detail ESCC 5611/006	Infineon Technologies AG München Germany	Qualification  Extension	DARA  DLR	Jun 1996  Jan 2000

Characteristics for BFY 193:

$V_{CE0} (V)_{max.}$	12		
$V_{CBO} (V)_{max.}$	20		
$h_{fe} \text{ min./max}$	50/175	@ $V_{CE}= 8.0 V, I_C= 30 \text{ mA}$	
$NF (dB)_{max.}$	@ 2 GHz 2.9	@ $V_{CE}= 5.0 V, I_C= 15 \text{ mA}$	
$MAG/MSG (dB)_{min.}$	@ 2 GHz 12.5	@ $V_{CE}= 5.0 V, I_C= 40 \text{ mA}$	
$f_T (GHz)_{min.}$	@ 500 MHz 7	@ $V_{CE}= 5.0 V, I_C= 40 \text{ mA}$	

Package: "Micro-X"  
Total Power Dissipation ( $P_{tot}$ )= 580 mW  
Operating Temperature Range ( $^{\circ}C$ ):  $T_{op} = -65 \text{ to } +200$

 <b>ESCC</b> <small>European Space Components Coordination</small>  <b>QPL</b>	<p style="text-align: center;">TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR BASED ON TYPE BFY 193</p>	Current Validity of Qualification		Page 12-10 001
		Certificate No. 230 A	Valid Until January 2002	



Types covered by similarity :  All variants are qualified (BFY 405, 420, and 450)	Remarks : Maintenance activities to be initiated.
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 5010  Detail ESCC 5611/008	Infineon Technologies AG München Germany	Qualification  Extension	DARA  DLR	Jun 1997  Jan 2000

Characteristics for BFY 450:

$V_{CE0} (V)_{max.}$	4.5			
$V_{CBO} (V)_{max.}$	15			
$I_C (mA)_{max.}$	100			
$I_B (mA)_{max.}$	10			
$h_{fe} min./max.$	50/150	@ $V_{CE} = 1.0 V, I_C = 20 mA$		
$NF (dB)_{max.}$	@ 1.8 GHz 2.0	@ $V_{CE} = 2.0 V, I_C = 10 mA$		
$f_T (GHz)_{min.}$	@ 1.0 GHz 18	@ $V_{CE} = 3.0 V, I_C = 90 mA$		

Package: "Micro-X"  
 Total Power Dissipation ( $P_{tot}$ )= 450 mW  
 Operating Temperature Range ( $^{\circ}C$ ):  $T_{Op} = - 65$  to  $+ 175$

 <b>ESCC</b> <small>European Space Components Coordination</small>   <b>QPL</b>	<b>TRANSISTORS,          MICROWAVE, SMALL SIGNAL, BIPOLAR          BASED ON TYPE BFY 450</b>	Current Validity of Qualification		Page	
		Certificate No.		Valid Until	
		245 A		January 2002	

Types covered by similarity :	Remarks : Maintenance activities to be initiated.
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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)<sub>max.</sub>                    14  
 $V_{DG}$  (V)<sub>max.</sub>                    16  
 $V_{GS}$  (V)<sub>max.</sub>                    -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		Page 12-15 001-1
		Certificate No. 246 A	Valid Until January 2002	



Types covered by similarity :  
All variants are qualified

Remarks : Maintenance activities to be initiated.

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 5010  Detail ESCC 5613/002 ESCC 5613/004	Infineon Technologies AG München Germany

Nature of Approval	Supervising Authority	Date
Qualification	DARA	Apr 1994
Extension	DLR	Jan 2000

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<sub>tot</sub>)=200 mW derated from +31 °C

Storage Temperature Range (°C): T<sub>stg</sub> = -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.	Valid Until	
213 A	January 2002	12-16 001

Sub-Section	Page No.	Cert.	Type Designation	Manufacturer
13-01			Low Frequency	
	13-01-001-1	07 J	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 F	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	Polyimide, Type 3901019**B	Axon' Cable
	13-01-005-1	159 E	Crosslinked PTFE, Type Silver-Plated Copper	Tyco Electronics
	13-01-005-2	267 A	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 C	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  Detail ESCC 3901/001 3901/002	Draka Fileca Ste-Genevieve France	Qualification  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES	Jan 1979  Sep 1981  Jan 1984  Aug 1986  Jan 1989
Characteristics  Voltage Rating, maximum (Vrms): 600 Temperature Range (°C): -100 to +200		Extension  Extension  Extension  Extension  Extension  Extension	CNES  CNES  CNES  CNES  CNES	Apr 1991  Jun 1993  Jun 1995  Aug 1997  Aug 1999  Jan 2002



WIRES AND CABLES,  
 LOW FREQUENCY, POLYIMIDE INSULATION,  
 BASED ON TYPES FA 3901-1, FA 3901-2

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Certificate No.  07 J	Valid Until  January 2004	13-01  001-1

Types covered by similarity :

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

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC    3901  Detail ESCC    3901/001 3901/002	Nexans Draveil France	Qualification  Extension Extension Extension Extension	CNES  CNES CNES CNES CNES	Jan 1979  Sep 1981 Dec 1983 Mar 1987 Jul 1989
Characteristics  Voltage Rating, maximum (Vrms) : 600 Temperature Range (°C): -100 to +200		Extension Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES	Sep 1991 Aug 1993 Sep 1995 Aug 1997 Aug 1999 Aug 2001 Aug 2003





WIRES AND CABLES,  
 LOW FREQUENCY, POLYIMIDE INSULATION,  
 BASED ON TYPES 1871 - 1872

Current Validity of Qualification		Page
Certificate No.  09 K	Valid Until  August 2005	13-01  001-2

Types covered by similarity :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901	AXON' CABLE Montmirail France	Qualification	ESTEC	Dec 1985
Detail ESCC 3901/002		Extension	ESTEC	Jul 1988
		Extension	ESTEC	Jul 1990
		Extension	ESTEC	Nov 1993
		Extension	ESTEC	Jan 1996
		Extension	ESTEC	May 1999
Characteristics  Voltage Rating, maximum (Vrms) : 600 Temperature Range(°C): -100 to +200		Extension	CNES	Jun 2002

 	<p style="text-align: center;">WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPE 3901002**B</p>	Current Validity of Qualification		Page 13-01 001-3
		Certificate No. 132 F	Valid Until June 2004	

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  Detail ESCC 3901/013	Nexans Draveil France	Qualification  Extension Extension Extension Extension	CNES  CNES CNES CNES CNES	Jan 1979  Sep 1981 Dec 1983 Mar 1987 Jul 1989
Characteristics  Voltage Rating, maximum, (Vrms): 600 Temperature Range, (°C): -100 to +200		Extension Extension Extension Extension Extension Extension Extension	CNES CNES CNES CNES CNES CNES CNES	Sep 1991 Aug 1993 Sep 1995 Aug 1997 Aug 1999 Aug 2001 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  Detail ESCC 3901/019	W.L. Gore & Co Pleinfeld Germany	Qualification  Extension  Extension  Extension  Extension	DARA  DARA  DLR  DLR  DLR	Nov 1994  Nov 1996  Oct 1998  Oct 2000  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	
Certificate No.	Valid Until
219 D	November 2004

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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  Detail ESCC 3901/019	AXON' CABLE Montmirail France	Qualification	CNES	Jun 2002
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	
Certificate No.  268	Valid Until  June 2004

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Types covered by similarity : All variants except for 26 and 28 AWG products	Remarks : This product is not intended for manned space applications
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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
Characteristics  Maximum voltage: 600 Vrms Operating temperature range (°C): -100 to +200				

 <b>ESCC</b> <small>European Space Components Coordination</small> 	<b>WIRES AND CABLES,          LOW FREQUENCY, 600V, SILVER-PLATED COPPER,          EXTRUDED CROSSLINKED FLUOROPOLYMER INSULATION</b>	Current Validity of Qualification		Page
		Certificate No. 159 E	Valid Until November 2003	13-01 005-1

Types covered by similarity : All variants based on qualified variants	Remarks : This product is not intended for manned space applications
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3901  Detail ESCC 3901/012	AXON' CABLE Montmirail France	Qualification  Extension	CNES  CNES	Mar 2002  Feb 2003

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		Page
Certificate No.	Valid Until	
267 A	March 2004	13-01 005-2

Types covered by similarity :	Remarks :
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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 3901/017		Extension	DARA	Sep 1996
		Extension	DLR	Aug 1998
		Extension	DLR	Aug 2000
		Extension	DLR	Aug 2002

<p>Characteristics</p> <p>Voltage Rating, maximum, (Vrms): 600V Temperature Range, (°C): -200 to +200</p> <p>Expanded PTFE, extruded polyimide/fluorthermoplast insulation</p>
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 	<p>POWER WIRES FOR CRIMPING, LOW FREQUENCY, BASED ON TYPE SPP</p>	Current Validity of Qualification		Page
		Certificate No. 215 D	Valid Until August 2004	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  Detail ESCC 3901/018		W.L. Gore & Co Pleinfeld Germany	Qualification  Extension  Extension  Extension  Extension	DARA  DARA  DLR  DLR  DLR	Jul 1994  Sep 1997  Aug 1999  Aug 2001  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.	Valid Until	13-01
		216 D	August 2005	009	



Types covered by similarity :	Remarks :
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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

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 C	Valid Until February 2004	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 :	Remarks :
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Procurement Specifications Issues in effect on certification date	Manufacturer	Nature of Approval	Supervising Authority	Date
Generic ESCC 3902	Nexans Draveil France	Qualification	CNES	July 1979
Detail ESCC 3902/001		Extension	CNES	Feb 1982
		Extension	CNES	July 1984
		Extension	CNES	Mar 1987
		Extension	CNES	July 1989
		Extension	CNES	Sept 1991
		Extension	CNES	Aug 1993
		Extension	CNES	Sep 1995
		Extension	CNES	Aug 1997
		Extension	CNES	Jan 1998
		Extension	CNES	Aug 1999
		Extension	CNES	Aug 2001
		Extension	CNES	Aug 2003
Characteristics  Variants 01, 02, and 03 are qualified Miniature 50 ohms PTFE Dielectric, Polyimide Jacketed, Double Shield, and Shielded/ Jacketed  Maximum voltage: 900 Vrms Operating Temperature Range (°C): -100 to +200				

 	WIRES AND CABLES, RF COAXIAL, PTFE/POLYIMIDE INSULATION, BASED ON TYPE 50 CIS	Current Validity of Qualification		Page
		Certificate No. 24 L	Valid Until August 2005	13-02 001

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	
Certificate No. 255 B	Valid Until February 2005

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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

Types covered by similarity :

Remarks :

Procurement Specifications Issues in effect on certification date	Manufacturer
Generic ESCC 3403  Detail ESCC 3403/006	RADIALL La Verpilliere France

Nature of Approval	Supervising Authority	Date
Qualification	CNES	Jul 1992
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



PASSIVE DEVICES, RF, COAXIAL,  
LOADS, 0 - 22GHz,  
BASED ON TYPE R404

Current Validity of Qualification	
Certificate No. 185 B	Valid Until March 2004

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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	
Certificate No.  178 C	Valid Until  March 2004

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