

ESCC QUALIFIED PARTS LIST

REP005

Updated 15-Aug-2003



| 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 13-01-003 13-01-009 13-02-001 | Index of Wires and Cables Polyimide, Types 1871-1872 from Nexans PTFE, Types MTV-BTV from Nexans PTFE, Polyimide / PFA Insulated, Shielded, Type SPM from Gore PTFE/Polyimide, Type 50 CIS from Nexans | Amended Extended Extended Extended Extended |



Qualified Parts List
DOCUMENT CHANGES

Changes of : 15-Aug-03

| General Information | |
|---------------------|---|
| As affected | |
| Section/Page No. | Description |
| Section 10 | Index of Resistors |
| 10-02-001 | Solid Core, Types RLR 05,07,20 from Vishay Sfernice |
| 10-03-002-4 | 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 |
| Section/Page No. | Description |
| Section 01 | Index of Capacitors |
| 01-02-001-1 | Type I from AVX/TPC |
| 01-02-002-1 | Type II from AVX/TPC |
| 01-02-003-1 | Type I, High Frequency from TEMEX |
| 01-08-001-1A | Concentric, Air from TEMEX |
| Section 04 | Index of Diodes |
| 04-05-001-3 | Schottky, BAS 70 from Infineon |
| 04-05-002-2 | PIN, BXY 42 from Infineon |
| 04-05-003 | PIN, BXY 43 and 42 from Infineon |
| 04-05-003-2 | Varactor, DH 267 from TEMEX |
| 04-05-003-3 | Varactor, Tuning, DH 76xxx from TEMEX |
| Section 08 | Index of Microcircuits |
| 08-07-004A-D | MMIC, GaAs standard Cell from Bookham |
| Section 10 | Index of Resistors |
| 10-05-002-1 | Types RWR 80,81 from Vishay SA |
| 10-05-003-1 | Types RER from Vishay SA |
| 10-09-001-2 | Single & Double layer from Nicolitch |



Qualified Parts List
DOCUMENT CHANGES

Changes of : 15-Jun-03

| | General Information | |
|------------------|--|---------|
| As affected | Framatome Connectors is now known as SOURIAU Connection Technology | |
| 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 02-01-001-2 02-02-001-2 | Index of Connectors D*M Series, Rectangular from FCI D*MA Series, Rectangular from FCI Amended Amended |
| Section 07 07-01-001 | Index of Inductors Type MSCI 10000, 12000 from Microspire Amended Extended |
| Section 10 10-02-001 10-03-002-4 10-05-003-1 10-05-004-1 10-08-001 | Index of Resistors Solid Core, Types RLR 05, 07, 20 from Vishay S.A. Sfernice Solid Core, Types RNC 50, 55, 60 from Vishay S.A. Sfernice Types RER 60, 65 from Vishay Sfernice Types MSPB HR from Vishay Sfernice Type CH*P HR from Vishay Sfernice Amended Amended Amended Extended Deleted |
| Section 11 11-01-001 | Index of Thermistors Types G*D and *K3A* from Betatherm Amended |
| Section 12 12-01-002-3A 12-02-002-3A | Index of Transistors Types NPN from ST Microelectronics Types PNP from ST Microelectronics Amended 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 | |
| 13-01-005-2 | Crosslinked PTFE, Type Silver-Plated Copper from AXON CABLE | Amended |
| 13-02-002-1 | Coaxial, Triaxial, Balanced Shielded Line from GORE | Extended |
| | | 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 03-01-001 03-01-002 | Index of Crystals Type TO-5 from C-MAC Frequency Products Type TO-8 from C-MAC Frequency Products |
| Section 04 04-02-002-1 | Index of Diodes Type STPS20H100 from ST Microelectronics |
| Section 08 08-02-001-2A-E 08-02-002-2A-F | Index of Microcircuits 4000 B Series from ST Microelectronics 54HCMOS Series from ST Microelectronics |
| Section 13 13-01-004-2 | Index of Wires and Cables Polymide, Type SPL from W.L. Gore |



| |
|---|
| <p align="center">Qualified Parts List</p> <p align="center">DOCUMENT CHANGES</p> |
| <p align="center">Changes of : 15-Jan-03</p> |

TABLE OF CONTENTS

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1. FOREWORD

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

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

2. PROCURORS' RESPONSIBILITY

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

3. USE OF TABLES

3.1 Publication

The individual entries are published in sections within this document and are presented by manufacturer on the web, the starting point for which is:

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

3.2 Type Designation

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

3.3 Component Characteristics

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

3.4 Manufacturer

Plant locations are indicated in the individual listings; contact information is given in full on the appropriate web pages accessed from:

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

4. REVISION PROCEDURE

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



Qualified Parts List

5. TABLE OF QUALIFIED COMPONENTS

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

TABLE 5.1

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



ESCC
European Space Components Coordination

QPL

Qualified Parts List

APPENDIX A
Qualified Components List



ESCC
European Space Components Coordination



QPL



Qualified Parts List

Section 01

Component Type: Capacitors

| Sub -Section | Page No. | Cert. | Type Designation | Manufacturer |
|--------------|-----------------------|-------|--|--------------|
| 01-01 | | | Ceramic, Fixed | |
| | 01-01-005 | 231 B | 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 : | | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | | |
| Generic ESCC 3001 | | AVX Limited Larne Northern Ireland | Qualification | DRA | Jul 1996 | | |
| Detail ESCC 3001/030 | | | Extension | DERA | Jul 1999 | | |
| | | | Extension | DERA | Jul 2001 | | |
| <p>Characteristics : E12 series</p> <p>Qualified Range:</p> <p>Variants 01 to 74 capacitance range for 50V, 100V and 200V, as per Detail Specification Variants 01 to 52, and 59 to 60, for 500V are qualified ± 10% tolerance</p> <p>Operating Temperature Range (°C): -55 to +125</p> | | | | | | | |
|   | | <p>CAPACITORS, CERAMIC, TYPE II, HIGH CAPACITANCE, BASED ON CASE STYLES BR, CV, AND CH</p> | | | Current Validity of Qualification | | Page |
| | | | | | Certificate No. 231 B | Valid Until July 2003 | 01-01 005 |

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

Types covered by similarity
 Variants 01 and 06 are qualified

Remarks :
 New process is under evaluation and qualification.

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

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

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



CAPACITORS,
 CERAMIC, FIXED,
 CHIP, TYPE I

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

Types covered by similarity :
 Variants 01 and 06 are qualified

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

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

Characteristics:

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

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



CAPACITORS,
 CERAMIC, FIXED,
 CHIP, TYPE II

| Current Validity of Qualification | | 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 | Nature of Approval | Supervising Authority | Date |
|--|--|---------------------------|--------------------|-----------------------|----------|
| Generic ESCC 3009 | | TEMEX Pessac France | Qualification | CNES | Aug 1998 |
| Detail ESCC 3009/035 3009/036 | | | Extension | CNES | Jan 2001 |

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

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



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

Current Validity of Qualification

Certificate No.
249 A

Valid Until
January 2003


Page
01-02
003-1



Types covered by similarity :
± 20% tolerance

Remarks :

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

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

| | | | | |
|--|---|-----------------------------------|---------------------------|----------------|
|   | 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 | Nature of Approval | Supervising Authority | Date |
|--|-------------------------------------|--------------------|-----------------------|----------|
| Generic ESCC 3003 | ARCOTRONICS Towcester England | Qualification | RAE | Sep 1990 |
| Detail ESCC 3003/005 | | 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 | 01-04 001-2 |
| 173 D | August 2004 | |

Types covered by similarity :

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

Remarks :

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

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

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



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

Current Validity of Qualification

Certificate No.

251 B

Valid Until

August 2005

Page

01-05

001-1

Types covered by similarity :

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

Remarks :

| Procurement Specifications Issues in effect on certification date | Manufacturer | Nature of Approval | Supervising Authority | Date |
|--|--|--------------------|-----------------------|----------|
| Generic ESCC 3006 Detail ESCC 3006/023 | EUROFARAD Lagny sur Marne France | Qualification | CNES | Aug 2002 |

Characteristics: E96 Series

| Capacitance Range (nF) | Tol.(± %) | 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 (°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.

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Valid Until

August 2004

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002-1

Types covered by similarity :

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

Remarks :

| Procurement Specifications Issues in effect on certification date | Manufacturer | Nature of Approval | Supervising Authority | Date |
|--|--|--------------------|-----------------------|----------|
| Generic ESCC 3006 Detail ESCC 3006/024 | EUROFARAD Lagny sur Marne France | Qualification | CNES | Aug 2002 |

Characteristics: E12 Series

Sizes Available: 01, 02, 03, 04

Maximum dimensions (mm):

- 01: 10.7 x 10.7 x B
- 02: 15.5 x 11.5 x B
- 03: 16.5 x 15.5 x B
- 04: 18.5 x 17.0 x B

| Capacitance Range (µF) | Tol.(± %) | U _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 |

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

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



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

Current Validity of Qualification

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Valid Until

August 2004

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01-05

003-1

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 | Nature of Approval | Supervising Authority | Date |
|--|---------------------------|--------------------|-----------------------|----------|
| Generic ESCC 3010 | TEMEX Pessac France | Qualification | CNES | Nov 1985 |
| Detail ESCC 3010/004 | | 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

Certificate No.
129 F

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December 2003

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001-1A

| Types covered by similarity : As described by ESA/SCC Detail Specification 3010/008 | | | | Remarks : | | | | | | | | | | |
|---|---|---|----------------------|-----------------------------------|----------------------------------|---------------------|----------------------|----------|---|---|-----|--|--|--|
| <u>Variants</u> 01 AT 5500 02 AT 5502 03 AT 5501 | | <u>Mfr. Designation</u> | | | | | | | | | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | | Nature of Approval | Supervising Authority | Date | | | | | | | | |
| Generic ESCC 3010 | | TEMEX Pessac France | | Qualification | CNES | Nov 1985 | | | | | | | | |
| Detail ESCC 3010/008 | | | | Extension | | Dec 1988 | | | | | | | | |
| | | | | Extension | | May 1991 | | | | | | | | |
| | | | | Extension | | Nov 1993 | | | | | | | | |
| | | | | Extension | | Sep 1996 | | | | | | | | |
| | | | | Extension | | Jan 1999 | | | | | | | | |
| | | | | Extension | | Dec 2001 | | | | | | | | |
| Characteristics <table border="1"> <thead> <tr> <th>Detail Spec.</th> <th>Capacitance Range (pF)</th> <th>Body Diameter (mm)</th> <th>Temp Coeff. (ppm/°C)</th> </tr> </thead> <tbody> <tr> <td>3010/008</td> <td>1 to 20</td> <td>8</td> <td>±30</td> </tr> </tbody> </table> | | | | Detail Spec. | Capacitance Range (pF) | Body Diameter (mm) | Temp Coeff. (ppm/°C) | 3010/008 | 1 to 20 | 8 | ±30 | | | |
| 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 | | | | | | | | | | | | | | |
|  ESCC European Space Components Coordination  QPL | | CAPACITORS, CONCENTRIC, TRIMMERS, VARIABLE | | Current Validity of Qualification | | Page | | | | | | | | |
| | | | | Certificate No. 129 F | Valid Until December 2003 | 01-08 001-1C | | | | | | | | |

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

| 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 |

Remarks :

| Procurement Specifications Issues in effect on certification date | Manufacturer | Nature of Approval | Supervising Authority | Date |
|--|---------------------------|--------------------|-----------------------|----------|
| Generic ESCC 3010 | TEMEX Pessac France | Qualification | CNES | Nov 1985 |
| Detail ESCC 3010/010 3010/011 | | 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) |
|--------------|------------------------|-------|--------------------|-----------------------|
| 3010/010 | 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

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129 F

Valid Until
December 2003

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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

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129 F


Valid Until
December 2003



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01-08
001-1E


Section 02


Component Type: Connectors

| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|-------------|-------|---------------------------------|--------------|
| 02-01 | | | Multipin, Solder Contacts | |
| | 02-01-001-1 | 71 J | D*M Series, Rectangular | ITT Cannon |
| | 02-01-001-2 | 155 F | D*M Series, Rectangular | SOURIAU |
| 02-02 | | | Multipin, Crimp Contacts | |
| | 02-02-001-1 | 72 J | D*MA Series, Rectangular | ITT Cannon |
| | 02-02-001-2 | 156 E | D*MA Series, Rectangular | SOURIAU |
| | 02-02-003 | 25 H | DBAS Series, Circular | Deutsch |
| | 02-02-005 | 220 B | Series I, Circular, Crimp | SOURIAU |
| | 02-02-006 | 221 B | Series II, Circular, Crimp | SOURIAU |
| | 02-02-007-1 | 222 B | Series III, Circular, Miniature | SOURIAU |
| | 02-02-008 | 223 A | Series III, Hermatic | SOURIAU |
| 02-03 | | | Printed Circuit Board | |
| | 02-03-001-1 | 99 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 |

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

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

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

| | | | | | | |
|--|-------|---|---|---|---|-------|
| Types covered by similarity : Complete range as defined in the Detail Specifications | | Remarks : | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| <p>Generic ESCC 3401</p> <p>Detail ESCC 3401/002 3401/005 3401/020 3401/021</p> | | <p>SOURIAU Connection Technology Marolles en Brie France</p> | <p>Qualification</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> | <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> | <p>Sep 1988</p> <p>Apr 1991</p> <p>Jan 1994</p> <p>Jul 1996</p> <p>Mar 2000</p> <p>Apr 2003</p> | |
| <p>Characteristics</p> <p>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</p> <p>Connector Savers:- For usage with above connector range</p> | | | | | | |
|  | | CONNECTORS AND CONNECTOR SAVER, ELECTRICAL, CRIMP CONTACTS, REMOVABLE, RECTANGULAR RECEPTACLE AND PLUG, BASED ON TYPE D*MA | | Current Validity of Qualification | | Page |
| | | | | Certificate No. | Valid Until | 02-02 |
| | 156 E | April 2005 | 001-2 | | | |

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

Remarks :

Maximum Ratings are stated for one isolated contact.

| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
|--|--|---------------------------------|--------------------|-----------------------|----------|
| Generic ESCC 3401 | | Cie DEUTSCH Evreux France | Qualification | CNES | Jul 1979 |
| Detail ESCC 3401/008 | | | Extension | CNES | Nov 1982 |
| 3401/009 | | | 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

Certificate No.

25 H



Valid Until



August 2003

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02-02

003

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

| | | | | | | | | | | | | | |
|---|--------------------|---|---|------------------------------|--|---------------------|--------------------|----|------|----|------|----|-----|
| Types covered by similarity : For contact, variants 01 to 08 are qualified | | Remarks : | | | | | | | | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | | | | | | | | |
| Generic ESCC 3401 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 <table border="0"> <tr> <td><u>Contact Size</u></td> <td><u>Ratings (A)</u></td> </tr> <tr> <td>12</td> <td>23.0</td> </tr> <tr> <td>16</td> <td>13.0</td> </tr> <tr> <td>20</td> <td>7.5</td> </tr> </table> Operating temperature range (° C): -65 to +200 °C | | | | | | <u>Contact Size</u> | <u>Ratings (A)</u> | 12 | 23.0 | 16 | 13.0 | 20 | 7.5 |
| <u>Contact Size</u> | <u>Ratings (A)</u> | | | | | | | | | | | | |
| 12 | 23.0 | | | | | | | | | | | | |
| 16 | 13.0 | | | | | | | | | | | | |
| 20 | 7.5 | | | | | | | | | | | | |
|   | | CONNECTORS, ELECTRICAL, CIRCULAR, BAYONET COUPLING, REMOVABLE CRIMP CONTACTS, BASED ON TYPE MIL-C-38999, SERIES II | | | Current Validity of Qualification | Page | | | | | | | |
| | | Certificate No. 221 B | Valid Until July 2003 | 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 | SOURIAU Connection Technology Marolles en Brie France | Qualification | CNES | May 1995 |
| Detail ESCC 3401/056 | | Extension | CNES | Mar 1998 |
| 3401/058 3401/066 3401/070 | | Extension | CNES | Jul 2001 |

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)



| Crimp Contact Size | Ratings (A) | PCB Contact Size | Ratings (A) |
|--------------------|-------------|------------------|-------------|
| 4 | 80.0 | 16 | 10.0 |
| 8 | 46.0 | 20 | 5.0 |
| 12 | 23.0 | 22 | 3.0 |
| 16 | 13.0 | | |
| 20 | 7.5 | | |
| 22 | 5.0 | | |



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



| | | | | |
|---|---|-----------------------------------|-------------|------|
|  <p>ESCC European Space Components Coordination</p>  <p>QPL</p> | <p>CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF-LOCKING COUPLING, SCOOP-PROOF, REMOVABLE & NON-REMOVABLE CRIMP CONTACTS BASED ON TYPE MIL-C-38999, SERIES III</p> | Current Validity of Qualification | | Page |
| | | Certificate No. | Valid Until | |
| | | 222 B | July 2003 | |



| | | | | | | | | | | | |
|---|-------------|---|--------------------------------------|-----------------------------------|--------------------------|--------------|-------------|----|-----|-----|-----|
| Types covered by similarity : | | Remarks : | | | | | | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | | | | | | |
| Generic ESCC 3401 Detail ESCC 3401/057 | | SOURIAU Connection Technology Marolles en Brie France | Qualification Requalification | CNES CNES | May 1995 Jul 2001 | | | | | | |
| Characteristics Range: #20 with standard contact arrangements (3,6,10,19,26,32,41,53,61 contacts) #22 with high density arrangements (6,13,22,37,55,66,79,100,128 contacts) Receptacle Shell Sizes: 09,11,13,15,17,19,21,23,25 <table border="0"> <tr> <td>Contact Size</td> <td>Ratings (A)</td> </tr> <tr> <td>20</td> <td>5.0</td> </tr> <tr> <td>22D</td> <td>3.0</td> </tr> </table> Receptacle (contacts # 8, 12, 16, 20, 22D) and Feedthrough (contacts # 8, 12, 16) Operating temperature range (° C): -65 to +200 oC | | | | | | Contact Size | Ratings (A) | 20 | 5.0 | 22D | 3.0 |
| Contact Size | Ratings (A) | | | | | | | | | | |
| 20 | 5.0 | | | | | | | | | | |
| 22D | 3.0 | | | | | | | | | | |
|   | | CONNECTORS, MINIATURE, ELECTRICAL, CIRCULAR, TRIPLE-START SELF- LOCKING COUPLING, SCOOP-PROOF, HERMETIC RECEPTACLE AND FEEDTHROUGH, TYPE MIL-C-38999, SERIES III | | Current Validity of Qualification | | Page | | | | | |
| | | | | Certificate No. | Valid Until | 02-02 | | | | | |
| | | | 223 A | July 2003 | 008 | | | | | | |



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|--|--|--|--|--|--|-------|
| 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. | Valid Until | 02-03 |
| | | | | 99 G | January 2004 | 001-1 |



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

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|--|--|---|---------------------------------|-----------------------------------|----------|
| Types covered by similarity : As defined in Table 1(a) of ESCC Detail Specifications listed below | | Remarks : | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
| Generic ESCC 3401 Detail ESCC 3401/039 | | HYPERTAC Saint-Aubin-Lès-Elbeuf France | Qualification | CNES | Mar 1987 |
| Characteristics 3 rows 26, 44, 62, 80, 98, 144 contacts Contact Ratings: 2 A (1 contact) Operating Temperature Range (°C): -55 to +125 | | | Extension | CNES | May 1990 |
| | | | Extension | CNES | Jan 1993 |
| | | | Extension | CNES | Oct 1995 |
| | | | Extension | CNES | Mar 1998 |
| | | | Extension | 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 | |
| | | Certificate No. 149 E | Valid Until January 2004 | Page 02-03 002-1 | |

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|--|---|--|-----------------------------------|-----------------------------|----------------|
| Types covered by similarity : As defined in Table 1(a) of ESCC Detail Specification | | Remarks : | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
| Generic ESCC 3401 Detail ESCC 3401/065 | | HYPERTAC Saint-Aubin-Lès-Elbeuf France | Qualification | CNES | Aug 1998 |
| | | | Extension | CNES | Jan 2002 |
| 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 | | Remarks : | | | |
|--|---|-------------------------------------|-----------------------------------|-----------------------|----------|
| - Hermetically sealed receptacle | | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
| Generic ESCC 3402 | | RADIALL La Verpilliere France | Qualification | CNES | Feb 1981 |
| Detail ESCC 3402/001 | | | Extension | CNES | Apr 1983 |
| 3402/002 | | | Extension | CNES | Apr 1986 |
| 3402/003 | | | Extension | CNES | Nov 1989 |
| Characteristics | | | Extension | CNES | Jul 1992 |
| Frequency Range 0-18 GHz | | | Extension | CNES | Nov 1994 |
| 3402/001 Pin contact (Plug) | | | Extension | CNES | May 1998 |
| 3402/002 Socket contact (Receptacle) | | | Extension | CNES | Aug 2002 |
| 3402/003 Adapters | | | | | |
| Crimp- or solder-type contact for flexible and semi-rigid cables, contacts for micro strip | | | | | |
| Gold-plated beryllium copper non-magnetic or stainless steel | | | | | |
| Operating temperature range (° C): See Detail Specifications | | | | | |
|   | CONNECTORS, RF, COAXIAL, SOLDER AND CRIMP CONTACTS, MALE, FEMALE ADAPTORS AND CONNECTING PIECES, BASED ON TYPE SMA | | Current Validity of Qualification | | Page |
| | | | Certificate No. | Valid Until | 02-04 |
| | | 68 G | August 2004 | 001 | |



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



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

Section 03

Component Type: Crystals

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



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|--|--|--|-----------------------------------|-----------------------|----------|
| Types covered by similarity : | | Remarks : | | | |
| 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 |
| Characteristics | | | Extension | CNES | Nov 1996 |
| TO-5 Can (T 807) | | | Extension | CNES | Apr 2000 |
| Frequency Range: 15 - 140 MHz | | | Extension | CNES | Nov 2002 |
|   | | | Current Validity of Qualification | | Page |
| | | | Certificate No. | Valid Until | 03-01 |
| | | 33 G | November 2004 | 001-1 | |
| | | CRYSTALS, TO-5 CAN | | | |



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



Section 04



Component Type: Diodes


| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|----------------|-------|-----------------------------------|-------------------|
| 04-01 | | | Small Signal | |
| | 04-01-002-2 | 197 D | Switching, 1N4148-1, 1N4150-1 | Microsemi |
| | 04-01-003-1 | 247 C | Switching, 1N6638 et al, 1N3595-1 | Microsemi |
| | 04-01-004-1 | 261 B | Switching, 1N5802, 1N5804, 1N5806 | Microsemi |
| | | | Power | |
| | 04-02-002-1 | 272 | Type STPS20H100 | STMicroelectronic |
| | 04-02-003-1 | 274 | Types BYW-81, BYV52, BYV54 | STMicroelectronic |
| 04-05 | | | Microwave, Silicon | |
| | 04-05-001-3 | 227 A | Schottky, BAS 70 | Infineon |
| | 04-05-002-2 | 224 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 |



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



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



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

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

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| Types covered by similarity : | | Remarks : | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| Generic ESCC 5000 Detail ESCC 5103/029 5103/030 5103/031 | | ST Microelectronics Rennes France | Qualification | CNES | Aug 2003 | |
| Characteristics 5103/029 variants 01 to 04 are qualified 5103/030 variant 01 is qualified 5103/031 variant 01 is qualified Maximum Ratings: V_{RRM} : 200 V; I_O : 40 A for BYV 54-200, 30 A for BYV52-200, 15 and 30 A for BYW-81-200 T_J : + 150° C; Package Type: TO254 Case Operating Temperature Range (°C): -55 to +150 | | | | | | |
|  | | DIODES, SILICON, POWER RECTIFIER, HIGH EFFICIENCY, FAST RECOVERY, BASED ON TYPES BYW81, BYV 52 AND BYV54 | | Current Validity of Qualification | | Page |
| | | | | Certificate No. 274 | Valid Until August 2005 | 04-02 003-1 |

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| Types covered by similarity : Variant 02: BAS 70-B | | Remarks : Maintenance activities to be initiated. | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| Generic ESCC 5010 Detail ESCC 5512/020 | | Infineon Technologies AG München Germany | Qualification Extension | DARA DLR | Sep 1995 Jan 2000 | |
| Characteristics Maximum Ratings: $V_R = -70 \text{ V}$ $I_F = 70 \text{ mA}$ $I_{FSM} = 85 \text{ mA}_{pk} @ t < 10 \text{ ms, duty cycle} = 10\%$ D.C Parameters: $I_R = 100 \text{ nA max @ } V_R = -56 \text{ V}$ $V_{F1} = 0.44 \text{ V max. @ } I_F = 1.0 \text{ mA}$ at room temp. $V_{BR} = 70 \text{ V min @ } I_R = -10 \mu\text{A}$ $V_{F2} = 0.78 \text{ V max. @ } I_F = 10 \text{ mA}$ $V_{F3} = 1.00 \text{ V max. @ } I_F = 15 \text{ mA}$ Package: T1, HPAC-140, $R_{TH(J-C)} = 100 \text{ CW}^{-1}$ Operating Temperature Range (°C): -55 to +150 | | | | | | |
|   | | DIODES, MICROWAVE, SILICON, SCHOTTKY, GENERAL PURPOSE, BASED ON TYPE BAS 70 | | Current Validity of Qualification | | Page |
| | | | | Certificate No. | Valid Until | 04-05 |
| | | | | 227 A | January 2002 | 001-3 |

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|--|--|---|--------------------|-----------------------|-----------------------------------|-----------------------------|----------------|
| Types covered by similarity : Variant 02 | | 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 | Jun 1995 | | |
| Detail ESCC 5513/017 | | | Extension | DLR | Jan 2000 | | |
| <p>Characteristics</p> <p>Maximum Ratings: $V_{R=}$ -50V $I_{FM=}$ 5.0 A @ $t_p=1.0 \mu s$, duty cycle =0.001%</p> <p>D.C Parameters: $I_{R1=}$ 10 μA max. @ $V_{R=-50 V}$ $I_{R2=}$ 5 nA max. @ $V_{R=-40 V}$ $V_{F=}$ 1.1 V max. @ $I_F=100 mA$</p> <p>Package: T1</p> <p>Operating Temperature Range (°C): -55 to +175</p> | | | | | | | |
|   | | <p>DIODES, MICROWAVE, SILICON, PIN BASED ON TYPE BXY 42- MESA</p> | | | Current Validity of Qualification | | Page |
| | | | | | Certificate No. 224 A | Valid Until January 2002 | 04-05 002-2 |

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|--|-----------------|---|-----------------|---|-----------------------------------|-------------------------------|---------------------|
| Types covered by similarity : See next page | | | | Remarks : Maintenance activities initiated. | | | |
| 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} (Ω) _(max.) | < 1.8 | < 1.6 | < 2.0 | < 1.9 | | | |
| τ _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

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|--|-----------------|---|-----------------|---|-----------------------------------|-------------------------------|---------------------|
| Types covered by similarity : See next page | | | | Remarks : Maintenance activities initiated. | | | |
| 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} (Ω) _(max.) | < 2.0 | < 2.3 | < 2.4 | < 2.5 | | | |
| τ _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



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|---|----------------------------------|--|--------------------|-----------------------|-----------------------------------|--------------|---------------|---------------|--|--|--|------------------|----------------------------------|---------------------------|--|--|--|--|----------------|--|--|--|--|--|----------------|--|--|--|--|-----------------|--------------------|------------------------------|--|--|--|--|--------------------|--------------------------------|--|--|--|-----------|-------------------------------|--|--|--|--|---|--|--|--|--|--|
| 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Characteristics</p> <table border="0"> <tr> <td></td> <td style="text-align: center;"><u>BXY 43</u></td> <td style="text-align: center;"><u>BXY 44</u></td> <td colspan="3"></td> </tr> <tr> <td>Maximum Ratings:</td> <td>$V_R = -150$ V (variants 01-04),</td> <td>-200 V (variants 05-08)</td> <td colspan="3"></td> </tr> <tr> <td></td> <td>$I_F = 400$ mA</td> <td></td> <td colspan="3"></td> </tr> <tr> <td></td> <td>$P_D = 500$ mW</td> <td></td> <td colspan="3"></td> </tr> <tr> <td>D.C Parameters:</td> <td>$I_R = 10$ nA max.</td> <td>5 nA max. @ $V_R = -100$ V</td> <td colspan="3"></td> </tr> <tr> <td></td> <td>$V_F = 1.0$ V max.</td> <td>1.05 V max. @ $I_F = 100$ mA</td> <td colspan="3"></td> </tr> <tr> <td>Packages:</td> <td colspan="5">T, T1, Teller, Pill, Flatpack</td> </tr> <tr> <td colspan="6">Operating Temperature Range: -55 to +150 °C</td> </tr> </table> | | | | | | | <u>BXY 43</u> | <u>BXY 44</u> | | | | Maximum Ratings: | $V_R = -150$ V (variants 01-04), | -200 V (variants 05-08) | | | | | $I_F = 400$ mA | | | | | | $P_D = 500$ mW | | | | | D.C Parameters: | $I_R = 10$ nA max. | 5 nA max. @ $V_R = -100$ V | | | | | $V_F = 1.0$ V max. | 1.05 V max. @ $I_F = 100$ mA | | | | Packages: | T, T1, Teller, Pill, Flatpack | | | | | Operating Temperature Range: -55 to +150 °C | | | | | |
| | <u>BXY 43</u> | <u>BXY 44</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Ratings: | $V_R = -150$ V (variants 01-04), | -200 V (variants 05-08) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | $I_F = 400$ 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 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|   | | DIODES, MICROWAVE, SILICON, PIN, PLANAR BASED ON TYPES BXY 43 AND 44 | | | Current Validity of Qualification | | Page | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Certificate No. | Valid Until | 04-05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 236 A | January 2002 | 003 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | |
|--|--|---|---|-----------------------------------|--|-------|
| Types covered by similarity : See next page | | Remarks : | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| Generic ESCC 5010 Detail ESCC: See types covered by similarity. | | Tyco Electronics Ltd. M/A - COM Division Milton Keynes England | Qualification Extension Extension | DRA DERA QinetiQ | Dec 1993 Oct 1997 Mar 2002 | |
| Characteristics | | | | | | |
| Operating Temperature Range (°C): -65 to +125 and 150 | | | | | | |
|   | | DIODES, MICROWAVE, SILICON, PIN AND VARACTORS | | Current Validity of Qualification | | Page |
| | | | | Certificate No. | Valid Until | 04-05 |
| | | | 200 B | March 2004 | 003-1A | |

Types covered by similarity

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



DIODES,
MICROWAVE, SILICON,
PIN AND VARACTORS

Current Validity of Qualification

Certificate No.

200 B



Valid Until

March 2004

Page

04-05

003-1B

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

Types covered by similarity :

Remarks :

| | | | | |
|--|-----------------------------|--------------------|-----------------------|----------|
| Procurement Specifications Issues in effect on certification date | Manufacturer | Nature of Approval | Supervising Authority | Date |
| Generic ESCC 5010 Detail ESCC: 5512/016 | TEMEX Les Ulis France | Qualification | CNES | Jun 2003 |

Characteristics: Operating Temperature Range (°C): -55 to +155

Maximum Ratings : $V_R = -20$ at $I_R=10\mu A$ and $T_{amb}= +25$ °C

| <u>Variants</u> | <u>CT(typ.) (-4V)</u> | <u>Based on Type</u> |
|-----------------|-----------------------|----------------------|
| 01 to 09 | 1 pF | DH 76010 |
| 10 to 18 | 1.5 pF | DH 76015 |
| 19 to 27 | 2.2 pF | DH 76022 |
| 28 to 36 | 3.3 pF | DH 76033 |
| 37 to 45 | 4.7 pF | DH 76047 |
| 46 to 54 | 6.8 pF | DH 76068 |
| 55 to 63 | 10 pF | DH 76100 |
| 64 to 72 | 15 pF | DH 76150 |





DIODES,
MICROWAVE, SILICON, HYPER-ABRUPT JUNCTION TUNING
VARACTOR, BASED ON TYPES DH 76xxx

| | | |
|-----------------------------------|--------------------------|------------------------|
| Current Validity of Qualification | | Page 04-05 003-3 |
| Certificate No. 273 | Valid Until June 2005 | |

Section 05

Component Type: Filters

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

| | | | | | | |
|--|--|--|--------------------------------|-----------------------|-----------------------------------|------|
| 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 | | | | | | |
|   | | CAPACITOR FILTERS, FEEDTHROUGH, ELECTROMAGNETIC INTERFERENCE SUPPRESSION, HERMETICALLY AND NON-HERMETICALLY SEALED, PI-, C-, AND L- TYPES, BASED ON TYPES SFC, SFL, AND SFP | | | Current Validity of Qualification | Page |
| | | Certificate No. 252 A | Valid Until April 2003 | 05-01 001 A | | |

Types covered by certificate

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

| Style | Detail Spec. | Variants | Capacitance Range (pF) | Rated Current (A) | Rated Voltage (V) |
|---------|--------------|----------|------------------------|-------------------|-------------------|
| SFC 030 | 3008/020 | 01 to 12 | 470 to 22 000 | 1.0 to 5.0 | 25 to 200 |
| SFC 060 | 3008/026 | 01 to 06 | 680 to 220 000 | 10 | 25 to 200 |
| SFC 100 | 3008/027 | 01 to 06 | 1000 to 1 000 000 | 10 | 25 to 200 |
| SFC 035 | 3008/031 | 01 to 06 | 470 to 22 000 | 10 | 25 to 200 |
| SFC 040 | 3008/032 | 01 to 12 | 470 to 22 000 | 10 | 25 to 200 |
| SFC 060 | 3008/033 | 01 to 12 | 680 to 220 000 | 10 | 25 to 200 |

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



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

Current Validity of Qualification

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05-01

001 B

Section 06

Component Type: Fuses

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

Section 07

Component Type: Inductors

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



Types covered by similarity : Remarks :

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

Characteristics Variants 01 to 04 are qualified

| Series No. | Range (µH) | Tolerance (±%) | Q _{min.} | Min. SRF f _r (MHz) | Max. DCR, R _{dc} (Ω) | 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 (°C): -55 to +125

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

Section 08


Component Type: Microcircuits

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

**QPL**

SECTION 08-**: INDEX OF MICROCIRCUITS

REP005 Updated on 15-Aug-03

| | | | | | | |
|--|--|--|--|--|--|--------|
| 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 Oct 1992 Apr 1995 Apr 1997 Apr 1999 May 2001 Nov 2002 | |
| 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 | | Page |
| | | | | Certificate No. | Valid Until | 08-02 |
| | | | | 73 J | November 2004 | 001-2A |

Types covered by similarity

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



QPL

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

Current Validity of Qualification

Certificate No.

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Valid Until

November 2004

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08-02

001-2B

Types covered by similarity

| ESCC Spec. No. | Description | Component Type |
|-------------------|--|-------------------|
| 9306/025 | 8-stage static bidirectional parallel/serial input/output bus register with 3 state output | 4034B |
| 9306/018 | 4-bit universal shift register | 4035B |
| 9204/026 | 12-stage ripple carry binary counter/divider | 4040B |
| 9202/040 | Quad true/complement buffer with unbuffered outputs | 4041UB |
| 9202/041 | Quad clocked "D" latch | 4042B |
| 9202/042 | Quad NOR 3- state R/S latches | 4043B |
| 9202/043 | Quad NAND 3-state R/S latch | 4044B |
| 9202/044 | Micropower phase-locked loop | 4046B |
| 9207/003 | Low power monostable/astable multivibrator | 4047B |
| 9202/045 | Hex buffer/converter (inverting type) | 4049UB |
| 9202/046 | Hex buffer/converter (non-inverting type) | 4050B |
| 9202/047 | Analogue multiplexer/demultiplexer | 4051B |
| 9202/048 | Analogue multiplexer/demultiplexer | 4052B |
| 9202/049 | Triple 2-channel analogue multiplexer/demultiplexer | 4053B |
| 9209/001 | 4-bit magnitude comparator | 4063B |
| 9204/052 | 14-stage ripple-carry binary counter/divider and oscillator | 4060B |
| 9408/005 | Quad bilateral switch | 4066B |
| 9408/009 | Analogue multiplexer/demultiplexer | 4067B |
| 9201/061 | 8-input NAND gate | 4068B |
| 9401/010 | Hex inverter | 4069UB |
| 9201/048 | Quad exclusive OR gate | 4070B |
| 9201/063 | Quad 2-input OR gate | 4071B |
| 9201/082 | Dual 4-input OR gate | 4072B |
| 9201/064 | Triple 3-input AND gate | 4073B |



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

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001-2C

Types covered by similarity

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



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

Current Validity of Qualification

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08-02

001-2D

Types covered by similarity

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



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

Current Validity of Qualification

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001-2E

| | | | | | | |
|---|--|---|--|--|--|-------|
| 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 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 NOTES 1. These parts have successfully passed radiation testing to 50 krads. | | | | | | |
|   | | MICROCIRCUITS, DIGITAL, MONOLITHIC, HIGH SPEED CMOS, 54HC AND 54HCT SERIES | | Current Validity of Qualification | | Page |
| | | | | Certificate No. | Valid Until | 08-02 |
| | | | 190 E | November 2004 | 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 |



QPL

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

Current Validity of Qualification

Certificate No.

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Page

08-02

002-2B

Types covered by similarity

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



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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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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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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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002-2F

| | | | | | |
|--|---|---|-----------------------------------|-----------------------|----------|
| 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 |
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| | | 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 μm gate lengths and TiPtAu gate metal. A composite silicon nitride/polyimide dielectric system combines with two levels of interconnect metal to form complex components and circuit topologies without the need for air bridges. Through GaAs vias are used for device grounding. The F20 process is suitable for microwave applications in radiation intensive environments.

BASIC F20 TECHNOLOGY INFORMATION

Two Level Metal and dielectric, ion implant substrates

| | |
|------------------------------|--|
| Operating Temperature | : $T_{ch \text{ max. } +150 \text{ } ^\circ\text{C}}$ |
| Storage Temperature | : $-65 \text{ } ^\circ\text{C to } +150 \text{ } ^\circ\text{C}$ |
| Max. Operating Frequency | : $> 200 \text{ GHz}$ |
| RF Output Power | : $250 \text{ mW/mm gate width (IG)}$: $300 \text{ mW/mm gate width (IS)}$ |
| Max. Power Dissipation (FET) | : $1 \text{ W/mm gate width (IG)}$: $2 \text{ W/mm gate width (IS)}$ |
| Max. Power Dissipation (die) | : 0.5 W/mm^2 |
| Max. Die Size | : $12.7 \text{ mm x } 12.7 \text{ mm}$ |
| Total Dose Tolerance | : $< 100 \text{ kRad(Si)}$: simulation supported to 80 kRad(Si) |
| Radiation Latch-up | : $\leq 140 \text{ MeV/(mg/cm}^2)$ |
| SEU Tolerance | : $\text{LET } \geq 54 \text{ MeV/(mg/cm}^2)$ |
| 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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F20 CELL LIBRARY

FETs: (pie) gate 1, 2, 4 or 6 finger. Finger widths 50 μm to 175 μm in 1 μm steps

Maximum ratings:

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

IS: V_{ds} 6V/ V_{gs} -10V or V_{ds} 6V/ V_{gd} -10V; 2 W/mm gate width; T_{ch} . 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 10 KGy. Irradiation from a 4 MeV electron source at $5 \times 10^2 \text{ Gy (Si) } \cdot \text{ min}^{-1}$ to a total dose of 10 KGy results in less than 0.8% change in device performance.



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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.



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004 D


Section 09



Component Type: Relays



| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|-----------|-------|---------------------------------------|--------------|
| 09-01 | | | Non-Latching, 28Vdc Contact Rating | |
| | 09-01-002 | 02 G | Type GP5 | LEACH |
| | 09-01-005 | 239 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 | | LEACH International Europe Niort France | Qualification | CNES | Apr 1978 | |
| Detail ESCC 3601/003 | | | Extension | CNES | Oct 1980 | |
| | | | Extension | CNES | Jan 1984 | |
| | | | Extension | CNES | Oct 1986 | |
| | | | Extension | CNES | Jul 1992 | |
| | | | Extension | CNES | Jun 1995 | |
| | | | Extension | CNES | Dec 1998 | |
| | | | Extension | CNES | Nov 2001 | |
| Characteristics Contact Rating : 2 A at 28 Vdc Contact Configuration: 2PDT Package Type: Half-crystal can Coil Voltage 26.5 Vdc Operating Temperature Range (°C): -65 to +125 | | | | | | |
|   | | RELAY, NON-LATCHING, ELECTROMAGNETIC, TYPE GP 5 | | Current Validity of Qualification | | Page |
| | | | | Certificate No. 02 G | Valid Until November 2003 | 09-01 002 |

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|--|--|---|-----------------------------------|-----------------------|--------------------------|
| 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 : | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
| Generic ESCC 3602 Detail ESCC 3602/003 | | LEACH International Europe Niort France | Qualification Extension Extension Extension Extension Extension Extension Extension | CNES CNES CNES CNES CNES CNES CNES | Jan 1979 Feb 1981 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-size crystal can Coil Voltage: 26.5 Vdc Operating Temperature Range (°C): -65 to +125 | | | | | |
|  | | RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 2 | | Current Validity of Qualification | |
| | | | | Certificate No. 13 G | Valid Until November 2003 |
| | | | | | Page 09-02 002 |

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|---|--|---|--------------------------------|-----------------------------------|--------------------------|-------|
| 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 3602 Detail ESCC 3602/019 | | LEACH International Europe Niort France | Qualification Extension | CNES CNES | Apr 1997 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. | Valid Until | 09-02 |
| | | | 240 A | September 2002 | 006 | |



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|---|---|-----------------------------------|----------------------------------|------------------|
| 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 | | | | |
|  ESCC <small>European Space Components Coordination</small>  | RELAY, LATCHING, ELECTROMAGNETIC, TYPE GP 250 | Current Validity of Qualification | | Page |
| | | Certificate No. 93 F | Valid Until November 2003 | 09-03 001 |

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

Section 10

Component Type: Resistors

| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|-------------|-------|-----------------------------|--------------------------|
| 10-02 | | | Fixed, Film | |
| | 10-02-006 | 256 A | 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 | 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 : | | | | | | Remarks : | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------|--|-----------|--|--------------|-----------------------------------|------------------------------|------------------|-----------|----------|-------------|------------------|------------------|-------------------|----------|----|-----------|------|-------------|-----------|-----|----|-----------|------|--------------|------------|----|-----------|-----|-------------|--|----|-----------|-----|-------------|--|-----------|------|----------|
| Tolerances: ± 0.02, 0.05, 0.1, 0.2, 0.5, 1% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procurement Specifications Issues in effect on certification date | | | | Manufacturer | | Nature of Approval | Supervising Authority | Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Generic ESCC 4001 | | | | Vishay S.A. Division Sfernice Nice France | | Qualification | CNES | Dec 1983 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Detail ESCC 4001/011 | | | | | | Extension | CNES | Oct 1986 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Extension | CNES | Nov 1989 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Extension | CNES | Jul 1992 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Requalification | CNES | Apr 1994 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Extension | CNES | Sep 1996 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Characteristics: Variants 03, 04, 07, 08 are qualified | | | | | | Extension | CNES | Jan 1999 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>Style</th> <th>Detail Spec.</th> <th>Variant</th> <th>Range (Ω)</th> <th>Tol. (%)</th> <th>TC (ppm/°C)</th> <th>Power Rating (W)</th> <th>Max. Voltage (V)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">RNC 90 (RS92N)</td> <td rowspan="4">4001/011</td> <td>03</td> <td>33 - 100k</td> <td>0.02</td> <td>±5, ≤ 125°C</td> <td rowspan="2">0.5 @70°C</td> <td rowspan="4">300</td> </tr> <tr> <td>04</td> <td>33 - 100k</td> <td>0.05</td> <td>±10, ≤ 125°C</td> <td rowspan="2">0.3 @125°C</td> </tr> <tr> <td>07</td> <td>33 - 100k</td> <td>0.5</td> <td>±10, >125°C</td> <td></td> </tr> <tr> <td>08</td> <td>33 - 100k</td> <td>1.0</td> <td>±10, ≤175°C</td> <td></td> </tr> </tbody> </table> | | | | | | 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 | 300 | 04 | 33 - 100k | 0.05 | ±10, ≤ 125°C | 0.3 @125°C | 07 | 33 - 100k | 0.5 | ±10, >125°C | | 08 | 33 - 100k | 1.0 | ±10, ≤175°C | | Extension | CNES | Jul 2001 |
| 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 | 300 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 04 | 33 - 100k | 0.05 | ±10, ≤ 125°C | | | 0.3 @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 | 10-04 001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Types covered by similarity :

Variant 05 of 4002/003 and 4002/005 are qualified.

Tolerances: (\pm) 1, 2 and 5%.

Temperature Coefficient : ± 50 ppm/ $^{\circ}$ C for $1.0 < R_n < 10$, and ± 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 | | Nature of Approval | Supervising Authority | Date | |
|---|--------------|--|----------|------------------------|-----------------------|------------------|---------------|
| Generic ESCC 4002 | | Vishay S.A. Division Sfernice Nice France | | Qualification | CNES | Dec 1986 | |
| Detail ESCC 4002/003 | | | | Extension | CNES | Jan 1991 | |
| 4002/005 | | | | 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 (Ω) | 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 ± 50 and 100 ppm/°C for values less than 5.0 Ω (for information only)

Remarks :

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

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

Characteristics

Inductively wound, precision, surface mount

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

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



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

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

Types covered by similarity :
 Variants 01, 02, 03, and 04 are qualified

Tolerances: R ≤ 100 ±0.05 %
 100 <R≤250 ±0.05, 0.02 %
 R > 250 ±0.01, 0.05, 0.02 %.

Remarks :

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

Characteristics

| Style | Range (Ω) | Tol. (±%) | TC (ppm/°C) | Critical R (Ω) | Limiting Voltage (V) | Type Variant |
|-------|------------|---------------------|-------------|----------------|----------------------|--------------|
| 0603 | 50 - 0.2M | 0.01, 0.02 and 0.05 | ±10 | 12.25k | 35 | 01 |
| 0805 | 50 - 0.25M | 0.01, 0.02 and 0.05 | ±10 | 45k | 75 | 02 |
| 1206 | 50 - 1.0M | 0.01, 0.02 and 0.05 | ±10 | 40k | 100 | 03 |
| 2010 | 50 - 3.0M | 0.01, 0.02 and 0.05 | ±10 | 45k | 150 | 04 |

Operating Temperature Range (°C): -55 to155

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





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

Current Validity of Qualification

Certificate No.
 265

Valid Until
 May 2003

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 10-08
 002

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

Types covered by similarity : Remarks :



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

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

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

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



Values: E48 series

| | | | | |
|--|---|-----------------------------------|------------------------------|----------------------|
|   | RESISTORS, NETWORKS, THICK FILM, SINGLE-IN-LINE PACKAGES | Current Validity of Qualification | | Page 10-10 001 |
| | | Certificate No. 235 B | Valid Until July 2003 | |

Section 11

Component Type: Thermistors

| 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 | | Page |
| | | | | | Certificate No. | Valid Until | 11-01 |
| | | | 266 A | July 2003 | 001 | | |

Section 12

Component Type: Transistors



| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|----------------|-------|---|---------------------|
| 12-01 | | | Low Power, NPN | |
| | 12-01-002-3A-B | 233 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 |



QPL

SECTION: 12-**: INDEX OF TRANSISTORS

REP005 Updated on 15-Aug-03

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



Certificate No.
 233 D

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 November 2003

Page

12-01
 002-3 B

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

| 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 | CNES | Sep 1996 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Extension | CNES | Sep 1997 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Extension | CNES | Aug 1998 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Extension | CNES | Nov 1999 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Extension | CNES | Nov 2001 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Characteristics Maximum Ratings: <table border="1"> <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_{CBO} (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_{CEO} (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> Packages : TO-78, TO-66, TO-39, TO-18, TO-257, LCCC3 and LCCC6 Operating Temperature Range (°C): -65 to +200 | | | | | | | <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 _{CBO} (V): | 60 | 60 | 60 | 60 | 80 | 100 | 100 | 160 | BV _{CEO} (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 _{CBO} (V): | 60 | 60 | 60 | 60 | 80 | 100 | 100 | 160 | | | | | | | | | | | | | | | | | | | | | | | | |
| BV _{CEO} (V): | 60 | 60 | 45 | 60 | 80 | 80 | 80 | 150 | | | | | | | | | | | | | | | | | | | | | | | | |
|   | | TRANSISTORS, LOW AND HIGH POWER, PNP | | | Current Validity of Qualification | | Page | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | Certificate No. | Valid Until | 12-02 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 234 D | November 2003 | 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



Page



12-02



002-3 B



| | | | | | | |
|--|--|---|---|--|--|-------|
| Types covered by similarity : | | Remarks : | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| Generic ESCC 5000 Detail ESCC 5202/004 | | ST Microelectronics Rennes France | Qualification Extension Extension Extension Extension Extension Extension Extension Extension | CNES CNES CNES CNES CNES CNES CNES CNES | Jul 1987 Apr 1990 Aug 1992 Jun 1995 Sep 1996 Sep 1997 Nov 1999 Nov 2001 | |
| Characteristics h_{FE} min/max: 40/150 at $I_C = -30$ mA t_{on} : 60 ns $V_{CE SAT}$: -0.2 V at $I_C = -3$ mA t_{off} : 90 ns Maximum Ratings: P_D : 360 mW at $T_{amb} + 25^\circ$ C; BV_{CBO} : -12 V; BV_{CEO} : -12 V; I_C : -0.2 A continuous Package Types: T0-18 and LCCC3 Operating Temperature Range ($^\circ$ C): -55 to +175 | | | | | | |
|   | | TRANSISTORS, LOW POWER, PNP, TYPE 2N 2894 | | Current Validity of Qualification | | Page |
| | | | | Certificate No. | Valid Until | 12-02 |
| | | | | 142 G | November 2003 | 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. | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
| Generic ESCC 5000 Detail ESCC 5203/004 | | ST Microelectronics Rennes France | Qualification Extension Extension Extension Extension | CNES CNES CNES CNES CNES | Jul 1987 Apr 1990 Aug 1992 Jun 1995 Sep 1997 |
| 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 | | | Requalification | CNES | Jun 2000 |
|   | TRANSISTORS, HIGH POWER, NPN, TYPE 2N 5672 | Current Validity of Qualification | | Page | |
| | | Certificate No. | Valid Until | 12-03 | |
| | | 143 E | June 2002 | 006-1 | |

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

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|---|--|---|--------------------|-----------------------|-----------------------------------|-------------|-------|
| Types covered by similarity : All variants are qualified (BFY 180, 181, 182, 183, 193, and 280) | | 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 | Jun 1996 | | |
| Detail ESCC 5611/006 | | | Extension | DLR | Jan 2000 | | |
| Characteristics for BFY 193: | | | | | | | |
| V_{CEO} (V) max. 12 V_{CBO} (V) max.: 20 h_{fe} min./max 50/175 @ $V_{CE}= 8.0$ V, $I_C= 30$ mA NF (dB) max. @ 2 GHz 2.9 @ $V_{CE}= 5.0$ V, $I_C= 15$ mA MAG/MSG (dB) min. @ 2 GHz 12.5 @ $V_{CE}= 5.0$ V, $I_C= 40$ mA f_T (GHz) min. @ 500 MHz 7 @ $V_{CE}= 5.0$ V, $I_C= 40$ mA Package: "Micro-X" Total Power Dissipation (P_{tot})= 580 mW Operating Temperature Range (°C): $T_{op} = -65$ to $+200$ | | | | | | | |
|  <p>European Space Components Coordination</p>  | | TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR BASED ON TYPE BFY 193 | | | Current Validity of Qualification | | Page |
| | | | | | Certificate No. | Valid Until | 12-10 |
| | | | 230 A | January 2002 | 001 | | |

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|---|--|---|---------------------------------|-----------------------|-----------------------------------|------|
| Types covered by similarity : All variants are qualified (BFY 405, 420, and 450) | | 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 | Jun 1997 | |
| Detail ESCC 5611/008 | | | Extension | DLR | Jan 2000 | |
| Characteristics for BFY 450: | | | | | | |
| V_{CEO} (V)max. 4.5 V_{CBO} (V)max.: 15 I_C (mA)max.: 100 I_B (mA)max.: 10 h_{fe} min./max. 50/150 @ $V_{CE}= 1.0$ V, $I_C= 20$ mA NF (dB) max. @ 1.8 GHz 2.0 @ $V_{CE}= 2.0$ V, $I_C= 10$ mA f_T (GHz) min. @ 1.0 GHz 18 @ $V_{CE}= 3.0$ V, $I_C= 90$ mA | | | | | | |
| Package: "Micro-X" Total Power Dissipation (P_{tot})= 450 mW Operating Temperature Range (°C): $T_{op} = - 65$ to + 175 | | | | | | |
|   | | TRANSISTORS, MICROWAVE, SMALL SIGNAL, BIPOLAR BASED ON TYPE BFY 450 | | | Current Validity of Qualification | Page |
| | | Certificate No. 245 A | Valid Until January 2002 | 12-10 002 | | |

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

Types covered by similarity :
 All variants are qualified

Remarks : 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 | Apr 1994 |
| Detail ESCC 5613/002 ESCC 5613/004 | | 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_{tot})=200 mW derated from +31 °C



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



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|--|---|-----------------------------------|-----------------------------|--------------|
|   | <p>TRANSISTORS, HIGH ELECTRON MOBILITY, GALLIUM ARSENIDE, MICROWAVE, LOW NOISE, SMALL SIGNAL, BASED ON TYPES CFY 66 and CFY 67</p> | Current Validity of Qualification | | Page |
| | | Certificate No. 213 A | Valid Until January 2002 | 12-16 001 |



Section 13



Component Type: Wires and Cables



| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|-------------|-------|---|------------------|
| 13-01 | | | Low Frequency | |
| | 13-01-001-1 | 07 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 |



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



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|--|-------------------------------|---|--------------------|-----------------------------------|----------|
| Types covered by similarity : | | Remarks : | | | |
| Medium weight | 1871 -n/1871 - 871 (3901/001) | Variants 24 to 47 are qualified | | | |
| Light weight | 1872 -n/1872 - 872 (3901/002) | Variants 31 to 73 are qualified | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | |
| Generic ESCC 3901 | | Nexans Draveil France | Qualification | CNES | Jan 1979 |
| Detail ESCC 3901/001 | | | Extension | CNES | Sep 1981 |
| 3901/002 | | | Extension | CNES | Dec 1983 |
| Characteristics | | | Extension | CNES | Mar 1987 |
| Voltage Rating, maximum (Vrms) : 600 | | | Extension | CNES | Jul 1989 |
| Temperature Range (°C): -100 to +200 | | | Extension | CNES | Sep 1991 |
| | | | Extension | CNES | Aug 1993 |
| | | | Extension | CNES | Sep 1995 |
| | | | Extension | CNES | Aug 1997 |
| | | | Extension | CNES | Aug 1999 |
| | | Extension | CNES | Aug 2001 | |
| | | Extension | CNES | Aug 2003 | |
|   | | WIRES AND CABLES, LOW FREQUENCY, POLYIMIDE INSULATION, BASED ON TYPES 1871 - 1872 | | Current Validity of Qualification | |
| | | Certificate No. | Valid Until | Page | |
| | | 09 K | August 2005 | 13-01 001-2 | |



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



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


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



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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 | | Page |
| | | | | Certificate No. 268 | Valid Until June 2004 | 13-01 004-3 |



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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. | | | | |
| 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 | | | | | | |
|   | | WIRES AND CABLES, LOW FREQUENCY, 600V, SILVER-PLATED COPPER, EXTRUDED CROSSLINKED FLUOROPOLYMER INSULATION | | | Current Validity of Qualification | Page |
| | | Certificate No. 159 E | | Valid Until November 2003 | | 13-01 005-1 |



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|--|--|--|-------------------------------|-----------------------|-----------------------------------|------|
| Types covered by similarity : All variants based on qualified variants | | Remarks : This product is not intended for manned space applications. | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| Generic ESCC 3901 | | AXON' CABLE Montmirail France | Qualification | CNES | Mar 2002 | |
| Detail ESCC 3901/012 | | | Extension | CNES | Feb 2003 | |
| 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. 267 A | Valid Until March 2004 | 13-01 005-2 | | |



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

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

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|--|--|---|--------------------|-----------------------------------|----------------------------------|--------------------|
| Types covered by similarity : | | Remarks : | | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date | |
| Generic ESCC 3901 | | W.L. Gore & Co Pleinfeld Germany | Qualification | DARA | Feb 1996 | |
| Detail ESCC 3901/021 | | | Extension | DLR | Feb 1998 | |
| | | | Extension | DLR | Feb 2000 | |
| | | | Extension | DLR | Feb 2002 | |
| 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 |

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|--|--|--|--------------------------------|-----------------------------------|---------------------------------|--------------------|
| 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 |

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|---|--|--|--|---|---|
| Types covered by similarity : | | Remarks : | | | |
| Procurement Specifications Issues in effect on certification date | | Manufacturer | Nature of Approval | Supervising Authority | Date |
| <p>Generic ESCC 3902</p> <p>Detail ESCC 3902/001</p> | | <p>Nexans Draveil France</p> | <p>Qualification</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> <p>Extension</p> | <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> <p>CNES</p> | <p>July 1979</p> <p>Feb 1982</p> <p>July 1984</p> <p>Mar 1987</p> <p>July 1989</p> <p>Sept 1991</p> <p>Aug 1993</p> <p>Sep 1995</p> <p>Aug 1997</p> <p>Jan 1998</p> <p>Aug 1999</p> <p>Aug 2001</p> <p>Aug 2003</p> |
| <p>Characteristics</p> <p>Variants 01, 02, and 03 are qualified</p> <p>Miniature</p> <p>50 ohms</p> <p>PTFE Dielectric,</p> <p>Polyimide Jacketed, Double Shield, and Shielded/ Jacketed</p> <p>Maximum voltage: 900 Vrms</p> <p>Operating Temperature Range (°C): -100 to +200</p> | | | | | |
|   | | <p>WIRES AND CABLES, RF COAXIAL,</p> <p>PTFE/POLYIMIDE INSULATION,</p> <p>BASED ON TYPE 50 CIS</p> | <p>Current Validity of Qualification</p> | | <p>Page</p> |
| | | | <p>Certificate No.</p> <p>24 L</p> | <p>Valid Until</p> <p>August 2005</p> | <p>13-02</p> <p>001</p> |

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|--|--|--|--------------------|-----------------------|-----------------------------------|-------------|-------|
| 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 | | W.L. Gore & Co Pleinfeld Germany | Qualification | DLR | Jan 1999 | | |
| Detail ESCC 3902/002 | | | Extension | DLR | Feb 2001 | | |
| | | | Extension | DLR | Feb 2003 | | |
| Characteristics | | | | | | | |
| Variants encompass coaxial, triaxial, and balanced shielded line | | | | | | | |
| Operating Voltage (Continuous), maximum ratings, (Vrms): | | | | | | | |
| Variant 03 180 | | | | | | | |
| Variants 04, 10, 21, 22, 23, 24 200 | | | | | | | |
| Variants 06, 25 250 | | | | | | | |
| All Other Variants 300 | | | | | | | |
| AWG Range: 20, 22, 24, 26, 28, 30 dependent on variant | | | | | | | |
| Temperature Range, (°C): -200 to +180 | | | | | | | |
|   | | WIRES AND CABLES, RADIO FREQUENCY, FLEXIBLE, COAXIAL, TRIAXIAL AND SYMMETRIC | | | Current Validity of Qualification | | Page |
| | | | | | Certificate No. | Valid Until | 13-02 |
| | | | 255 B | February 2005 | 002-1 | | |

Section 14

Component Type: Miscellaneous

| Sub-Section | Page No. | Cert. | Type Designation | Manufacturer |
|-------------|-------------|-------|--------------------------|--------------|
| 14-01 | | | Passive Devices, RF | |
| | 14-01-002-2 | 185 B | Coaxial Loads, to 22 GHz | Radiall |
| | 14-01-004 | 178 C | Attenuators, Type R413 | Radiall |

**QPL**

SECTION 14-**: MISCELLANEOUS

REP005 Updated on 15-Aug-03

Types covered by similarity : Remarks :



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

Characteristics

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

| Type | VSWR max | | | |
|------|------------|---------------|------------------|----------------|
| | 0<f(GHz)≤4 | 4<f(GHz)≤12.4 | 12.4<f(GHz)≤18.4 | 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

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

Types covered by similarity :

Variants 01 to 31

Remarks :

| Procurement Specifications Issues in effect on certification date | Manufacturer | Nature of Approval | Supervising Authority | Date |
|--|-------------------------------------|--|--|--|
| Generic ESCC 3403 Detail ESCC 3403/005 | RADIALL La Verpilliere France | Qualification Extension Extension Extension | CNES CNES CNES CNES | Jan 1991 Jan 1994 Jun 1997 Mar 2002 |
| <p>Characteristics</p> <p>Frequency range (GHz): 0 - 22 Attenuation (dB): 0 - 20 Temperature range (°C): -55 to +125</p> | | | | |



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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