

**CAPACITORS, FIXED, CERAMIC DIELECTRIC,
TYPE I N2200, HIGH VOLTAGE 200V TO 5000V**

**BASED ON TYPES
C480PS TO C485PS, C480PLS TO C485PLS,
C480LS TO C485LS, C480RS TO C485RS**

ESCC Detail Specification No. 3001/040

Issue 1	October 2018
---------	--------------



LEGAL DISCLAIMER AND COPYRIGHT

European Space Agency, Copyright © 2018. All rights reserved.

The European Space Agency disclaims any liability or responsibility, to any person or entity, with respect to any loss or damage caused, or alleged to be caused, directly or indirectly by the use and application of this ESCC publication.

This publication, without the prior permission of the European Space Agency and provided that it is not used for a commercial purpose, may be:

- copied in whole, in any medium, without alteration or modification.
- copied in part, in any medium, provided that the ESCC document identification, comprising the ESCC symbol, document number and document issue, is removed.

DOCUMENTATION CHANGE NOTICE

(Refer to <https://escies.org> for ESCC DCR content)

DCR No.	CHANGE DESCRIPTION

TABLE OF CONTENTS

1	GENERAL	5
1.1	SCOPE	5
1.2	APPLICABLE DOCUMENTS	5
1.3	TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS	5
1.4	THE ESCC COMPONENT NUMBER AND COMPONENT TYPE VARIANTS	5
1.4.1	The ESCC Component Number	5
1.4.2	Component Type Variants and Range of Components	6
1.5	MAXIMUM RATINGS	10
1.6	PHYSICAL DIMENSIONS	10
1.6.1	Type C48*PS - Variants 01, 05, 09, 13, 17, 21	10
1.6.2	Type C48*PLS - Variants 02, 06, 10, 14, 18, 22	11
1.6.3	Type C48*LS - Variants 03, 07, 11, 15, 19, 23	11
1.6.4	Type C48*RS - Variants 04, 08, 12, 16, 20, 24	12
1.7	FUNCTIONAL DIAGRAM	12
2	REQUIREMENTS	12
2.1	GENERAL	12
2.1.1	Deviations from the Generic Specification	13
2.2	MARKING	13
2.3	ROBUSTNESS OF TERMINATIONS	13
2.4	ELECTRICAL MEASUREMENTS AT ROOM, HIGH AND LOW TEMPERATURES	13
2.4.1	Room Temperature Electrical Measurements	14
2.4.2	High and Low Temperatures Electrical Measurements	15
2.5	INTERMEDIATE AND END-POINT ELECTRICAL MEASUREMENTS	15
2.6	BURN-IN	17
	APPENDIX A	18

1 GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, and test and inspection data for the component type variants and/or the range of components specified below. It supplements the requirements of, and shall be read in conjunction with, the ESCC Generic Specification listed under Applicable Documents.

1.2 APPLICABLE DOCUMENTS

The following documents form part of this specification and shall be read in conjunction with it:

- (a) ESCC Generic Specification No. [3001](#).

1.3 TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESCC Basic Specification No. [21300](#) shall apply.

1.4 THE ESCC COMPONENT NUMBER AND COMPONENT TYPE VARIANTS

1.4.1 The ESCC Component Number

The ESCC Component Number shall be constituted as follows:

Example: 3001xxx01682KX

- Detail Specification Reference: 3001xxx
- Component Type Variant Number: 01 (as required)
- Characteristic code: Capacitance Value (6.8nF): 682 (as required)
- Characteristic code: Capacitance Tolerance ($\pm 10\%$): K (as required)
- Rating code: Rated Voltage (1500V): X (as required)

1.4.1.1 *Characteristics and Ratings Codes*

Characteristics and ratings to be codified as part of the ESCC Component Number shall be as follows:

- (a) Rated Capacitance Value, C_n , expressed by means of the following codes in accordance with ESCC Basic Specification No. [21700](#). The unit quantity shall be picofarad (pF).

Capacitance Value C_n (pF)	Code
XX	XX0
XX 10^1	XX1
XX 10^2	XX2
XX 10^3	XX3
XX 10^4	XX4
XX 10^5	XX5

- (b) Capacitance Tolerance expressed by the following codes in accordance with ESCC Basic Specification No. 21700:

Tolerance (\pm %)	Code Letter
10	K
20	M

- (c) Rated Voltage expressed by the following codes:

Rated Voltage U_R (V)	Code Letter
200	G
500	L
1000	M
1500	X
2000	P
3000	R
4000	S
5000	T

1.4.2 Component Type Variants and Range of Components

The component type variants and range of components applicable to this specification are as follows:

Variant Number	Based on Type (Note 2)	Capacitance Range, Tolerance, Rated Voltage	Terminal Material	Terminal Finish	Weight Max (g)
01	C480PS (See Para. 1.6.1)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	1
02	C480PLS (See Para. 1.6.2)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	1
03	C480LS (See Para. 1.6.3)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	1
04	C480RS (See Para. 1.6.4)	See Note 1	Brass	Pure silver plating, electro-deposited	1
05	C481PS (See Para. 1.6.1)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	1.8
06	C481PLS (See Para. 1.6.2)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	1.8
07	C481LS (See Para. 1.6.3)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	1.8
08	C481RS (See Para. 1.6.4)	See Note 1	Brass	Pure silver plating, electro-deposited	1.8

Variant Number	Based on Type (Note 2)	Capacitance Range, Tolerance, Rated Voltage	Terminal Material	Terminal Finish	Weight Max (g)
09	C482PS (See Para. 1.6.1)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	2.8
10	C482PLS (See Para. 1.6.2)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	2.8
11	C482LS (See Para. 1.6.3)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	2.8
12	C482RS (See Para. 1.6.4)	See Note 1	Brass	Pure silver plating, electro-deposited	2.8
13	C483PS (See Para. 1.6.1)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	3.8
14	C483PLS (See Para. 1.6.2)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	3.8
15	C483LS (See Para. 1.6.3)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	3.8
16	C483RS (See Para. 1.6.4)	See Note 1	Brass	Pure silver plating, electro-deposited	3.8
17	C484PS (See Para. 1.6.1)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	5
18	C484PLS (See Para. 1.6.2)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	5
19	C484LS (See Para. 1.6.3)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	5
20	C484RS (See Para. 1.6.4)	See Note 1	Brass	Pure silver plating, electro-deposited	5
21	C485PS (See Para. 1.6.1)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	5
22	C48PLS (See Para. 1.6.2)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	5
23	C485LS (See Para. 1.6.3)	See Note 1	Oxygen free copper	Pure silver plating, electro-deposited	5
24	C485RS (See Para. 1.6.4)	See Note 1	Brass	Pure silver plating, electro-deposited	5

NOTES:

1. Available rated voltages, capacitance values and tolerances are as follows:

Variant Number	Rated Voltage U_R (V)	Capacitance Range C_n (pF)	Tolerance (\pm %)	Value Series
01, 02, 03, 04	200	1500 to 330000	10	E12
			20	E6
	500	180 to 56000	10	E12
			20	E6
	1000	68 to 12000	10	E12
			20	E6
	1500	68 to 6800	10	E12
			20	E6
	2000	47 to 3900	10	E12
			20	E6
	3000	39 to 1800	10	E12
			20	E6
05, 06, 07, 08	200	2200 to 390000	10	E12
			20	E6
	500	270 to 82000	10	E12
			20	E6
	1000	120 to 22000	10	E12
			20	E6
	2000	82 to 5600	10	E12
			20	E6
	3000	68 to 2200	10	E12
			20	E6
	4000	56 to 1200	10	E12
			20	E6
09, 10, 11, 12	200	5600 to 680000	10	E12
			20	E6
	500	470 to 150000	10	E12
			20	E6
	1000	270 to 39000	10	E12
			20	E6
	2000	150 to 10000	10	E12
			20	E6
	3000	120 to 4700	10	E12
			20	E6
	4000	82 to 2200	10	E12
			20	E6
	5000	82 to 1500	10	E12
			20	E6

Variant Number	Rated Voltage U_R (V)	Capacitance Range C_n (pF)	Tolerance (\pm %)	Value Series
13, 14, 15, 16	200	10000 to 1200000	10	E12
			20	E6
	500	680 to 270000	10	E12
			20	E6
	1000	470 to 82000	10	E12
			20	E6
	2000	390 to 22000	10	E12
			20	E6
	3000	330 to 10000	10	E12
			20	E6
	4000	270 to 5600	10	E12
			20	E6
	5000	220 to 3300	10	E12
			20	E6
17, 18, 19, 20	200	1000 to 1800000	10	E12
			20	E6
	500	1800 to 330000	10	E12
			20	E6
	1000	1000 to 100000	10	E12
			20	E6
	2000	820 to 27000	10	E12
			20	E6
	3000	680 to 12000	10	E12
			20	E6
	4000	560 to 5600	10	E12
			20	E6
	5000	470 to 3900	10	E12
			20	E6
21, 22, 23, 24	200	18000 to 3300000	10	E12
			20	E6
	500	10000 to 680000	10	E12
			20	E6
	1000	1500 to 220000	10	E12
			20	E6
	2000	1200 to 56000	10	E12
			20	E6
	3000	1000 to 27000	10	E12
			20	E6
	4000	820 to 15000	10	E12
			20	E6
	5000	680 to 8200	10	E12
			20	E6

2. For Variants 03, 04, 07, 08, 11, 12, 15, 16, 19, 20, 23, 24 the body shall be coated with varnish. Variants 01, 02, 05, 06, 09, 10, 13, 14, 17, 18, 21, 22 are classified as non-insulated (no varnish).

1.5 MAXIMUM RATINGS

The maximum ratings shall not be exceeded at any time during use or storage.

Maximum ratings shall only be exceeded during testing to the extent specified in this specification and when stipulated in Test Methods and Procedures of the ESCC Generic Specification.

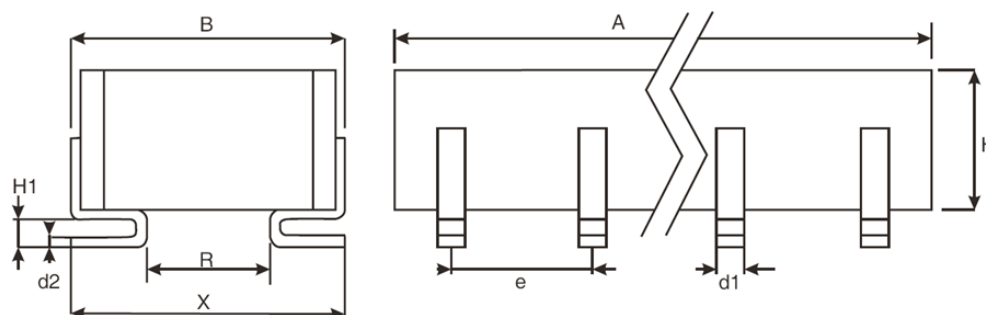
Characteristics	Symbols	Maximum Ratings	Units	Remarks
Rated Voltage	U_R	200, 500, 1000, 1500, 2000, 3000, 4000, 5000	V	Note 1
Operating Temperature Range	T_{op}	-55 to +125	°C	Without derating. T_{amb}
Storage Temperature Range	T_{stg}	-55 to +125	°C	
Soldering Temperature	T_{sol}	+260	°C	Note 2

NOTES:

- As required; See Para. 1.4.2.
- Duration 10 seconds maximum and the same lead shall not be resoldered until 3 minutes have elapsed.

1.6 PHYSICAL DIMENSIONS

1.6.1 Type C48*PS - Variants 01, 05, 09, 13, 17, 21

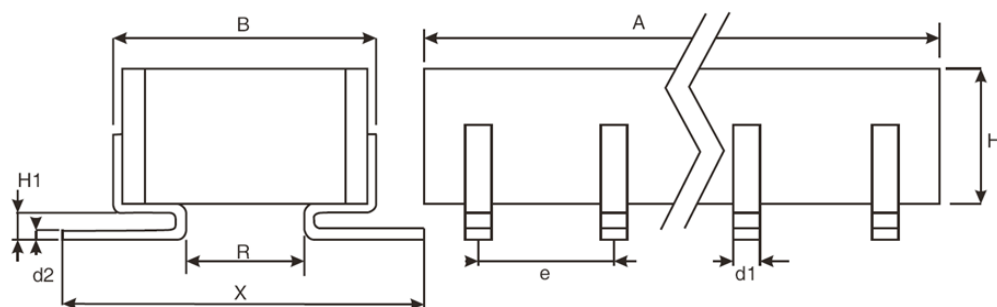


Variant Number	No. of Leads	Dimensions (mm)															
		A Max	B Max	d1 (Note 1)		d2 (Note 1)		e (Note 1)		H max			H1 (Note 1)		R Min (Note 1)	X (Note 1)	
				Min	Max	Min	Max	Min	Max	≤ 3kV	4kV	5kV	Min	Max		Min	Max
01	2	5.5	7	0.4	0.6	0.2	0.3	2.44	2.64	3	3.8	3.8	1.2	1.8	2.5	6.5	7
05	2	6.85	8	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	3.5	7.5	8
09	3	8.9	9	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	4.5	8.5	9
13	4	11.16	12	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	7	11.5	12
17	4	11.16	15.5	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	10	15	15.5
21	6	16.2	18.5	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	13	18	18.5

NOTES:

- All leads.

1.6.2 Type C48*PLS - Variants 02, 06, 10, 14, 18, 22

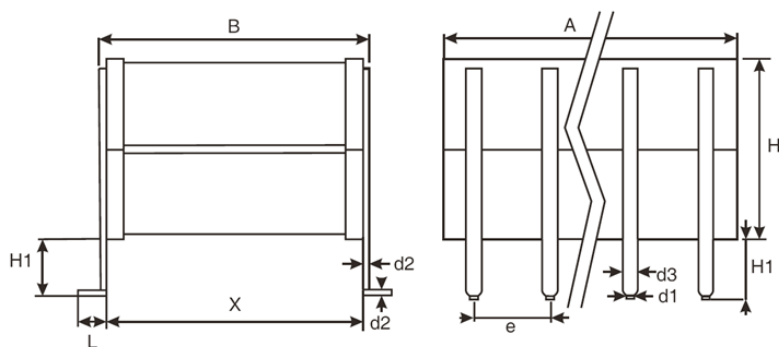


Variant Number	No. of Leads	Dimensions (mm)															
		A Max	B Max	d1 (Note 1)		d2 (Note 1)		e (Note 1)		H max			H1 (Note 1)		R Min (Note 1)	X (Note 1)	
				Min	Max	Min	Max	Min	Max	≤ 3kV	4kV	5kV	Min	Max		Min	Max
02	2	5.5	7	0.4	0.6	0.2	0.3	2.44	2.64	3	3.8	3.8	1.2	1.8	2.5	11	13
06	2	6.85	8	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	3.5	12	14
10	3	8.9	9	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	4.5	13	15
14	4	11.16	12	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	7	16	18
18	4	11.16	15.5	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	10	19.5	21.5
22	6	16.2	18.5	0.4	0.6	0.2	0.3	2.44	2.64	4	5	6	1.2	1.8	13	22.5	24.5

NOTES:

- All leads.

1.6.3 Type C48*LS - Variants 03, 07, 11, 15, 19, 23

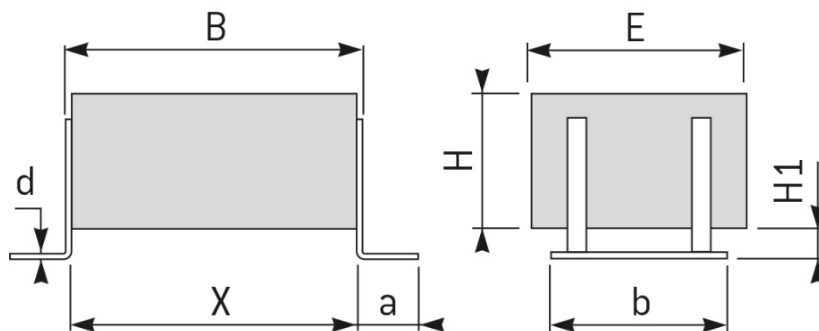


Variant Number	No. of Leads	Dimensions (mm)																		
		A Max	B Max	d1 (Note 1)		d2 (Note 1)		d3 (Note 1)		e (Note 1)		H max			H1 (Note 1)		L (Note 1)		X (Note 1)	
				Min	Max	Min	Max	Min	Max	Min	Max	≤ 3kV	4kV	5kV	Min	Max	Min	Max	Min	Max
03	2	5.5	7	0.4	0.6	0.2	0.3	0.9	1.1	2.44	2.64	3	3.8	3.8	2	3	2.0	2.4	5.7	6.7
07	2	6.85	8	0.4	0.6	0.2	0.3	0.9	1.1	2.44	2.64	4	5	6	2	3	2.0	2.4	6.9	7.9
11	3	8.9	9	0.4	0.6	0.2	0.3	0.9	1.1	2.44	2.64	4	5	6	2	3	3.3	3.7	7.8	8.8
15	4	11.16	12	0.4	0.6	0.2	0.3	0.9	1.1	2.44	2.64	4	5	6	2	3	3.3	3.7	10.5	11.5
19	4	11.16	15.5	0.4	0.6	0.2	0.3	0.9	1.1	2.44	2.64	4	5	6	2	3	3.3	3.7	14	15
23	6	16.2	18.5	0.4	0.6	0.2	0.3	0.9	1.1	2.44	2.64	4	5	6	2	3	3.3	3.7	17	18

NOTES:

- All leads.

1.6.4 Type C48*RS - Variants 04, 08, 12, 16, 20, 24



Variant Number	Dimensions (mm)														
	E Max	B Max	a (Note 1)		b (Note 1)		d (Note 1)		H max			H1 (Note 1)		X (Note 1)	
			Min	Max	Min	Max	Min	Max	≤ 3kV	4kV	5kV	Min	Max	Min	Max
04	5.5	7	2	2.4	4.5	5.5	0.2	0.3	3	3.8	3.8	1.2	1.8	5.7	6.7
08	6.85	8	2	2.4	4.5	5.5	0.2	0.3	4	5	6	1.2	1.8	6.9	7.9
12	8.9	9	3.3	3.7	7.5	8.5	0.2	0.3	4	5	6	1.2	1.8	7.8	8.8
16	11.16	12	3.3	3.7	7.5	8.5	0.2	0.3	4	5	6	1.2	1.8	10.5	11.5
20	11.16	15.5	3.3	3.7	7.5	8.5	0.2	0.3	4	5	6	1.2	1.8	14	15
24	16.2	18.5	3.3	3.7	14.5	15.5	0.2	0.3	4	5	6	1.2	1.8	17	18

NOTES:

- All leads.

1.7 FUNCTIONAL DIAGRAM



NOTES:

- All leads on each side of the component are connected to the same capacitor terminal.

2 REQUIREMENTS

2.1 GENERAL

The complete requirements for procurement of the components specified herein are as stated in this specification and the ESCC Generic Specification. Permitted deviations from the Generic Specification, applicable to this specification only, are listed below.

Permitted deviations from the Generic Specification and this Detail Specification, formally agreed with specific Manufacturers on the basis that the alternative requirements are equivalent to the ESCC requirement and do not affect the component's reliability, are listed in the appendices attached to this specification.

2.1.1 Deviations from the Generic Specification

2.1.1.1 *Deviations from Qualification and Periodic Tests - Chart F4*

- (a) Resistance to Soldering Heat and Solderability: Only the part of the leads designed to be soldered shall be tested.
- (b) Vibration: Prior to Vibration, the samples shall be mounted and glued on to a suitable substrate in order to avoid any stress. The samples shall be maintained on the substrate for all subsequent tests in the subgroup test sequence.

2.2 MARKING

The marking shall be in accordance with the requirements of ESCC Basic Specification No. [21700](#) and as follows.

The information to be marked on the component shall be:

- (a) The ESCC qualified components symbol (for ESCC qualified components only).
- (b) The ESCC Component Number (see Para. 1.4.1).
- (c) Traceability information.

2.3 ROBUSTNESS OF TERMINATIONS

The terminations of these devices are classified as rigid.

The test conditions for Robustness of Terminations shall be as specified in the ESCC Generic Specification and as follows:

- Applicable test: Ue3 (shear) only.
- Pushing force: 10N for 10s.

2.4 ELECTRICAL MEASUREMENTS AT ROOM, HIGH AND LOW TEMPERATURES

Electrical measurements shall be performed at room, high and low temperatures.

2.4.1 Room Temperature Electrical Measurements

The measurements shall be performed at $T_{amb} = +22 \pm 3^{\circ}\text{C}$.

Characteristics	Symbols	Test Method and Conditions	Tolerance (\pm %)	Limits		Units
				Min	Max	
Capacitance	C_A	ESCC No. 3001 $f = 1\text{kHz}$	10 20	$0.9C_n$ $0.8C_n$	$1.1C_n$ $1.2C_n$	pF
Tangent of Loss Angle	$\text{tg}\delta$	ESCC No. 3001 $f = 1\text{kHz}$ For $C_n \leq 50\text{pF}$ For $C_n > 50\text{pF}$	All	- -	Note 1 15×10^{-4}	-
Insulation Resistance (Dielectric)	R_{ID}	ESCC No. 3001 $C_n \leq 25000\text{pF}$ $C_n > 25000\text{pF}$	All	20 500	- -	$\text{G}\Omega$ $\text{G}\Omega.\text{nF}$
Insulation Resistance (Body Insulation)	R_{IB}	ESCC No. 3001 Notes 2, 3 $C_n \leq 25000\text{pF}$ $C_n > 25000\text{pF}$	All	20 500	- -	$\text{G}\Omega$ $\text{G}\Omega.\text{nF}$
Voltage Proof (Dielectric)	VP_D	ESCC No. 3001 For $U_R < 500\text{V}$ For $U_R = 500\text{V}$ For $500\text{V} < U_R \leq 1250\text{V}$ For $U_R > 1250\text{V}$	All	$2.5U_R$ $2U_R$ $1.5U_R$ $1.3U_R$	- - - -	V
Voltage Proof (Body Insulation)	VP_B	ESCC No. 3001 Notes 2, 4	All	1300	-	V

NOTES:

- For $C_n \leq 50\text{pF}$, $\text{tg}\delta < 1.5 \times (150/C_n + 7) \times 10^{-4}$, where the unit quantity for C_n is in pF.
- Not applicable to Variants 01, 02, 05, 06, 09, 10, 13, 14, 17, 18, 21, 22.
- Guaranteed but not tested during Chart F3 of the Generic Specification; only tested during Chart F4 of the Generic Specification (see Para. 2.5 herein).
- The measurements shall be performed on a sample of 5 components from each manufacturing lot with 0 failures allowed. In the event of any failure a 100% inspection may be performed.

2.4.2 High and Low Temperatures Electrical Measurements

Characteristics	Symbols	Test Method and Conditions (Note 1)	Limits		Units
			Min	Max	
Insulation Resistance (Dielectric)	R_{ID}	ESCC No. 3001 $T_{amb} = +125 \pm 2^{\circ}\text{C}$ Note 2 $C_n \leq 25000\text{pF}$ $C_n > 25000\text{pF}$	2	-	$\text{G}\Omega$
			50	-	$\text{G}\Omega.\text{nF}$
Insulation Resistance (Body Insulation)	R_{IB}	ESCC No. 3001 $T_{amb} = +125 \pm 2^{\circ}\text{C}$ Notes 2, 3 $C_n \leq 25000\text{pF}$ $C_n > 25000\text{pF}$	2	-	$\text{G}\Omega$
			50	-	$\text{G}\Omega.\text{nF}$
Temperature Coefficient	TC	ESCC No. 3001 $T_{amb} = -55 \pm 2^{\circ}\text{C}, +20 \pm 2^{\circ}\text{C}, +125 \pm 2^{\circ}\text{C}$ Note 4	-2700	-1700	$10^{-6}/^{\circ}\text{C}$

NOTES:

- The measurements shall be performed on a sample of 5 components from each manufacturing lot with 0 failures allowed. In the event of any failure a 100% inspection may be performed.
- Guaranteed but not tested during Chart F3 of the Generic Specification; only tested in Temperature Characterisation during Chart F4 of the Generic Specification (see Para. 2.5 herein).
- Not applicable to Variants 01, 02, 05, 06, 09, 10, 13, 14, 17, 18, 21, 22.
- In the case of a 100% inspection, a 1% total percent defective is allowed.

2.5 INTERMEDIATE AND END-POINT ELECTRICAL MEASUREMENTS

Unless otherwise specified, the measurements shall be performed at $T_{amb} = +22 \pm 3^{\circ}\text{C}$.

Unless otherwise specified, the test methods and test conditions shall be as per the corresponding test defined in Para. 2.4.1 Room Temperature Electrical Measurements.

Test Reference per ESCC No. 3001	Characteristics	Symbols	Limits		Units
			Min	Max	
Rapid Change of Temperature	Capacitance	C _A	Note 1		%
Initial Measurements	Capacitance	C _A	Note 1		
Final Measurements	Change in Capacitance	ΔC _A /C _A	-3	+3	
	Tangent of Loss Angle	tgδ	-	Note 2	

Test Reference per ESCC No. 3001	Characteristics	Symbols	Limits		Units
			Min	Max	
Steady State Humidity					
Initial Measurements	Capacitance	C_A	Note 1		
Final Measurements (1000 hours)	Capacitance	C_A	Note 1		
	Change in Capacitance	$\Delta C_A/C_A$	-3	+3	%
	Tangent of Loss Angle	$\tan \delta$	-	Note 2	
	Insulation Resistance (Dielectric) (Note 3):				
	For $C_n \leq 25000\text{pF}$	R_{ID}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{ID}	50	-	GΩ.nF
	Insulation Resistance (Body Insulation) (Notes 3, 4):				
	For $C_n \leq 25000\text{pF}$	R_{IB}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{IB}	50	-	GΩ.nF
Operating Life					
Initial Measurements	Capacitance	C_A	Note 1		
Intermediate Measurements (1000 hours) (Note 5)	Capacitance	C_A	Note 1		
	Change in Capacitance	$\Delta C_A/C_A$	-3	+3	%
	Insulation Resistance (Dielectric):				
	For $C_n \leq 25000\text{pF}$	R_{ID}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{ID}	50	-	GΩ.nF
	Insulation Resistance (Body Insulation) (Note 4):				
	For $C_n \leq 25000\text{pF}$	R_{IB}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{IB}	50	-	GΩ.nF
Final Measurements (1000 or 2000 hours) (Note 6)	Capacitance	C_A	Note 1		
	Change in Capacitance	$\Delta C_A/C_A$	-3	+3	%
	Tangent of Loss Angle	$\tan \delta$	-	Note 2	
	Insulation Resistance (Dielectric):				
	For $C_n \leq 25000\text{pF}$	R_{ID}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{ID}	50	-	GΩ.nF
	Insulation Resistance (Body Insulation) (Note 4):				
	For $C_n \leq 25000\text{pF}$	R_{IB}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{IB}	50	-	GΩ.nF
	Voltage Proof (Dielectric)	V_{PD}	Note 1		
	Voltage Proof (Body Insulation) (Note 4)	V_{PB}	Note 1		

Test Reference per ESCC No. 3001	Characteristics	Symbols	Limits		Units
			Min	Max	
Temperature Characterisation	Insulation Resistance (Dielectric) at $T_{amb} = +125 \pm 2^{\circ}\text{C}$	R_{ID}	Note 7		
	Insulation Resistance (Body Insulation) at $T_{amb} = +125 \pm 2^{\circ}\text{C}$ (Note 4)	R_{IB}	Note 7		
	Temperature Coefficient	TC	Note 7		
Resistance to Soldering Heat Initial Measurements	Capacitance	C_A	Note 1		
Final Measurements	Capacitance	C_A	Note 1		
	Change in Capacitance	$\Delta C_A/C_A$	-3	+3	%
	Insulation Resistance (Dielectric):				
	For $C_n \leq 25000\text{pF}$	R_{ID}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{ID}	50	-	GΩ.nF
	Insulation Resistance (Body Insulation) (Note 4):				
	For $C_n \leq 25000\text{pF}$	R_{IB}	2	-	GΩ
	For $C_n > 25000\text{pF}$	R_{IB}	50	-	GΩ.nF

NOTES:

- As specified in Para. 2.4.1 Room Temperature Electrical Measurements.
- Twice the limit specified in Para. 2.4.1 Room Temperature Electrical Measurements.
- Test conditions for Insulation Resistance shall be as specified in Steady State Humidity in the ESCC Generic Specification.
- Not applicable to Variants 01, 02, 05, 06, 09, 10, 13, 14, 17, 18, 21, 22.
- Intermediate measurements are optional at the Manufacturer's discretion.
- 1000 hours is applicable to Periodic Testing for extension of qualification. 2000 hours is applicable to Qualification Testing, and to Periodic Testing for renewal of qualification after lapse.
- As specified in Para. 2.4.2 High and Low Temperatures Electrical Measurements.

2.6

BURN-IN

The requirements for Burn-in are specified in the ESCC Generic Specification. The following conditions shall also apply:

- After Burn-in, the components shall be removed from the chamber and allowed to cool under normal atmospheric conditions for recovery for 24 hours minimum.

APPENDIX A**AGREED DEVIATIONS FOR EXXELIA TECHNOLOGIES (F)**

Items Affected	Description of Deviations
Para. 2.1.1 Deviations from Generic Specification: Special In-Process Controls - Chart F2	Robustness of Terminations, shall not be performed.