



**CAPACITOR FILTERS, L-TYPE, FEEDTHROUGH,  
ELECTROMAGNETIC INTERFERENCE SUPPRESSION,  
HERMETICALLY SEALED**

**BASED ON TYPE SFL100**

**ESCC Detail Specification No. 3008/029**

Issue 4	November 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 prior permission of the European Space Agency and provided 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
1140	Specification upissued to incorporate changes per DCR.

**TABLE OF CONTENTS**

1	GENERAL	6
1.1	SCOPE	6
1.2	COMPONENT TYPE VARIANTS AND RANGE OF COMPONENTS	6
1.3	MAXIMUM RATINGS	6
1.4	PARAMETER DERATING INFORMATION	6
1.5	PHYSICAL DIMENSIONS	6
1.6	FUNCTIONAL DIAGRAM	6
2	APPLICABLE DOCUMENTS	6
3	TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS	6
4	REQUIREMENTS	10
4.1	GENERAL	10
4.2	DEVIATIONS FROM GENERIC SPECIFICATION	10
4.2.1	Deviations From Special In-Process Controls	10
4.2.2	Deviations from Final Production Tests (Chart II)	10
4.2.3	Deviations from Burn-in and Electrical Measurements (Chart III)	10
4.2.4	Deviations from Qualification Tests (Chart IV)	10
4.2.5	Deviations from Lot Acceptance Tests (Chart V)	10
4.3	MECHANICAL REQUIREMENTS	10
4.3.1	Dimension Check	10
4.3.2	Weight	10
4.3.3	Robustness of Terminations	10
4.3.4	Solderability	11
4.3.5	Seal Test	11
4.4	MATERIALS AND FINISHES	11
4.4.1	Case	11
4.4.2	Lead Material and Finish	11
4.4.3	Accessories	11
4.5	MARKING	11
4.5.1	General	11
4.5.2	Lead Identification	11
4.5.3	The ESCC Component Number	12
4.5.4	Traceability Information	12
4.6	ELECTRICAL MEASUREMENTS	12
4.6.1	Electrical Measurements at Room Temperature	12
4.6.2	Electrical Measurements at High and Low Temperatures	12
4.6.3	Circuits for Electrical Measurements (Figure 4)	12
4.7	BURN-IN TESTS	12



4.7.1	Parameter Drift Values	12
4.7.2	Conditions for Burn-in	12
4.7.3	Electrical Circuits for Burn-in (Figure 5)	12
4.8	ENVIRONMENTAL AND ENDURANCE TESTS (CHART IV AND V OF ESCC GENERIC SPECIFICATION NO. 3008)	15
4.8.1	Measurements and Inspections on Completion of Environmental Tests	15
4.8.2	Measurements and Inspections at Intermediate Points During Endurance Tests	15
4.8.3	Measurements and Inspections on Completion of Endurance Tests	15
4.8.4	Conditions for Operating Life Tests (Part of Endurance Testing)	15
4.8.5	Electrical Circuit for Operating Life Tests (Figure 5)	15
APPENDIX A		18

## 1 GENERAL

### 1.1 SCOPE

This specification details the ratings, physical and electrical characteristics, test and inspection data for a Capacitor Filter, L-Type, Feedthrough, Electromagnetic Interference Suppression, Hermetically Sealed, based on Type SFL100. It shall be read in conjunction with ESCC Generic Specification No. 3008, the requirements of which are supplemented herein.

### 1.2 COMPONENT TYPE VARIANTS AND RANGE OF COMPONENTS

Variants of the basic type capacitor filters and the range of components covered by this specification are given in Table 1(a).

### 1.3 MAXIMUM RATINGS

The maximum ratings, which shall not be exceeded at any time during use or storage, applicable to the capacitor filters specified herein, are scheduled in Table 1(b).

### 1.4 PARAMETER DERATING INFORMATION

The parameter derating information applicable to the capacitor filters specified herein, is shown in Figure 1.

### 1.5 PHYSICAL DIMENSIONS

The physical dimensions of the capacitor filters specified herein, are shown in Figure 2.

### 1.6 FUNCTIONAL DIAGRAM

The functional diagram, showing lead identification, of the capacitor filters specified herein, is shown in Figure 3.

## 2 APPLICABLE DOCUMENTS

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

- (a) ESCC Generic Specification No. 3008 for Capacitors, and Capacitor Filters, Feedthrough.
- (b) MIL-STD-202, Test Methods for Electronic and Electrical Component Parts.

## 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. In addition, the following abbreviations are used:

- $V_T$  = Test Voltage

**TABLE 1(a) – TYPE VARIANTS AND RANGE OF COMPONENTS**

(1) Variant (Note 1)	(2) Rated Voltage $U_R$ (V)		(3) Insulation Resistance $R_i$ (M $\Omega$ )		(4) Voltage Proof VP (V)	(5) Voltage Drop $V_{dr}$ (V)	(6) DC Resistance $R_s$ (m $\Omega$ )	(7) Rated Current $I_R$ (A)	(8) Capacitance C ( $\mu$ F)
	(a) -55°C/+85°C	(b) +125°C	(a) -55°C/+85°C	(b) +125°C					
01, 13, 25, 37	80	50	100	10	200	60	4	15	0.8
02, 14, 26, 38	50	50	100	10	125	100	10	10	1.6
03, 15, 27, 39	100	70	1000	100	250	75	15	5	0.656
04, 16, 28, 40	150	100	1000	100	375	120	8	15	0.312
05, 17, 29, 41	50	40	100	10	125	150	10	15	0.8
06, 18, 30, 42	300	200	100	10	600	60	4	15	0.264
07, 19, 31, 43	200	200	100	10	500	60	4	15	0.12
08, 20, 32, 44	50	40	100	10	125	100	10	10	1.6
09, 21, 33, 45	100	50	100	10	250	150	10	15	0.0176
10, 22, 34, 46	200	200	1000	100	500	100	10	10	0.144
11, 23, 35, 47	100	70	100	10	250	40	4	10	1.2
12, 24, 36, 48	80	50	100	10	200	60	4	15	1.2

(1) Variant (Note 1)	(9) Insertion Loss (L) (dB) With Full Rated Current Applied					(10) Case Size (Note 1)	(11) Weight (g)	(12) Inductor Position IN/OUT (Note 2)
	100kHz	1MHz	10MHz	100MHz	1GHz			
01, 13, 25, 37	20	40	60	70	70	1	4	O
02, 14, 26, 38	26	44	60	70	70	2	8	O
03, 15, 27, 39	19	38	55	70	70	2	8	I
04, 16, 28, 40	10	32	50	60	70	3	5.5	O
05, 17, 29, 41	20	45	65	70	70	2	8	I
06, 18, 30, 42	12	30	50	60	70	3	5.5	O
07, 19, 31, 43	5	24	45	58	70	4	4	O
08, 20, 32, 44	26	44	55	70	70	2	8	I
09, 21, 33, 45	-	7	25	40	57	1	4	O
10, 22, 34, 46	6	25	45	55	70	2	8	I
11, 23, 35, 47	25	44	60	70	70	2	8	O
12, 24, 36, 48	26	44	60	65	70	1	4	O

**NOTES:**

1. See the table below and Figure 2 for physical characteristics:

Variant	Case Thread E	Lock-Washer	Case Finish
01 to 12	I: M6 x 0.75	Fan	Silver Plated
13 to 24	I: M6 x 0.75	Fan	Tin-lead Plated
25 to 36	U: 1/4-28 UNF	Tooth	Silver Plated
37 to 48	U: 1/4-28 UNF	Tooth	Tin-lead Plated

2. See Figure 3. I = Inductor set at input side; O = inductor set at output side.

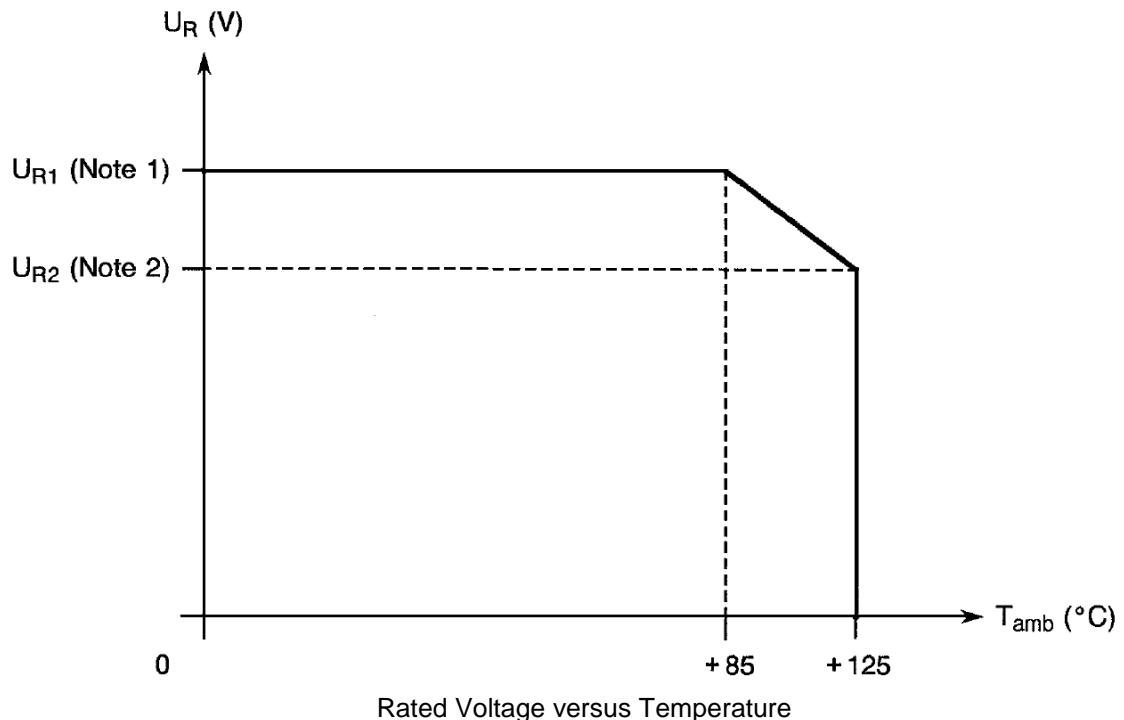
**TABLE 1(b) MAXIMUM RATINGS**

No.	Characteristic	Symbol	Maximum Ratings	Unit	Remarks
1	Rated DC Voltage	$U_R$	See Table 1(a) Column 2	V	Notes 1 and 2
2	Voltage Drop	$V_{dr}$	See Table 1(a) Column 5	mV	
3	DC Resistance	$R_s$	See Table 1(a) Column 6	m $\Omega$	
4	Rated Current	$I_R$	See Table 1(a) Column 7	A	Note 3
5	Torque	$T_{qe}$	0.8	Nm	
6	Operating Temperature Range	$T_{op}$	-55 to +125	$^{\circ}\text{C}$	$T_{amb}$
7	Storage Temperature Range	$T_{stg}$	-55 to +125	$^{\circ}\text{C}$	
8	Soldering Temperature	$T_{sol}$	+260	$^{\circ}\text{C}$	Note 4

**NOTES:**

1. At  $T_{amb} \leq +85^{\circ}\text{C}$ . For derating at  $T_{amb} > +85^{\circ}\text{C}$ , see Figure 1.
2. The addition of DC applied voltage and ripple voltage shall never exceed the rated DC voltage.
3. DC and low frequency.
4. Duration 10 seconds maximum at a distance of not less than 2mm from the body and the same lead shall not be resoldered until 3 minutes have elapsed.

**FIGURE 1 - PARAMETER DERATING INFORMATION**

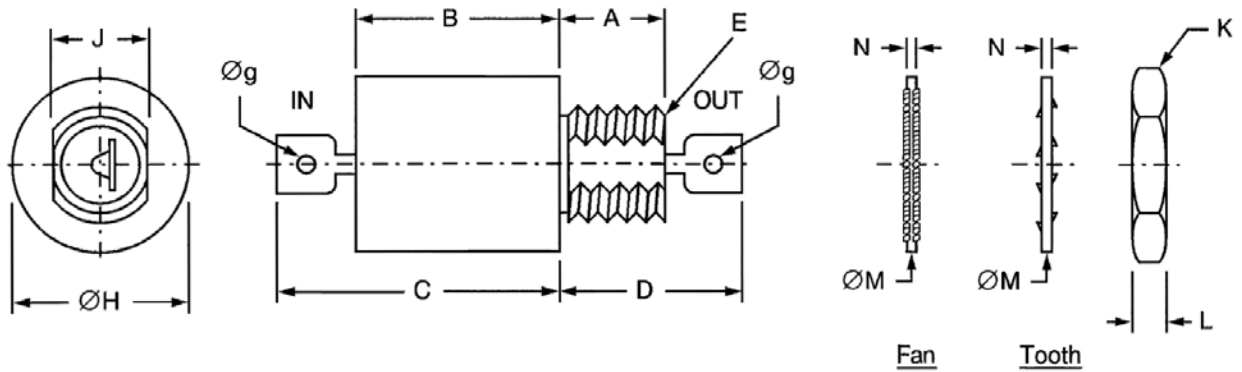


**NOTES:**

1. See  $U_{R1}$  Voltage value for each variant on Table 1(a), Column 2(a).
2. See  $U_{R2}$  Voltage value for each variant on Table 1(a), Column 2(b).



**FIGURE 2 – PHYSICAL DIMENSIONS**



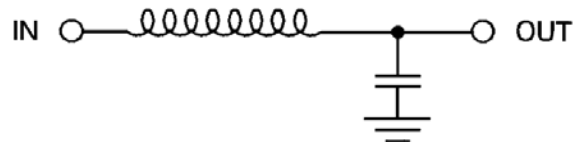
Symbol	Case Size 1		Case Size 2		Case Size 3		Case Size 4		Notes
	Millimetres		Millimetres		Millimetres		Millimetres		
	Min	Max	Min	Max	Min	Max	Min	Max	
A	5.1	5.2	5.1	5.2	5.1	5.2	5.1	5.2	
B	4.5	4.8	14	14.3	6.5	6.8	5	5.3	
C	-	8.8	-	18.3	-	10.8	-	9.4	1
D	-	9	-	9	-	9	-	9	2
E	See Table 1(a)		See Table 1(a)		See Table 1(a)		See Table 1(a)		Thread
Øg	1.50		1.50		1.50		1.50		
ØH	9.7	9.9	9.7	9.9	9.7	9.9	9.7	9.9	
J	4.9	5.1	4.9	5.1	4.9	5.1	4.9	5.1	
K	-	8	-	8	-	8	-	8	Across flats
L	-	2.5	-	2.5	-	2.5	-	2.5	
ØM	-	9.4	-	9.4	-	9.4	-	9.4	Variants 01 to 24
	-	10.2	-	10.2	-	10.2	-	10.2	Variants 25 to 48
N	-	0.4	-	0.4	-	0.4	-	0.4	Variants 01 to 24
	-	0.6	-	0.6	-	0.6	-	0.6	Variants 25 to 48

**NOTES:**

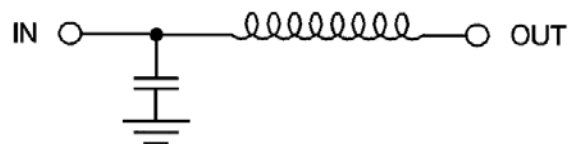
1. Lead finish shall commence not more than 1.5mm from encapsulant.
2. The terminals are defined as rigid.

**FIGURE 3 - FUNCTIONAL DIAGRAM**

INDUCTOR SET AT INPUT SIDE (I) (SEE TABLE 1(a) COLUMN 12)



INDUCTOR SET AT OUTPUT SIDE (O) (SEE TABLE 1(a) COLUMN 12)



## 4 REQUIREMENTS

### 4.1 GENERAL

The complete requirements for procurement of the components specified herein are stated in this specification and ESCC Generic Specification No. 3008 for Capacitors and Capacitor Filters, Feedthrough. Deviations from the Generic Specification, applicable to this specification only, are detailed in Para. 4.2.

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

### 4.2 DEVIATIONS FROM GENERIC SPECIFICATION

#### 4.2.1 Deviations From Special In-Process Controls

None.

#### 4.2.2 Deviations from Final Production Tests (Chart II)

(a) Para. 9.7, External Visual Inspection: For variants with a silver plated case, a change of shade is acceptable.

#### 4.2.3 Deviations from Burn-in and Electrical Measurements (Chart III)

(a) Para. 9.7, External Visual Inspection: For variants with a silver plated case, a change of shade is acceptable.

#### 4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.7, External Visual Inspection: For variants with a silver plated case, a change of shade is acceptable.

#### 4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.7, External Visual Inspection: For variants with a silver plated case, a change of shade is acceptable.

### 4.3 MECHANICAL REQUIREMENTS

#### 4.3.1 Dimension Check

The dimensions of the components specified herein shall be verified in accordance with the requirements set out in Para. 9.5 of ESCC Generic Specification No. 3008 and they shall conform to those shown in Figure 2 of this specification.

#### 4.3.2 Weight

The maximum weight of the components specified herein shall be as given in Table 1(a).

#### 4.3.3 Robustness of Terminations

The requirements for the robustness of terminations tests are specified in Section 9 of ESCC Generic Specification No. 3008. The leads are defined as "Rigid".

- Test Ua1, Tensile: The load shall be 20N.

#### 4.3.4 Solderability

The requirements for solderability testing are specified in Section 9 of ESCC Generic Specification No. 3008.

Test Method 1 shall apply and a thermal screen of 1.6mm may be used. The terminal shall be immersed up to the terminal slot which shall be fully filled.

#### 4.3.5 Seal Test

The requirements for seal testing are specified in Section 9 of ESCC Generic Specification No. 3008.

The limit for fine leak shall be  $5 \cdot 10^{-3}$  Pa.cm<sup>3</sup>/s [ $5 \cdot 10^{-8}$  bar.cm<sup>3</sup>/s].

### 4.4 MATERIALS AND FINISHES

The materials and finishes shall be as specified herein. Where a definite material is not specified, a material which will enable the components specified herein to meet the performance requirements of this specification shall be used. Acceptance or approval of any constituent material does not guarantee acceptance of the finished product.

#### 4.4.1 Case

The case shall be silver plated brass or tin-lead plated brass and hermetically sealed with hard glass seals (see Table 1(a)).

#### 4.4.2 Lead Material and Finish

The lead material shall be Type 'G' with Type '3 or 4' finish in accordance with the requirements of ESCC Basic Specification No. 23500.

#### 4.4.3 Accessories

- Nut: As per Figure 2, brass, silver-plated.
- Lock-Washer: As per Figure 2, bronze, silver-plated.

### 4.5 MARKING

#### 4.5.1 General

The marking of all components delivered to this specification shall be in accordance with the requirements of ESCC Basic Specification No. 21700 and the following paragraphs. When the component is too small to accommodate all of the marking specified, as much as space permits shall be marked and the marking information, in full, shall accompany the component in its primary package.

The information to be marked and the order of precedence, shall be as follows:

- (a) Lead Identification
- (b) The ESCC Component Number.
- (c) Traceability Information.

#### 4.5.2 Lead Identification

Not applicable.

#### 4.5.3 The ESCC Component Number

The ESCC Component Number shall be constituted and marked as follows:

Example: 300802901B

- Detail Specification Number: 3008029
- Type Variant (see Table 1(a)): 01
- Testing level (B or C, as applicable): B

#### 4.5.4 Traceability Information

Each component shall be marked in respect of traceability information in accordance with the requirements of ESCC Basic Specification No. [21700](#).

### 4.6 ELECTRICAL MEASUREMENTS

#### 4.6.1 Electrical Measurements at Room Temperature

The parameters to be measured at room temperature are scheduled in Table 2. Unless otherwise specified, measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}\text{C}$ .

#### 4.6.2 Electrical Measurements at High and Low Temperatures

The parameters to be measured at high and low temperatures are scheduled in Table 3. Measurements shall be performed at  $T_{amb} = +125 (+0 -5)^{\circ}\text{C}$  and  $-55 (+5 -0)^{\circ}\text{C}$  respectively.

#### 4.6.3 Circuits for Electrical Measurements (Figure 4)

Not applicable.

### 4.7 BURN-IN TESTS

#### 4.7.1 Parameter Drift Values

The parameter drift values applicable to burn-in are specified in Table 4 of this specification. Unless otherwise stated, measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}\text{C}$ . The parameter drift values ( $\Delta$ ) applicable to the parameters scheduled shall not be exceeded. In addition to these drift value requirements for a given parameter, the appropriate limit value specified in Table 2 shall not be exceeded.

#### 4.7.2 Conditions for Burn-in

The requirements for burn-in are specified in Section 7 of ESCC Generic Specification No. [3008](#). The conditions for burn-in shall be as specified in Table 5(a) of this specification.

#### 4.7.3 Electrical Circuits for Burn-in (Figure 5)

Not applicable.

**TABLE 2 – ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE – DC PARAMETERS**

No.	Characteristics	Symbol	ESCC 3008 Test Method	Test Conditions	Limits		Unit
					Min	Max	
1	Voltage Drop	V <sub>dr</sub>	Para. 9.4.1.5	I <sub>R</sub> = Note 1	-	Note 2	V
2	Voltage Proof	VP	Para. 9.4.1.2		Note 3	-	V
3	Insulation Resistance	Ri	Para. 9.4.1.3	Para. 9.4.1.3	Note 4	-	MΩ

**NOTES:**

1. See Column 7 of Table 1(a).
2. See Column 5 of Table 1(a).
3. See Column 4 of Table 1(a).
4. See Column 3(a) of Table 1(a).

**TABLE 2 – ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE – AC PARAMETERS**

No.	Characteristics	Symbol	ESCC 3008 Test Method	Test Conditions	Limits		Unit
					Min	Max	
4	Insertion Loss	I <sub>L1</sub>	Para. 9.4.1.4	f = 100kHz Note 1	Note 2	-	dB
5	Insertion Loss	I <sub>L2</sub>	Para. 9.4.1.4	f = 1MHz Note 3	Note 2	-	dB
6	Insertion Loss	I <sub>L3</sub>	Para. 9.4.1.4	f = 10MHz Note 3	Note 2	-	dB
7	Insertion Loss	I <sub>L4</sub>	Para. 9.4.1.4	f = 100MHz Note 3	Note 2	-	dB
8	Insertion Loss	I <sub>L5</sub>	Para. 9.4.1.4	f = 1GHz Note 1	Note 2	-	dB
9	Capacitance	C	Para. 9.4.1.1	Para. 9.4.1.1	Note 4	-	μF

**NOTES:**

1. Measurements at this frequency to be made only during Chart IV testing.
2. See Column 9 of Table 1(a).
3. Measurements at rated current to be made only during Chart IV testing in Subgroups II or III. Measurements without load current to be made during Charts II, III and V.
4. See Column 8 of Table 1(a).

**TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES**

No.	Characteristics	Symbol	ESCC 3008 Test Method	Test Conditions (Note 1)	Limits		Unit
					Min	Max	
3	Insulation Resistance	R <sub>i</sub>	Para. 9.4.1.3	Para. 9.4.1.3 Note 4	Note 2	-	MΩ
5	Insertion Loss	I <sub>L3</sub>	Para. 9.4.1.4	f = 1MHz No Current	Note 3	-	dB
6	Insertion Loss	I <sub>L3</sub>	Para. 9.4.1.4	f = 10MHz No Current	Note 3	-	dB
7	Insertion Loss	I <sub>L4</sub>	Para. 9.4.1.4	f = 100MHz No Current	Note 3	-	dB

**NOTES:**

1. If more than 20 units have to be measured, the measurement shall be performed on a sample basis in accordance with Inspection Level I, Table IIA, AQL = 1% of IEC Publication No. 410.
2. See Column 3(b) of Table 1(a).
3. See Column 9 of Table 1(a).
4. Insulation resistance is to be performed only at high temperature.

**FIGURE 4 – CIRCUITS FOR ELECTRICAL MEASUREMENTS**

Not applicable.

**TABLE 4 – PARAMETER DRIFT VALUES**

No.	Characteristics	Symbol	Spec. and/or Test Method	Test Conditions	Change Limits (Δ)	Unit
9	Capacitance Change	ΔC/C	As per Table 2	As per Table 2	±10	%

**TABLE 5(a) – CONDITIONS FOR BURN-IN TESTS**

No.	Characteristic	Symbol	Condition	Unit
1	Ambient Temperature	T <sub>amb</sub>	+125 (+0 -3)	°C
2	Test Voltage	V <sub>T</sub>	2 x U <sub>R</sub> at +125°C Note 1	V

**NOTES:**

1. Applied between one terminal and the case. See Column 2(b) of Table 1(a) for value of U<sub>R</sub>.

**TABLE 5(b) – CONDITIONS FOR OPERATING LIFE TESTS**

No.	Characteristic	Symbol	Condition	Unit
1	Ambient Temperature	T <sub>amb</sub>	+125 (+0 -3)	°C
2	Test Voltage	V <sub>T</sub>	2 x U <sub>R</sub> at +125°C Note 1	V
3	Rated Current	I <sub>R</sub>	Note 2	A

**NOTES:**

1. Applied between one terminal and the case. See Column 2(b) of Table 1(a) for value of U<sub>R</sub>.
2. To flow between the terminals. See Column 7 of Table 1(a) for value of I<sub>R</sub>.

**FIGURE 5 – ELECTRICAL CIRCUIT FOR BURN-IN AND OPERATING LIFE TESTS**

Not applicable.

4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHART IV AND V OF ESCC GENERIC SPECIFICATION No. 3008)

4.8.1 Measurements and Inspections on Completion of Environmental Tests

The parameters to be measured and inspections to be performed on completion of environmental tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}\text{C}$ .

4.8.2 Measurements and Inspections at Intermediate Points During Endurance Tests

The parameters to be measured and inspections to be performed at intermediate points during endurance tests are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}\text{C}$ .

4.8.3 Measurements and Inspections on Completion of Endurance Tests

The parameters to be measured and inspections to be performed on completion of endurance testing are scheduled in Table 6. Unless otherwise stated, the measurements shall be performed at  $T_{amb} = +22 \pm 3^{\circ}\text{C}$ .

4.8.4 Conditions for Operating Life Tests (Part of Endurance Testing)

The requirements for operating life test are specified in Section 9 of ESCC Generic Specification No. 3008. The conditions for operating life testing shall be as specified in Table 5(b) of this specification.

4.8.5 Electrical Circuit for Operating Life Tests (Figure 5)

Not applicable.

**TABLE 6 – MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING**

No.	ESCC Generic Spec. No. 3008		Measurements and Inspections		Symbols	Limits		Unit
	Environmental and Endurance Tests (1)	Test Method and Conditions	Identification	Conditions		Min	Max	
01	Seal Test (Hermetically Sealed)	Para. 9.6 and Para 4.3.5 of this spec.	Gross Leak Fine Leak	ESCC No. 3008 Para. 9.6.1 ESCC No. 3008 Para. 9.6.2	- -	- -	- -	
02	External Visual Inspection	Para. 9.7 and Paras 4.2.4 and 4.2.5 of this spec	<b>Final Measurements</b> Visual Inspection	ESCC No. 20500	-	-	-	
03	Temperature Rise	Para. 9.9	Temperature Rise	Rated Current (3)	-	-	25	°C
04	Shock	Para. 9.10	<b>Measurements during Tests</b>  <b>Final Measurements</b> Visual Examination Insertion Loss	100% $U_R$ (2) applied No Open or Short Circuits > 0.1ms  No Mechanical Damage Table 2 Item 4 to 8	-  - $I_L$	-  - Table 2	-  - -	

No.	ESCC Generic Spec. No. 3008		Measurements and Inspections		Symbols	Limits		Unit
	Environmental and Endurance Tests (1)	Test Method and Conditions	Identification	Conditions		Min	Max	
05	Vibration	Para. 9.11	<b>Measurements during Tests</b>  <b>During Last Cycle</b>  <b>Final Measurements</b> Visual Examination Insertion Loss	Rated Current (3) and 100% U <sub>R</sub> (2) applied  No Open or Short Circuits > 0.1ms  No Mechanical Damage Table 2 Item 4 to 8	- - - I <sub>L</sub>	- - - Table 2	- - - -	
06	Accelerated Damp Heat	Before tests 10 cycles of Para. 9.2. Para. 9.12	<b>Final Measurements</b> Visual Examination Voltage Proof Insulation Resistance Insertion Loss	After recovery of 4 to 24 hrs  No corrosion, damage or obliteration of marking Table 2 Item 2 Table 2 Item 3 Table 2 Item 4 to 8	- VP Ri I <sub>L</sub>	- 90% U <sub>R</sub> (2) (4) Table 2	- - - -	
07	Low Air Pressure	Para. 9.13	<b>Measurements during Tests</b>  Voltage Proof Visual Examination  <b>Final Measurements</b> Visual Examination	During last 5 minutes  Table 2 Item 2  No breakdown, flashover, deformation or seepage  No breakdown, flashover, deformation or seepage	VP - -	125% U <sub>R</sub> (2) - -	- - -	
08	Robustness of Terminations	Para. 9.14 and Para. 4.3.3 of this spec	<b>Final Measurements</b> Visual Examination Voltage Drop	No damage Table 2 Item 1	- V <sub>dr</sub>	- -	- Table 2	
09	Immersion	Before tests 10 cycles of Para. 9.2. Para. 9.15	<b>Final Measurements</b> Visual Examination Voltage Proof Insulation Resistance Insertion Loss	After recovery of 4 to 24 hrs  No obliteration of marking and harmful corrosion Table 2 Item 2 Table 2 Item 3 Table 2 Item 4 to 8	- VP Ri I <sub>L</sub>	- 90% U <sub>R</sub> (2) (4) Table 2	- - - -	
10	Overload	Para. 9.16	<b>Final Measurements</b> Insulation Resistance Voltage Drop Visual Examination	140% of Rated Current (3) for 15 mins min.  Table 2 Item 3 Table 2 Item 1 No damage	- Ri V <sub>dr</sub> -	- Table 2 -	- - Table 2 -	
11	Resistance to Soldering Heat	Para. 9.17	<b>Final Measurements</b> Visual Examination Insulation Resistance Insertion Loss	After recovery of 1 to 2 hrs  No damage Table 2 Item 3 Table 2 Item 4 to 8	- Ri I <sub>L</sub>	- Table 2 Table 2	- - -	
12	Solderability	Para. 9.18 and Para 4.3.4 of this spec.	<b>Final Measurements</b> Visual Examination	IEC No. 68-2-20 Para. 4.6.4, 4.7.4 or 4.9.3	-	-	-	



No.	ESCC Generic Spec. No. 3008		Measurements and Inspections		Symbols	Limits		Unit
	Environmental and Endurance Tests (1)	Test Method and Conditions	Identification	Conditions		Min	Max	
13	Operating Life	Para. 9.19	<b>Initial Measurements</b>					
			Capacitance	Table 2 Item 9	C	Record Values		
			<b>During Tests</b>	No Open or Short Circuit	-	-	-	
			<b>Intermediate Measurements</b>					
			Insulation Resistance	Table 3 Item 3	Ri	Table 3	-	
				After 24 hrs recovery				
			Voltage Proof	Table 2 Item 2	VP	90% U <sub>R</sub> (2)	-	
			Insulation Resistance	Table 2 Item 3	Ri	(5)	-	
			Insertion Loss	Table 2 Item 4 to 8	I <sub>L</sub>	Table 2	-	
			Capacitance Change	Table 2 Item 9	ΔC/C	-	Table 4	
			<b>Final Measurements</b>					
			Insulation Resistance	Table 3 Item 3	Ri	Table 3	-	
				After 24 hrs recovery				
Voltage Proof	Table 2 Item 2	VP	90% U <sub>R</sub> (2)	-				
Insulation Resistance	Table 2 Item 3	Ri	(5)	-				
Insertion Loss	Table 2 Item 4 to 8	I <sub>L</sub>	Table 2	-				
Capacitance Change	Table 2 Item 9	ΔC/C	-	Table 4				
14	Corrosion	Para. 9.20	<b>Final Measurements</b>					
			Visual Examination	No corrosion, damage or obliteration of marking	-	-	-	
15	Permanence of Marking	Para. 9.21	<b>Final Measurements</b>					
			Visual Examination	No corrosion or obliteration of marking	-	-	-	
16	Damp Heat (Non-hermetically Sealed)	Para. 9.24	Not applicable					

**NOTES:**

1. The tests in this Table refer to either Chart IV or V and shall be used as applicable.
2. For U<sub>R</sub>, see Column 2(a) of Table 1(a).
3. For I<sub>R</sub>, see Column 7 of Table 1(a).
4. Greater than 10% of the value given in Table 2.
5. Greater than 50% of the value given in Table 2.

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

ITEMS AFFECTED	DESCRIPTION OF DEVIATIONS
Paras. 4.2.2, 4.2.3 and Table 2	Para. 9.4.1.5, Voltage Drop: Voltage Drop may be performed as a DC Resistance measurement in accordance with <a href="#">MIL-STD-202</a> , Method 303. In this case, the maximum value of DC Resistance (Rs) shall be as specified in Column 6 of Table 1(a).
Para. 4.4.1 Case	Note: The glass seal at the threaded OUT end of the case is soldered in place using fused pure tin. Accordingly, localised spots of fused pure tin may be present in the annular metal seal around this glass seal. This is acceptable as fused pure tin is not prone to whiskering.