



europaean space agency
agence spatiale européenne

Pages 1 to 19

CAPACITORS, VARIABLE, CONCENTRIC
TRIMMER, SAPPHIRE DIELECTRIC, 0.3 TO 1.2 pF,
BODY DIAMETER 1.9mm
ESA/SCC Detail Specification No. 3010/017



**space components
coordination group**

Issue/Rev.	Date	Approved by	
		SCCG Chairman	ESA Director General or his Deputy
Issue 3	August 1995		
Revision 'A'	June 1996		
Revision 'B'	February 2002		



DOCUMENTATION CHANGE NOTICE

Rev. Letter	Rev. Date	Reference	CHANGE Item	Approved DCR No.
		<p>This Issue supersedes Issue 2 and incorporates all changes agreed in the following DCR's:-</p> <p>Cover page DCN Table 1(b) : Notes rearranged Figure 2 : Clarity of Drawings improved Para. 3 : Test Voltage added Para. 4.2.3 : Title amended and deviations ref. Para. 9.3.3 deleted and incorporated as Note to Table 2 Para. 4.2.4 : Deviations ref. Para. 9.12 deleted and incorporated within Table 6 Para. 4.3.3 : Test conditions deleted Para. 4.3.5 : Deleted in toto Para. 4.7 : Title amended Para. 4.7.3 : New entry added Table 2 : Notes moved Table 3 : Test Numbers and Temperature Coefficient amended and related Notes revised Table 4 : Columns and Symbol changed Figure 5 : New entry added Para. 4.8 : Title amended Para. 4.8.1 to 4.8.3 : First sentence revised Para. 4.8.4 : At end of last sentence, reference to "Burn-in test" added Para. 4.8.5 : New entry added Table 6 : Reformatted</p>		<p>None None 23748 23748 23748 23748 23748 221282 221282 23748 23748 23748 221282/ 23748 23748 23748 23748 23748 23748 23748 23748 23748 23748</p>
'A'	June '96	P1. Cover Page P2. DCN P4. T of C P19. Appendix 'A'	: Page count amended : : "None" deleted and Appendix 'A' entry added : New page added	221305 None 221305 221305
'B'	Feb. '02	P1. Cover Page P2. DCN P19. Annex 'A'	: : : New sentence added	None None 221660

**SCC**ESA/SCC Detail Specification
No. 3010/017

PAGE 3

ISSUE 3

TABLE OF CONTENTS

	<u>Page</u>
1. <u>GENERAL</u>	5
1.1 Scope	5
1.2 Type Variants	5
1.3 Maximum Ratings	5
1.4 Parameter Derating Information	5
1.5 Physical Dimensions	5
1.6 Functional Diagram	5
2. <u>APPLICABLE DOCUMENTS</u>	5
3. <u>TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS</u>	5
4. <u>REQUIREMENTS</u>	11
4.1 General	11
4.2 Deviations from Generic Specification	11
4.2.1 Deviations from Special In-process Controls	11
4.2.2 Deviations from Final Production Tests	11
4.2.3 Deviations from Burn-in and Electrical Measurements	11
4.2.4 Deviations from Qualification Tests	11
4.2.5 Deviations from Lot Acceptance Tests	11
4.3 Mechanical Requirements	11
4.3.1 Dimension Check	11
4.3.2 Weight	11
4.3.3 Robustness of Terminations	12
4.3.4 Resistance to Soldering Heat	12
4.4 Materials and Finishes	12
4.4.1 Body	12
4.4.2 Terminals	12
4.5 Marking	12
4.5.1 General	12
4.5.2 The SCC Component Number	12
4.5.3 Traceability Information	13
4.6 Electrical Measurements	13
4.6.1 Electrical Measurements at Room Temperature	13
4.6.2 Electrical Measurements at High and Low Temperatures	13
4.6.3 Circuits for Electrical Measurements	13
4.7 Burn-in Tests	13
4.7.1 Parameter Drift Values	13
4.7.2 Conditions for Burn-in	13
4.7.3 Electrical Circuit for Burn-in	13
4.8 Environmental and Endurance Tests	16
4.8.1 Measurements and Inspections on Completion of Environmental Tests	16
4.8.2 Measurements and Inspections at Intermediate Points during Endurance Tests	16
4.8.3 Measurements and Inspections on Completion of Endurance Tests	16
4.8.4 Conditions for Operating Life Tests	16
4.8.5 Electrical Circuit for Operating Life Tests	16

**TABLES**Page

1(a)	Type Variants	6
1(b)	Maximum Ratings	6
2	Electrical Measurements at Room Temperature	14
3	Electrical Measurements at High and Low Temperatures	14
4	Parameter Drift Values	15
5	Conditions for Burn-in and Operating Life Tests	15
6	Measurements and Inspections on Completion of Environmental Tests and at Intermediate Points and on Completion of Endurance Testing	17

FIGURES

1	Parameter Derating Information	N/A
2	Physical Dimensions	7
3	Functional Diagram	10
4	Circuits for Electrical Measurements	15
5	Electrical Circuit for Burn-in and Operating Life Tests	15

APPENDICES (Applicable to specific Manufacturers only)

'A'	Agreed Deviations for Tekelec (F)	19
-----	-----------------------------------	----

**1. GENERAL****1.1 SCOPE**

This specification details the ratings, physical and electrical characteristics, test and inspection data for Capacitors, Variable, Concentric Trimmer, Sapphire Dielectric, 0.3 to 1.2 pF. It shall be read in conjunction with ESA/SCC Generic Specification No. 3010, the requirements of which are supplemented herein.

1.2 TYPE VARIANTS

The type variants covered by this specification are scheduled 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 capacitors specified herein are scheduled in Table 1(b).

1.4 PARAMETER DERATING INFORMATION (FIGURE 1)

Not applicable.

1.5 PHYSICAL DIMENSIONS

The physical dimensions of the capacitors specified herein are shown in Figure 2.

1.6 FUNCTIONAL DIAGRAM

The functional diagram for the capacitors 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) ESA/SCC Generic Specification No. 3010 for Capacitors, Variable, Concentric Trimmer.
- (b) IEC Publication No. 68-2-21, Robustness of Terminations.

3. TERMS, DEFINITIONS, ABBREVIATIONS, SYMBOLS AND UNITS

For the purpose of this specification, the terms, definitions, abbreviations, symbols and units specified in ESA/SCC Basic Specification No. 21300 shall apply. In addition the following symbols are used:-

T_{qm} = Non-destructive Maximum Torque.

T_{qo} = Operating Torque.

V_T = Test Voltage.

**TABLE 1(a) - TYPE VARIANTS**

Variant	Capacitance (pF)		Temperature Coefficient (10 ⁻⁶ /°C)	Figure
	Min.	Max.		
01	0.3	1.2	- 75 ± 75	2(a)
02	0.3	1.2	400 ± 100	2(a)
03	0.3	1.2	- 75 ± 75	2(b)
04	0.3	1.2	400 ± 100	2(b)
05	0.3	1.2	- 75 ± 75	2(c)
06	0.3	1.2	400 ± 100	2(c)
07	0.3	1.2	- 75 ± 75	2(d)
08	0.3	1.2	400 ± 100	2(d)
09	0.3	1.2	- 75 ± 75	2(e)
10	0.3	1.2	400 ± 100	2(e)
11	0.4	1.2	- 75 ± 75	2(f)
12	0.4	1.2	400 ± 100	2(f)

TABLE 1(b) - MAXIMUM RATINGS

No.	Characteristics	Symbol	Limits		Unit	Remarks
			Min.	Max.		
1	Rated Voltage	U _R	-	500	V	-
2	Operating Temperature Range	T _{op}	- 55	+ 125	°C	Without derating
3	Storage Temperature Range	T _{stg}	- 55	+ 125	°C	-
4	Soldering Temperature	T _{sol}	-	+ 185	°C	Note 1
5	Non-destructive Maximum Torque	T _{qm}	-	0.8	N.cm	-

NOTES

- Duration 5.0 seconds maximum.
- Handling precautions:
 - Use appropriate turning tool.
 - Rotor shall not be disconnected from stator.
 - Capacitors shall not be cleaned with solvent

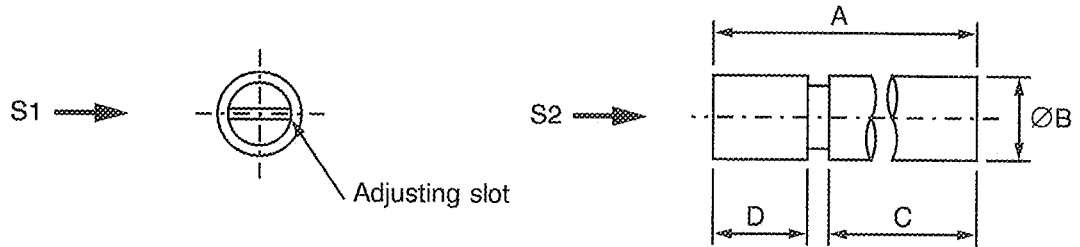
FIGURE 1 - PARAMETER DERATING INFORMATION

Not applicable.



FIGURE 2 - PHYSICAL DIMENSIONS

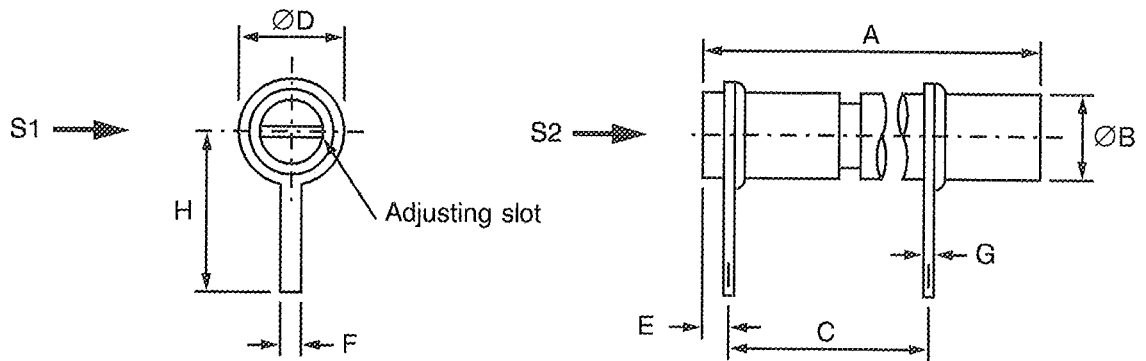
FIGURE 2(a) - VARIANTS 01 AND 02



S1, S2 - Vibration and shock axis

		A	ØB	C	D
mm	MIN.	5.50	-	3.91	1.20
	MAX.	6.10	1.90	4.10	1.40

FIGURE 2(b) - VARIANTS 03 AND 04



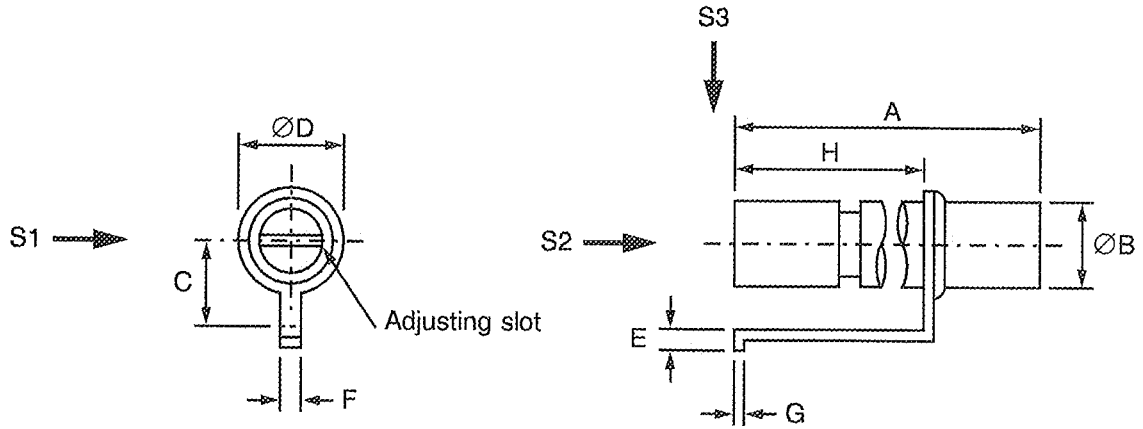
S1, S2 - Vibration and shock axis

		A	ØB	C	ØD	E	F	G	H
mm	MIN.	5.50	-	1.90	-	0.40	0.95	0.15	5.60
	MAX.	6.10	1.90	2.10	2.50	0.60	1.05	0.25	5.80



FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

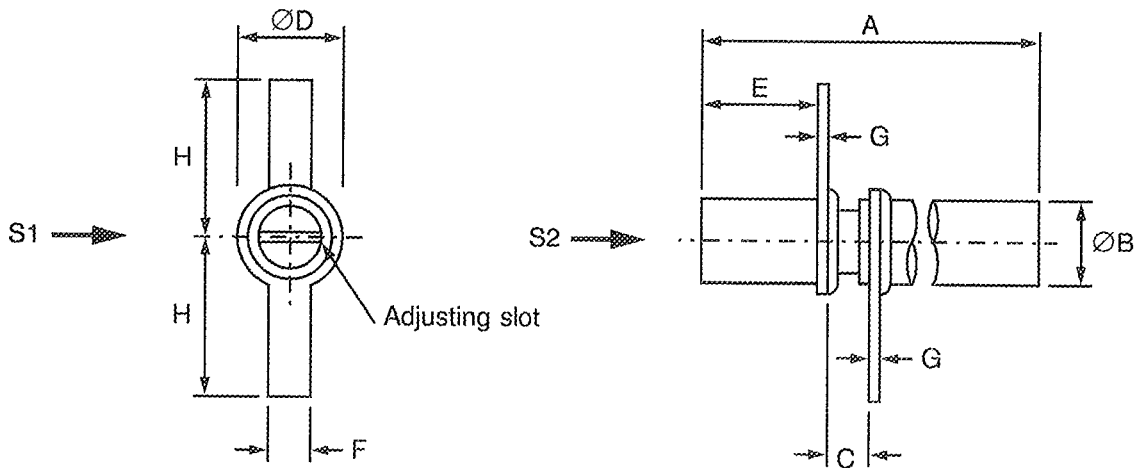
FIGURE 2(c) - VARIANTS 05 AND 06



S1, S2, S3 - Vibration and shock axis

		A	ØB	C	ØD	E	F	G	H
mm	MIN.	5.50	-	1.80	-	0.50	0.95	0.15	2.20
	MAX.	6.10	1.90	2.00	2.50	0.70	1.05	0.25	2.40

FIGURE 2(d) - VARIANTS 07 AND 08



S1, S2 - Vibration and shock axis

		A	ØB	C	ØD	E	F	G	H
mm	MIN.	5.50	-	1.50	-	0.20	0.95	0.15	5.60
	MAX.	6.10	1.90	1.70	2.50	0.40	1.05	0.25	5.80



FIGURE 2 - PHYSICAL DIMENSIONS (CONTINUED)

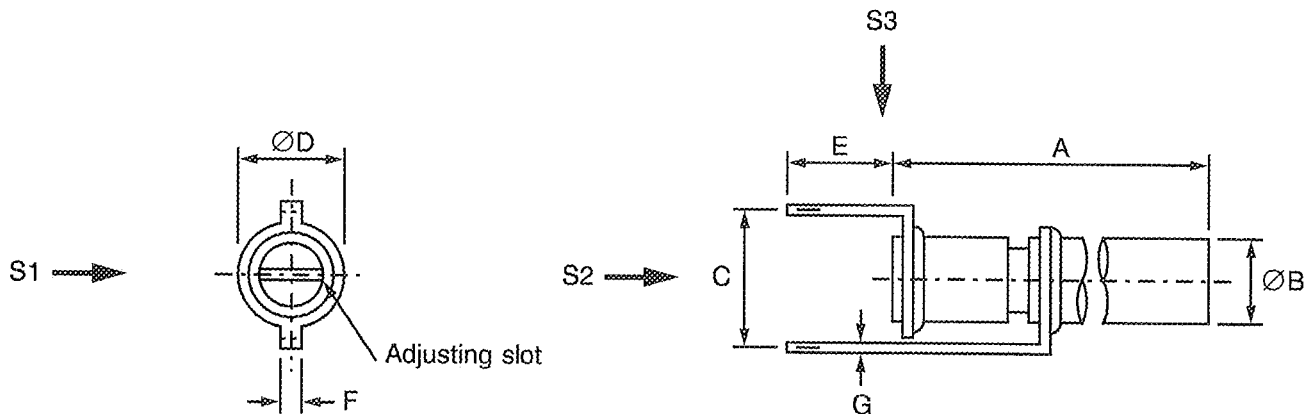
FIGURE 2(e) - VARIANTS 09 AND 10



S1, S2 - Vibration and shock axis

		A	$\varnothing B$	C	D	E	G
mm	MIN.	5.50	-	1.00	-	2.20	0.15
	MAX.	6.10	1.90	1.20	4.70	2.40	0.25

FIGURE 2(f) - VARIANTS 11 AND 12



S1, S2, S3 - Vibration and shock axis

		A	$\varnothing B$	C	$\varnothing D$	E	F	G
mm	MIN.	5.50	-	2.80	-	3.90	0.95	0.15
	MAX.	6.10	1.90	3.20	2.50	4.10	1.05	0.25



SCC

ESA/SCC Detail Specification
No. 3010/017

PAGE 10

ISSUE 3

FIGURE 3 - FUNCTIONAL DIAGRAM





4. REQUIREMENTS

4.1 GENERAL

The complete requirements for procurement of the capacitors specified herein are stated in this specification and ESA/SCC Generic Specification No. 3010 for Capacitors, Variable, Concentric Trimmer. Deviations from the Generic Specification, applicable to this specification only, are listed 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 ESA/SCC 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)

None.

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

(a) Para. 9.3.3, "Temperature Coefficient": To ensure accuracy of temperature coefficient measurement, it is allowed to connect up capacitors in parallel so that the capacitance measurement is performed at a value of 7.0pF minimum.

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.15, "Mechanical Endurance": The 50 cycles shall be divided into 10 groups of 5 cycles. Upon completion of each group of 5 cycles, 1 minute of standing by shall be observed.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.15, "Mechanical Endurance": The 50 cycles shall be divided into 10 groups of 5 cycles. Upon completion of each group of 5 cycles, 1 minute of standing by shall be observed.

4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the capacitors specified herein shall be verified in accordance with the requirements set out in Para. 9.5 of ESA/SCC Generic Specification No. 3010 and they shall conform to those shown in Figure 2 of this specification.

4.3.2 Weight

The maximum weight of the capacitors specified herein shall be 0.2 grammes.



4.5.3 Traceability Information

Traceability information shall be marked in accordance with the requirements of ESA/SCC Basic Specification No. 21700.

- (a) Manufacturing Date Code.
- (b) Serial Number.
- (c) Manufacturer's Name.

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 $T_{amb} = +22 \pm 3$ °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.

4.6.3 Circuits for Electrical Measurements

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 $T_{amb} = +22 \pm 3$ °C. The parameter drift values (Δ) applicable to the parameters scheduled, shall not be exceeded. In addition to these drift value requirements, the appropriate limit value specified for a given parameter 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 ESA/SCC Generic Specification No. 3010. The conditions for burn-in shall be as specified in Table 5 of this specification. On completion of burn-in, a recovery period of 24 ± 2 hours is necessary before the end-measurements.

4.7.3 Electrical Circuit for Burn-in (Figure 5)

Not applicable.

**TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE**

No.	Characteristics	Symbol	ESA/SCC 3010 Test Method	Test Conditions	Limits		Unit
					Min	Max	
1	Minimum Capacitance	C _m	Para. 9.3.1.1	1.0 ± 0.1MHz	-	0.3 (1)	pF
2	Maximum Capacitance	C _M	Para. 9.3.1.1	1.0 ± 0.1MHz	1.2	-	pF
3	Change in Capacitance	-	Para. 9.3.1.2	1.0 ± 0.1MHz Note 2	-	-	-
4	Insulation Resistance	R _i	Para. 9.3.1.3	500V ± 25V	10 ⁴	-	MΩ
5	Voltage Proof	V _p	Para. 9.3.1.4	-	1000	-	V
6	Quality Factor	Q	Para. 9.3.1.5	250 ± 5.0MHz Note 3	5000	-	-
7	Operating Torque	T _{q0}	Para. 9.3.1.6	C minimum to maximum	0.07	0.5	N.cm

NOTES

- 0.4pF for Variants 11 and 12.
- No change of sign over the entire adjustment range.
- Sampling Level II, AQL = 1.0%.

TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES

No.	Characteristics	Symbol	ESA/SCC 3010 Test Method	Test Conditions (Note 1)	Limits		Unit
					Min	Max	
4	Insulation Resistance at T _{amb} = +125 ± 3 °C	R _i	Para. 9.3.1.3	500 ± 25V	10 ³	-	MΩ
8(i)	Temperature Coefficient	TC1	Para. 9.18	Between - 55 and + 22 °C Note 2	See Table 1(a)		10 ⁻⁶ /°C
8(ii)	Temperature Coefficient	TC2	Para. 9.18	Between + 22 and + 125 °C Note 2	See Table 1(a)		10 ⁻⁶ /°C

NOTES

- Inspection Level II, AQL 2.5%.
- Trimmers set at approx. 75% of rated max. capacitance and capacitors may be connected in parallel so that a minimum of 7.0pF is obtained for this test.

FIGURE 4 - CIRCUITS FOR ELECTRICAL MEASUREMENTS

Not applicable.

TABLE 4 - PARAMETER DRIFT VALUES

No.	Characteristic	Symbol	ESA/SCC 3010 Test Method	Test Condition	Change Limit	Unit
1	Maximum Rated Capacitance Drift	$\frac{\Delta C}{C}$	Para. 9.3.1.1	1.0 ± 0.1MHz (Note 1)	± 0.05	pF

NOTES

1. Trimmers set at maximum rated capacitance (CM).

TABLE 5 - CONDITIONS FOR BURN-IN AND OPERATING LIFE TESTS

No.	Characteristic	Symbol	Condition	Unit
1	Ambient Temperature	T _{amb}	+ 125(+ 0 - 3)	°C
2	Test Voltage	V _T	750	V

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

Not applicable.



- 4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESA/SCC GENERIC SPECIFICATION No. 3010)
- 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 specified, the measurements shall be performed at $T_{amb} = +22 \pm 3$ °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 specified, the measurements shall be performed at $T_{amb} = +22 \pm 3$ °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 specified, the measurements shall be performed at $T_{amb} = +22 \pm 3$ °C.
- 4.8.4 Conditions for Operating Life Tests (Part of Endurance Testing)
The requirements for operating life testing are specified in Section 9 of ESA/SCC Generic Specification No. 3010. The conditions for operating life testing shall be as specified in Table 5 for the Burn-in test
- 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	ESA/SCC GENERIC SPEC. NO. 3010		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN	MAX.	
01	Rapid Change of Temperature	Para. 9.2	Initial Measurements Capacitance	Table 2 Items 1 & 2	CM & Cm	Table 2		pF
			Final Measurements Capacitance Drift	After a recovery period of 24 ± 3 hrs Table 2 Items 1 & 2	ΔCM & ΔCm	-0.05	+0.05	pF
02	Electrical and Mechanical Measurements	Para. 9.3.4	Electrical and Mechanical Measurements	Table 2		Table 2		
03	Robustness of Terminations	Para. 9.6 & Para. 4.3.3 of this spec.	None	-	-	-	-	-
04	Solderability	Para. 9.7	Visual Examination	Magn. 10X to 30X	-	-	-	-
05	Resistance to Soldering Heat	Para. 9.8 & Para. 4.3.4 of this spec.	Initial Measurements Capacitance	Table 2 Item 1 at 0.75 CM	C	-	-	pF
			Final Measurements Capacitance Drift	After a recovery period of 24 ± 3 hrs Table 2 Item 1 at 0.75 CM	ΔC	-0.05	+0.05	pF
			Voltage Proof Quality Factor	Table 2 Item 5 Table 2 Item 6	Vp Q	1000 5000	- -	V -
06	Vibration	Para. 9.9	Initial Measurements Capacitance	Table 2 Item 1 at 0.75 CM	C	-	-	pF
			During Test Visual Examination	No arcing or shorting > 0.5ms	-	-	-	-
			Final Measurements Capacitance Drift	Table 2 Item 1 at 0.75 CM	ΔC	-0.05	+0.05	pF
07	Shock or Bump	Para. 9.10	Initial Measurements Capacitance	Table 2 Item 1 at 0.75 CM	C	-	-	pF
			During Test Visual Examination	No arcing or shorting > 0.5ms	-	-	-	-
			Final Measurements Capacitance Drift	Table 2 Item 1 at 0.75 CM	ΔC	-0.05	+0.05	pF
08	Climatic Sequence	Para. 9.11	Initial Measurements Capacitance	Table 2 Item 1 at 0.75 CM	C	-	-	pF
			During Test Visual Examination	Post Dry Heat & Cold Tests No evidence of mechanical damage	-	-	-	-
			Final Measurements Visual Examination	After a recovery period of 24 ± 3 hrs No evidence of damage	-	-	-	-
			Capacitance Drift	Table 2 Item 1 at 0.75 CM	ΔC	-0.05	+0.05	pF
			Quality Factor Insulation Resistance Voltage Proof Operating Torque	Table 2 Item 6 Table 2 Item 4 Table 2 Item 5 Table 2 Item 7	Q Ri Vp T _{qp}	5000 10 ⁹ 1000 0.07	- - - 0.5	- MΩ V N.cm

NOTES

1. The tests in this Table refer to either Chart IV or V and shall be used as applicable.
2. No change of sign over the entire adjustment range.
3. 1000 hrs Intermediate and 2000 hrs Final relate to Qualification Testing (Chart IV) only.



TABLE 6 - MEASUREMENTS AND INSPECTIONS ON COMPLETION OF ENVIRONMENTAL TESTS AND AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING (CONT'D)

NO	ESA/SCC GENERIC SPEC. NO. 3010		MEASUREMENTS AND INSPECTIONS		SYMBOL	LIMITS		UNIT
	ENVIRONMENTAL AND ENDURANCE TESTS (1)	TEST METHOD AND CONDITIONS	IDENTIFICATION	CONDITIONS		MIN.	MAX.	
09	Damp Heat, Steady State	Para. 9.12 and Para. 4.3.5 of this specification Half of components with U_R applied, half of components without U_R applied.	Initial Measurements Capacitance	Table 2 Items 1 & 2	CM & Cm	Table 2		pF
			Final Measurements Capacitance Drift	After a recovery period of 24 ± 2 hrs Table 2 Items 1 & 2	Δ CM & Δ Cm	-0.05	+0.05	pF
10	End Stop Torque	Para. 9.13 Torque: 0.8 N.cm Duration: 5.0 ± 1 s	Final Measurements Minimum Capacitance	Table 2 Item 1	Cm	-	0.3	pF
			Maximum Capacitance	Table 2 Item 2	CM	1.2	-	pF
11	Axial Thrust	Para. 9.14 Thrust: 1.0 N max.	Initial Measurements Capacitance	Table 2 Item 1 at 0.75 CM	C	-	-	pF
			During Test Capacitance Drift	With Thrust applied Table 2 Item 1 at 0.75 CM	Δ C	-0.05	+0.05	pF
12	Mechanical Endurance	Para. 9.15	During Test Voltage Proof	After initial 50 cycles Table 2 Item 5	Vp	1000	-	V
			Capacitance vs Rotation	Para. 9.15 of ESA/SCC 3010	Δ C	Deviation $\pm 10\%$ max. (2)		-
13	Operating Life	Para. 9.16 Change limits relate to initial (0- hour) measurements	Operating Torque	Table 2 Item 7	T _{qo}	0.03	0.7	N.cm
			Insulation Resistance	Between rotor screw and base, Para. 9.15 of ESA/SCC 3010	Ri	Table 2 Item 4		M Ω
13	Operating Life	Para. 9.16 Change limits relate to initial (0- hour) measurements	Final Measurements Voltage Proof	Table 2 Item 5	Vp	1000	-	V
			Minimum Capacitance	Table 2 Item 1	Cm	-	0.3	pF
14	Temperature Coefficient	Para. 9.18	Maximum Capacitance	Table 2 Item 2	CM	1.2	-	pF
			Insulation Resistance	Table 2 Item 4	Ri CM	10^4	-	M Ω
14	Temperature Coefficient	Para. 9.18	Insulation Resistance	Table 2 Item 4	Ri CM	10^4	-	M Ω
			Quality Factor	Table 2 Item 6	Q	5000	-	-
14	Temperature Coefficient	Para. 9.18	Operating Torque	Table 2 Item 7	T _{qo}	0.07	0.5	N.cm
			Final Measurements Capacitance Drift	1000 & 2000 hrs (3) After a recovery period of 24 ± 2 hrs	Δ CM	-0.05	+0.05	pF
14	Temperature Coefficient	Para. 9.18	Insulation Resistance	Table 2 Item 1	Ri CM	10^4	-	M Ω
			Voltage Proof	Table 2 Item 4	Vp	1000	-	V
14	Temperature Coefficient	Para. 9.18	Quality Factor	Table 2 Item 5	Q	5000	-	-
			Operating Torque	Table 2 Item 6	T _{qo}	0.07	0.5	N.cm
14	Temperature Coefficient	Para. 9.18	Temperature Coefficient	Table 3 Item 8(i) or 8(ii)	TC	Table 1(a)		$10^{-6}/^{\circ}\text{C}$

NOTES: See Page 17.

**SEA**ESA/SCC Detail Specification
No. 3010/017

Rev. 'B'

PAGE 19

ISSUE 3

APPENDIX 'A'

Page 1 of 1

AGREED DEVIATIONS FOR TEKELEC (F)

Para. 9.3.1.5, Quality Factor of ESA/SCC Generic Specification No. 3010 and Table 2 of this specification.

Measurement of the Q factor shall be performed at frequencies comprised between 100 and 400 MHz.

The value of the Q factor shall be determined at 250MHz by using the following formula:

$$Q_{fo} = Q_m \times (f_m/f_o)^{3/2}$$

where Q_m is the Q factor read at frequency f_m (f_m is that frequency where the quarter-wave line, including the capacitance being measured, is resonating) and $f_o = 250\text{MHz}$.

The record sheet shall indicate the Q factor at 250MHz, as required by Table 2 of this specification, as well as the frequency f_m at which the Q factor was read.

For LAT level 3: The measurements of the Q factor required by Table 2 of this specification must be done before solderability