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CAPACITORS, MICROWAVE, SILICON, NAKED DIE, MOS

BASED ON TYPE 101M, 201M, 400M and 401M

ESCC Detail Specification No. 5711/002

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DCR No.	CHANGE DESCRIPTION

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1. GENERAL

1.1 SCOPE

This specification details the ratings, physical and electrical characteristics and test and inspection data for a Capacitor, Microwave, Silicon, Naked Die, MOS, based on Type 101M, 201M, 400M and 401M. It shall be read in conjunction with ESCC Generic Specification No. 5010, the requirements of which are supplemented herein.

1.2 COMPONENT TYPE VARIANTS AND RANGE OF COMPONENTS

The variants and 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 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.

1.7 HANDLING PRECAUTIONS

These devices are susceptible to damage by electrostatic discharge. Therefore suitable precautions shall be employed for protection during all phases of manufacture, test, packaging, shipping and handling.

These components are categorised as Class 1 per ESCC Basic Specification No. 23800 with a minimum Critical Path Failure Voltage of 1000V.

2. APPLICABLE DOCUMENTS

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

(a) ESCC Generic Specification No. 5010 for Discrete Microwave Semiconductor Components.
(b) MIL-STD-750, Test Methods for Semiconductor Devices.

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.

TABLE 1(a) - TYPE VARIANTS

Variant	Based on type	Figure	Rated Voltage U_R (V)	Capacitance Values (pF) Note 1	Notes
01	201M106C	2(a)	200	2.2, 2.7. 3.3	
02	101M106C	2(a)	100	3.9, 4.7, 5.6, 6.8	
03	400M106C	2(a)	40	8.2, 10, 12, 15	
04	201M107C	2(a)	200	3.9, 4.7, 5.6, 6.8, 8.2	
05	101M107C	2(a)	100	10, 12, 15	
06	400M107C	2(a)	40	18, 22, 27, 33, 39	
07	201M108C	2(a)	200	10, 12, 15, 18	
08	101M108C	2(a)	100	22, 27, 33, 39	
09	400M108C	2(a)	40	47, 56, 68	
10	400M110C	2(a)	40	82, 100	
11	201M106A	2(b)	200	0.22, 0.27, 0.33, 0.39, 0.47, 0.56, 0.68, 0.82, 1, 1.2, 1.5, 1.8, 2.2, 2.7, 3.3	3
12	101M106A	2(b)	100	3.9, 4.7, 5.6, 6.8	
13	400M106A	2(b)	40	8.2, 10, 12, 15	
14	201M104A	2(b)	200	3.9, 4.7, 5.6, 6.8	
15	101M104A	2(b)	100	10, 12	
16	400M104A	2(b)	40	18, 22, 27	
17	201M107A	2(b)	200	8.2	
18	101M107A	2(b)	100	15	
19	400M107A	2(b)	40	33, 39	
20	201M108A	2(b)	200	10, 12, 15, 18	
21	101M108A	2(b)	100	22, 27, 33, 39	
22	400M108A	2(b)	40	47, 56, 68	
23	400M110A	2(b)	40	82, 100	
24	401M111J	2(c)	400	0.125	2
25	201M111J	2(c)	200	0.25	2
26	101M111J	2(c)	100	0.5	2
27	401M112J	2(d)	400	0.2	2
28	201M112J	2(d)	200	0.4	2
29	101M112J	2(d)	100	0.8	2
30	400M113J	2(e)	40	10	2
31	400M114J	2(f)	40	10	2

NOTES:
1. Unless otherwise specified tolerances of 10% and 20% are available.
2. Capacitor arrays with several pads, see Figure 2 for configurations. The specified capacitance is the basic minimum capacitance value of each die (C_npF) and multiples of C_n shall be as specified in each Figure 2.
3. For values 0.22 through 1.8pF only 20% tolerances are available.

TABLE 1(b) - MAXIMUM RATINGS

Characteristics	Symbols	Maximum Ratings	Unit	Remarks
Rated Voltage	U_R	See Table 1(a)	V	
Breakdown Voltage	$V_{(BR)}$	$1.5U_R$	V	Minimum
Operating Temperature Range	T_{op}	-55 to +150	^oC	T_{amb}
Storage Temperature Range	T_{stg}	-55 to +175	^oC	
Die Attach Temperature	T_{die}	+320	^oC	Note 1

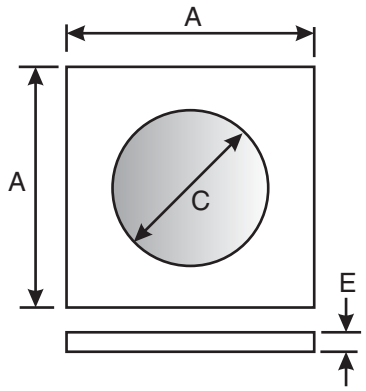
NOTES:
1. For a maximum duration of 30 seconds when using Gold/Tin (Au/Sn 80/20) preforms.

FIGURE 1 - PARAMETER DERATING INFORMATION

Not applicable.

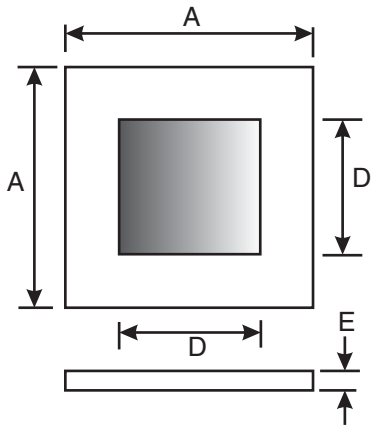
FIGURE 2 - PHYSICAL DIMENSIONS

FIGURE 2(a) - Variants 01 through 10



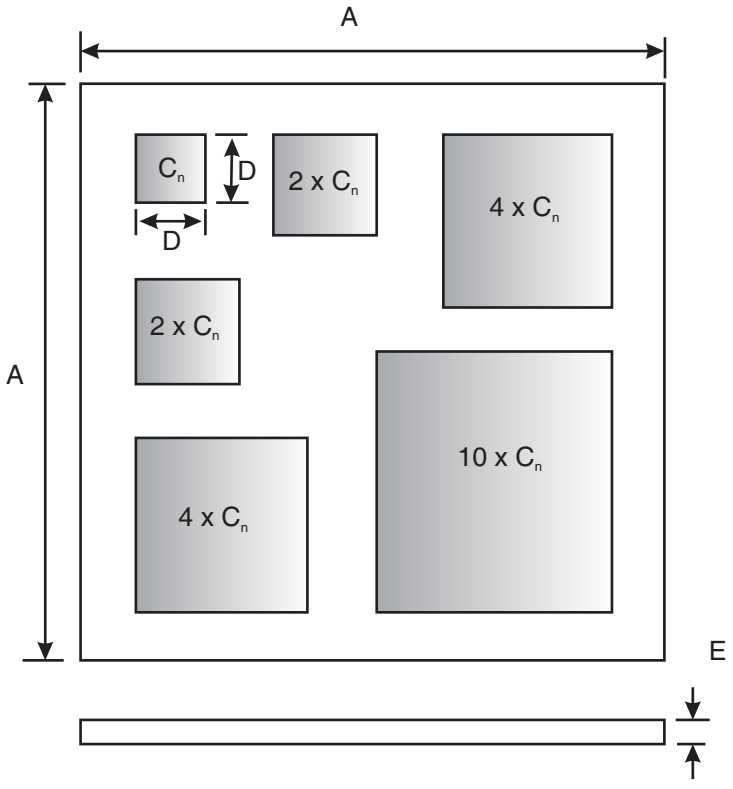
Variant	Dimensions (mm)					
	A		ØC		E	
	Min	Max	Min	Max	Min	Max
01, 02, 03	0.34	0.4	0.145	0.31	0.16	0.22
04, 05, 06	0.54	0.6	0.31	0.49	0.16	0.22
07, 08, 09	0.74	0.8	0.54	0.66	0.16	0.22
10	0.94	1	0.72	0.78	0.16	0.22

FIGURE 2(b) - Variants 11 through 23



Variant	Dimensions (mm)					
	A		D		E	
	Min	Max	Min	Max	Min	Max
11, 12, 13	0.3	0.4	0.22	0.28	0.16	0.22
14, 15, 16	0.44	0.54	0.34	0.38	0.16	0.22
17, 18, 19	0.5	0.6	0.4	0.44	0.16	0.22
20, 21, 22	0.7	0.8	0.54	0.64	0.16	0.22
23	0.9	1	0.68	0.78	0.16	0.22

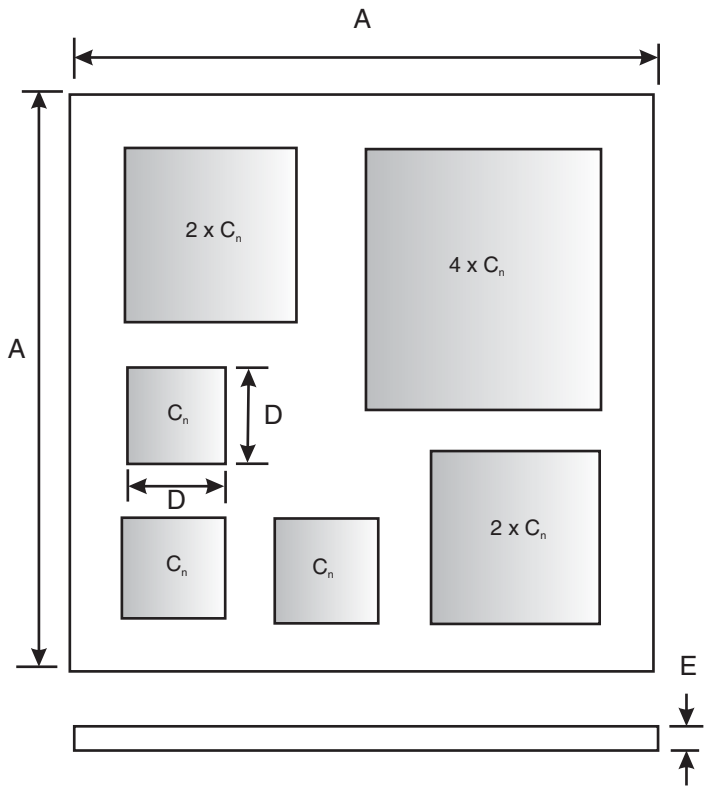
FIGURE 2(c) - Variants 24, 25, 26



Variant	Dimensions (mm) Note 1					
	A		D		E	
	Min	Max	Min	Max	Min	Max
24, 25, 26	0.4	0.5	0.06	0.08	0.16	0.22

NOTES:
1. Dimension D is given to specify the smallest pad area for bonding purposes.

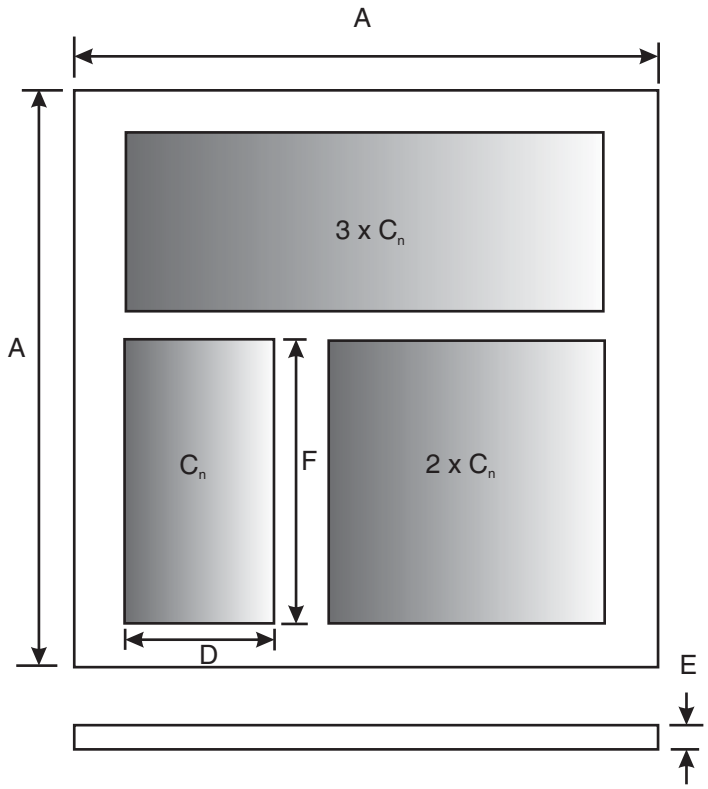
FIGURE 2(d) - Variant 27, 28 and 29



Variant	Dimensions (mm) Note 1					
	A		D		E	
	Min	Max	Min	Max	Min	Max
27, 28, 29	0.4	0.5	0.08	0.1	0.16	0.22

NOTES:
1. Dimension D is given to specify the smallest pad area for bonding purposes.

FIGURE 2(e) - Variant 30

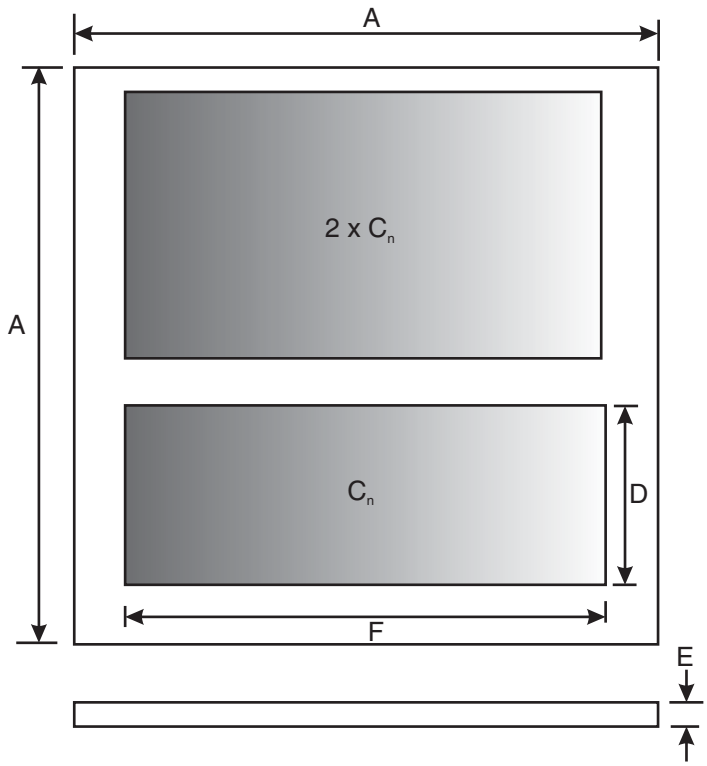


Variant	Dimensions (mm) Note 1							
	A		D		E		F	
	Min	Max	Min	Max	Min	Max	Min	Max
30	0.65	0.75	0.17	0.19	0.16	0.22	0.26	0.28

NOTES:

1. Dimensions D and F are given to specify the smallest pad area for bonding purposes.

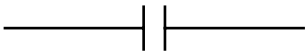
FIGURE 2(f) - Variant 31



Variant	Dimensions (mm) Note 1							
	A		D		E		F	
	Min	Max	Min	Max	Min	Max	Min	Max
31	0.45	0.55	0.1	0.12	0.16	0.22	0.89	0.41

NOTES:
1. Dimension D and F are given to specify the smallest pad area for bonding purposes.

FIGURE 3 - FUNCTIONAL DIAGRAM



4. REQUIREMENTS

4.1 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.

4.2 DEVIATIONS FROM THE GENERIC SPECIFICATION

4.2.1 Deviations from Production Control

(a) Para. 5.2.2, Scanning Electron Microscope (SEM) Inspection: Shall be performed on 3 dice per wafer lot, after wafer dicing.

4.2.2 Deviation from Final Production Tests (Chart II(b))

(a) Para. 6.2, Sampling for Naked Die Procurement: Shall be performed on a minimum of 5 parts per wafer and with a minimum of 20 parts per wafer lot.

The following deviations apply to test vehicles:

(a) Para. 9.2.4, Die-Shear: Individual forces shall not be recorded and the minimum residual die area shall be ≥ 50% of the original die size.
(b) Para. 9.3, Encapsulation: Optional.
(c) Para. 9.7, Particle Impact Noise Detection Test: Not applicable.
(d) Para. 9.10, External Visual Inspection: Not applicable.

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

No tests from Chart III are required for dice. The following deviations apply to test vehicles:

(a) Para. 9.21, High Temperature Reverse Bias Burn-in test and subsequent electrical measurements related to this test shall be omitted.
(b) Para. 9.12, Radiographic Inspection: Not applicable.
(c) Para. 9.8.1 and 9.8.2, Seal Test: Not applicable.
(d) Para. 9.10, External Visual Inspection: Not applicable.

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.23, Special Testing: Metallisation Adhesion Test per Para. 4.10 shall be performed on 5 naked dice per wafer lot.

The following deviations apply to test vehicles subjected to Qualification testing:

(b) Environmental/Mechanical Testing from Subgroup I: Not applicable.
(c) Para. 9.2.4, Die -Shear: Individual forces shall not be recorded an the minimum residual die area shall be ≥ 50% of the original die size.
(d) Para. 9.17, Solderability Test: Not applicable.
(e) Para. 9.19, Terminal Strength: Not applicable.
(f) Para 9.8.1 and 9.8.2, Seal Test: Not applicable.
(g) Para. 9.10, External Visual Inspection: Not applicable.
(h) Para. 9.18, Permanence of Marking: Not applicable.

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.23, Special Testing: As Para. 4.2.4(a).

The following deviations apply to test vehicles subjected to Lot Acceptance testing:

(b) Environmental/Mechanical Testing for Level 1: Not applicable.
(c) Para. 9.10, External Visual Inspection: Not applicable.
(d) Para. 9.17, Solderability Test: Not applicable.
(e) Para. 9.18, Permanence of Marking: Not applicable.
(f) Para. 9.19, Terminal Strength: Not applicable.

4.3 MECHANICAL REQUIREMENTS

4.3.1 Dimension Check

The dimensions of the capacitors specified herein shall be checked. They shall conform to those shown in Figure 2.

4.3.2 Weight

The maximum weight of the capacitors specified herein shall be 450µg.

4.3.3 Terminal Strength

Not applicable.

4.3.4 Bond Strength

The requirements for bond strength are specified in Section 9 of ESCC Generic Specification No. 5010. The test conditions shall be as follows:

(a) Condition: A

4.3.5 Die Shear

The requirements for die shear are specified in Section 9 of ESCC Generic Specification No. 5010. The test conditions shall be as follows:

(a) Semiconductor Material Remaining: 50% minimum.

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 capacitors 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

Not applicable.

4.4.2 Pad and Backface Material and Finish

The pad and backface metallisation material shall be TiAu with a minimum pad thickness of 0.25µm of vacuum deposited gold plus 2.7µm of electrolytic gold. The minimum backface metallisation thickness shall be 0.5µm of gold.

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) The ESCC Component Number.

(b) The traceability Information

4.5.2 The ESCC Component Number

Each component shall bear the ESCC Component Number which shall be constituted and marked as follows:

Detail Specification Number	5711002
Type Variant (see Table 1(a))	01
Testing Level (B or C, as applicable)	B

4.5.3 Electrical Characteristics and Ratings

The electrical characteristics and ratings to be marked in the following order of precedence are:

(a) Capacitance Value.
(b) Tolerance.
(c) Rated Voltage.

The information shall be constituted and marked as follows

- Capacitance Value (47pF): 470
- Tolerance (±10%): K
- Rated Voltage (40V): B

4.5.3.1 Capacitance Values

The capacitance values shall be expressed by means of the following codes. The unit quantity for marking shall be in picofarads.

Capacitance Value	Code
0.XX	CXX
X.X	XCX
XX	XX0
XX10[1]	XX1

4.5.3.2 Tolerances

The tolerances on capacitance values shall be indicated by the code letters specified hereafter.

Tolerance (%)	Code Letter
10	K
20	M

4.5.3.3 Rated Voltage

The rated voltage shall be indicated by the code letters specified hereafter.

Rated Voltage (V)	Code Letter
40	B
100	E
200	G
400	K

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, the measurements shall be performed at T_{amb} = +22 ±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. Unless otherwise specified, the measurements shall be performed at T_{amb} = +150(+0 -3)°C

4.7 BURN-IN TESTS

Burn-in shall be Category 2 of Chart III(a).

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 ±3°C. The parameter drift values (Δ) applicable to the scheduled parameters 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 High Temperature Reverse Bias Burn-in (Table 5(a))

Not applicable.

4.7.3 Conditions for Power Burn-in

The requirements for Power Burn-in are specified in Section 9 of ESCC Generic Specification No. 5010. The conditions for power burn-in shall be as specified in Table 5(b) of this specification.

4.7.4 Electrical Circuit for High Temperature Reverse Bias Burn-in (Figure 5(a))

Not applicable.

4.7.5 Electrical Circuit for Power Burn-in

Not applicable.

TABLE 2 - ELECTRICAL MEASUREMENTS AT ROOM TEMPERATURE - D.C. PARAMETERS

No.	Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
					Min	Max	
1	Capacitance	C	4001	V_T=0V f=1MHz	Note 1		pF
2	Leakage Current 1	I_{L1}	4016	$V_T=U_R$ (Note 2)	-	50	nA
3	Voltage Proof Leakage Current 2	I_{L2}	4016	$V_T=1.5U_R$ (Note 2)	-	100	nA

NOTES:
1. The limits for Capacitance shall be as specified in Table 1(a).
2. The test condition Rated Voltage (U_R) shall be as specified in Table 1(a).

TABLE 3 - ELECTRICAL MEASUREMENTS AT HIGH AND LOW TEMPERATURES

No.	Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions Note 1	Limits		Units
					Min	Max	
2	Leakage Current 1	I_{L1}	4016	$V_T=U_R$ (Note 1)	-	100	nA
4	Temperature Coefficient of Capacitance	TC	4001	V_T=0V f=1MHz (Note 2)	-50	+50	$10^{-6}/^oC$

NOTES:
1. The test condition Rated Voltage (U_R) shall be as specified in Table 1(a).
2. For information only not tested.

FIGURE 4 - CIRCUITS FOR ELECTRICAL MEASUREMENTS

Not applicable.

TABLE 4 - PARAMETER DRIFT VALUES

No.	Characteristics	Symbols	Spec. and/or Test Method	Test Conditions	Change Limits (Δ)	Units
1	Capacitance	C	As per Table 2	As per Table 2	±0.2 or (1) ±2	pF %
2	Leakage Current 1	I_{L1}	As per Table 2	As per Table 2	±5 or (1) ±100	nA %

NOTES:

1. Whichever is greater, referred to the initial value.

TABLE 5(a) - CONDITIONS FOR HIGH TEMPERATURE REVERSE BIAS BURN-IN

Not applicable.

TABLE 5(b) - CONDITIONS FOR POWER BURN-IN AND OPERATING LIFE TESTS

No.	Characteristics	Symbols	Conditions	Units
1	Ambient Temperature	T_{amb}	+150 (+0 -3)	^{o}C
2	Test Voltage	V_T	U_R (Note 1)	V
3	Duration	t	240(+24 -0)	Hours

NOTES:

1. The test condition Rated Voltage (U_R) shall be as specified in Table 1(a).

FIGURE 5(a) - ELECTRICAL CIRCUIT FOR HIGH TEMPERATURE REVERSE BIAS BURN-IN

Not applicable.

FIGURE 5(b) - ELECTRICAL CIRCUIT FOR POWER BURN-IN AND OPERATING LIFE TESTS

Not applicable.

4.8 ENVIRONMENTAL AND ENDURANCE TESTS (CHARTS IV AND V OF ESCC GENERIC SPECIFICATION NO. 5010)

4.8.1 Electrical Measurements on Completion of Environmental Tests

The parameters to be measured on completion of environmental tests are scheduled in Table 2. Unless otherwise stated, the measurements shall be performed at T_{amb} = +22 ±3^{o}C.

4.8.2 Electrical Measurements at Intermediate Points on Completion of Endurance Tests

The parameters to be measured at intermediate points and on completion of endurance testing are as scheduled in Table 6 of this specification. Unless otherwise stated, the measurements shall be performed at T_{amb} = +22 ±3^{o}C.

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

The requirements for operating life testing are specified in Section 9 of ESCC Generic Specification No. 5010. The conditions for operating life testing shall be as specified in Table 5(b) of this specification except that the duration shall be as specified in ESCC Generic Specification No. 5010, Para. 9.20.

4.8.4 Electrical Circuit for Operating Life Tests

Not applicable.

4.9 TOTAL DOSE IRRADIATION TESTING

Not applicable.

4.10 SPECIAL TESTING

Metallisation Adhesion test shall be performed comprising 5 minutes bake at +320°C minimum. Any evidence of lifting or peeling shall be considered a failure.

TABLE 6 - ELECTRICAL MEASUREMENTS AT INTERMEDIATE POINTS AND ON COMPLETION OF ENDURANCE TESTING

No.	Characteristics	Symbols	Spec and/or Test Method	Test Conditions	Limits		Units
					Min.	Max.	
1	Capacitance	C	As per Table 2	As per Table 2	Note 1		pF
2	Leakage Current	I_{L1}	As per Table 2	As per Table 2	-	50	nA
3	Voltage Proof Leakage Current	I_{L2}	As per Table 2	As per Table 2	-	100	nA

NOTES:

1. The limits for Capacitance shall be as specified in Table 1(a).

FIGURE 6 - BIAS CONDITIONS FOR IRRADIATION TESTING

Not applicable

TABLE 7 - ELECTRICAL MEASUREMENTS DURING AND ON COMPLETION OF IRRADIATION TESTING

Not applicable

APPENDIX A

AGREED DEVIATIONS FOR CHELTON TELECOM AND MICROWAVE (F)
ESCC VERSUS CHELTON COMPONENT NUMBER LIST

ESCC Variant	ESCC Component Number	Chelton Component Number
01	5711###01B2C2KG	201M106C2R2K
01	5711###01B2C2MG	201M106C2R2M
01	5711###01B2C7KG	201M106C2R7K
01	5711###01B2C7MG	201M106C2R7M
01	5711###01B3C3KG	201M106C3R3K
01	5711###01B3C3MG	201M106C3R3M
02	5711###02B3C9KE	101M106C3R9K
02	5711###02B3C9ME	101M106C3R9M
02	5711###02B4C7KE	101M106C4R7K
02	5711###02B4C7ME	101M106C4R7M
02	5711###02B5C6KE	101M106C5R6K
02	5711###02B5C6ME	101M106C5R6M
02	5711###02B6C8KE	101M106C6R8K
02	5711###02B6C8ME	101M106C6R8M
03	5711###03B8C2KB	400M106C8R2K
03	5711###03B8C2MB	400M106C8R2M
03	5711###03B100KB	400M106C100K
03	5711###03B100MB	400M106C100M
03	5711###03B120KB	400M106C120K
03	5711###03B120MB	400M106C120M
03	5711###03B150KB	400M106C150K
03	5711###03B150MB	400M106C150M
04	5711###04B3C9KG	201M107C3R9K
04	5711###04B3C9MG	201M107C3R9M
04	5711###04B4C7KG	201M107C4R7K
04	5711###04B4C7MG	201M107C4R7M
04	5711###04B5C6KG	201M107C5R6K
04	5711###04B5C6MG	201M107C5R6M
04	5711###04B6C8KG	201M107C6R8K
04	5711###04B6C8MG	201M107C6R8M
04	5711###04B8C2KG	201M107C8R2K
04	5711###04B8C2MG	201M107C8R2M
05	5711###05B100KE	101M107C100K
05	5711###05B100ME	101M107C100M
05	5711###05B120KE	101M107C120K
05	5711###05B120ME	101M107C120M
05	5711###05B150KE	101M107C150K
05	5711###05B150ME	101M107C150M

ESCC Variant	ESCC Component Number	Chelton Component Number
06	5711###06B180KB	400M107C180K
06	5711###06B180MB	400M107C180M
06	5711###06B220KB	400M107C220K
06	5711###06B220MB	400M107C220M
06	5711###06B270KB	400M107C270K
06	5711###06B270MB	400M107C270M
06	5711###06B330KB	400M107C330K
06	5711###06B330MB	400M107C330M
06	5711###06B390KB	400M107C390K
06	5711###06B390MB	400M107C390M
07	5711###07B100KG	201M108C100K
07	5711###07B100MG	201M108C100M
07	5711###07B120KG	201M108C120K
07	5711###07B120MG	201M108C120M
07	5711###07B150KG	201M108C150K
07	5711###07B150MG	201M108C150M
07	5711###07B180KG	201M108C180K
07	5711###07B180MG	201M108C180M
08	5711###08B220KE	101M108C220K
08	5711###08B220ME	101M108C220M
08	5711###08B270KE	101M108C270K
08	5711###08B270ME	101M108C270M
08	5711###08B330KE	101M108C330K
08	5711###08B330ME	101M108C330M
08	5711###08B390KE	101M108C390K
08	5711###08B390ME	101M108C390M
09	5711###09B470KB	400M108C470K
09	5711###09B470MB	400M108C470M
09	5711###09B560KB	400M108C560K
09	5711###09B560MB	400M108C560M
09	5711###09B680KB	400M108C680K
09	5711###09B680MB	400M108C680M
10	5711###10B820KB	400M110C820K
10	5711###10B820MB	400M110C820M
10	5711###10B101KB	400M110C101K
10	5711###10B101MB	400M110C101M
11	5711###11BC22MG	201M106A0R22M
11	5711###11BC27MG	201M106A0R27M
11	5711###11BC33MG	201M106A0R33M
11	5711###11BC39MG	201M106A0R39M
11	5711###11BC47MG	201M106A0R47M
11	5711###11BC56MG	201M106A0R56M
11	5711###11BC68MG	201M106A0R68M
11	5711###11BC82MG	201M106A0R82M
11	5711###11B1C0MG	201M106A1R0M
11	5711###11B1C2MG	201M106A1R2M

ESCC Variant	ESCC Component Number	Chelton Component Number
11	5711###11B1C5MG	201M106A1R5M
11	5711###11B1C8MG	201M106A1R8M
11	5711###11B2C2KG	201M106A2R2K
11	5711###11B2C2MG	201M106A2R2M
11	5711###11B2C7KG	201M106A2R7K
11	5711###11B2C7MG	201M106A2R7M
11	5711###11B3C3KG	201M106A3R3K
11	5711###11B3C3MG	201M106A3R3M
12	5711###12B3C9KE	101M106A3R9K
12	5711###12B3C9ME	101M106A3R9M
12	5711###12B4C7KE	101M106A4R7K
12	5711###12B4C7ME	101M106A4R7M
12	5711###12B5C6KE	101M106A5R6M
12	5711###12B5C6ME	101M106A5R6M
12	5711###12B6C8KE	101M106A6R8K
12	5711###12B6C8ME	101M106A6R8M
13	5711###13B8C2KB	400M106A8R2K
13	5711###13B8C2MB	400M106A8R2M
13	5711###13B100KB	400M106A100K
13	5711###13B100MB	400M106A100M
13	5711###13B120KB	400M106A120K
13	5711###13B120MB	400M106A120M
13	5711###13B150KB	400M106A150K
13	5711###13B150MB	400M106A150M
14	5711###14B3C9KG	201M107A3R9K
14	5711###14B3C9MG	201M107A3R9M
14	5711###14B4C7KG	201M107A4R7K
14	5711###14B4C7MG	201M107A4R7M
14	5711###14B5C6KG	201M107A5R6K
14	5711###14B5C6MG	201M107A5R6M
14	5711###14B6C8KG	201M107A6R8K
14	5711###14B6C8MG	201M107A6R8M
15	5711###15B100KE	101M107A100K
15	5711###15B100ME	101M107A100M
15	5711###15B120KE	101M107A120K
15	5711###15B120ME	101M107A120M
16	5711###16B180KB	400M107A180K
16	5711###16B180MB	400M107A180M
16	5711###16B220KB	400M107A220K
16	5711###16B220MB	400M107A220M
16	5711###16B270KB	400M107A270K
16	5711###16B270MB	400M107A270M
17	5711###17B8C2KG	201M107A8R2K
17	5711###17B8C2MG	201M107A8R2M
18	5711###18B150KE	101M107A150K
18	5711###18B150ME	101M107A150M

ESCC Variant	ESCC Component Number	Chelton Component Number
19	5711###19B330KB	400M107A330K
19	5711###19B330MB	400M107A330M
19	5711###19B390KB	400M107A390K
19	5711###19B390MB	400M107A390M
20	5711###20B100KG	201M108A100K
20	5711###20B100MG	201M108A100M
20	5711###20B120KG	201M108A120K
20	5711###20B120MG	201M108A120M
20	5711###20B150KG	201M108A120K
20	5711###20B150MG	201M108A120M
20	5711###20B180KG	201M108A180K
20	5711###20B180MG	201M108A180M
21	5711###21B220KE	101M108A220K
21	5711###21B220ME	101M108A220M
21	5711###21B270KE	101M108A270K
21	5711###21B270ME	101M108A270M
21	5711###21B330KE	101M108A330K
21	5711###21B330ME	101M108A330M
21	5711###21B390KE	101M108A390K
21	5711###21B390ME	101M108A390M
22	5711###22B470KB	400M108A470K
22	5711###22B470MB	400M108A470M
22	5711###22B560KB	400M108A560K
22	5711###22B560MB	400M108A560M
22	5711###22B680KB	400M108A680K
22	5711###22B680MB	400M108A680M
23	5711###23B820KB	400M110A820K
23	5711###23B820MB	400M110A820M
23	5711###23B101KB	400M110A101K
23	5711###23B101MB	400M110A101M
24	5711###24BC12KK	401M111J0R12K
24	5711###24BC12MK	401M111J0R12M
25	5711###25BC25KG	201M111J0R25K
25	5711###25BC25MG	201M111J0R25M
26	5711###26BC50KE	101M111J0R5K
26	5711###26BC50ME	101M111J0R5M
27	5711###27BC20KK	401M112J0R2K
27	5711###27BC20MK	401M112J0R2M
28	5711###28BC40KG	201M112J0R4K
28	5711###28BC40MG	201M112J0R4M
29	5711###29BC80KE	101M112J0R8K
29	5711###29BC80ME	101M112J0R8M
30	5711###30B100KB	400M113J100K
30	5711###30B100MB	400M113J100M
31	5711###31B100KB	400M114J100K
31	5711###31B100MB	400M114J100M