

TABLE 1(a)- Type Variants

Variant	Based on Type	Case	Figure	Breakdown Voltage $V_{(BR)}$ (V)	Repetitive peak reverse voltage V_{RRM} (V)	Working Peak Reverse Voltage V_{RWM} (V)	Lead/Terminal Material and Finish
07	1N6642U	LCC2D	2(c)	100	100	-	2
08	1N6642U	LCC2D	2(c)	100	100	-	4

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

TABLE 1(b)- MAXIMUM RATINGS

N°	Characteristics	Symbols	Maximum Ratings	Unit	Remarks
1	Forward Surge Current (per Diode) Variants 01 to 06 Variants 07 to 08	IFSM	2.5 2	A(pk) A	At $T_{amb} \leq +25^{\circ}\text{C}$ Note 1
3	Average Output Rectified Current Variants 01 to 06 Variants 07 to 08	IO	300 300	mA mA	Note 3 and 4 Note 7
4	Operating Temperature Range Variants 01 to 06 Variants 07 to 08 (Case Temperature)	Top Top	-65 to +175 -65 to +175	$^{\circ}\text{C}$ $^{\circ}\text{C}$	T_{amb} Note 8
added	Junction Temperature Variants 07 to 08	Tj	+175	$^{\circ}\text{C}$	
5	Storage Temperature Range Variants 01 to 06 Variants 07 to 08	Tstg	-65 to +175	$^{\circ}\text{C}$	Note 8
6	Soldering Temperature Variant 01 to 03 Variant 04 to 06 Variants 07 to 08	Tsol	+260 +245 +245	$^{\circ}\text{C}$	Note 5 Note 6 Note 9
added	Thermal Resistance, Junction to Case Variants 07 to 08	Rth(j-c)	60	$^{\circ}\text{C}/\text{W}$	Note 10
added	Thermal Resistance, Junction to Ambient Variants 07 to 08	Rth(j-a)	280	$^{\circ}\text{C}/\text{W}$	

NOTES:

7. For Variants 07 to 08 at $T_{case} \geq +155^{\circ}\text{C}$ per Diode, derate linearly to 0A at $+175^{\circ}\text{C}$.

8. For Variants with hot solder dip lead finish all testing performed at $T_{amb} > +125^{\circ}\text{C}$ shall be carried out in a 100% inert atmosphere.

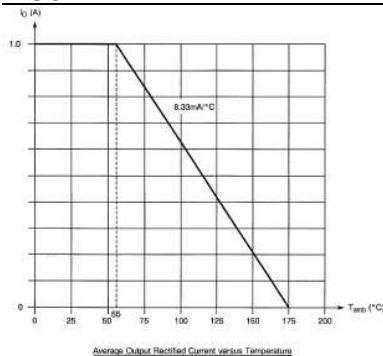
9. Duration 5 seconds maximum. The same package must not be resoldered until 3 minutes have elapsed.

10. Package mounted on infinite heatsink.

Justification .

Variant 07: new ST variant introduction with LCC2D package

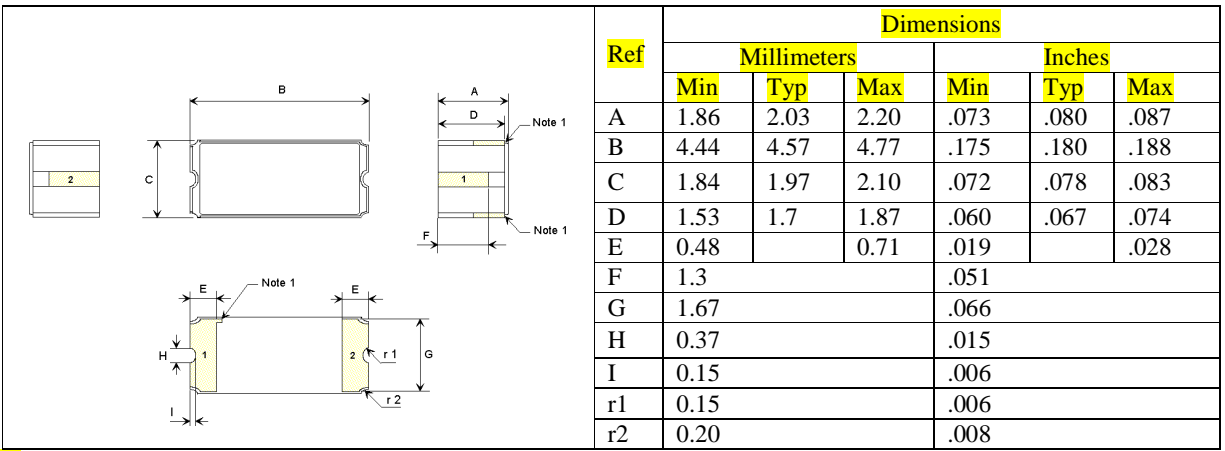
Variant 08: new ST variant introduction with LCC2D package

FIGURE 1 – PARAMETER DERATING INFORMATION (Not Applicable for the variants 07 to 08)**Justification .**

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

Figure 2(c)- Variant 07 to 08 - Leadless Chip Carrier 2 (LCC2D) – 2 Terminal



Notes:

1- The anode is identified by a metallization in 2 top angle castellations and by the index mark on the bottom metallization n° 1.

2- Measurement prior to solder coating the mounting pads on bottom of package.

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

FIGURE 3 - FUNCTIONAL DIAGRAM

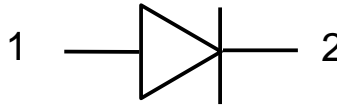
Variants 07 to 08

Terminal 1: Anode

Terminal 2: Cathode

Notes:

For LCC2, the lid is not connected to any lead.



Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.2.2 Deviations from Final Production Tests (Chart II)

(a) Para. 9.2.1, Bond Strength Test: Not applicable.

Excepted for the variants 07 to 08 (Applicable in the Chart F2 of the ESCC N°5000 Issue 6).

(b) Para. 9.2.2, Die Shear Test: Not applicable.

Excepted for the variants 07 to 08 (Applicable in the Chart F2 of the ESCC N°5000 Issue 6).

(c) At any time following Para. 9.5.1, Thermal Shock Test, Thermal impedance measurements shall be performed in accordance with MIL-STD-750, TEST Method 3101 as specified in Table 2, item 11.

For the variants 07 to 08 (the thermal impedance is applicable in the Chart F3 of the ESCC N°5000 Issue 6).

For the variants 07 to 08 (the thermal shock is applicable in the Chart F4 Environmental Subgroup of the ESCC N°5000 Issue 6).

(d) Para. 9.6, Constant Acceleration: Not applicable.

Excepted for the variants 07 to 08 (Applicable in the Chart F4 Mechanical Subgroup of the ESCC N°5000 Issue 6).

(e) Para. 9.7 Particle Impact Noise Detection (PIND) test: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F3 of the ESCC N°5000 Issue 6).

(f) Para. 9.8.1, Seal Test Fine Leak: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F3 of the ESCC N°5000 Issue 6).

(g)Excepted for the variants 07 to 08: N/A.

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

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

(b) Para. 9.8.1 Seal Test Fine Leak: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F3 of the ESCC N°5000 Issue 6).

(c) Para. 9.12, Radiographic Inspection: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F3 of the ESCC N°5000 Issue 6).

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.2.4 Deviations from Qualification Tests (Chart IV)

(a) Para. 9.2.3, Bond Strength Test: Not applicable

Excepted for the variants 07 to 0 (Applicable in the Chart F4 Assembly Capability Subgroup of the ESCC N°5000 Issue 6).

(b) Para. 9.2.4, Die Shear Test: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F4 Assembly Capability Subgroup of the ESCC N°5000 Issue 6).

(c) Para. 9.8.1, Seal Test Fine Leak: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F4 Environmental and Mechanical Subgroup of the ESCC N°5000 Issue 6).

(d) Para. 9.15, Constant Acceleration: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F4 Mechanical Subgroup of the ESCC N°5000 Issue 6).

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.2.5 Deviations from Lot Acceptance Tests (Chart V)

(a) Para. 9.8.1, Seal Test Fine Leak: Not applicable

Excepted for the variants 07 to 08 (Applicable in the Chart F4 F4 Environmental and Mechanical Subgroup of the ESCC N°5000 Issue 6).

(b) Para. 9.15, Constant Acceleration: Not applicable

Excepted for the variants 13 to 14 (Applicable in the Chart F4 Mechanical Subgroup of the ESCC N°5000 Issue 6).

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.3.2 Weight

The maximum weight of the diodes specified herein shall be 0.2 grammes for the variants 01 to 03 and 0.13 grammes for variant 04 to 06 and 0.12 grammes for the variants 07 to 08.

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.3.3 Terminal Strength

For the variants 07 to 08 as specified in the ESCC Generic Specification (Applicable in the Chart F4 Assembly Capability Subgroup of the ESCC N°5000 Issue 6).

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.4.1 Case

The case shall be hermetically sealed and have an Aln body with kovar lid for the variants 07 to 08.

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.4.2 Lead Material and Finish

For the variants 07 to 08 leads/terminals as specified in the Table 1a.

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

4.5.1 General

For the variants 07 to 08 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) Polarity.

(a) The ESCC qualified components symbol (for ESCC qualified components only).

(b) The ESCC Component Number.

(c) Traceability information.

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

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

N°	Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
					Min	Max	
1	Breakdown Voltage	$V_{(BR)}$	4021	$I_R = -100\mu A$ Variants 01 to 06 Variants 07 to 08	Note 1 100	-	V V
2	Forward Voltage	V_{F1}	4011	Pulse Method $I_F = 10mA$, Variants 07 to 08 (Note 2)	-	0.8	V
3	Forward Voltage	V_{F2}	4011	Pulse Method $I_F = 100mA$, Variants 07 to 8 (Note 2)	-	1.2	V
4	Reverse Current	I_{R1}	4016	DC Method $V_R = 20V$ Variant 07 to 08	-	25	nA
5	Reverse Current	I_{R2}	4016	DC Method $V_R = 75V$ Variant 07 to 08	-	50	nA

Notes

1. See Column 5 of Table 1(a).
2. For variant 01 to 06 pulsed measurement: $t_p = 5.0ms$ maximum
For variant 07 to 08 Pulse Width $\leq 680\mu s$; Duty Cycle $\leq 2\%$
3. See Column 6 of Table 1(a).

Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

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

N°	Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
					Min	Max	
added	Junction Capacitance	C_{J1}		$V_R = 0Vdc$ $V_{sig} = 50mV(p-p)max$ $f = 1MHz$ (Note 4) Variants 07 to 08	-	5	pF
added	Junction Capacitance	C_{J2}		$V_R = 0Vdc$ $V_{sig} = 50mV(p-p)max$ $f = 1MHz$ (Note 4) Variants 07 to 08	-	2.8	pF
8	Reverse Recovery Time	T_{rr1}	4031 Cond. 'A'	$I_F = I_{RM} = 10$ to $100mA$ $I_{RR} = 10\%$ of I_{RM} (Note 1) (Note 4 and 5) Variants 07 to 08	-	9	nS
		T_{rr2}	4031 Cond. 'A'	$I_F = 1A$; $V_R = 30V$ $DI/dt = -15A/\mu S$ (Note 4) Variants 07 to 08	-	20	nS
9	Forward Recovery Time	t_{FR}	4026	$I_F = 50mA$ (Note 1 and 2) Variants 01 to 06 $I_F = 2000mA$ (Note 4) Variants 07 to 08	-	20 20	nS
10	Forward Recovery Voltage	V_{FR}	4026	$I_F = 50mA$ (Note 1 and 2) Variants 01 to 06 $I_F = 200mA$ (Note 4)	-	5	V

				Variants 07 to 08	-	5	
11	Thermal Impedance	$Z_{TH(j-c)}$	3101	Variants 01 to 06 only			
added	Thermal Impedance	$Z_{TH(j-c)}$	3101	Variants 07 to 08 $I_H=0.1$ to $0.3A$ $t_H=50ms$ to $10s$ $I_M=10mA$ $t_{md}=100\mu s$ (Note 6)	Calculate ΔVF , (see Note 7)		$^{\circ}C/W$

NOTES

- 4) See appendix A [Agreed Deviations for STMicroelectronics (F)]
- 5) Test parameter trr1 is not tested but guaranteed by trr2.
- 6) Performed only during Screening Tests Parameter Drift Values (Initial Measurements), go-no-go.
- 7) The limits for ΔVF shall be defined by the Manufacturer on every lot in accordance with MIL-STD-750 Method 3101 and shall guarantee the $R_{th(j-a)}$ limits specified in Maximum Ratings.

Justification .

Variation 07: new ST variant introduction with LCC2D package

Variation 08: new ST variant introduction with LCC2D package

TABLE 3(a) - ELECTRICAL MEASUREMENTS AT HIGH TEMPERATURES

N°	Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
					Min	Max	
2	Forward Voltage	V_{F1}	4011	$I_F=10mA$ (Note 1) Variants 01, 02, 04, 05 Variants 03, 06 $T_{amb}=+150(+0-5)^{\circ}C$ Pulse Method $I_F=10mA$ Variants 07 to 08 (Note 3, 4)	- -	0.65 0.80	V
4	Reverse Current	I_{R1}	4016	DC Method $V_R=-20V$ Variants 01, 02, 04, 05 Variants 03, 06 $T_{amb}=+150(+0-5)^{\circ}C$ Variants 07 to 08 (Note 4)	- -	50 75	μA
5	Reverse Current	I_{R2}	4016	DC Method $V_R=$ Note2 Variants 01, 02, 04, 05 Variants 03, 06 $T_{amb}=+150(+0-5)^{\circ}C$ $V_R=75V$ Variants 07 to 08 (Note 4)	- -	100 160	μA

NOTES

3. Pulse Width $\leq 680\mu s$; Duty Cycle $\leq 2\%$

4. Read and record measurements shall be performed on a sample of 5 components with 0 failures allowed. Alternatively a 100% inspection may be performed.

Justification .

Variation 07: new ST variant introduction with LCC2D package

Variation 08: new ST variant introduction with LCC2D package

TABLE 3(b) - ELECTRICAL MEASUREMENTS AT LOW TEMPERATURES

N°	Characteristics	Symbols	MIL-STD-750 Test Method	Test Conditions	Limits		Units
					Min	Max	
1	Forward Voltage	V_{F2}	4011	$I_F=200mA$ (Note 1) Variants 01, 04 $I_F=100mA$ (Note 1) Variants 02, 05 Variants 03, 06 Pulse Method , $T_{amb}=-55(+5-0)^{\circ}C$ $I_F=100mA$ Variants 07 to 08 (Note 2, 3)	- - - -	1.2 1.2 1.4	V
					-	1.2	

NOTES

2. Pulse Width $\leq 680\mu\text{s}$; Duty Cycle $\leq 2\%$

3. Read and record measurements shall be performed on a sample of 5 components with 0 failures allowed. Alternatively a 100% inspection may be performed.

TABLE 4 PARAMETER DRIFT VALUES FOR VARIANTS 07 T08

Characteristics	Symbols	Limits			Units
		Drift Value Δ	Absolute		
			Min	Max	
Reverse Current 1	I_{R2}	+/-10 or +/-100%	-	50	nA
Forward Voltage 1	V_{F2}	+/-50	-	1200	mV

Note:

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

Justification.

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

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

N°	Characteristics	Symbols	Conditions	Units
2	Reverse Voltage Variants 07 to 08	V_R	80 (80% of V_{RRM})	V
3	Duration Variants 01 to 06 Variants 07 to 08	t t	72 ≥ 48	Hours Hours

Justification.

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

TABLE 5(c) - CONDITIONS FOR POWER BURN-IN AND OPERATING LIFE TESTS FOR VARIANTS 07 T08

N°	Characteristics	Symbols	Test Conditions	Units
1	Ambient Temperature	T_{amb}	+125 (+0/-5)	$^{\circ}\text{C}$
2	Junction Temperature	T_j	+175 (+0 -5)	$^{\circ}\text{C}$
3	Average Output Rectified Current	I_O	Note 2	A

NOTES:

2. The output current may be adjusted, within their given limit ranges, to attain the specified junction temperature.

Justification.

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

TABLE 6 - ELECTRICAL MEASUREMENTS AT INTERMEDIATE POINTS AND ONCOMPLETION OF ENDURANCE TESTING FOR VARIANTS 07 T08

No.	CHARACTERISTICS	SYMBOL	SPEC. AND/OR TEST METHOD	TEST CONDITIONS (ABSOLUTE		UNIT
					MIN.	MAX.	
3	D.C Forward Voltage 1	V_{F2}	As per Table 2	As per Table 2	-	1.2	V
5	Reverse Current	I_{R2}	As per Table 2	As per Table 2	-	50	nA

Justification.

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package

APPENDIX 'B'

AGREED DEVIATIONS FOR STMICROELECTRONICS (F)

ITEMS AFFECTED	DESCRIPTION OF DEVIATIONS
Deviations from Production Control-Chart F2	Internal Visual Inspection: Wedge bonds equal to 1.1 wire diameter are acceptable for bonding with a V-Groove tool.
Deviations from Production Control-Chart F2	Special In-process Control Internal Visual Inspection. For CCP packages the criteria specified for voids in the filet and minimum die mounting material around the visible die perimeter for die mounting defects may be omitted providing that a radiographic inspection to verify the die-attach process is performed on a sample basis in accordance with STMicroelectronics procedure 7050651.
Deviations from Screening Tests- Chart F3	Solderability is not applicable unless otherwise stipulated in the Purchase Order.
Deviations from Room	Test parameter the reverse recovery time $trr1$ is not tested but guaranteed by $trr2$.

Temperature Electrical Measurements	AC characteristics (t_{rr2} , C, t_{fr} , V_{fr}), may be considered guaranteed but not tested if successful pilot lot testing has been performed in accordance with STMicroelectronics procedure 7188211 on the wafer lot, which includes AC characteristic measurements per the Detail Specification. A summary of the pilot lot testing shall be provided if required by the Purchase Order.
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Justification .

Variant 07: new ST variant introduction with LCC2D package

Variant 08: new ST variant introduction with LCC2D package