

AIGBG25N120S7

Package: PG-TO263-7

All reliability stress tests according to AEC-Q101 are assessed as PASS. The data outlined in this document may reference existing qualification results of similar products in the qualification family.

Table 1 Reliability stress tests.

#	Test description	Abbr.	Condition	Duration	Min. # of lots × sample size	Result
Test group A – accelerated environment stress tests						
A1	Preconditioning JEDEC JESD22-A113, J-STD-20 (MSL)	PC	MSL 1	3 × reflow 260°C	Before A2, A3, A4, A5, B1, B2	Pass
A2 alt	High humidity high temperature reverse bias JEDEC JESD22-A101	H3TRB	85°C 85% RH 80% Vce max	1000 h	3 × 77	Pass
A3	Unbiased highly accelerated temperature and humidity stress JEDEC JESD22-A118	UHASt	130°C 85% RH	96 h	3 × 77	Pass
A4	Temperature cycling JEDEC JESD22-A104	TC	-55°C to 150°C	1000 ×	3 × 77	Pass
A4a	Temperature cycling hot test JEDEC JESD22-A104 App. 6	TCHT	125°C TEST after TC, decap, WBP			Pass
A4a alt	TC delamination test JEDEC JESD22-A104 App. 6, J-STD-035	TCDT	100% AM inspection after TC, decap, WBP			Pass
A5	Intermittent operational life MIL-STD-750 Method 1037	IOL	ΔT ≥ 100°C	15000 ×	3 × 77	Pass
Test group B – accelerated lifetime simulation tests						
B1	High Temperature Reverse Bias MIL-STD-750-1 Method 1038	HTRB	Tj max Vds max	1000 h	3 × 77	Pass
B2	High temperature gate bias MIL-STD-750-1 Method 1038	HTGB	175°C ±20 V	1000 h	3 × 77	Pass
#	Test description	Abbr.	Comment			Result
Test group C – package assembly integrity tests						
C1	Destructive physical analysis AEC-Q101-004 section 4	DPA	after H3TRB, TC			Pass
C2	Physical dimensions JEDEC JESD22-B100	PD	Covered by package platform qualification and production monitoring			Pass
C3	Wire bond pull strength MIL-STD-750-2 Method 2037 for Au and Al wire AEC Q006 for Cu wire	WBP	20 ×			Pass
C4	Wire bond shear strength AEC-Q101-003, JEDEC JESD22-B116	WBS	20 ×			Pass
C5	Die shear MIL-STD-750-2 Method 2017	DS	Die is breaking before it can be sheared off			n.a.
C6	Terminal strength MIL-STD-750-2 Method 2036	TS	Not required for SMD packages			n.a.
C7	Resistance to solvents JEDEC JESD22-B117	RTS	Not required for laser marking			n.a.

#	Test description	Abbr.	Comment	Result
C8	Resistance to solder heat <i>JEDEC JESD22-A111(SMD), or B106(PTH)</i>	RSH	Not designed for wave soldering	n.a.
C9	Thermal resistance <i>JEDEC JESD24-3/4/6 as appropriate</i>	TR	Done during product characterisation	Pass
C10	Solderability <i>JEDEC J-STD-002</i>	SD	Covered by package platform qualification and production monitoring	Pass
C11	Whisker growth evaluation <i>AEC-Q005</i>	WG	Covered by package platform qualification and production monitoring	Pass
C12	Constant acceleration <i>MIL-STD-750-2 Method 2006</i>	CA	For hermetic packages only	n.a.
C13	Vibration variable frequency <i>JEDEC JESD22-B103</i>	VVF	For hermetic packages only	n.a.
C14	Mechanical shock <i>JEDEC JESD22-B104</i>	MS	For hermetic packages only	n.a.
C15	Hermeticity <i>JEDEC JESD22-A109</i>	HER	For hermetic packages only	n.a.

Test group D – die fabrication reliability tests

D1	Dielectric integrity <i>AEC-Q101-004 Section 3</i>	DI	Gate oxide reliability qualification on wafer level incl. assessment of lifetime and defect density	Pass
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Test group E – electrical verification tests

E0	External visual <i>JEDEC JESD22-B101</i>	EV	Performed for all qualification parts	Pass
E1	Pre- and post-stress function parameter	TEST	Performed for all qualification parts	Pass
E2	Parametric verification	PV	Test at room, hot, cold temperature	Pass
E3	ESD human body model <i>AEC-Q101-001</i>	ESD HBM	Class H3A (> 4000 V to ≤ 8000 V) 5 kV	Pass
E4	ESD charged device model ¹⁾ <i>AEC-Q101-005</i>	ESD CDM	Class C3 (≥ 1000 V) 2000 V	Pass
E5	Unclamped inductive switching <i>AEC-Q101-004 Section 2</i>	UIS	Not applicable for IGBT	n.a.
E6	Short circuit characterization <i>AEC-Q100-012</i>	SC	For smart power devices only	n.a.

For further information and documentation please refer to the product homepage:

<https://www.infineon.com/part/AIGBG25N120S7>

¹⁾ voltage refers to test condition (TC) mentioned in the standard

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