Product Qualification Report (PQR)

S28HS256TGZBHB013

Package: PG-BGA-24

All reliability stress tests according to AEC-Q100 Rev. J1 (Grade 2) are assessed as PASS. The data outlined in this document may reference existing qualification results of similar products.

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 3	3 × reflow 260°C	Before A2, A3, A4	Pass
A2	**Highly accelerated temperature and humidity stress** *JEDEC JESD22-A110*	HAST	110°C 85% RH	264 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	-65°C to 150°C	500×	3 × 77	Pass
A5	**Power temperature cycling** *JEDEC JESD22-A105*	PTC	Power dissipation < 1W			n.a
A6	**High temperature storage life** *JEDEC JESD22-A103*	HTSL	150°C	1000 h	1 × 45	Pass
Test group B – accelerated lifetime simulation tests						
B1	**High temperature operating life** *JEDEC JESD22-A108*	HTOL	125°C Vcc max	1000 h	3 × 77	Pass
B2	**Early life failure rate** *AEC Q100-008*	ELFR	125°C Vcc max	48 h ≤ t ≤ 168 h	3 × 800	Pass
B3	**NVM endurance, data retention, and operational life** *AEC Q100-005*	EDR + HTOL	125°C	100000 × 1000 h	3 × 77	Pass
B3	**NVM endurance, data retention, and operational life** *AEC Q100-005*	EDR + HTSL	125°C	100000 × 1000 h	3 × 77	Pass

#	Test description	Abbr.	Comment	Result
Test group C – package assembly integrity tests				
C1	**Wire bond shear** *AEC Q100-001, AEC Q003*	WBS	Covered by package platform qualification and production monitoring	Pass
C2	**Wire bond pull** *MIL-STD883 Method 2011, AEC Q003*	WBP	Covered by package platform qualification and production monitoring	Pass
C3	**Solderability** *JEDEC J-STD-002*	SD	Covered by package platform qualification and production monitoring	Pass
C4	**Physical dimensions** *JEDEC JESD22-B100 and AEC Q003*	PD	Covered by package platform qualification and production monitoring	Pass
C5	**Solder ball shear** *AEC Q100-010, AEC Q003*	SBS	Covered by package platform qualification and production monitoring	Pass
C6	**Lead integrity** *JEDEC JESD22-B105*	LI	For through-hole devices only	n.a
C7	**Bump shear test** *JEDEC JESD22-B117, AEC-Q003*	BST	For flip-chip technology only	n.a

#	Test description	Abbr.	Comment	Result
Test group D – die fabrication reliability tests				
Die fabrication reliability tests like EM, TDDB, HCI, BTI, SM are covered by wafer technology qualification				Pass
Test group E – electrical verification tests				
E1	**Pre- and post-stress function parameter**	TEST	Performed for all qualification parts	Pass
E2	**ESD human body model** *AEC Q100-002*	ESD HBM	Class 2 (2000 V to ＜ 4000 V)	Pass
E3	**ESD charged device model**[1)] *AEC Q100-011*	ESD CDM	Class C2a (500 V to ＜ 750 V, corner pins ≥ 750 V)	Pass
E4	**Latch-up** *AEC Q100-004*	LU	Class II	Pass
E5	**Electrical distributions** *AEC Q100-009, AEC Q003*	ED	Test at room, hot, cold temperature	Pass
E6	**Fault grading** *AEC Q100-007*	FG		n.a
E7	**Characterization** *AEC Q003*	CHAR		Pass
E9	**Electromagnetic compatibility** *SAE J1752/3 – Radiated Emissions*	EMC	Data will be provided on request	Pass
E10	**Short circuit characterization** *AEC Q100-012*	SC	For smart power devices only	n.a
E11	**Soft error rate** *JEDEC JESD89-1 (un-accelerated)* *JEDEC JESD89-2/-3 (accelerated)*	SER	Covered by wafer technology qualification	Pass
E12	**Lead (Pb) free** *AEC Q005*	LF	Covered by package platform qualification	Pass
Test group F – defect screening tests				
F1	**Process average testing** *AEC Q001*	PAT	Implemented in production test	Pass
F2	**Statistical bin / yield analysis** *AEC Q002*	SBA	Implemented in production test	Pass
Test group G – cavity package integrity tests				
Cavity package integrity tests like MS, VFV, CA, GFL, DROP, LT, DS, IWV apply for hermetic packages only				n.a.
Components using copper (Cu) wire interconnections				
AEC Q006 qualification				Pass

For further information and documentation please refer to the product homepage:
https://www.infineon.com/part/S28HS256TGZBHB013

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

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