




QRT inc.
Reliability Test Report

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COMPANY : IDQuantique SA(BTREE Co., Ltd.)
PRODUCT : S2Q100
PACKAGE : 14ball NeoPAC 3D
PURPOSE : Qualification
ISSUED DATE : Oct 7, 2019
REFERENCE No. : 1904-01551
1906-03678
1908-06177
1908-06184

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Approved by : Youngran Kim 



1 Qualification Plan and Results

The purpose of these tests is evaluation (or monitoring) of **S2Q100**.

Test conditions are specified in customers in-house test plan and all test procedures comply with **AEC-Q100** standards.

Obligation to perform exact procedure to reference documents is QRT Inc. responsibility only, but establishing failure criteria and judgment of pass/fail is customer's responsibility.

Test Items	Test Condition	Duration	Sample Size	Failed Unit ¹⁾	Test Method ²⁾
Preconditioning	BAKE : 125 (+5, -0) °C SOAK : 30 °C ± 2 °C, 60 % ± 3 % R.H. REFLOW : ≥ 260 °C	24 h 192 h 3 cycles	760	0	JESD22-A113H
Early Life Failure Rate	105 °C ± 5 °C V0 = 3.22 V, V1 = 1.95 V, VIH = 1.95 V	48 h	2400	0	AEC-Q100-008
High Temperature Operating Life	105 °C ± 5 °C V0 = 3.22 V, V1 = 1.95 V, VIH = 1.95 V	1000 h 1000 h	115 116	0	JESD22-A108F
Temperature, Humidity with Bias *	85 °C ± 2 °C, 85 % ± 5 % R.H. VDD_3.22V = 3.22 V, VCC_1.95V = 1.95 V	1000 h 1000 h	114 117	0	JESD22-A101D
High Temperature Storage Life	150 (+10, -0) °C	500 h	45	0	JESD22-A103E
Unbiased-Highly Accelerated Temp. and Humidity Stress Test *	110 °C ± 2 °C, 85 % ± 5 % R.H. / 122 psia	264 h	231	0	JESD22-A118B
Temperature Cycling *	-55 (+0, -10) °C ~ 125 (+10, -0) °C	500 cycles	231	0	JESD22-A104E
Power and Temperature Cycling *	-40 (+0, -10) °C ~ 105 (+10, -0) °C VDD_3.22V = 3.22 V, VCC_1.95V = 1.95 V	1000 cycles	45	0	JESD22-A105C
Variable Frequency Vibration	Peak Acceleration : 50 G Frequency : 20 Hz ~ 2 kHz ~ 20 Hz Sweep Time : 4 min Test Duration : 4 cycles at x, y, z axis	-	15	0	AEC-Q100 JESD22-B103
Mechanical shock	Peak Acceleration : 1500 G Pulse Duration : 0.5 ms Test Duration : 5 times at Y1 axis	-	15	0	AEC-Q100 JESD22-B104
Constant Acceleration	Peak Acceleration : 30 K g-force Duration Time : 1 min Test axis : Y1	-	15	0	AEC-Q100 MIL-STD-883 Method 2001

Additional Requirement : N/A

Note :

1) Test results are based on the "Final Test Result" provided by customer.

2) Although the name of test item is same, reference documents can be JEDEC, MIL-std or AEC.

* "Preconditioning" was applied before reliability test.



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Electrostatic Discharge (ESD) Human Body Model	± 500 V / 1000 V / 2000 V	-	27	0	AEC-Q100-002
Electrostatic Discharge (ESD) Charged Device Model	± 250 V / 500 V / 750 V	-	9	0	AEC-Q100-002
Latch-up	I-Test : ± 100 mA (Test Temp : 125 °C) Vsupply overvoltage : + 2.925 V (Test Temp : 125 °C)	-	9	0	AEC-Q100-004
Electro Magnetic Interference	AEC-Q100	-	3	0	SAE J1752-3

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World Class Reliability Testing & Failure Analysis Company



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