

VS1011E Qualification Report Summary

1.1 Package qualification

Package type: LQFP 48 RoHS

Dimensions: 7 x 7 x 1.4 (mm)

LQFP48 RoHS (Green) package has passed qualification tests, MSL3 at 260°C

Package type: SOIC 28 RoHS

Dimensions: 7.5 x 17.9 x 2.5 (mm)

SOIC 28 RoHS (Green) package has passed qualification tests, MSL3 at 260°C

1.2 Device qualification

The qualification is done for devices that have been fabricated with the production masks and encapsulated with the qualified production package. Each device has also passed the test program (+25 °C), that is also called as "Final Test".

The qualification tests are summarized below

Test	Sample size	Conditions	Result Failed/passed
Electrical temperature characterization VS1011E, Lot ID: N5N2069	10	-30, +25, +85 °C AVDD = 2.5, 2.5, 2.7 or 3.6 V DVDD = 2.3, 2.5, 2.7 or 3.6 V	0 / 10
Latch-up immunity: I-Test VS1011E, Lot ID: N5N2069 JEDEC JESD78, Vdig = Vana = 2.7 V	6	+/- 15 mA	0 / 6
		+200 mA	0 / 6
		-35 mA, failed pins XTALO, XTALI, XCS	6 / 0
		-200 mA, failed pins XTALI, XTALO, XCS, SCLK, SI, SO.	6 / 0
Latch-up immunity: Voltage test. Vdig = Vana = 3.6 V	6	3,6 V trigger pulses JEDEC JESD78	0 / 6
ESD susceptibility, VS1011B, Lot ID: N4S2341	3	HBM, 2000 V, MIL-STD-883 3015	0 / 3
Life test VS1011E, LQFP48 RoHS, Lot ID: N5N0944	33	125 °C, 994 h biased + 89,5 h unbiased MIL-STD-883 1005	0 / 33

Test	Sample size	Conditions	Result Failed/passed
Life test VS1011E, SOIC28 RoHS, Lot ID: N5N0947	34	125 °C, 1000 h biased MIL-STD-883 1005	0 / 34

1.3 Conclusion

VS1011E device has passed all tests, but latch-up immunity is about 35 mA to negative pulses for pins XTALI, XTALO and XCS. These pins can be protected to 50 mA immunity by external series resistor of > 100 Ohm. Latch-up is not possible from XTALI and XTALO pins when crystal is used.

At electrical temperature characterization two chips failed marginally at THD @ Right test in -40 °C with all voltage combinations. All devices will pass with relaxed test limit < -53 dB (original limit < -54 dB).

For ESD-test the VS1011B results can be used. The VIA1 layer of ROM memory is only difference between VS1011B and VS1011E design. VS1011E has ROHS compliant LQFP48 and VS1011B normal LQFP48, dimensions and pinout are the same for both devices.