

VS1053B/VS1063A/VS8053B QUALIFICATION REPORT SUMMARY

1.1 Purpose

This document provides summary of the product qualifications.

1.2 Scope

Qualification information and conclusions cover the following products:

- VS1053B-L
- VS8053B-L
- VS1063A-L
- VS1163A-L
- VS8063A-L

1.3 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 qualification has been done by the assembly subcontractor.

1.4 Device qualification

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

Test	Year Done	Sample size	Conditions	Result Failed/passed
Electrical temperature characterization (Lot 7076011#7, Lot 7076011#9)	2008	6	-30, +25, +85°C at 7 voltage combinations (setup A)	0 / 6
Electrical temperature characterization (Lot 8172031, Lot 9126430)	2010	10+10	-30, +25, +85°C at 7 voltage combinations (setup A)	0 / 20
Electrical temperature characterization *) (Lot 1001070)	2011	9	-35, +25, +85°C at 7 voltage combinations (setup A)	0 / 9
Electrical temperature characterization (Lot 6021690)	2016	33	-40, +25, +85°C at 7 voltage combinations (setup B)	0 / 33
Latch-up immunity (Lot 7076011#7): I-Test JEDEC JESD78	2008	3	+/- 200 mA CVDD = 1.85 V, AVDD = IOVDD = 3.6 V	0 / 3
Latch-up immunity (Lot 7076011#7): Voltage test.	2008	3	3,6 V trigger pulses JEDEC JESD78	0 / 3
ESD susceptibility JEDEC JESD22-A114-E (Lot 8022580):	2008	3	HBM, 1000 V	0 / 3
		3	HBM, 2000 V	0 / 3
		3	HBM, 4000 V	0 / 3
		3	HBM, 8000 V	0 / 3
Life test (Lot 7076011)	2007	34	125 °C, 1000 h, AVDD = IOVDD = 3.6V, CVDD = 1.95 V MIL-STD-883 1005	0 / 34
Life test (Lot 8172030)	2008	34	125 °C, 1000 h, AVDD = IOVDD = 3.6V, CVDD = 1.89 V MIL-STD-883 1005	0 / 34
Life test (Lot 1001070)	2011	34	125 °C, 1000 h, AVDD = IOVDD = 3.3V, CVDD = 1.85 V MIL-STD-883 1005	0 / 34
Life test (Lot 6021690#10)	2016	17	125 °C, 3500 h, AVDD = IOVDD = 3.3V, CVDD = 1.85 V MIL-STD-883 1005	0 / 17

*) Electrical temp. char. (Lot 1001070) in VLSI laboratory, accuracy of test temperature +/-2 °C

1.5 Conclusion

Device passed electrical temperature characterization from **-40°C** to +85°C .

Latch-up immunity test passed +/- 200 mA.

ESD test showed no failures for Human Body Model stress voltage levels up to 8000V (Class 3B).

Device passed the lifetest (1000h, +125°C, biased).

With these considerations device passed the qualification.

1.6 Electrical temperature characterization set-up

1.6.1 Setup A (old lots)

CVDD, AVDD, IOVDD	-30 °C	+25 °C	+85 °C
1.80 V, 3.30 V, 2.80 V.	6+10+10+9	6+10+10+9	6+10+10+9
1.77 V, 3.45 V, 2.70 V	6+10+10+9	6+10+10+9	6+10+10+9
1.70 V, 3.30 V, 1.80 V.	6+10+10	6+10+10	6+10+10
1.70 V, 3.30 V, 2.25 V.	9	9	9
1.70 V, 3.30 V, 2.80 V	6+10+10+9	6+10+10+9	6+10+10+9
1.85 V, 3.60 V, 3.60 V.	6+10+10+9	6+10+10+9	6+10+10+9
1.80 V, 3.30 V, 3.60 V.	6+10+10+9	6+10+10+9	6+10+10+9
1.70 V, 3.60 V, 3.60 V.	6+10+10+9	6+10+10+9	6+10+10+9

1.6.2 Setup B (new lots)

CVDD, AVDD, IOVDD	-40 °C	+25 °C	+85 °C
Reference voltage selection = 1.65V mode			
1.80 V, 3.30 V, 2.80 V.	33	33	33
1.83 V, 3.45 V, 2.70 V	33	33	33
1.70 V, 3.30 V, 1.80 V.	33	33	33
1.70 V, 3.30 V, 2.80 V.	33	33	33
1.95 V, 3.60 V, 3.60 V	33	33	33
1.80 V, 3.30 V, 3.60 V.	33	33	33
1.70 V, 3.60 V, 3.60 V.	33	33	33
Reference voltage selection = 1.24V mode			
1.80 V, 2.80 V, 2.80 V.	33	33	33
1.83 V, 3.10 V, 2.70 V	33	33	33
1.70 V, 2.60 V, 1.80 V.	33	33	33
1.70 V, 2.60 V, 2.80 V.	33	33	33
1.95 V, 3.60 V, 3.60 V	33	33	33
1.80 V, 2.60 V, 3.60 V.	33	33	33
1.70 V, 3.60 V, 3.60 V.	33	33	33