05/14/03

RELIABILITY REPORT
FOR

DS9034PCX & DS9034PC0 SPRING SUPPLIER (CHI CHENG)

Dallas Semiconductor

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Conclusion:

The following qualification successfully meets the quality and reliability standards required of all Dallas Semiconductor products and processes:

DS9034PCX & DS9034PC0 SPRING SUPPLIER (CHI CHENG)

In addition, Dallas Semiconductor's continuous reliability monitor program ensures that all outgoing product will continue to meet Maxim's quality and reliability standards. The current status of the reliability monitor program can be viewed at http://www.maxim-ic.com/TechSupport /dsreliability.html.*

Module Description:

A description of this Module can be found in the product data sheet. You can find the product data sheet at http://dbserv.maxim-ic.com/l_datasheet3.cfm.*

Reliability Derating:

A module device consists of one or more IC's in a single, upward integrated, package. This package is assembled to include batteries, crystals, and other piece parts that make up the configuration of the Module. Because of either the complexity of the package or the included piece parts, standard high temperature reliability testing is not possible. Therefore, in order to determine the reliability of module products, the reliability of each of the piece parts is individually determined, then summed to determine the reliability of the integrated module product. If there are "n" significant components in the module then:

Fr (module) = Fr (1) + Fr (2) + Fr (3) + ... + Fr (n)
Fr (module) = Failure rate of module
Fr(n) = Failure rate of the nth component

Failure Rates are reported in FITs (Failures in Time) or MTTF (Mean Time To Failure). The FIT rate is related to MTTF by:

MTTF = 1/Fr

NOTE: MTTF is frequently used interchangeably with MTBF.

The calculated failure rate for this module/assembly is:

Module Device:	Quantity:	MTTF (Yrs):	FITs:
BR1632	**1**	**1352**	**84.4**
CRYSTAL	**1**	**12458**	**9.2**
Totals:		**1220**	**94**

The parameters used to calculate the module failure rate are as follows:

Cf: 60% **Ea: 0.7** **B: 0** **Tu: 25** **°C** **Vu: 5.5** **Volts**

The reliability data follows. A the start of this data is the module assembly information. This is a description of the module. The next section is the detailed reliability data for each stress found in the qualification / monitor. If there are additional processes or assemblies used as part of this report, a description of each will follow which includes the respective reliability data for that process/ assembly. The reliability data section includes the latest data available.

* Some proprietary products may be excepted from this requirement.

Assembly Information:

Qualification Vehicle:	DS9034
Assembly Site:	Fastech
Pin Count:	4
Package Type:	Power Cap
Body Size:	850
Lead Frame:	Printed Crt Brd; FR4
Flammability:	UL 94-V0
Date Code Range:	0231 to 0231

INITIAL TEST

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
0 HR TEST	0231	Connect Cap & Base	2		328	0
				Total:		**0**

MECHANICAL LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
MECHANICAL SHOCK	0231	HALF-SINE,200G,6.0MS-5 PULSES IN 6 ORIEN	30	CYS	50	0
VIBRATION, VARIABLE F		10g or 0.06", 5Hz-2KHz, X Y Z axis	9	HRS	50	0
				Total:		**0**

OPERATING LIFE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
HIGH TEMP OP LIFE	0231	85 C, 3.3V (PSA) & 0.0V (PSB)	1000	HRS	76	0
				Total:		**0**

PACKAGE TESTS

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
X-RAY	0231	MIL-STD-883-2012 : TOP & SIDE VIEW	2	DYS	6	0
PHYSICAL DIMENSIONS		JESD22-B100	2	DYS	6	0
				Total:		**0**

TEMPERATURE CYCLE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
TEMP CYCLE	0231	-40 TO 85C	2000	CYS	76	0
				Total:		**0**

UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE CODE	CONDITION	READPOINT		QUANTITY	FAILS
MOISTURE SOAK	0231	60C/90% R.H.	1000	HRS	76	0
				Total:		**0**

All stressing and testing was performed with DS9034PCX caps connected to DS1744W-P12 power cap bases with exception of the package tests (X-RAY & Physical Dimensions).