

RELIABILITY REPORT  
FOR

**DS1813, Rev A6**

**Dallas Semiconductor**

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Prepared by:

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**Conclusion:**

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

DS1813, Rev A6

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>.

**Device Description:**

A description of the device used in this qualification can be found in the product data sheet. You can find the product data sheet at [http://dbserv.maxim-ic.com/l\\_datasheet3.cfm](http://dbserv.maxim-ic.com/l_datasheet3.cfm).

**Reliability Derating:**

The Arrhenius model will be used to determine the acceleration factor for failure mechanisms that are temperature accelerated.

$$AfT = \exp((Ea/k) * (1/Tu - 1/Ts)) = tu/ts$$

AfT = Acceleration factor due to Temperature  
tu = Time at use temperature (e.g. 55°C)  
ts = Time at stress temperature (e.g. 125°C)  
k = Boltzmann's Constant (8.617 x 10<sup>-5</sup> eV/°K)  
Tu = Temperature at Use (°K)  
Ts = Temperature at Stress (°K)  
Ea = Activation Energy (e.g. 0.7 eV)

The activation energy of the failure mechanism is derived from either internal studies or industry accepted standards, or activation energy of 0.7eV will be used whenever actual failure mechanisms or their activation energies are unknown. All deratings will be done from the stress ambient temperature to the use ambient temperature.

An exponential model will be used to determine the acceleration factor for failure mechanisms, which are voltage accelerated.

$$AfV = \exp(B * (Vs - Vu))$$

AfV = Acceleration factor due to Voltage  
Vs = Stress Voltage (e.g. 7.0 volts)  
Vu = Maximum Operating Voltage (e.g. 5.5 volts)  
B = Constant related to failure mechanism type (e.g. 1.0, 2.4, 2.7, etc.)

The Constant, B, related to the failure mechanism is derived from either internal studies or industry accepted standards, or a B of 1.0 will be used whenever actual failure mechanisms or their B are unknown. All deratings will be done from the stress voltage to the maximum operating voltage. Failure rate data from the operating life test is reported using a Chi-Squared statistical model at the 60% or 90% confidence level (Cf).

The failure rate, Fr, is related to the acceleration during life test by:

$$Fr = X / (ts * AfV * AfT * N * 2)$$

X = Chi-Sq statistical upper limit  
N = Life test sample size

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 device/process/assembly is:

**FAILURE RATE:**                      **MTTF (YRS): 118935**                      **FITS: 1.0**

The parameters used to calculate this failure rate are as follows:

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

The reliability data follows. At the start of this data is the device information. This is a description of the device for this report. Following this is the assembly information. This section includes a description of the assembly vehicle used to generate this reliability data for both qualifications and monitors. The next section is the detailed reliability data for each stress found in the qualification / monitor. If there are additional assemblies used as part of this report, a description of each will follow which includes the respective reliability data for that assembly. The reliability data section includes the latest data available. Some of this data may be generic with other products.

**Device Information:**

Process: 1P, 1M, 0.8um, Neg ZTC P1R, PdpID, Low Vts, BPSG ILO, N+  
 Passivation: Passivation w/Nov TEOS Oxide-Nitride  
 Die Size: 41 x 29  
 Number of Transistors: 465  
 Interconnect: Aluminum / 1% Silicon / 0.5% Copper  
 Gate Oxide Thickness: 175 Å

**Assembly Information:**

Qualification Vehicle: DS1810  
 Assembly Site: Carsem  
 Pin Count: 3  
 Package Type: SOT23  
 Body Size: 50x0.9  
 Mold Compound: Sumitomo 6710S  
 Lead Frame: Stamped Alloy 42  
 Lead Finish: SnPb Plate  
 Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
 Bond Wire / Size: Au / 1.0 mil  
 Flammability: UL 94-V0  
 Moisture Sensitivity (JEDEC J-STD20A) Level 1  
 Date Code Range: 9638 to 9638

**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
PRECONDITION U/S	9638	J-STD-020	199 DYS	8	0	
ULTRASOUND		J-STD-020	199 DYS	8	0	
STORAGE LIFE		125C	26 HRS	8		
MOISTURE SOAK		85 C/85% R.H.	194 HRS	8		
SOLDER HEAT		HTC VAPOR PHASE	3 PASS	8	0	
EXTERNAL VISUAL		MIL-STD-883-2009	198 DYS	8	0	
<b>Total:</b>					<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
INFANT LIFE	9638		125C, 7.0 VOLTS	48 HRS	198	0	
HIGH VOLTAGE LIFE	9638		125C, 7.0 VOLTS	1000 HRS	117	0	
<b>Total:</b>						<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY	9638		MIL-STD-883-2003	1 DYS	3	0	
X-RAY	9638		MIL-STD-883-2012 : TOP & SIDE VIEW	1 DYS	6		
PHYSICAL DIMENSIONS			MIL-STD-883-2016	2 DYS	6		
MARK PERMANENCY			MIL-STD-883-2015	3 DYS	6		
LEAD INTEGRITY			MIL-STD-883-2004 : COND B2	4 DYS	6	0	
<b>Total:</b>						<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	9638		-55C TO 125C	1000 CYS	77	0	
AUTOCLAVE			121C, 2 ATM STEAM, UNBIASED	1096 HRS	35	0	
<b>Total:</b>						<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	9638		85/85, 5.5 VOLTS	959 HRS	81	0	
<b>Total:</b>						<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	9638		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
<b>Total:</b>						<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1811  
Assembly Site: Carsem  
Pin Count: 3  
Package Type: SOT23  
Body Size: 50x0.9  
Mold Compound: Sumitomo 6710S  
Lead Frame: Stamped Alloy 42  
Lead Finsh: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) Level 1  
Date Code Range: 9616 to 9616

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**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
PRECONDITION U/S	9616		J-STD-020	199 DYS	8	0	

ULTRASOUND	9616	J-STD-020	199	DYS	8	0
STORAGE LIFE		125C	26	HRS	8	
MOISTURE SOAK		85 C/85% R.H.	194	HRS	8	
SOLDER HEAT		HTC VAPOR PHASE	3	PASS	8	0
EXTERNAL VISUAL		MIL-STD-883-2009	198	DYS	8	0
			<b>Total:</b>			<b>0</b>

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#### OPERATING LIFE

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
INFANT LIFE	9616		125C, 7.0 VOLTS	48 HRS	192	0	
HIGH VOLTAGE LIFE	9616		125C, 7.0 VOLTS	1000 HRS	114	0	
				<b>Total:</b>		<b>0</b>	

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#### PACKAGE TESTS

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
CONSTRUCTION ANALYSIS	9616		TO BE DONE BY F/A	1 WKS	5	0	
SOLDERABILITY	9616		MIL-STD-883-2003	1 DYS	3	0	
X-RAY	9616		MIL-STD-883-2012 : TOP & SIDE VIEW	1 DYS	6		
PHYSICAL DIMENSIONS			MIL-STD-883-2016	2 DYS	6		
MARK PERMANENCY			MIL-STD-883-2015	3 DYS	6		
LEAD INTEGRITY			MIL-STD-883-2004 : COND B2	4 DYS	6	0	
				<b>Total:</b>		<b>0</b>	

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#### TEMPERATURE CYCLE

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	9616		-55C TO 125C	1000 CYS	77	0	
				<b>Total:</b>		<b>0</b>	

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#### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	9616		85/85, 5.5 VOLTS	959 HRS	78	0	
				<b>Total:</b>		<b>0</b>	

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#### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	9616		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
				<b>Total:</b>		<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1811  
Assembly Site: ATEC  
Pin Count: 3  
Package Type: SOT23  
Body Size: 50x0.9  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finish: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) Level 1  
Date Code Range: 0222 to 0222

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**MISC**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
PIN HOLE TEST	0222		MIL-STD-833-2021	0 DYS	5	0	
<b>Total:</b>						<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH VOLTAGE LIFE	0222		125C, 7.0 VOLTS	1000 HRS	78	0	
<b>Total:</b>						<b>0</b>	

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**PRECONDITIONING LEVEL 1**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
STORAGE LIFE	0222		125C	24 HRS	154		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	154		
CONVECTION REFLOW			235C +5/-0C	3 PASS	154	0	
<b>Total:</b>						<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	0222		-55C TO 125C	1000 CYS	77	0	
<b>Total:</b>						<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0222		85/85, 5.5 VOLTS	959 HRS	78	0	
<b>Total:</b>						<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	0222		121C, 2 ATM STEAM, UNBIASED	168 HRS	76	0	
<b>Total:</b>						<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1814  
Assembly Site: Carsem  
Pin Count: 5  
Package Type: SOT23  
Body Size: 60x1.2  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finish: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity Level 1  
(JEDEC J-STD20A)  
Date Code Range: 9835 to 9835

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**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
PRECONDITION U/S	9835	J-STD-020	199 DYS	8	0	
ULTRASOUND		J-STD-020	199 DYS	8	0	
STORAGE LIFE		125C	26 HRS	8		
MOISTURE SOAK		85 C/85% R.H.	194 HRS	8		
SOLDER HEAT		HTC VAPOR PHASE	3 PASS	8	0	
EXTERNAL VISUAL		MIL-STD-883-2009	198 DYS	8	0	
			<b>Total:</b>		<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
INFANT LIFE	9835	125C, 7.0 VOLTS	48 HRS	186	0	
HIGH VOLTAGE LIFE	9835	125C, 7.0 VOLTS	1000 HRS	114	0	
			<b>Total:</b>		<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY	9835	MIL-STD-883-2003	4 DYS	3	0	
X-RAY	9835	MIL-STD-883-2012 : TOP & SIDE VIEW	1 DYS	6		
PHYSICAL DIMENSIONS		MIL-STD-883-2016	2 DYS	6		
MARK PERMANENCY		MIL-STD-883-2015	3 DYS	6		
LEAD INTEGRITY		MIL-STD-883-2004 : COND B2	4 DYS	6	0	
			<b>Total:</b>		<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	9835	-55C TO 125C	1000 CYS	77	0	
			<b>Total:</b>		<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	9835	85/85, 5.5 VOLTS	959 HRS	72	0	
			<b>Total:</b>		<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	9835		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
<b>Total:</b>						<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1814  
Assembly Site: Fastech  
Pin Count: 5  
Package Type: SOT23  
Body Size: 60x1.2  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finsh: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) Level 1  
Date Code Range: 9937 to 9937

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**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
MOISTURE SOAK	9937		85 C/85% R.H.	168 HRS	8		
<b>Total:</b>							

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**Assembly Information:**

Qualification Vehicle: DS1818  
Assembly Site: ATEC  
Pin Count: 3  
Package Type: SOT23  
Body Size: 50x0.9  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finsh: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) Level 1  
Date Code Range: 0012 to 0013

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**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
ULTRASOUND	0012		J-STD-020	1 DYS	8	0	
STORAGE LIFE			125C	24 HRS	8		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	8		
CONVECTION REFLOW			235C +5/-0C	3 PASS	8	0	
EXTERNAL VISUAL			MIL-STD-883-2009	1 DYS	8	0	
PRECONDITION U/S			J-STD-020	1 DYS	8	0	
ULTRASOUND	0013		J-STD-020	1 DYS	8	0	
STORAGE LIFE			125C	24 HRS	8		
MOISTURE SOAK			85 C/85% R.H.	168 HRS	8		



CONVECTION REFLOW	0013	235C +5/-0C	3	PASS	8	0
EXTERNAL VISUAL		MIL-STD-883-2009	1	DYS	8	0
PRECONDITION U/S		J-STD-020	1	DYS	8	0
<b>Total:</b>					<b>0</b>	<b>0</b>

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### OPERATING LIFE

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
INFANT LIFE	0012		125C, 7.0 VOLTS	48 HRS	144	0	
HIGH VOLTAGE LIFE	0012		125C, 7.0 VOLTS	1000 HRS	72	0	
INFANT LIFE	0013		125C, 7.0 VOLTS	48 HRS	144	0	
HIGH VOLTAGE LIFE	0013		125C, 7.0 VOLTS	1000 HRS	72	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

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### PACKAGE TESTS

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY	0012		MIL-STD-883-2003	4 DYS	3	0	
X-RAY	0012		MIL-STD-883-2012 : TOP & SIDE VIEW	10 DYS	6	0	
PHYSICAL DIMENSIONS			MIL-STD-883-2016	10 DYS	6	0	
MARK PERMANENCY			MIL-STD-883-2015	10 DYS	6	0	
LEAD INTEGRITY			MIL-STD-883-2004 : COND B2	10 DYS	6	0	
SOLDERABILITY	0013		MIL-STD-883-2003	4 DYS	3	0	
X-RAY	0013		MIL-STD-883-2012 : TOP & SIDE VIEW	10 DYS	6	0	
PHYSICAL DIMENSIONS			MIL-STD-883-2016	10 DYS	6	0	
MARK PERMANENCY			MIL-STD-883-2015	10 DYS	6	0	
LEAD INTEGRITY			MIL-STD-883-2004 : COND B2	10 DYS	6	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

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### TEMPERATURE CYCLE

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	0012		-55C TO 125C	1000 CYS	77	0	
TEMP CYCLE	0013		-55C TO 125C	1000 CYS	77	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

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### TEMPERATURE HUMIDITY BIAS

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0012		85/85, 5.5 VOLTS	959 HRS	72	0	
BIASED MOISTURE	0013		85/85, 5.5 VOLTS	959 HRS	72	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

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### UNBIASED MOISTURE RESISTANCE

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	0012		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
AUTOCLAVE	0013		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
<b>Total:</b>					<b>0</b>	<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1819  
Assembly Site: Dallas  
Pin Count: 8  
Package Type: CDIP  
Body Size: 300  
Mold Compound: Ceramic  
Lead Frame: ?  
Lead Finsh:  
Die Attach: ?  
Bond Wire / Size: /  
Flammability: UL 94-V0  
Moisture Sensitivity  
(JEDEC J-STD20A)  
Date Code Range: 0127 to 0127

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**ELECTRICAL CHARACTERIZATION**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 500 VOLTS	2 PUL'S	3	0	
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 1000 VOLTS	0 PUL'S	3	0	
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 2000 VOLTS	2 PUL'S	3	0	
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 4000 VOLTS	2 PUL'S	3	0	
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 8000 VOLTS	2 PUL'S	3	3	No FA
LATCH-UP	0127		JESD78, I-TEST 25C	2 DYS	3	0	
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 500 VOLTS	2 PUL'S	3	0	
ESD SENSITIVITY	0127		EOS/ESD S5.1 HBM 2000 VOLTS	2 PUL'S	3	0	
<b>Total:</b>						<b>3</b>	

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**Assembly Information:**

Qualification Vehicle: DS1819  
Assembly Site: ATEC  
Pin Count: 5  
Package Type: SOT23  
Body Size: 60x1.2  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finsh: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity  
(JEDEC J-STD20A)  
Date Code Range: 0029 to 0029

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**CONSTRUCTION ANALYSIS**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
CONSTRUCTION ANALYSIS	0029		TO BE DONE BY F/A	0 WKS	5	0	
<b>Total:</b>						<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
INFANT LIFE	0029		125C, 7.0 VOLTS	48 HRS	183	0	
HIGH VOLTAGE LIFE	0029		125C, 7.0 VOLTS	1000 HRS	114	0	
				<b>Total:</b>		<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY	0029		MIL-STD-883-2003	4 DYS	3	0	
X-RAY	0029		MIL-STD-883-2012 : TOP & SIDE VIEW	10 DYS	6	0	
PHYSICAL DIMENSIONS			MIL-STD-883-2016	10 DYS	6	0	
MARK PERMANENCY			MIL-STD-883-2015	10 DYS	6	0	
LEAD INTEGRITY			MIL-STD-883-2004 : COND B2	10 DYS	6	0	
				<b>Total:</b>		<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	0029		-55C TO 125C	1000 CYS	77	0	
				<b>Total:</b>		<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0029		85/85, 5.5 VOLTS	959 HRS	69	0	
				<b>Total:</b>		<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	0029		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
				<b>Total:</b>		<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1819  
Assembly Site: Carsem  
Pin Count: 5  
Package Type: SOT23  
Body Size: 60x1.2  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finsh: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) Level 1  
Date Code Range: 0210 to 0210

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**OPERATING LIFE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH VOLTAGE LIFE	0210		125C, 7.0 VOLTS	1000 HRS	78	0	
				<b>Total:</b>		<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1819  
Assembly Site: Fastech  
Pin Count: 5  
Package Type: SOT23  
Body Size: 60x1.2  
Mold Compound: Nitto MP8000C  
Lead Frame: Stamped Copper CDA194  
Lead Finish: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity Level 1  
(JEDEC J-STD20A)  
Date Code Range: 0014 to 0014

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**MOISTURE SENSITIVITY LEVEL 1**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
ULTRASOUND	0014	J-STD-020	1 DYS	8	0	
STORAGE LIFE		125C	24 HRS	8		
MOISTURE SOAK		85 C/85% R.H.	168 HRS	8		
CONVECTION REFLOW		235C +/-0C	3 PASS	8	0	
EXTERNAL VISUAL		MIL-STD-883-2009	1 DYS	8	0	
PRECONDITION U/S		J-STD-020	1 DYS	8	0	
			<b>Total:</b>		<b>0</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
INFANT LIFE	0014	125C, 7.0 VOLTS	48 HRS	186	0	
HIGH VOLTAGE LIFE	0014	125C, 7.0 VOLTS	1000 HRS	114	0	
			<b>Total:</b>		<b>0</b>	

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**PACKAGE TESTS**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
SOLDERABILITY	0014	MIL-STD-883-2003	4 DYS	3	0	
X-RAY	0014	MIL-STD-883-2012 : TOP & SIDE VIEW	10 DYS	6	0	
PHYSICAL DIMENSIONS		MIL-STD-883-2016	10 DYS	6	0	
MARK PERMANENCY		MIL-STD-883-2015	10 DYS	6	0	
LEAD INTEGRITY		MIL-STD-883-2004 : COND B2	10 DYS	6	0	
			<b>Total:</b>		<b>0</b>	

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**TEMPERATURE CYCLE**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
TEMP CYCLE	0014	-55C TO 125C	1000 CYS	77	0	
			<b>Total:</b>		<b>0</b>	

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**TEMPERATURE HUMIDITY BIAS**

DESCRIPTION	DATE CODE	CONDITION	READPOINT	QTY	FAILS	FA#
BIASED MOISTURE	0014	85/85, 5.5 VOLTS	959 HRS	72	0	
			<b>Total:</b>		<b>0</b>	

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**UNBIASED MOISTURE RESISTANCE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
AUTOCLAVE	0014		121C, 2 ATM STEAM, UNBIASED	168 HRS	45	0	
<b>Total:</b>						<b>0</b>	

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**Assembly Information:**

Qualification Vehicle: DS1834  
Assembly Site: ATP (Amkor, PI)  
Pin Count: 8  
Package Type: SOIC  
Body Size: 150x1.4  
Mold Compound: Sumitomo 6300H  
Lead Frame: Stamped Copper CDA194  
Lead Finsh: SnPb Plate  
Die Attach: 84-1 LMISR4 Epoxy Silverfilled Ablebond  
Bond Wire / Size: Au / 1.0 mil  
Flammability: UL 94-V0  
Moisture Sensitivity (JEDEC J-STD20A) Level 1  
Date Code Range: 0218 to 0218

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**ELECTRICAL CHARACTERIZATION**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
ESD SENSITIVITY	0218		EOS/ESD S5.1 HBM 500 VOLTS	2 PUL'S	3	0	
ESD SENSITIVITY	0218		EOS/ESD S5.1 HBM 1000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0218		EOS/ESD S5.1 HBM 2000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0218		EOS/ESD S5.1 HBM 4000 VOLTS	1 PUL'S	3	0	
ESD SENSITIVITY	0218		EOS/ESD S5.1 HBM 8000 VOLTS	1 PUL'S	3	3	No FA
LATCH-UP	0218		JESD78, I-TEST 125C	2 DYS	3	0	
LATCH-UP	0218		JESD78, Vsupply TEST 125C	2 DYS	3	0	
<b>Total:</b>						<b>3</b>	

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**OPERATING LIFE**

DESCRIPTION	DATE	CODE	CONDITION	READPOINT	QTY	FAILS	FA#
HIGH VOLTAGE LIFE	0218		125C, 6.0 VOLTS	1000 HRS	80	0	
<b>Total:</b>						<b>0</b>	

**FAILURE RATE: MTTF (YRS): 118935 FITS: 1.0**