SI2309CDS-T1-E3

SOT-23 Plastic-Encapsulate MOSFETS

P-Channel 60-V(D-S) MOSFET

V(BR)DSS	RDS(on)MAX	ID
-60V	150mΩ@ 10V	-2.0A

FEATURE

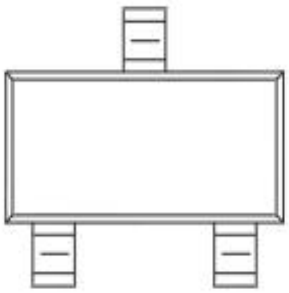
※ TrenchFET Power MOSFET

APPLICATION

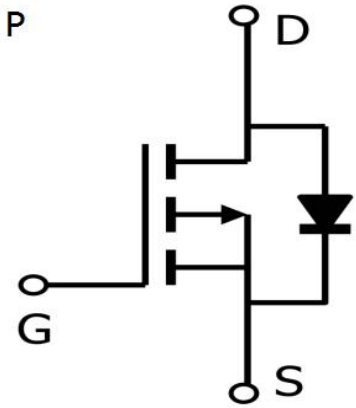
※ Load Switch for Portable Devices

※ DC/DC Converter

MARKING



Equivalent Circuit



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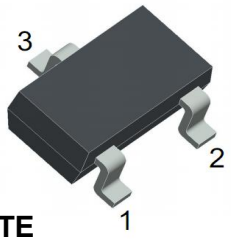


1.GATE
2.SOURCE
3.DRAIN

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	-60	V
Gate-Source Voltage	VGS	±20	V
Continuous Drain Current	ID	-2.0	A
Drain Current-Pulsed (note 1)	IDM	-10	A
Pulsed Drain Current	IDM	-8	A
Avalanche Current	IAS	-5	A
Power Dissipation	PD	1.5	W
Thermal Resistance from Junction to Ambient	RθJA	120	℃/W
Operating Junction and Storage Temperature Range	TJ,TSTG	-55~+150	℃

Note :

※Surface Mounted on FR4 Board, t < 5 sec.

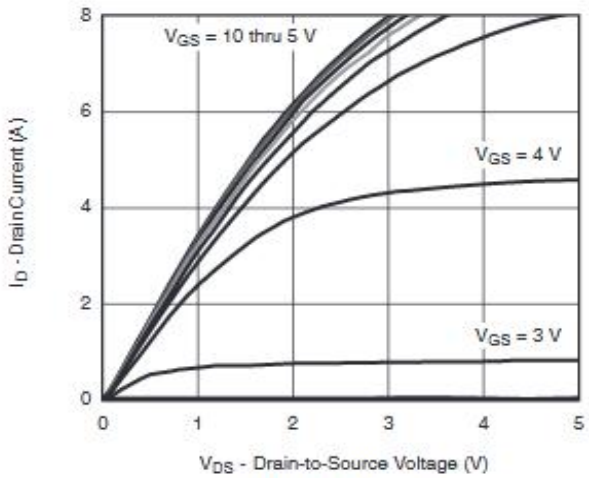
Static Electrical Characteristics (Ta = 25 ℃ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID =-250μA	-60			V
Gate threshold voltage	VGS(th)	VDS =VGS, ID =-250μA	-1	-1.9	-3	V
Gate-source leakage current	IGSS	VDS =0V, VGS =±20 V			±100	nA
Zero gate voltage drain current	IDSS	VDS =-60V, VGS = 0V			-1	μA
	IDSS	VDS =-48V, VGS = 0V, TJ=125°C			-50	μA
On-state Drain Current	ID(ON)	VGS =-10V, VDS ≥-4.5V	-6			A
Drain-source on-resistance	RDS(on)	VGS =-10V, ID = -2A		150	190	mΩ
Forward tranconductance	gFS	VDS =-4.5V, ID =-1A		1.9		S
Input capacitance	Ciss	VDS = -30V,VGS =0V, f=1MHz		210		pF
Output capacitance	Coss			28		pF
Reverse transfer capacitanceb	Crss			20		pF
Total Gate Charge	Qg	VDS =-30V, VGS =-10V, ID =-1.25 A		5.4	12	nC
Gate-Source Charge	Qgs			1.15		nC
Gate-Drain Charge	Qgd			0.92		nC
Turn-on Delay time	td(on)	VDD=-30V, RL=6Ω, ID=-1A VGEN=-4.5V, RG=6Ω		10.5	20	nS
Rise time	tr			11.5	20	nS
Turn-on Delay time	td(off)			15.5	30	nS
Fall time	tr			7.5	15	nS
Continuous Current	IS				-1.25	A
Pulsed Current	ISM				-8	A
Dioge forward voitage	VSD	Is=-1.25A, VGS=0V		-0.82	-1.25	V
Source-Drain Reverse Recovery Tir	trr	IF=-1.25A Di/Dt=100A/μs		30	55	ns

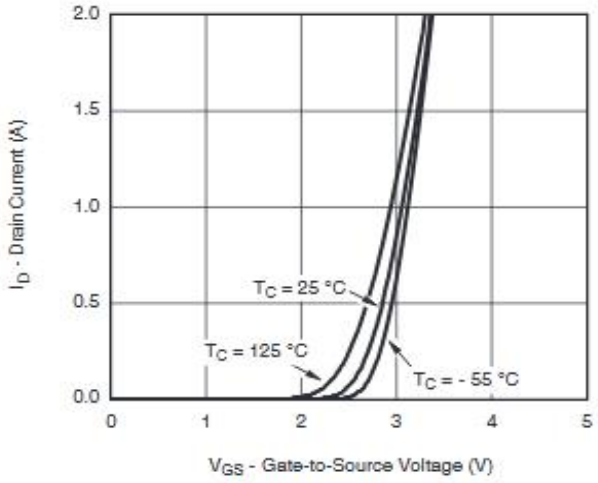
Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

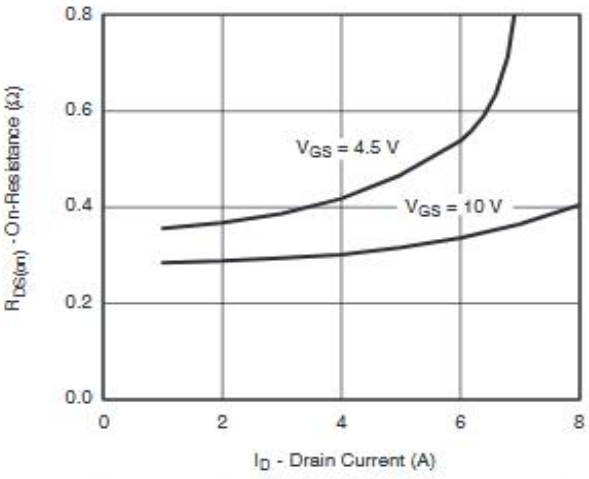
TYPICAL ELEC TRICAL AND THERMAL CHARACTERISTICS



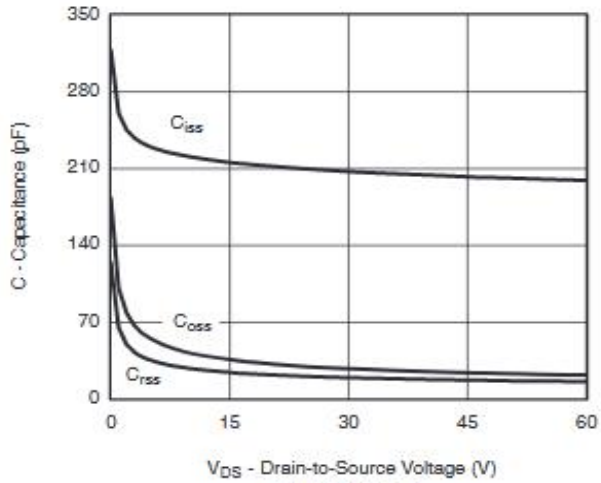
Output Characteristics



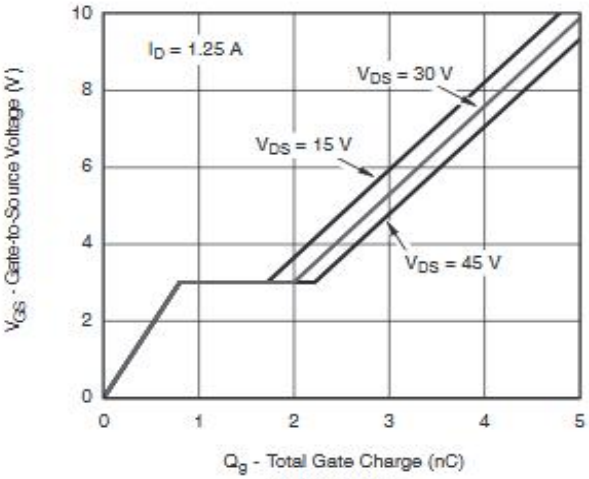
Transfer Characteristics



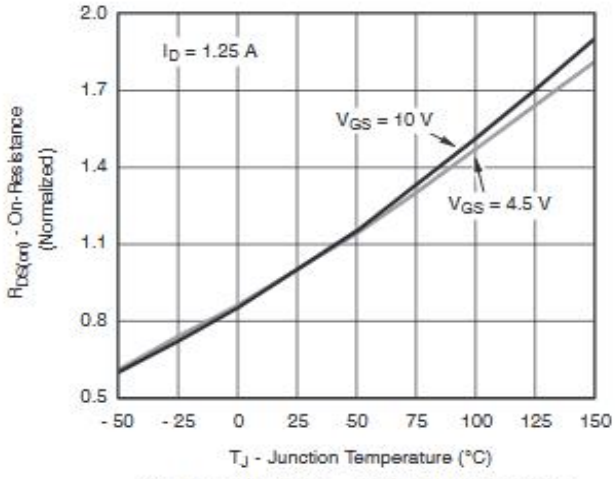
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

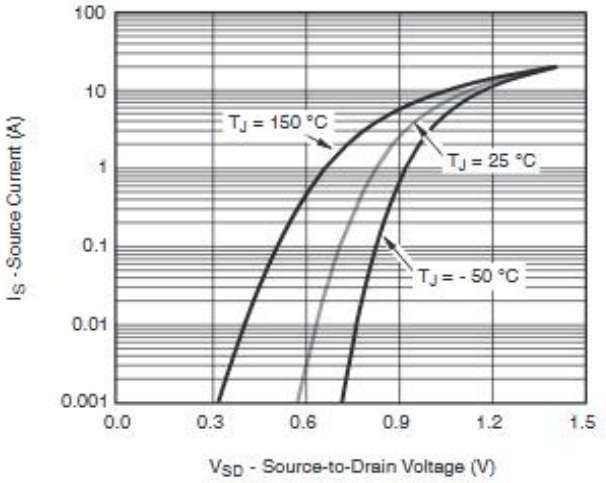


Gate Charge

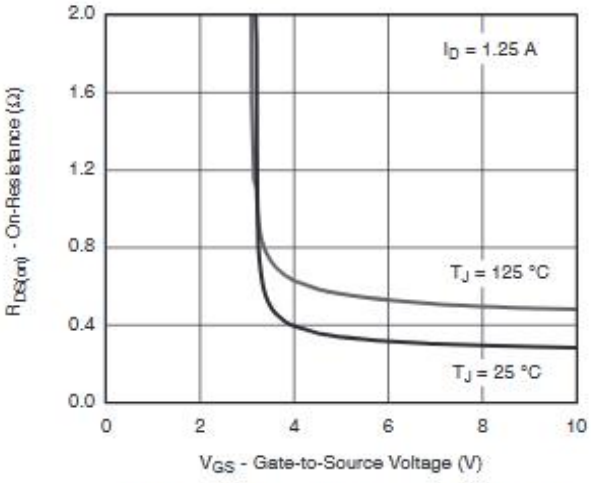


On-Resistance vs. Junction Temperature

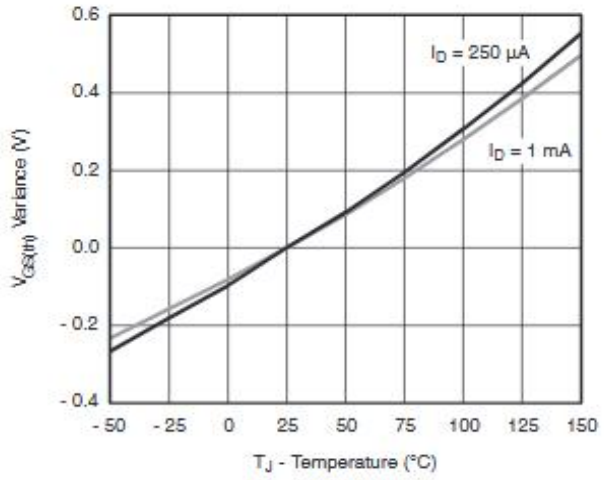
TYPICAL ELEC TRICAL AND THERMAL CHARACTERISTICS



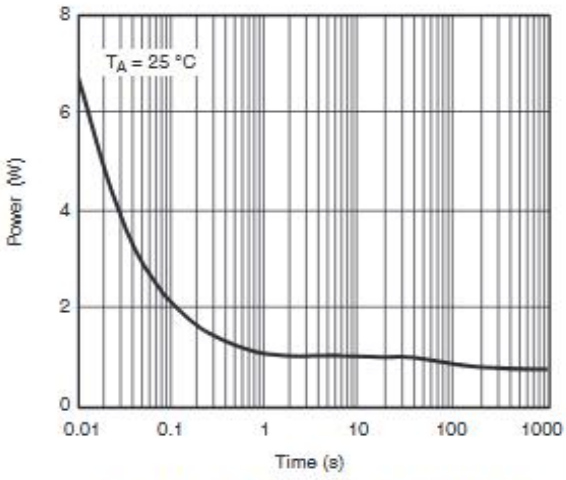
Source-Drain Diode Forward Voltage



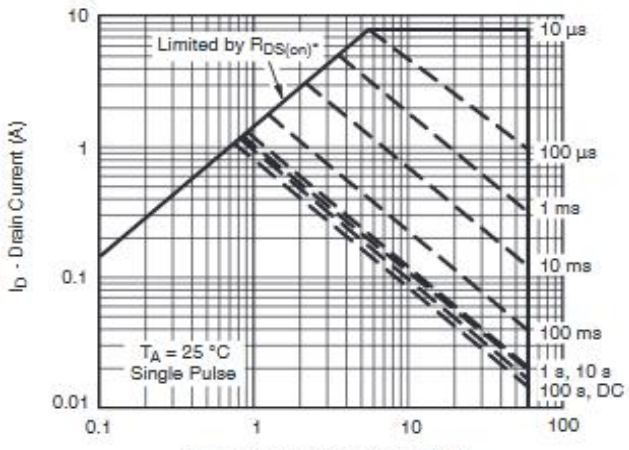
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



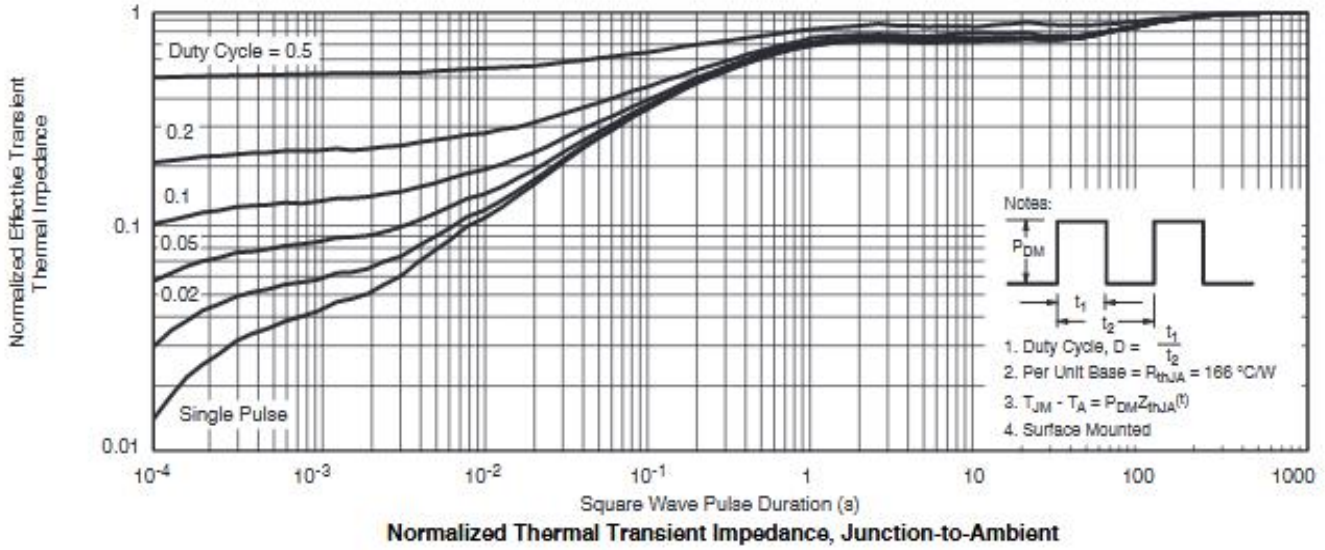
Single Pulse Power, Junction-to-Ambient



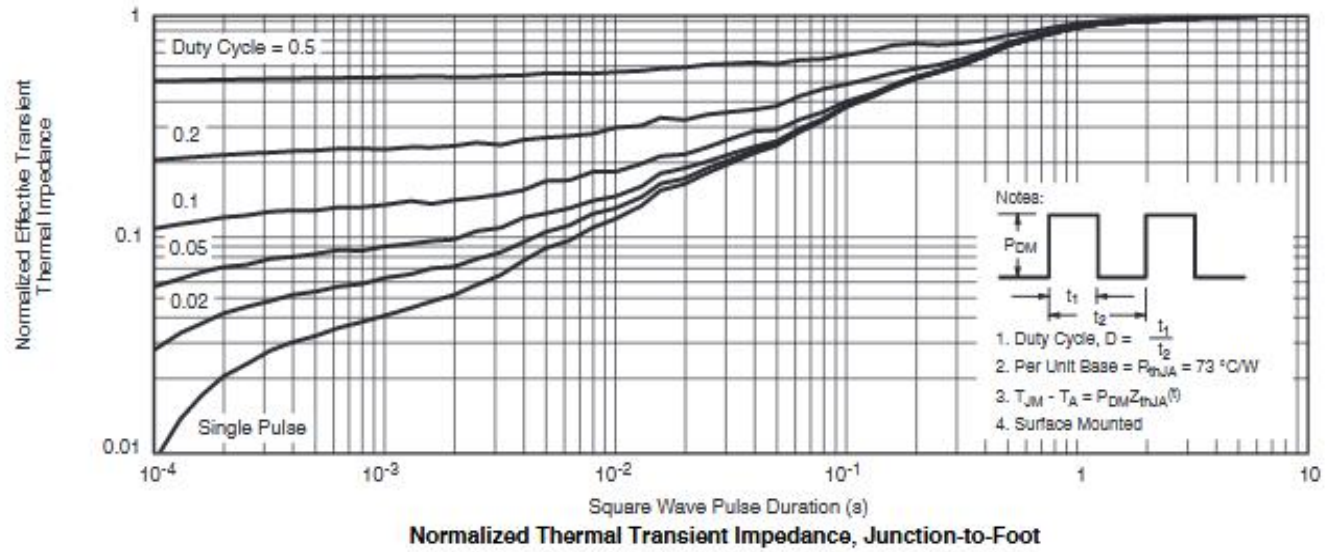
* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient

TYPICAL ELEC TRICAL AND THERMAL CHARACTERISTICS

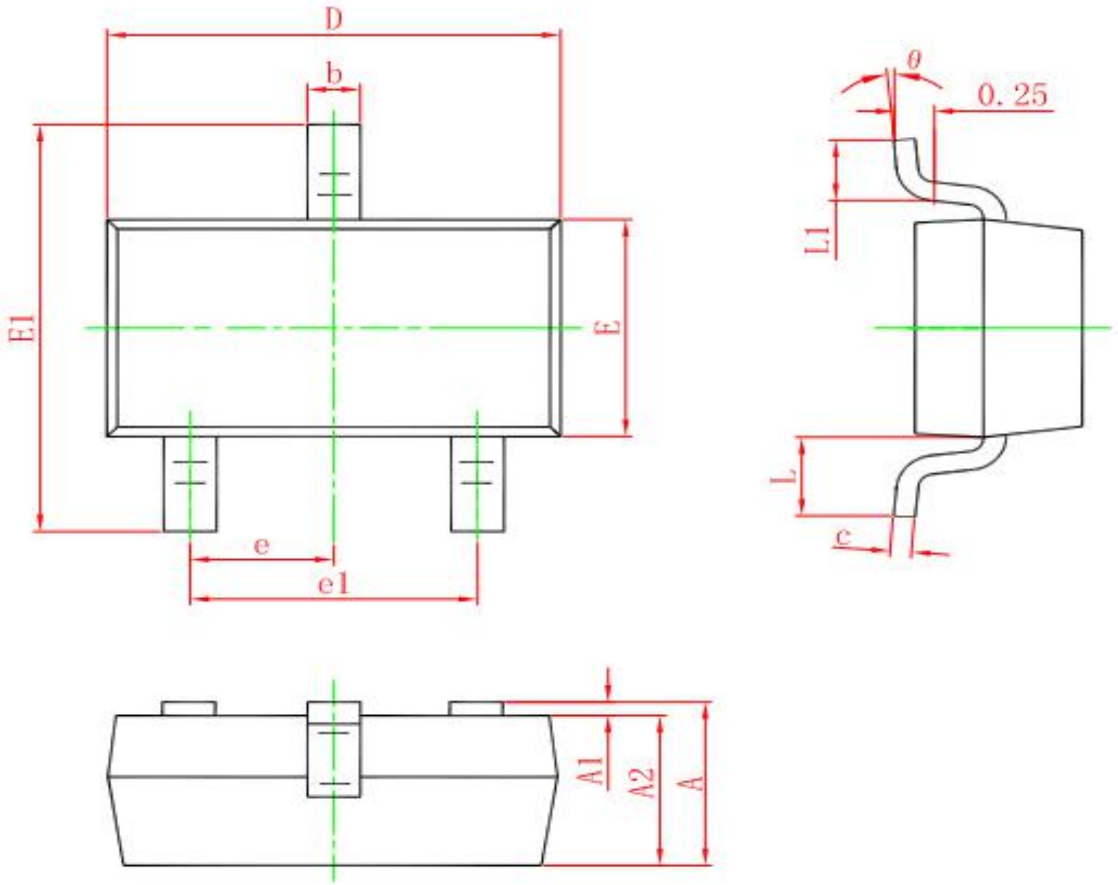


Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245℃±5℃	5sec±1sec
Pb-Free device	260℃+0/-5℃	5sec±1sec

This integrated circuit can be damaged by ESD BYSEMI Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.