

N-Channel 40-V(D-S) MOSFET

V(BR)DSS	RDS(on)MAX	ID
40 V	42mΩ@10V	5.6A
	51mΩ@4.5V	

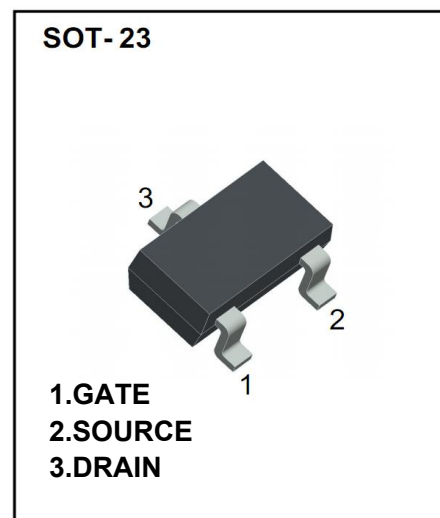
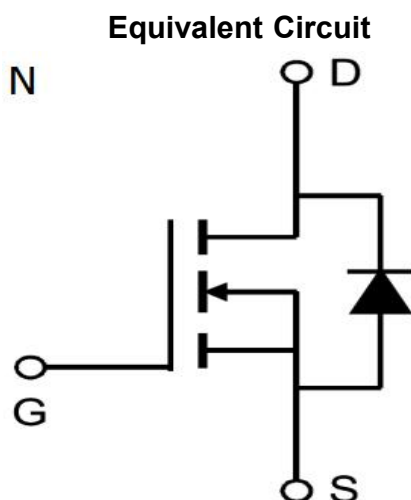
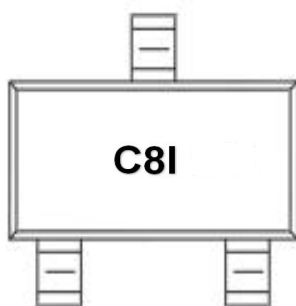
FEATURE

- ※ TrenchFET Power MOSFET
- ※ 100 % Rg Tested
- ※ Compliant to RoHS Directive

APPLICATION

- ※ Load Switch for Portable Devices
- ※ DC/DC Converter
- ※ Portable and Consumer Applications

MARKING



Maximum ratings (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	40	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current	ID	5.6	A
Pulsed Diode Current	IDM	20	
Continuous Source-Drain Current(Diode Conduction)	IS	1.75	
Power Dissipation	PD	2.1	W
Thermal Resistance from Junction to Ambient (t≤5s)	RθJA	100	°C/W
Operating Junction	TJ	150	°C
Storage Temperature	TSTG	-55~+150	°C

MOSFET ELECTRICAL CHARACTERISTICS

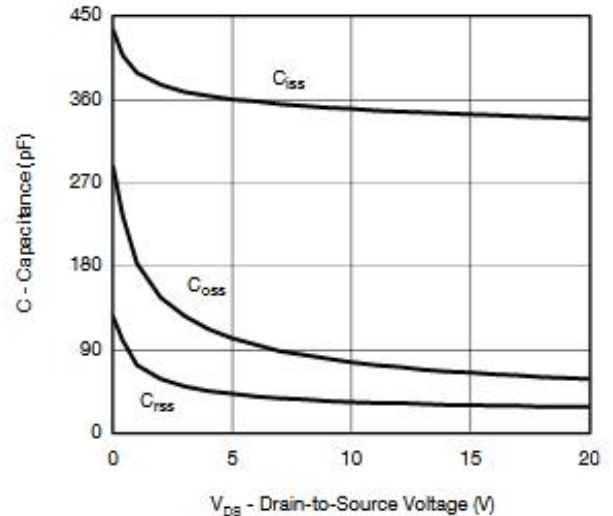
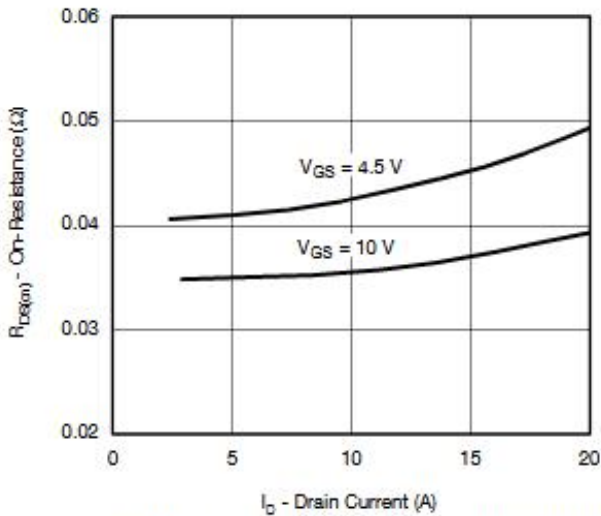
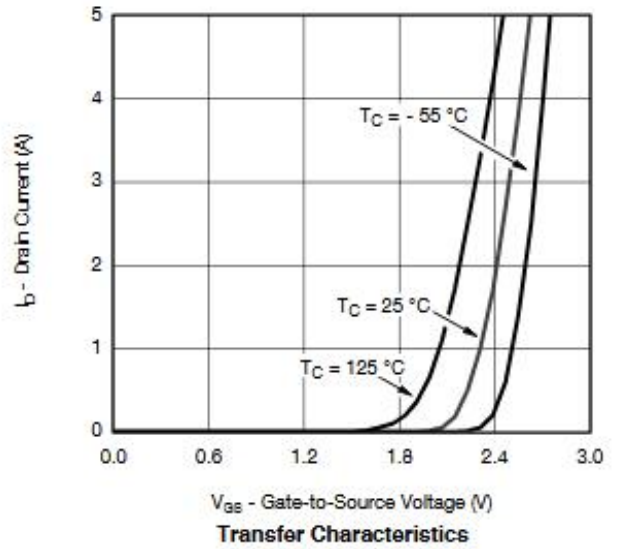
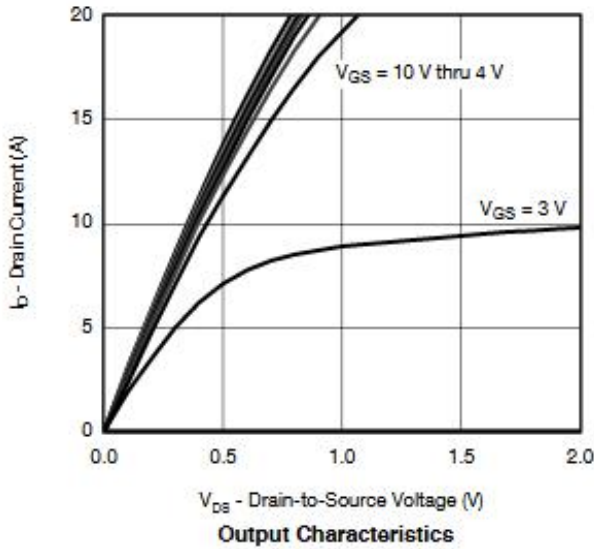
Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	40			V
Gate-source threshold voltage	VGS(th)	VDS = VGS, ID = 250μA	1.2		2.5	V
Gate-source leakage	IGSS	VDS = 0V, VGS = ±20V			±100	nA
Zero gate voltage drain current	IDSS	VDS = 40V, VGS = 0V			1	μA
Drain-source on-state resistancea	RDS(on)	VGS = 10V, ID = 4.3A		35	42	mΩ
		VGS = 4.5V, ID = 3.9A		41	51	mΩ
Forward transconductancea	gfs	VDS = 10V, ID = 4.3A		17		S
Diode forward voltage	VSD	IS=1A,VGS=0V		0.8	1.2	V
Dynamic						
Input capacitance	Ciss	VDS = 20V, VGS = 0V, f=1MHz		340		pF
Output capacitance	Coss			60		pF
Reverse transfer capacitanceb	Crss			30		pF
Total gate charge	Qg	VDS = 20V, VGS = 10V, ID = 4.3A		5.8		nC
Gate-source charge	Qgs			1.1		nC
Gate-drain charge	Qgd			1		nC
Gate resistance	Rg	f=1MHz		3.3		Ω
Switchingb						
Turn-on delay time	td(on)	VDD= 20V RL=5.7Ω, ID = 1A, VGEN= 10V,Rg=1Ω		7		ns
Rise time	tr			20		ns
Turn-off delay time	td(off)			14		ns
Fall time	tf			8		ns
Drain-source body diode characteristics						
Continuous Source-Drain Diode Current	IS	Tc=25°C			1.75	A
Pulsed Diode forward Current	ISM				20	A
Body Diode Reverse Recovery Time	trr	IF = 5.6 A, dI/dt = 100 A/ μs		15	23	ns
Body Diode Reverse Recovery Charge	Qrr	IF = 5.6 A, dI/dt = 100 A/ μs		7	14	nC

Note :

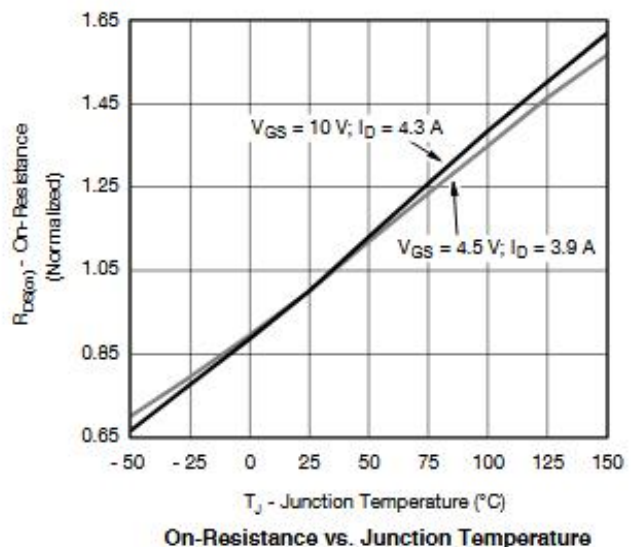
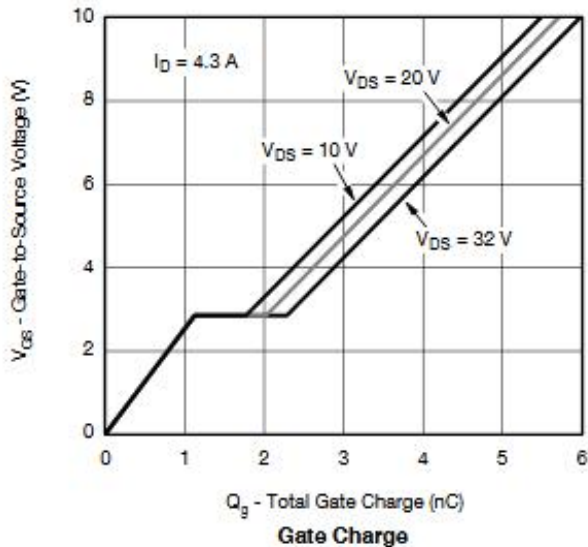
1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



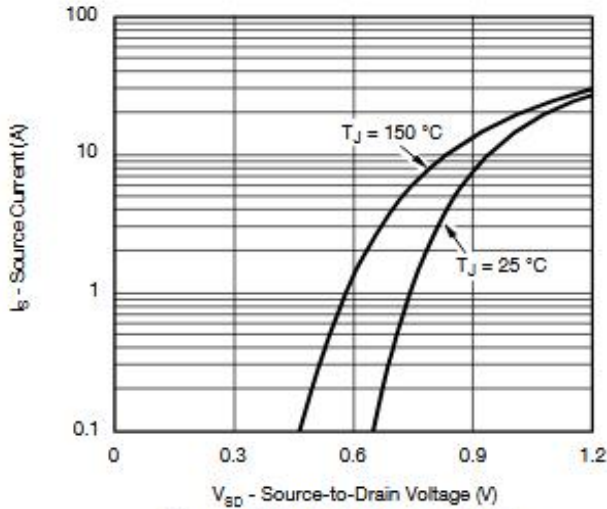
On-Resistance vs. Drain Current and Gate Voltage

Capacitance

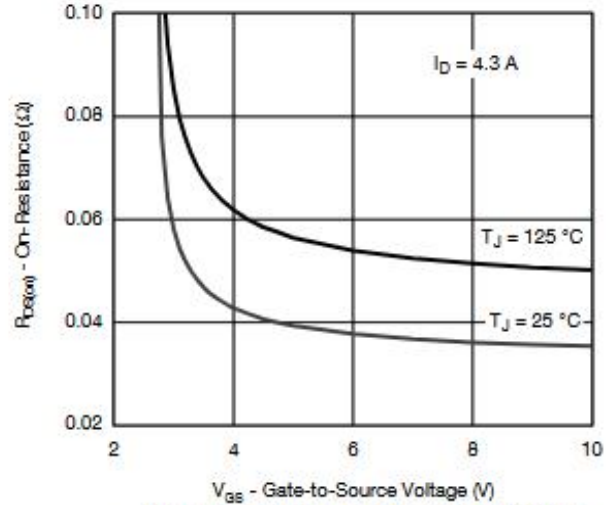


On-Resistance vs. Junction Temperature

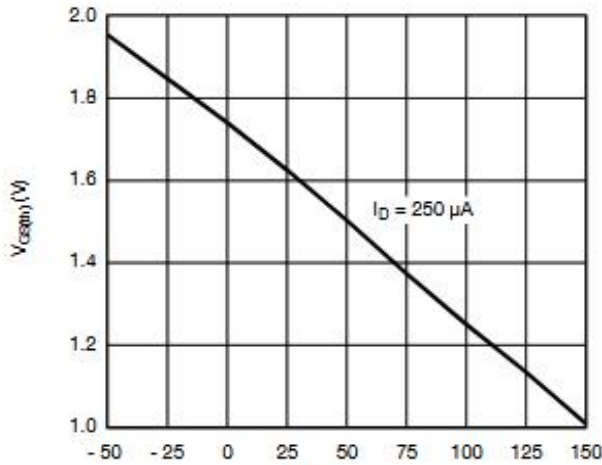
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



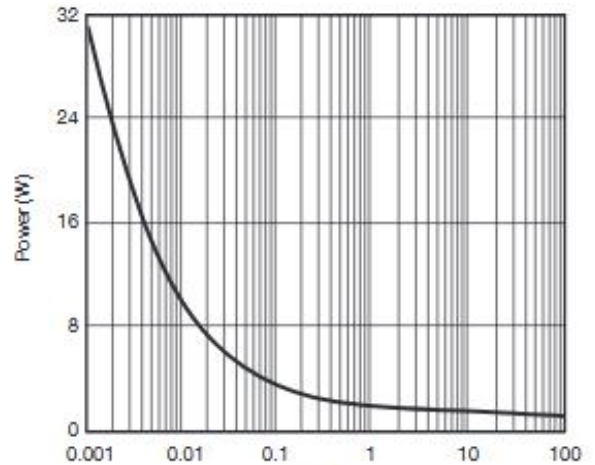
Source-Drain Diode Forward Voltage



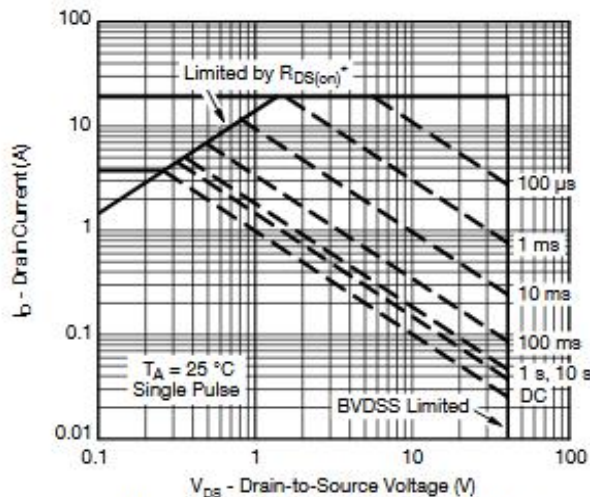
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

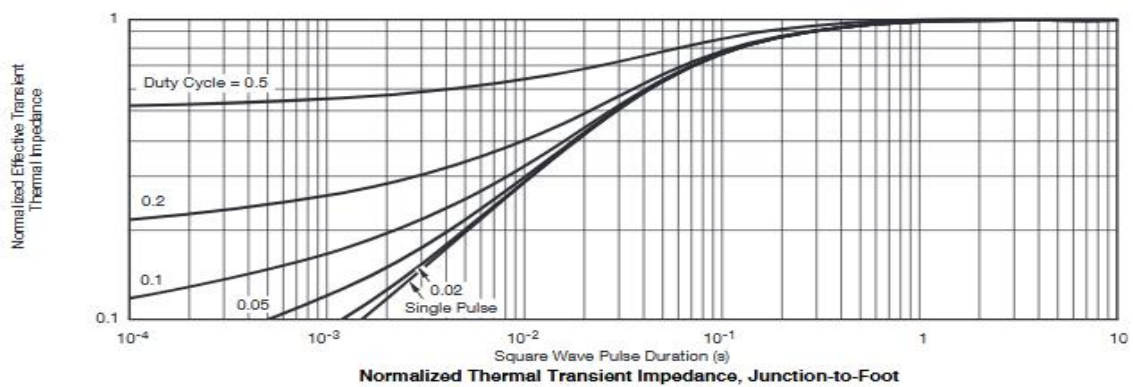
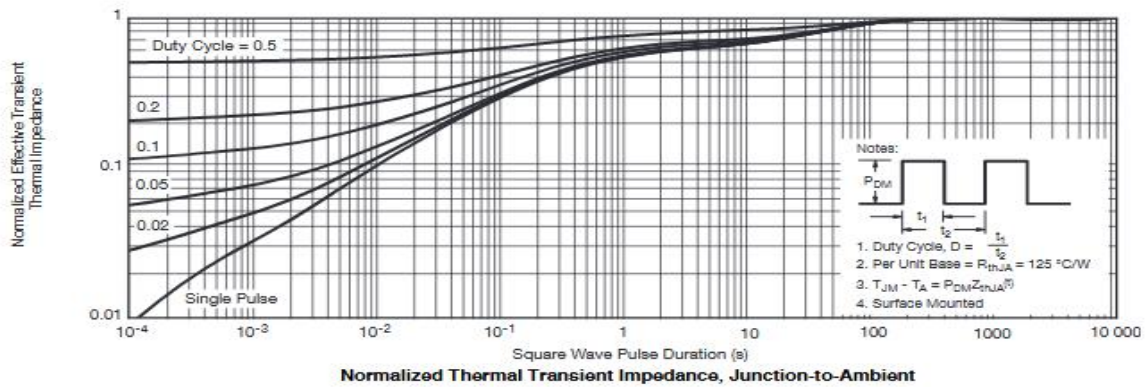
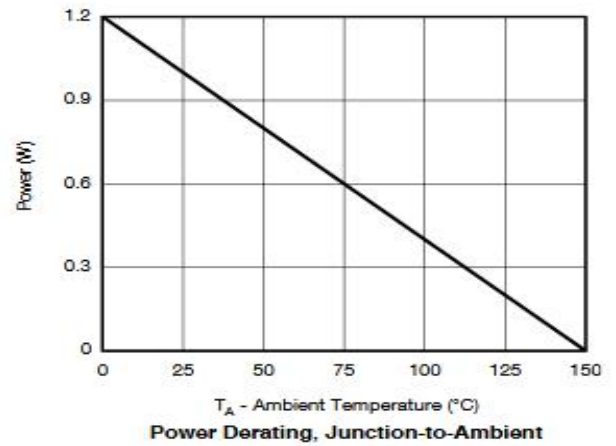
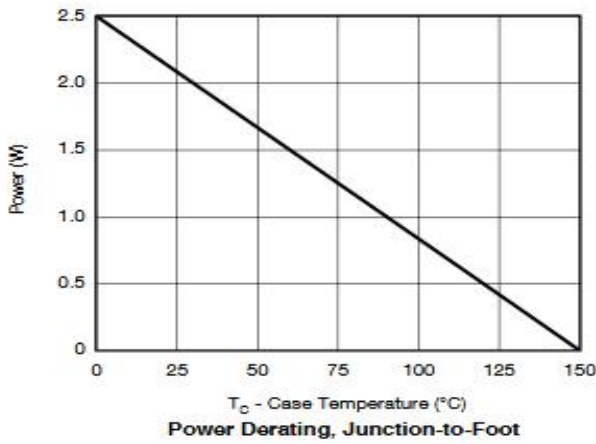
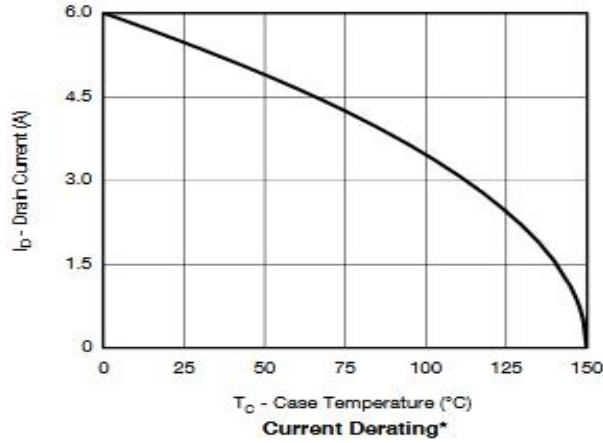


Single Pulse Power (Junction-to-Ambient)

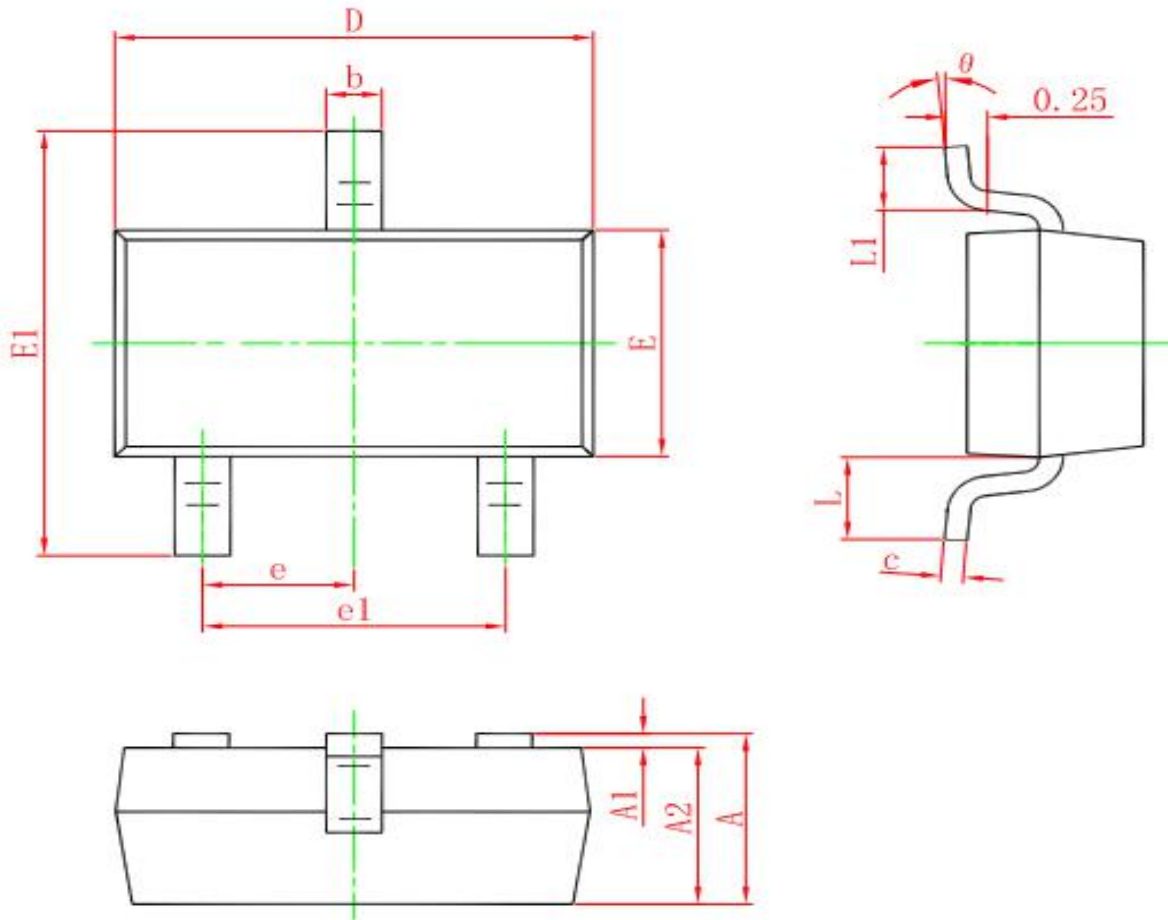


* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified
Safe Operating Area, Junction-to-Ambient

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



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°