

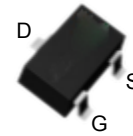
Features

- -30V/-12A
 $R_{DS(ON)}=25m\Omega(\text{typ.})@V_{GS}=-10V$
 $R_{DS(ON)}=37m\Omega(\text{typ.})@V_{GS}=-4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

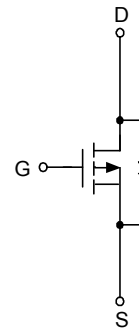
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



Top View of SOT-23-3



P-Channel MOSFET

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V _{DSS}	Drain-Source Voltage		-30	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _D ^c	Continuous Drain Current	T _A =25°C	-12	A
		T _A =70°C	-4.8	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	-36	
I _S ^c	Diode Continuous Forward Current	T _A =25°C	-12	A
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =70°C	1.6	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	50	°C/W
		Steady state	80	
I _{AS} ^b	Avalanche Current, Single pulse	L=0.1mH	-19	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.1mH	18	mJ

Note * : Calculated continuous current based on maximum allowable junction temperature. Bonding wire limitation current is 6A.

Note a : Pulse width limited by max. junction temperature.

Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^{\circ}\text{C}$).

Note c : Surface Mounted on 1in^2 pad area, $t \leq 10\text{sec}$.

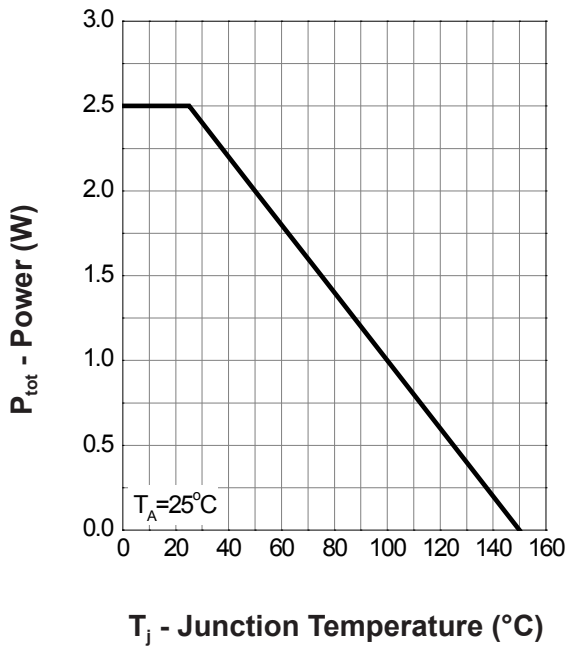
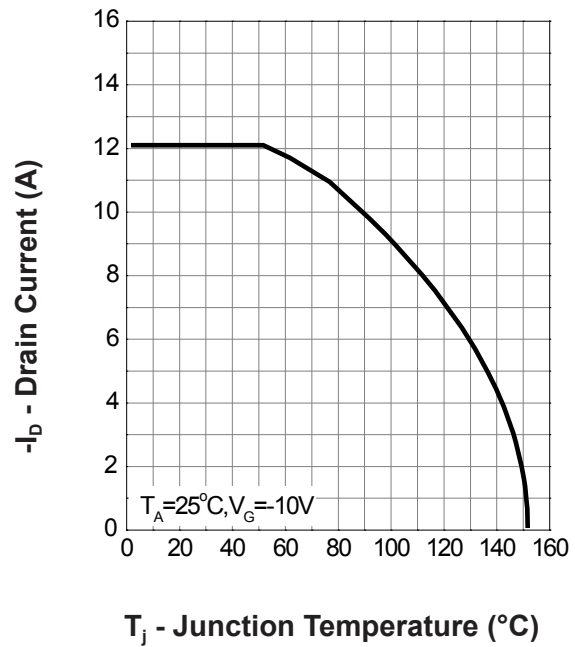
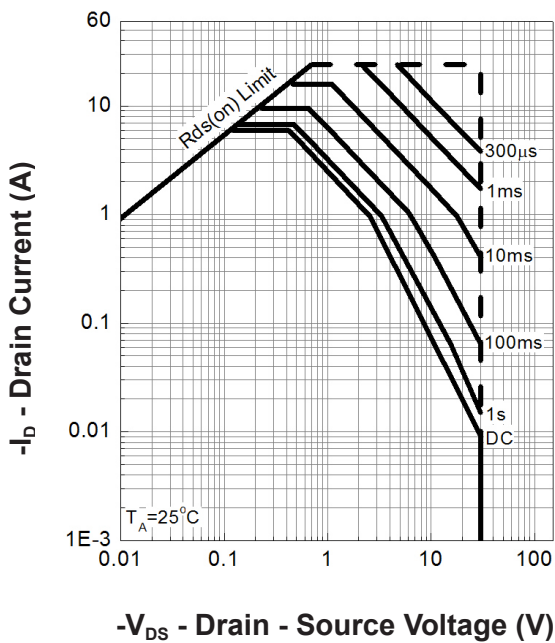
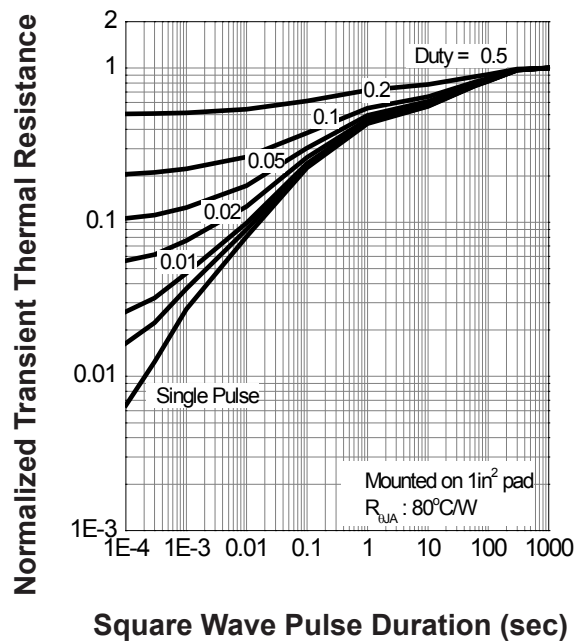
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V T _J =85°C	-	-	-1	μA
			-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.3	-1.8	-2.3	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-4A	-	25	32	mΩ
		V _{GS} =-4.5V, I _{DS} =-3A	-	37	47	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-2A, V _{GS} =0V	-	-0.7	-1	V
t _{rr} ^e	Reverse Recovery Time	I _{SD} =-4A, dI _{SD} /dt=100A/μs	-	19	-	ns
Q _{rr} ^e	Reverse Recovery Charge		-	9	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	8	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	840	-	pF
C _{oss}	Output Capacitance		-	150	-	
C _{rss}	Reverse Transfer Capacitance		-	110	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	10	-	ns
t _r	Turn-on Rise Time		-	11	-	
t _{d(OFF)}	Turn-off Delay Time		-	42	-	
t _f	Turn-off Fall Time		-	24	-	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-4.5V, I _{DS} =-4A	-	8.5	-	nC
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-4A	-	18	-	
Q _{gs}	Gate-Source Charge		-	2.8	-	
Q _{gd}	Gate-Drain Charge		-	3.4	-	

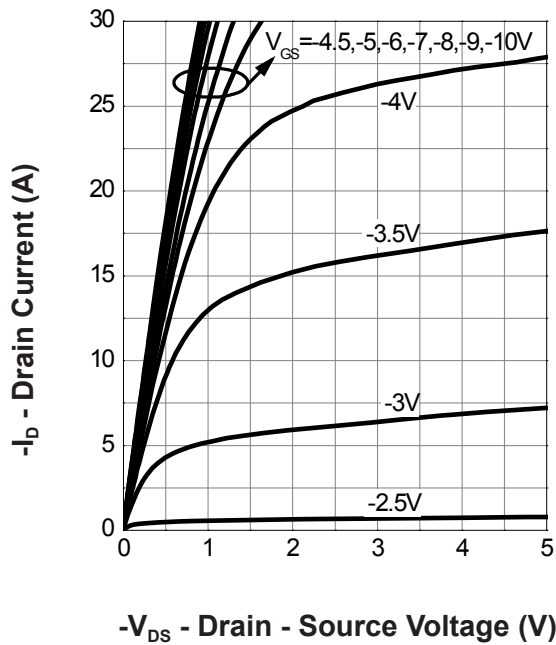
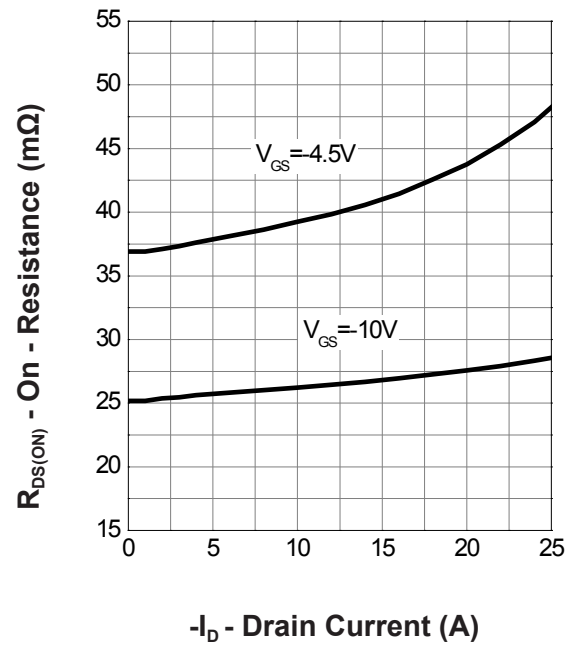
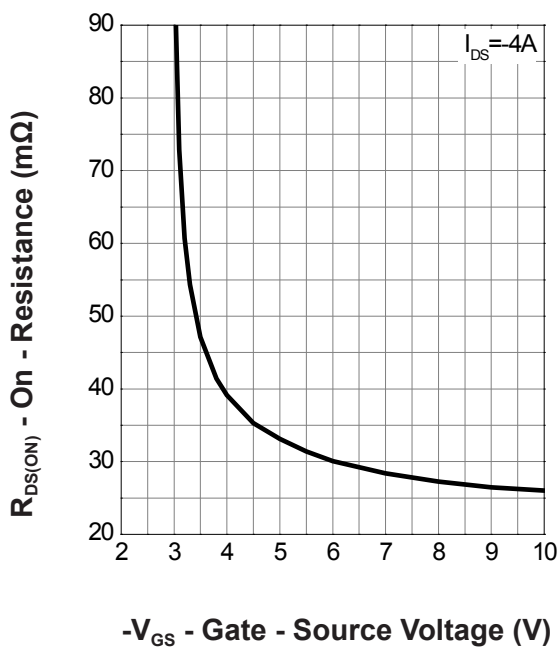
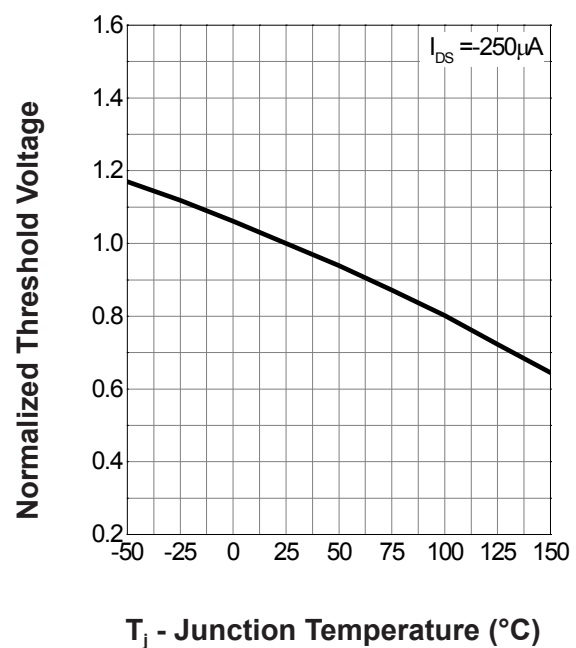
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

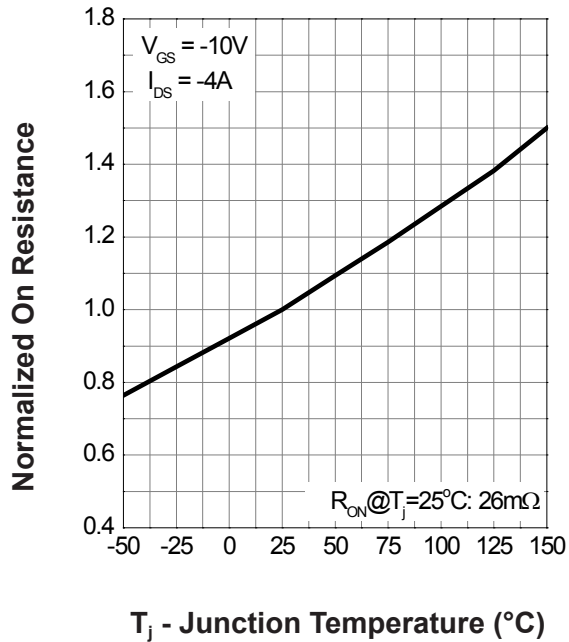
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


Typical Operating Characteristics(Cont.)

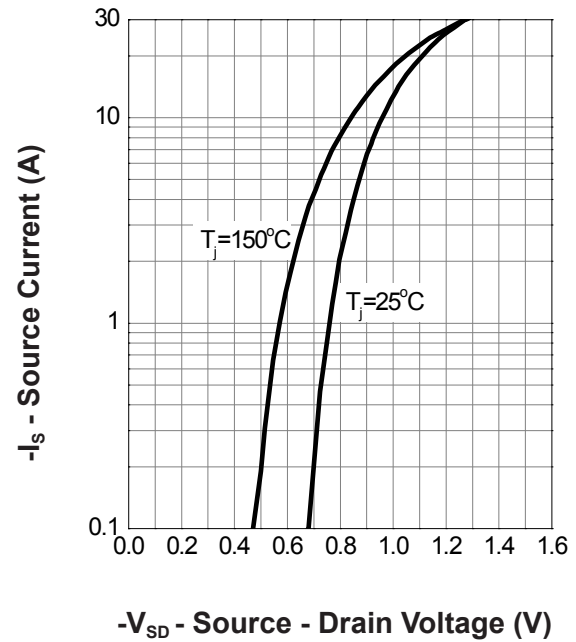
Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


Typical Operating Characteristics(Cont.)

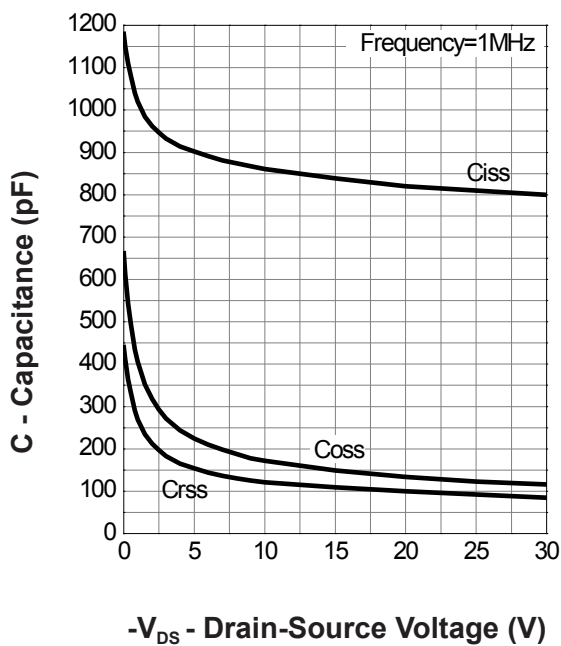
Drain-Source On Resistance



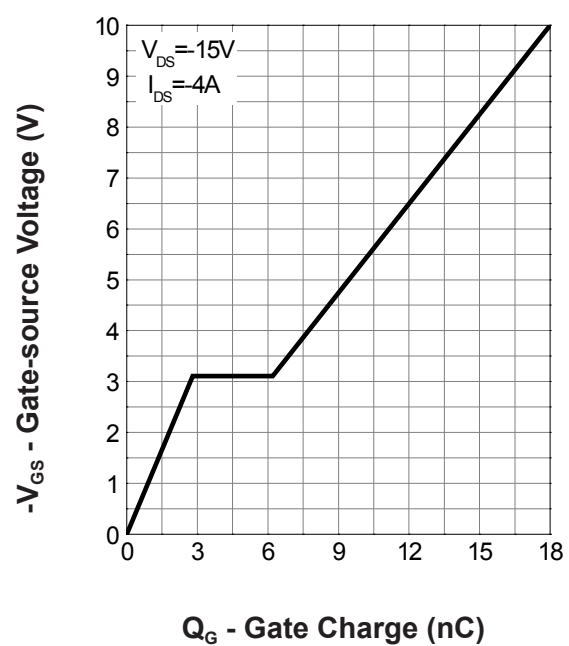
Source-Drain Diode Forward



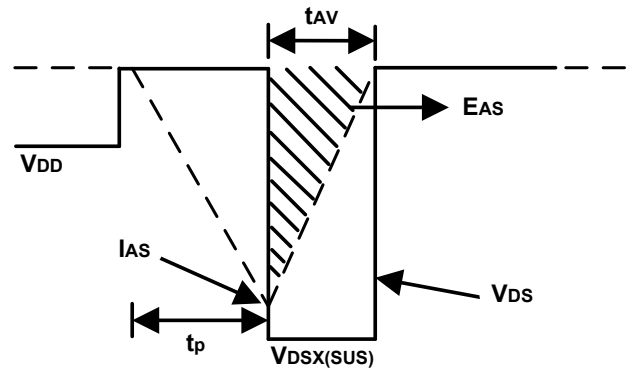
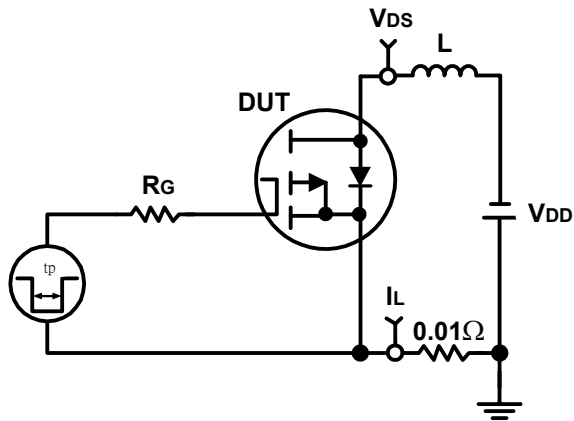
Capacitance



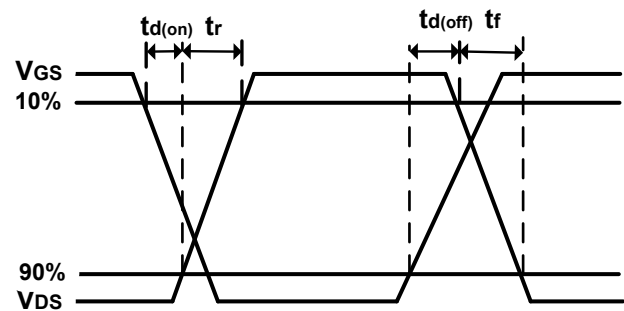
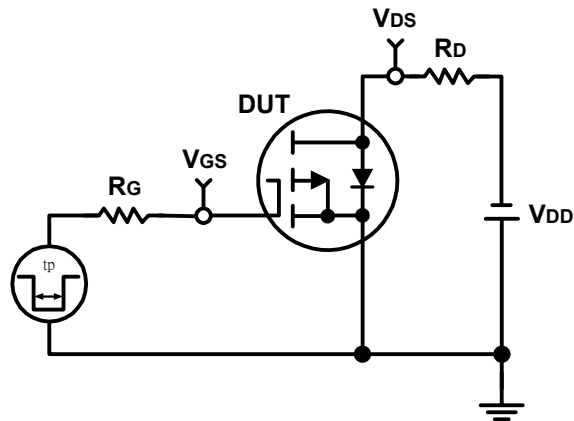
Gate Charge



Avalanche Test Circuit and Waveforms

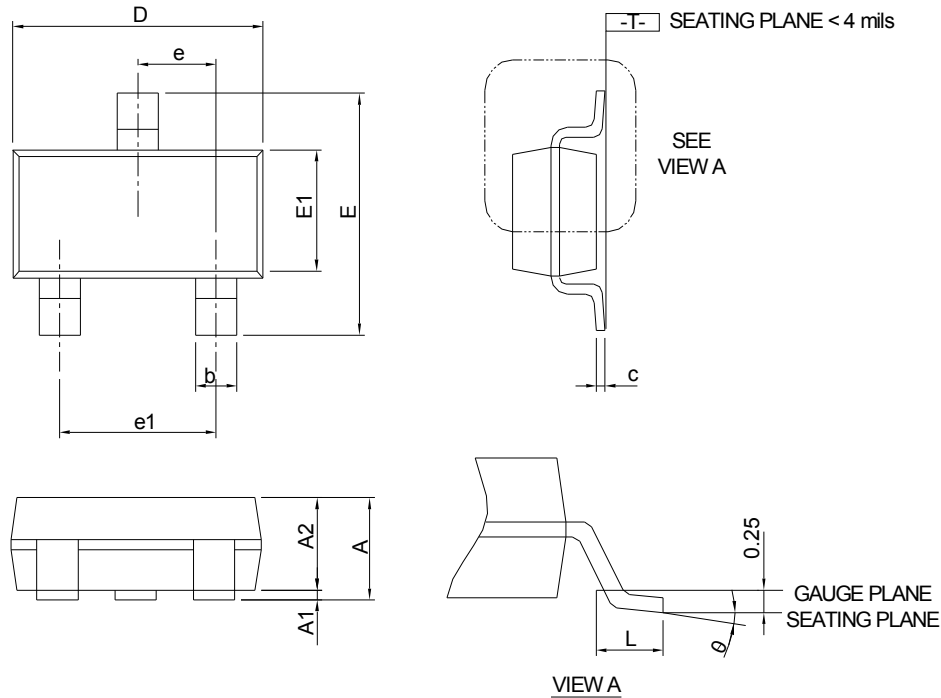


Switching Time Test Circuit and Waveforms



Package Information

SOT-23-3



SYMBOL	SOT-23-3			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.20	-	0.047
A1	0.00	0.08	0.000	0.003
A2	0.90	1.12	0.035	0.044
b	0.30	0.50	0.012	0.020
c	0.08	0.22	0.003	0.009
D	2.70	3.10	0.106	0.122
E	2.60	3.00	0.102	0.118
E1	1.40	1.80	0.055	0.071
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.30	0.60	0.012	0.024
θ	0°	8°	0°	8°

Note : Dimension D and E1 do not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 10 mil per side.

RECOMMENDED LAND PATTERN

