

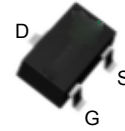
Features

- -30V/-6A
 $R_{DS(ON)}=26m\Omega(\text{typ.})@V_{GS}=-10V$
 $R_{DS(ON)}=34m\Omega(\text{typ.})@V_{GS}=-4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)
- Moisture Sensitivity Level MSL1
(per JEDEC J-STD-020D)

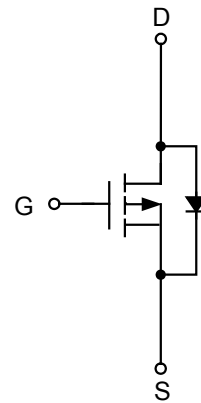
Applications

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

Pin Description



SOT-23



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		±25	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S	Diode Continuous Forward Current	T _A =25°C	-6	A
I _D	Continuous Drain Current	T _A =25°C	-6	A
		T _A =70°C	-2.4	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	-18	
P _D	Maximum Power Dissipation	T _A =25°C	1.2	W
		T _A =70°C	0.8	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	Steady state	100	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.1mH	-15	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.1mH	11.2	mJ

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

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

Note c : Surface mounted on 1in^2 pad area.

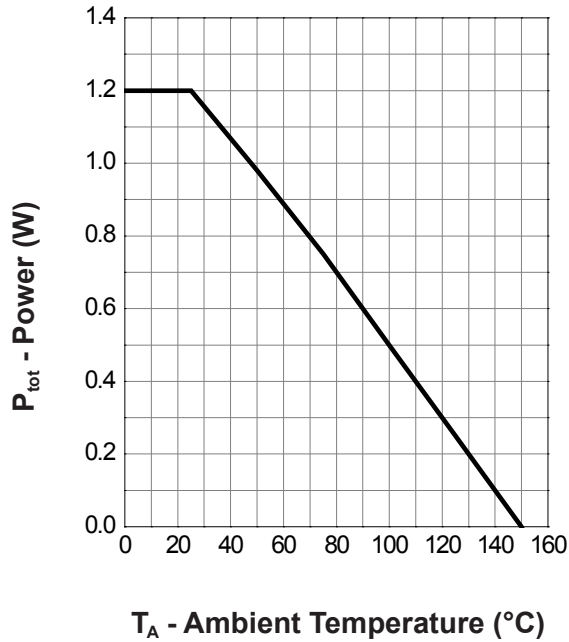
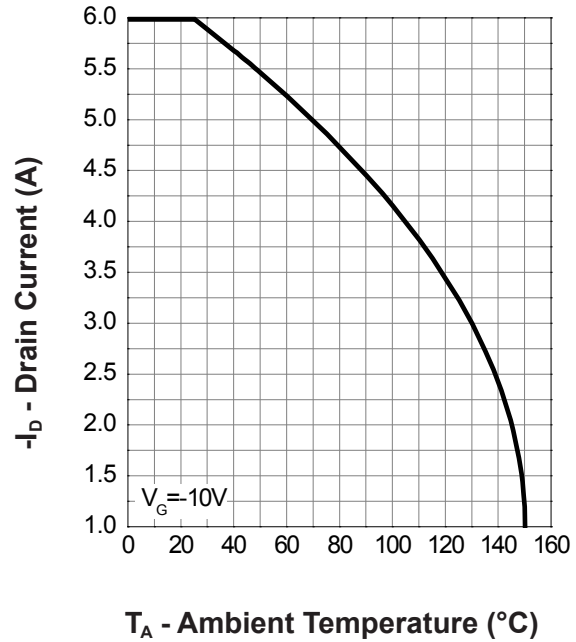
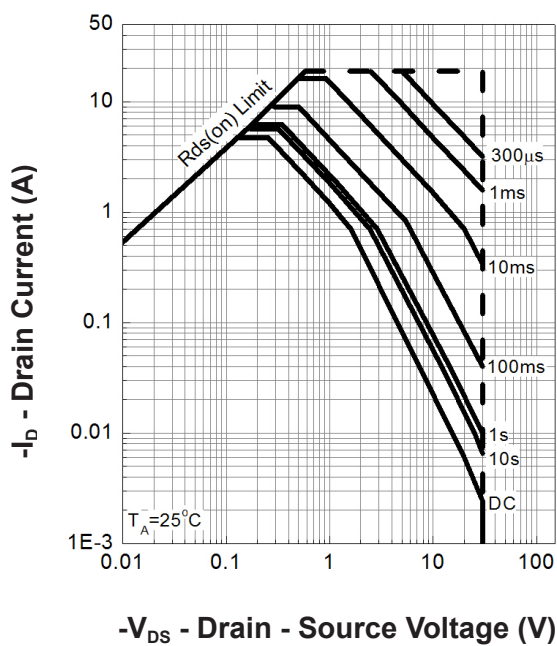
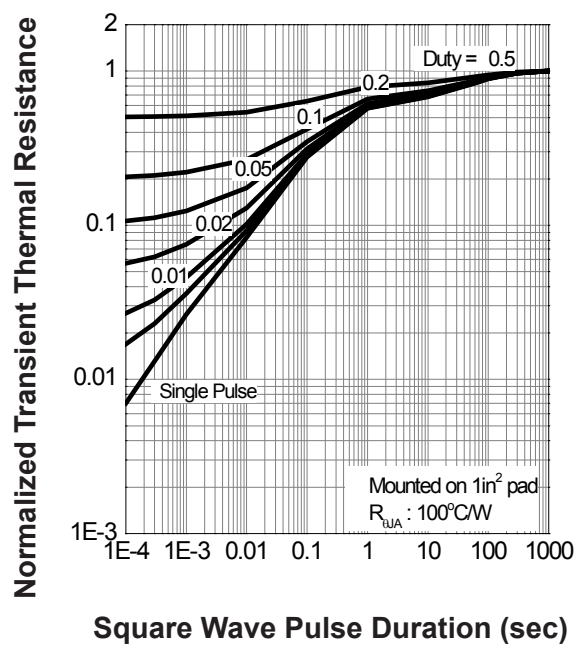
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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} =±25V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-6A V _{GS} =-4.5V, I _{DS} =-5A	-	26 34	35 54	mΩ
			-			
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-2.3A, V _{GS} =0V	-	-0.8	-1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-4.7A, dI _{SD} /dt=100A/μs	-	14	-	ns
Q _{rr}	Reverse Recovery Charge		-	7.4	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	6.2	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz	-	610	790	pF
C _{oss}	Output Capacitance		-	110	-	
C _{rss}	Reverse Transfer Capacitance		-	90	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	9	16	ns
t _r	Turn-on Rise Time		-	11	20	
t _{d(OFF)}	Turn-off Delay Time		-	28	50	
t _f	Turn-off Fall Time		-	18	32	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _{DS} =-4.7A	-	13	19	nC
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-4.5V, I _{DS} =-4.7A	-	6.9	10	
Q _{gs}	Gate-Source Charge		-	2.2	-	
Q _{gd}	Gate-Drain Charge		-	3.1	-	

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

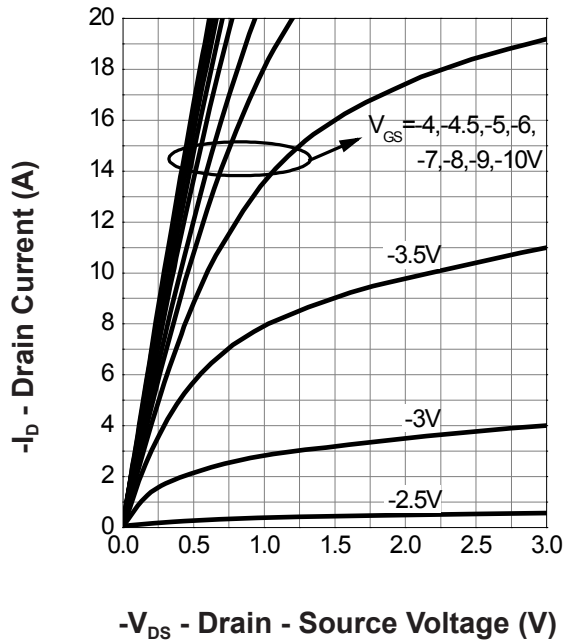
Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

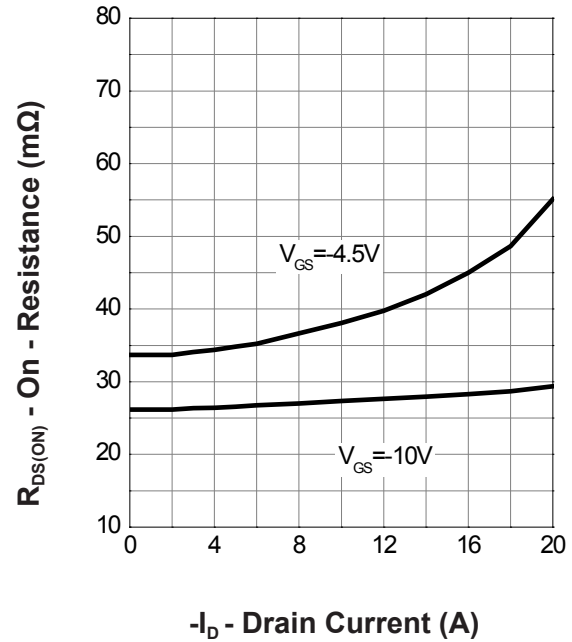
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


Typical Operating Characteristics(Cont.)

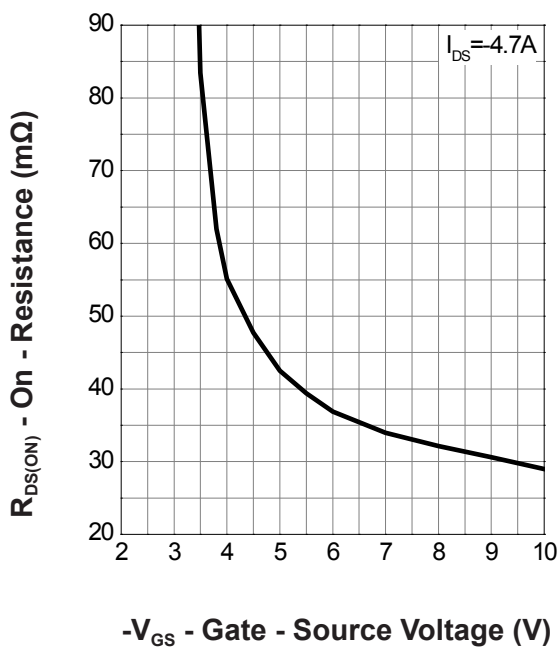
Output Characteristics



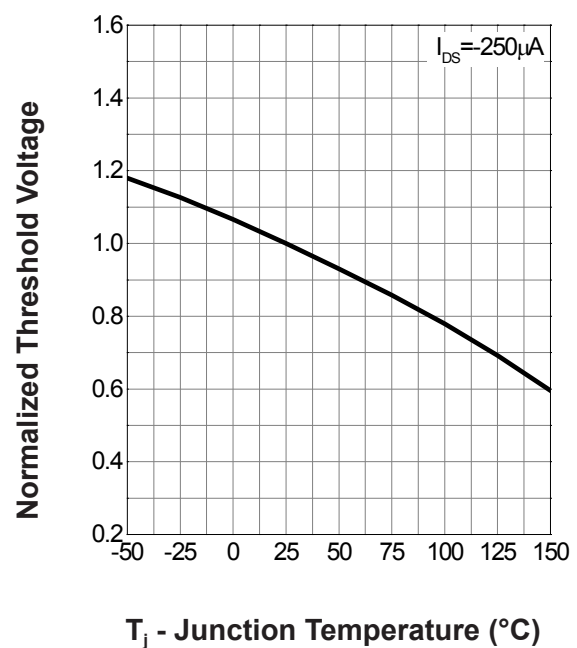
Drain-Source On Resistance



Gate-Source On Resistance

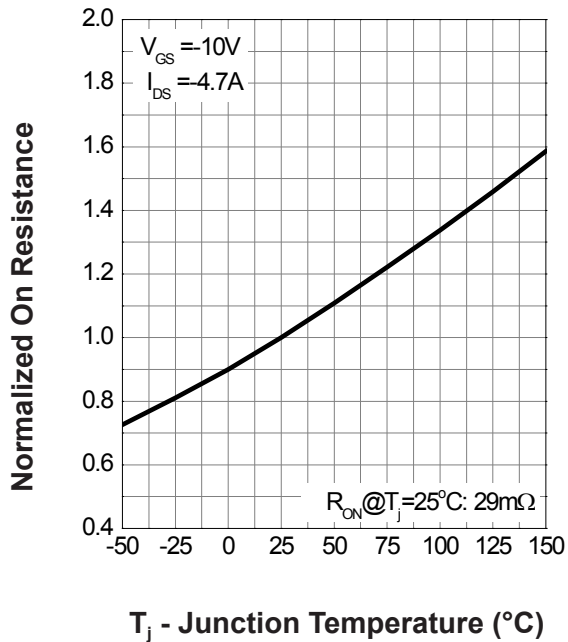


Gate Threshold Voltage

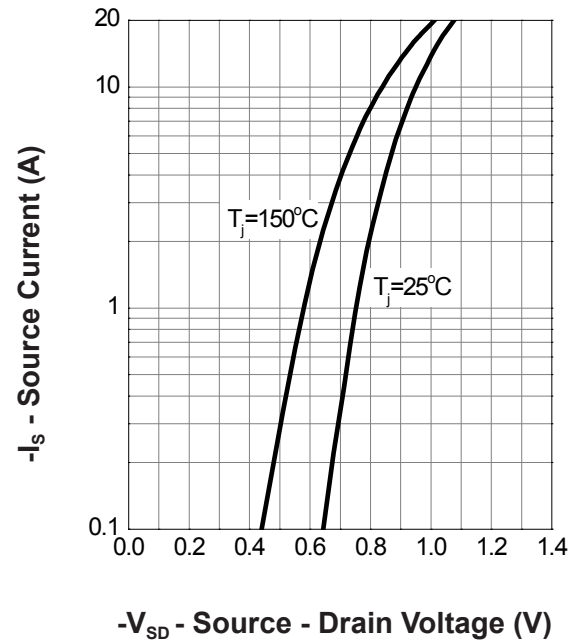


Typical Operating Characteristics(Cont.)

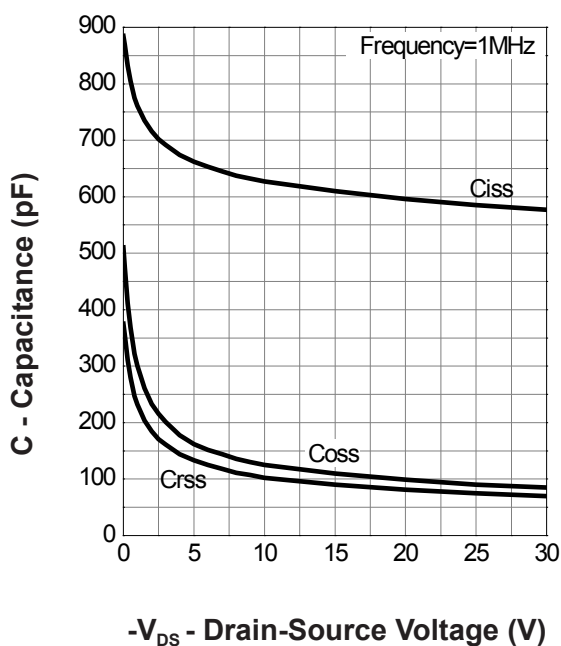
Drain-Source On Resistance



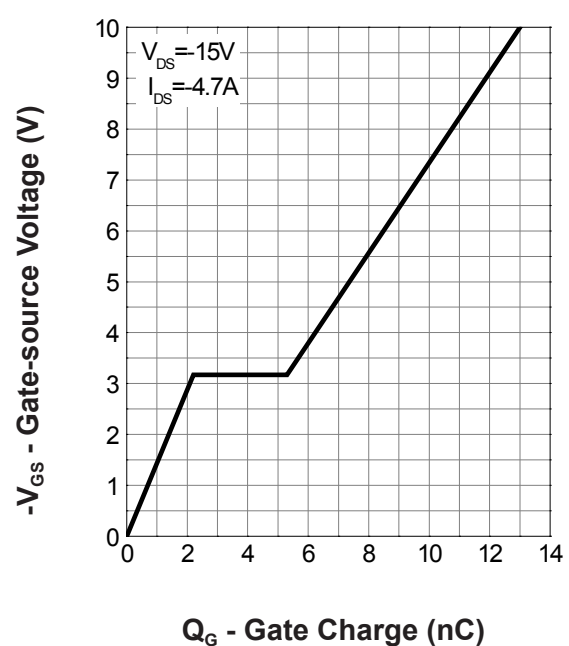
Source-Drain Diode Forward



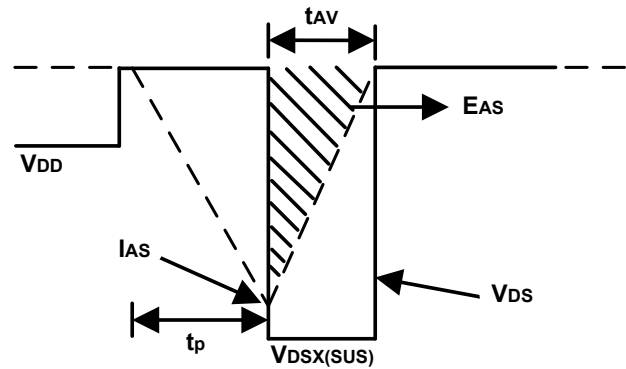
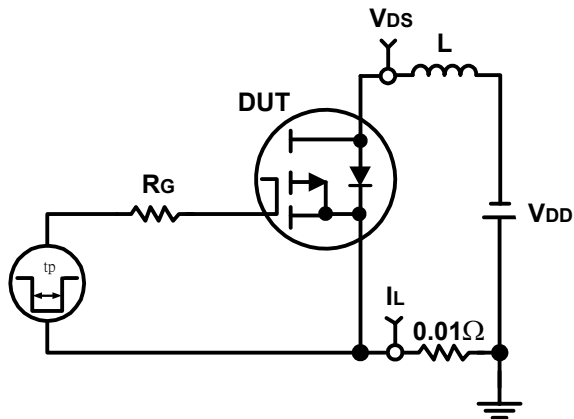
Capacitance



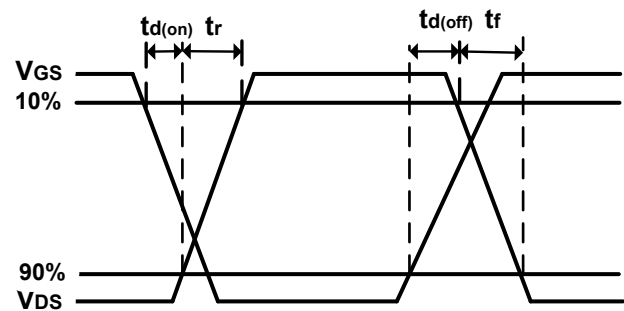
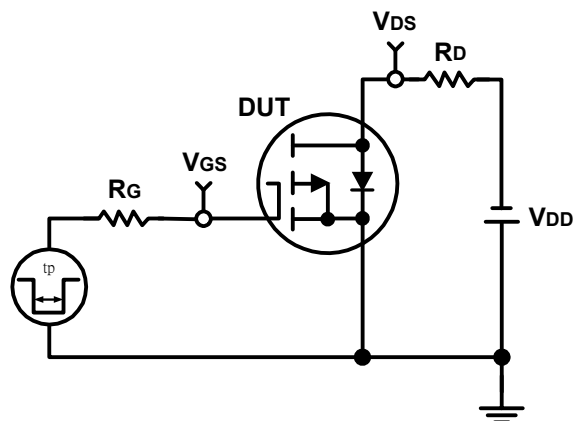
Gate Charge



Avalanche Test Circuit and Waveforms

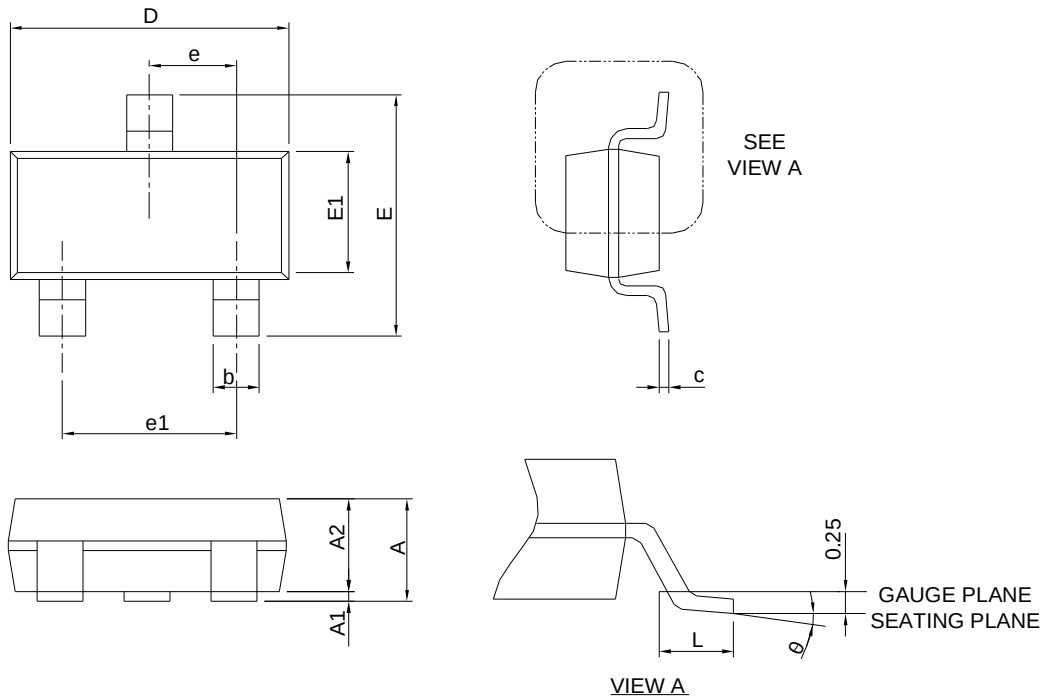


Switching Time Test Circuit and Waveforms



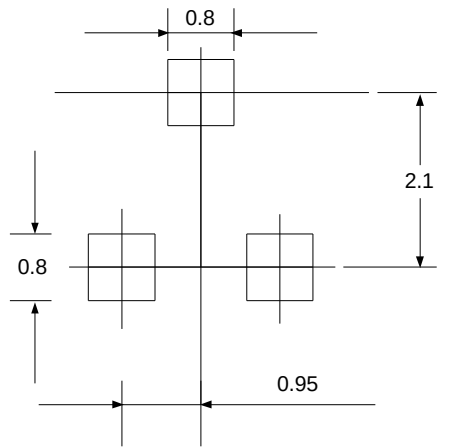
Package Information

SOT-23



SYMBOL	SOT-23			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.20	-	0.047
A1	0.00	0.10	0.000	0.004
A2	0.90	1.10	0.035	0.043
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	2.20	2.60	0.086	0.102
E1	1.20	1.40	0.047	0.055
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°

RECOMMENDED LAND PATTERN



UNIT: mm

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.