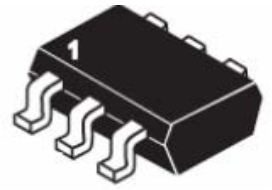
Features

- 20V/10A
  $R_{DS(ON)}$=11mΩ(typ.)@V_{GS}=4.5V
  $R_{DS(ON)}$=14mΩ(typ.)@V_{GS}=2.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

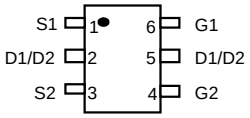
- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.
- One Cell Li-ion Battery Pack.

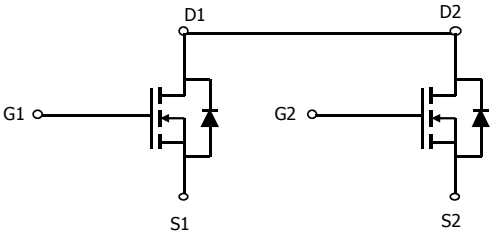
Pin Description



SOT23-6L top view

Top View





Absolute Maximum Ratings (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	
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	10	A
I_D	Continuous Drain Current	T_A=25°C	10	A
		T_A=70°C	4	
I_{DM} [b]	Pulsed Drain Current	T_A=25°C	30	
P_D	Maximum Power Dissipation	T_A=25°C	1	W
		T_A=70°C	0.6	
$R_{\theta JA}$ [a]	Thermal Resistance-Junction to Ambient	t ≤ 10s	80	°C/W
		Steady state	127	
I_{AS} [c]	Avalanche Current, Single pulse	L=0.1mH	20	A
E_{AS} [c]	Avalanche Energy, Single pulse	L=0.1mH	20	mJ

Note a：Surface mounted on 1in^2 pad area, steady state t = 999s.
Note b：Pulse width limited by max. junction temperature.
Note c：UIS tested and pulse width limited by maximum junction temperature (initial temperature T_j=25°C).

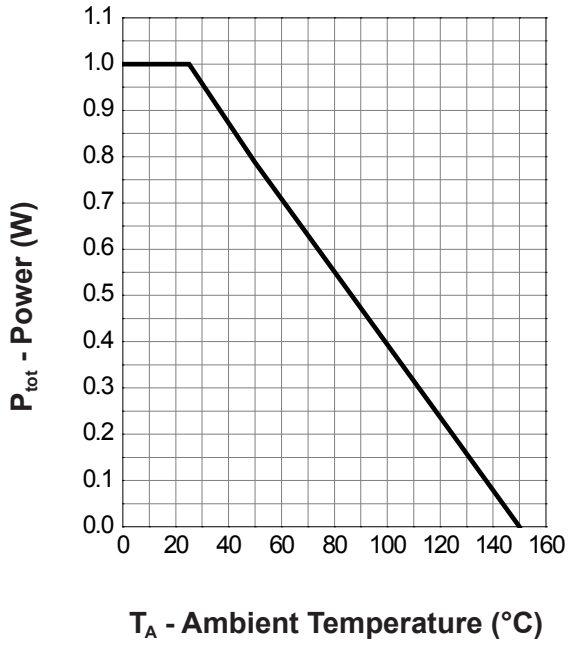
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.4	-	1.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [d]	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=5A	-	11	15	mΩ
		V_{GS}=2.5V, I_{DS}=3A	-	14	19	
Gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=5.5A	-	10.7	-	S
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V	-	0.75	1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=5A, dI_{SD}/dt=100A/μs	-	10	-	ns
t_a	Charge Time		-	5.5	-	
t_b	Discharge Time		-	4.5	-	
Q_{rr}	Reverse Recovery Charge		-	3.6	-	nC
Dynamic Characteristics [e]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	5	7.5	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	900	1170	pF
C_{oss}	Output Capacitance		-	120	-	
C_{rss}	Reverse Transfer Capacitance		-	95	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, R_L=10Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	9	17	ns
t_r	Turn-on Rise Time		-	13.5	25	
$t_{d(OFF)}$	Turn-off Delay Time		-	45.5	82	
t_f	Turn-off Fall Time		-	20	36	
Gate Charge Characteristics [e]						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=5A	-	9	-	nC
Q_{gth}	Threshold Gate Charge		-	0.8	-	
Q_{gs}	Gate-Source Charge		-	1.7	-	
Q_{gd}	Gate-Drain Charge		-	2.3	-	

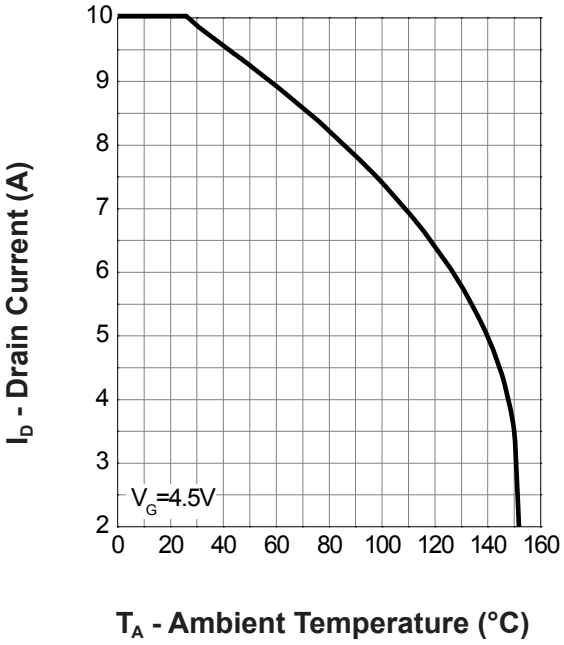
Note d：Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e：Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

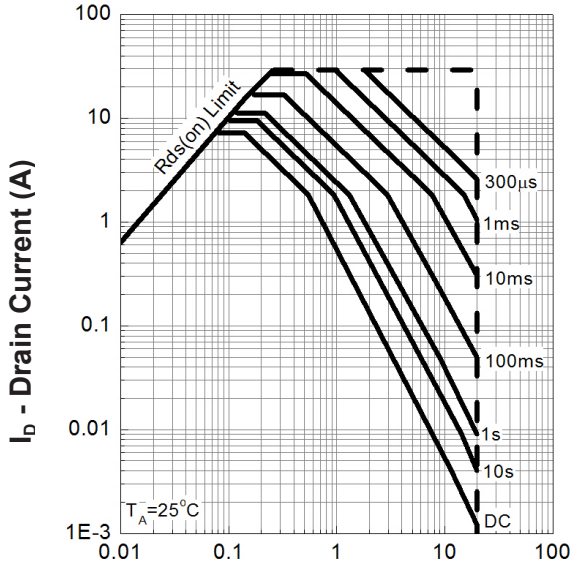
Power Dissipation



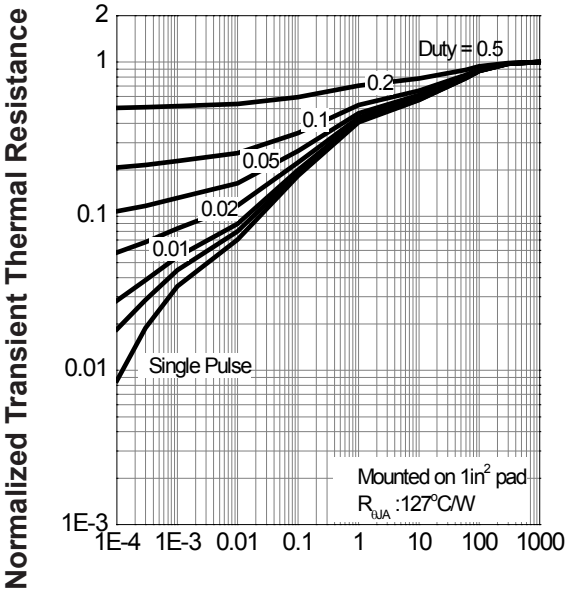
Drain Current



Safe Operation Area

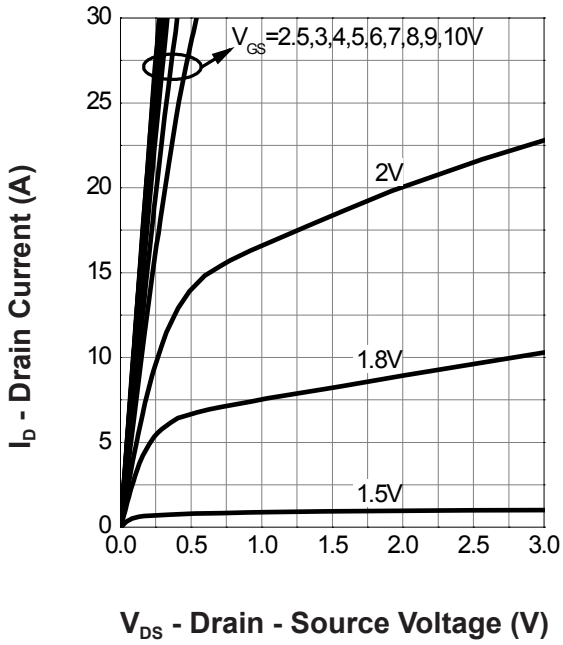


Thermal Transient Impedance

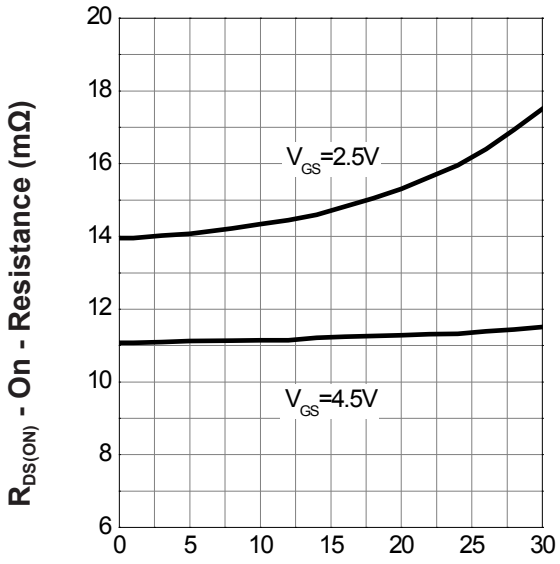


Typical Operating Characteristics(Cont.)

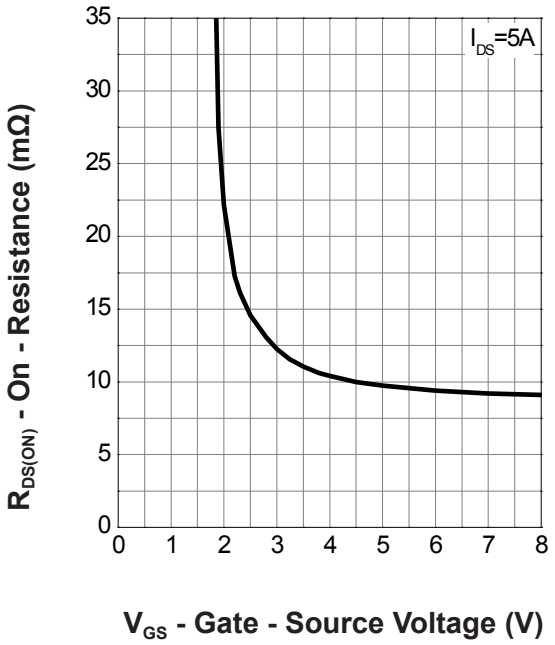
Output Characteristics



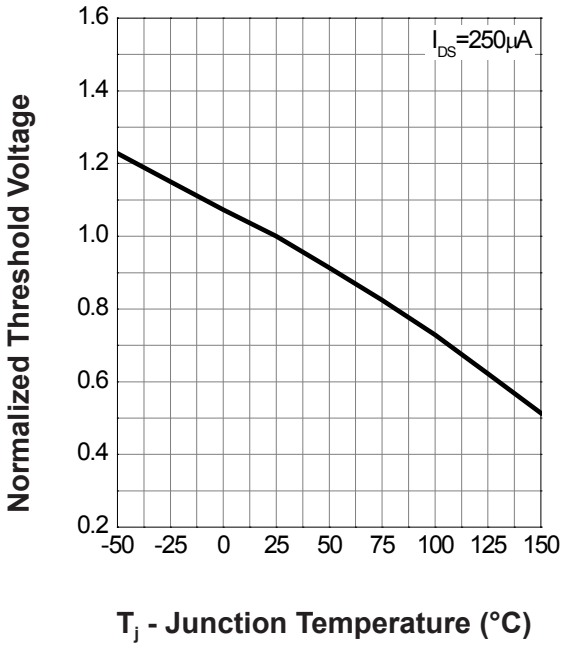
Drain-Source On Resistance



Gate-Source On Resistance

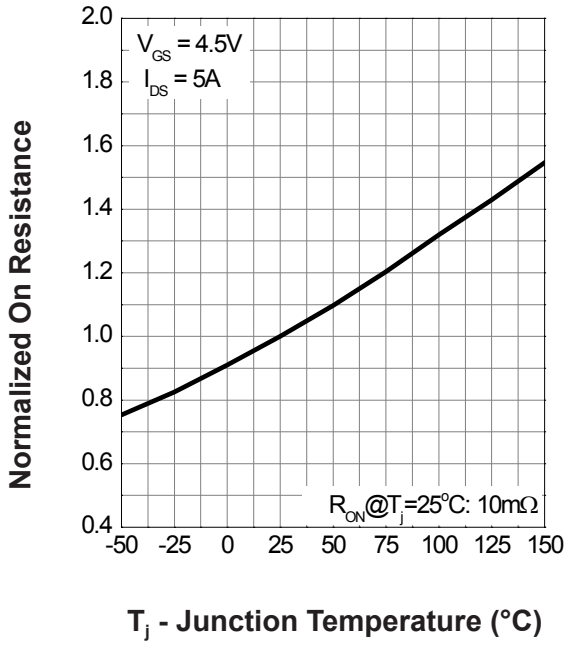


Gate Threshold Voltage

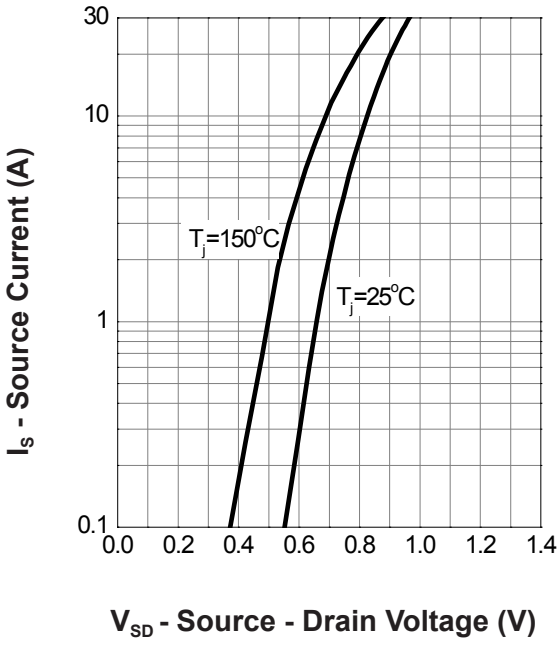


Typical Operating Characteristics(Cont.)

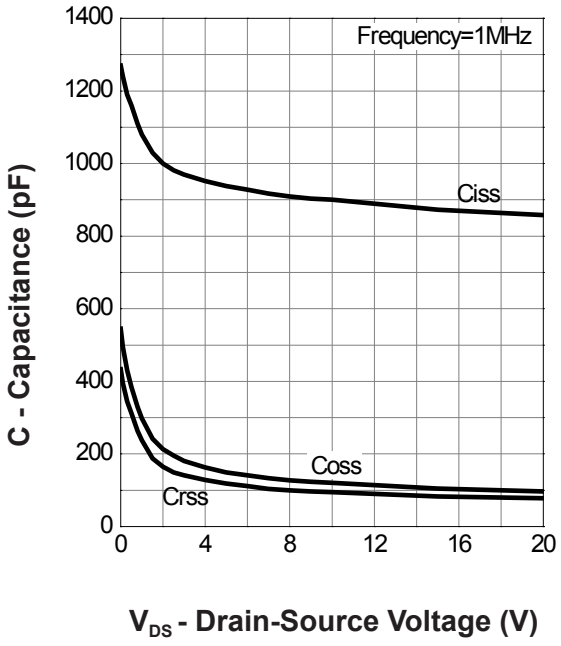
Drain-Source On Resistance



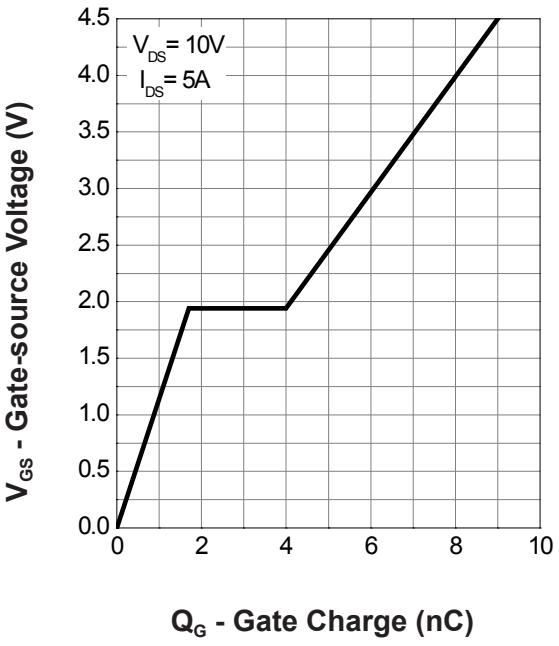
Source-Drain Diode Forward



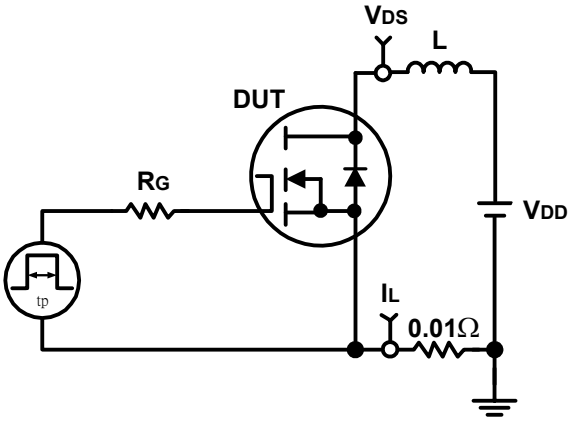
Capacitance

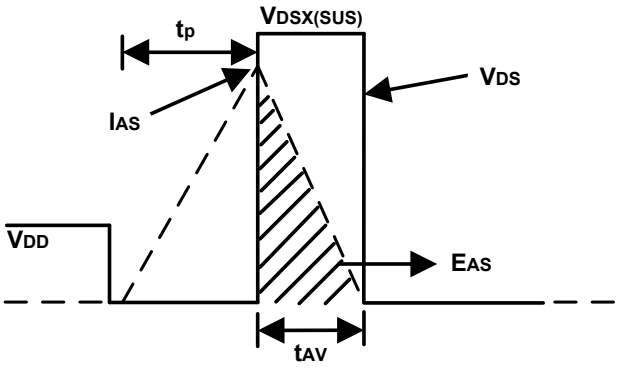


Gate Charge

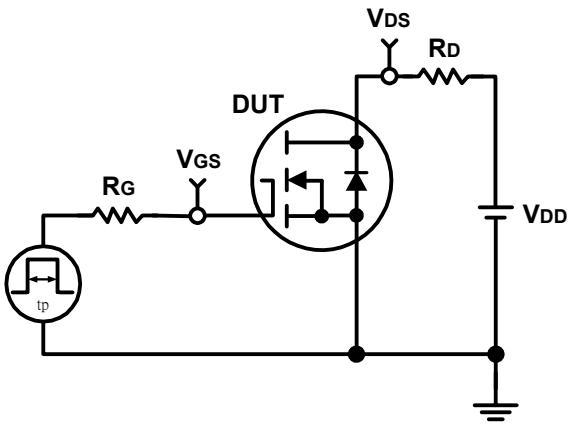


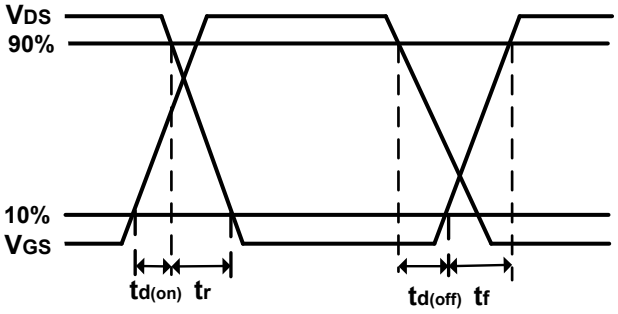
Avalanche Test Circuit and Waveforms



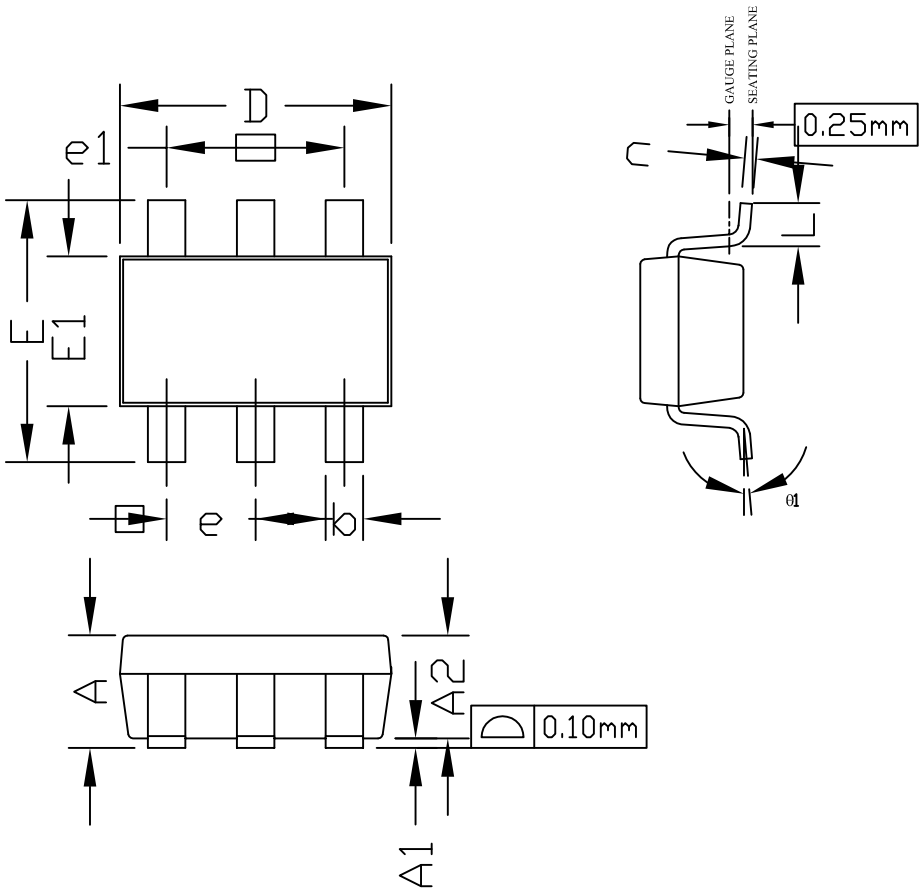


Switching Time Test Circuit and Waveforms

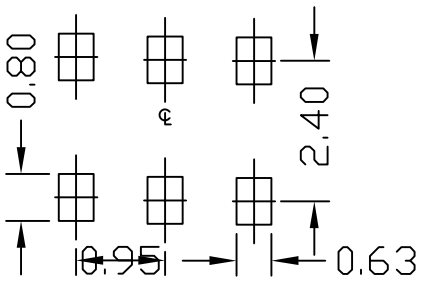




SOT23-6L PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	—	1.25	0.031	—	0.049
A1	0.00	—	0.15	0.000	—	0.006
A2	0.70	1.10	1.20	0.028	0.043	0.047
b	0.30	0.40	0.50	0.012	0.016	0.020
c	0.08	0.13	0.20	0.003	0.005	0.008
D	2.70	2.90	3.10	0.106	0.114	0.122
E	2.50	2.80	3.10	0.098	0.110	0.122
E1	1.50	1.60	1.70	0.059	0.063	0.067
e	0.95 BSC.			0.037BSC.		
e1	1.90 BSC.			0.075 BSC.		
L	0.30	—	0.60	0.012	—	0.024
θ1	0°	—	8°	0°	—	8°

UNIT: mm

NOTE
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
   MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 5 MILS EACH.
2. DIMENSION "L" IS MEASURED IN GAUGE PLANE.
3. TOLERANCE ±0.100 mm(4 mil) UNLESS OTHERWISE SPECIFIED.
4. FOLLOWED FROM JEDEC MO-178C & MO-193C.
5. CONTROLLING DIMENSIONS IS MILLIMETER.
   CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.