

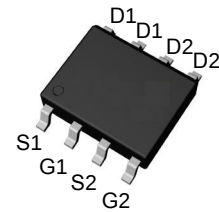
Features

- 60V/-4A
 $R_{DS(ON)} = 60m\Omega (typ.) @ V_{GS} = -10V$
 $R_{DS(ON)} = 70m\Omega (typ.) @ V_{GS} = -4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

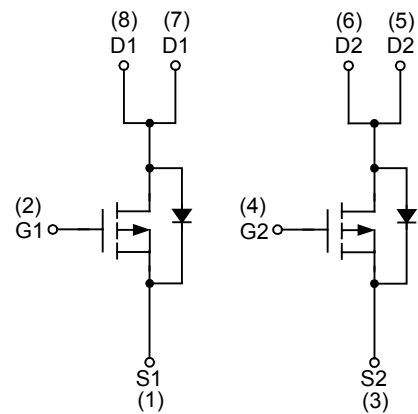
Applications

- Power Management in Computer, Portable Equipment and Battery Powered Systems.
- Load Switches.
- Motor Control.

Pin Description



SOP8



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		-60	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	
I _S ^b	Diode Continuous Forward Current	T _A =25°C	-4	A
I _D ^b	Continuous Drain Current	T _A =25°C	-4	A
		T _A =70°C	-3.25	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	-12	
P _D ^b	Maximum Power Dissipation	T _A =25°C	2	W
		T _A =70°C	1.3	
R _{θJA} ^b	Thermal Resistance-Junction to Ambient	t ≤ 10s	62.5	°C/W
		Steady state	100	
I _{AS} ^c	Avalanche Current, Single pulse	L=0.1mH	-18	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.1mH	16	mJ

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

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

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

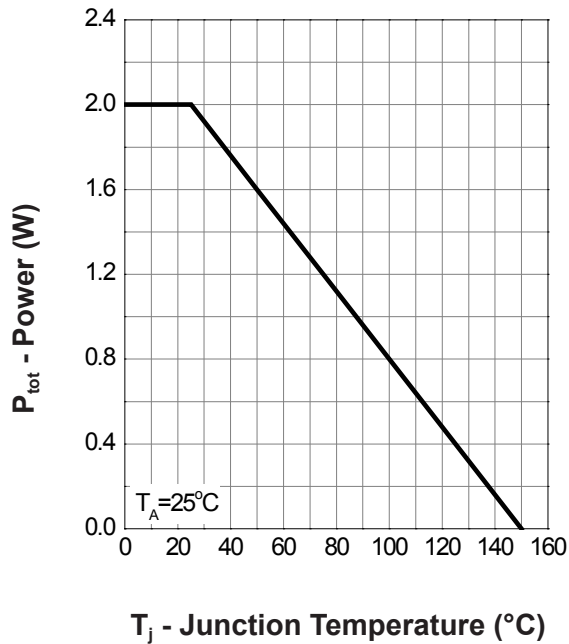
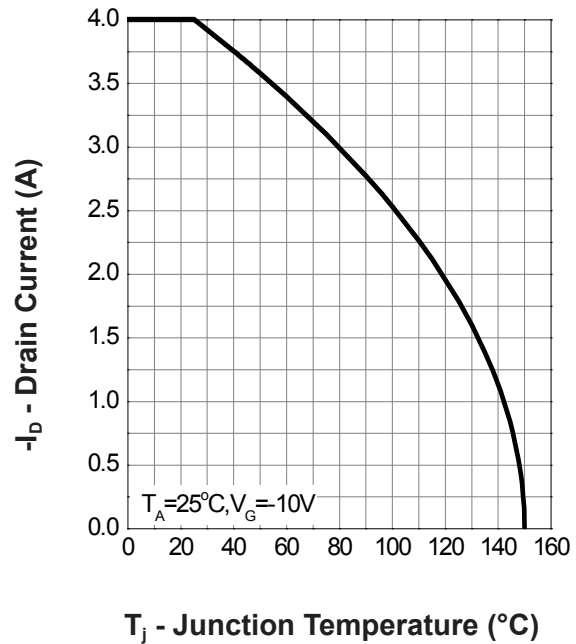
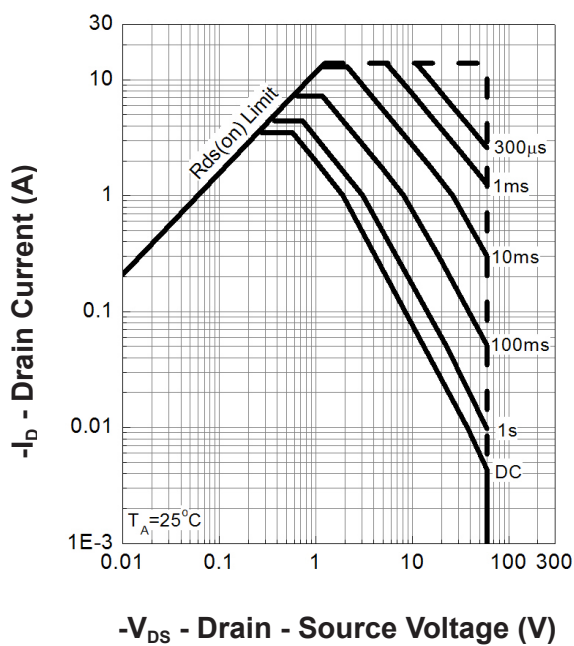
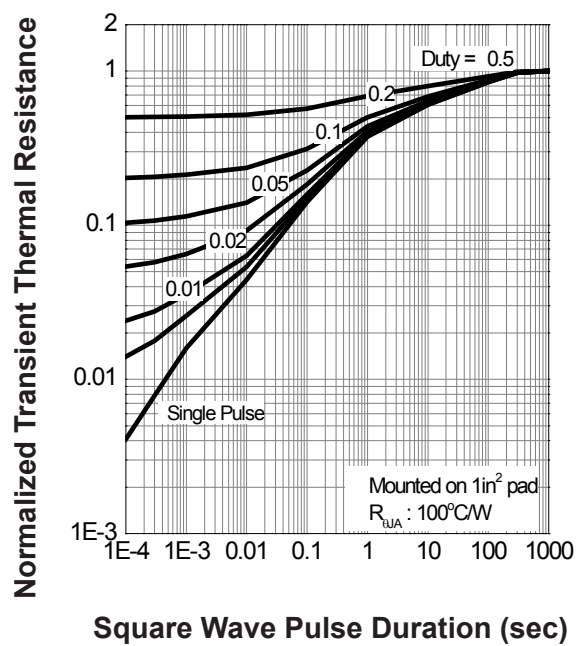
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-48V, V _{GS} =0V T _J =85°C	-	-	-1	μA
			-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.5	-2	-2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-3.5A	-	60	90	mΩ
		V _{GS} =-4.5V, I _{DS} =-2A	-	70	100	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-3.5A, dI _{SD} /dt=100A/μs	-	21	-	ns
Q _{rr}	Reverse Recovery Charge		-	20	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	10	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-30V, Frequency=1.0MHz	-	535	695	pF
C _{oss}	Output Capacitance		-	70	-	
C _{rss}	Reverse Transfer Capacitance		-	40	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-30V, R _L =30Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	9	16	ns
t _r	Turn-on Rise Time		-	5	9	
t _{d(OFF)}	Turn-off Delay Time		-	40	72	
t _f	Turn-off Fall Time		-	27	49	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-4.5V, I _{DS} =-3.5A	-	5.5	-	nC
Q _g	Total Gate Charge	V _{DS} =-30V, V _{GS} =-10V, I _{DS} =-3.5A	-	12	17	
Q _{gs}	Gate-Source Charge		-	2.3	-	
Q _{gd}	Gate-Drain Charge		-	2.3	-	

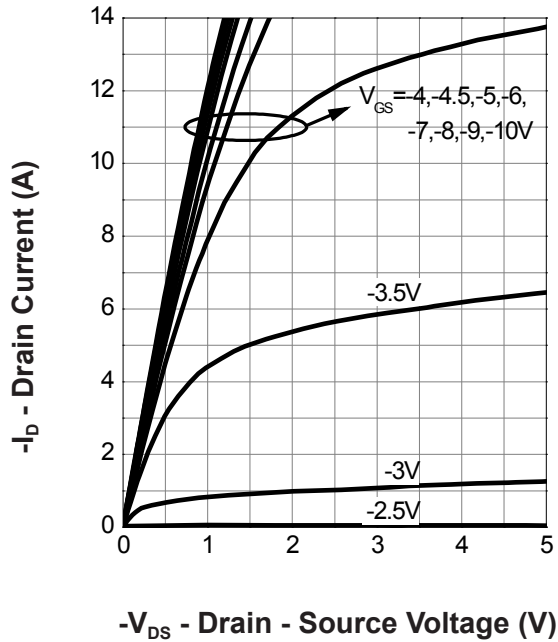
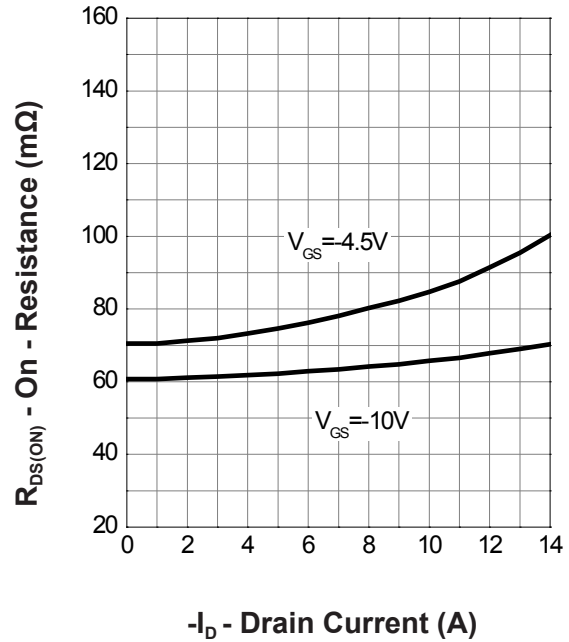
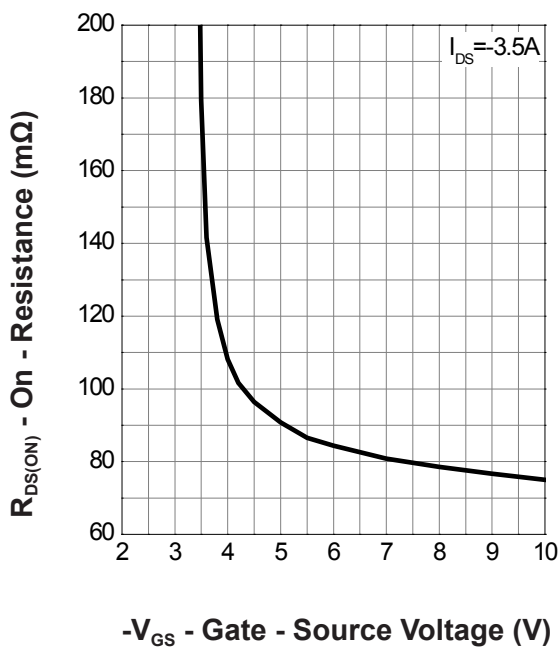
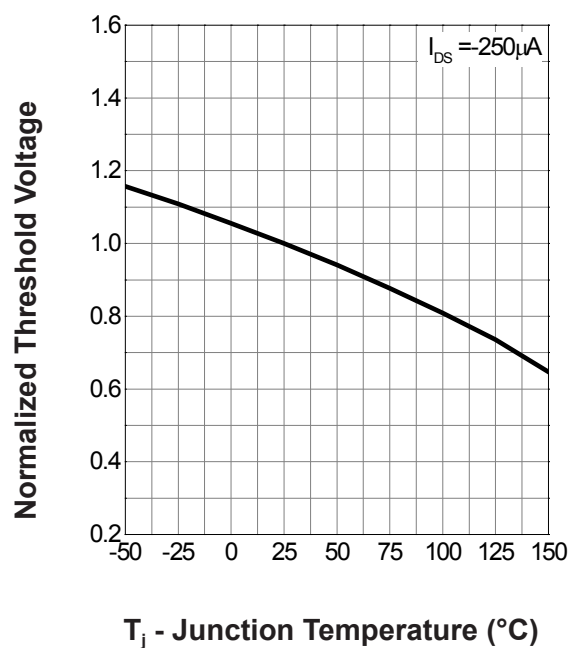
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycles $\leq 2\%$.

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

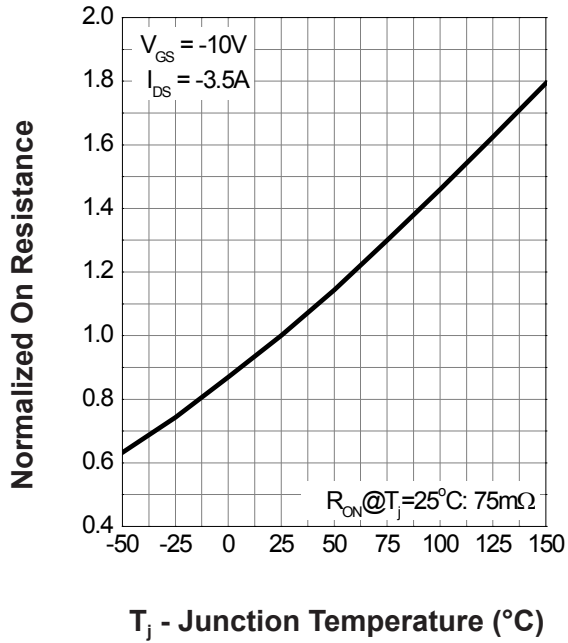
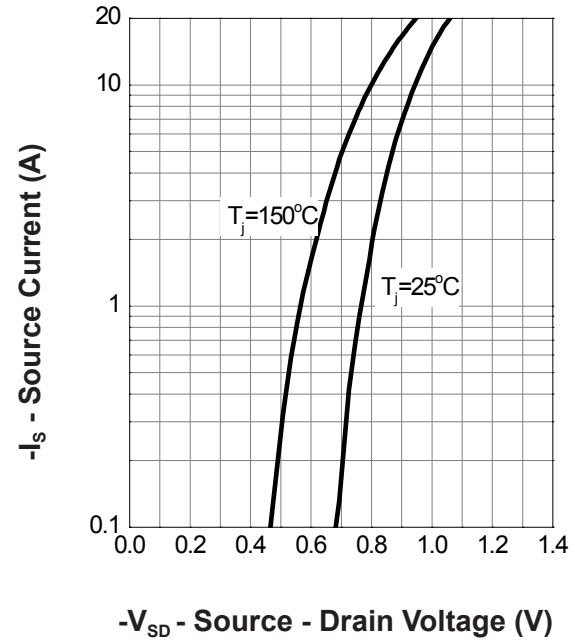
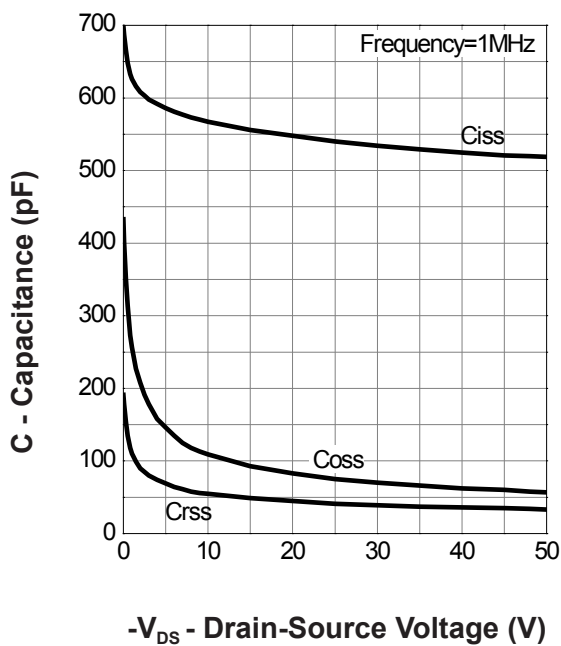
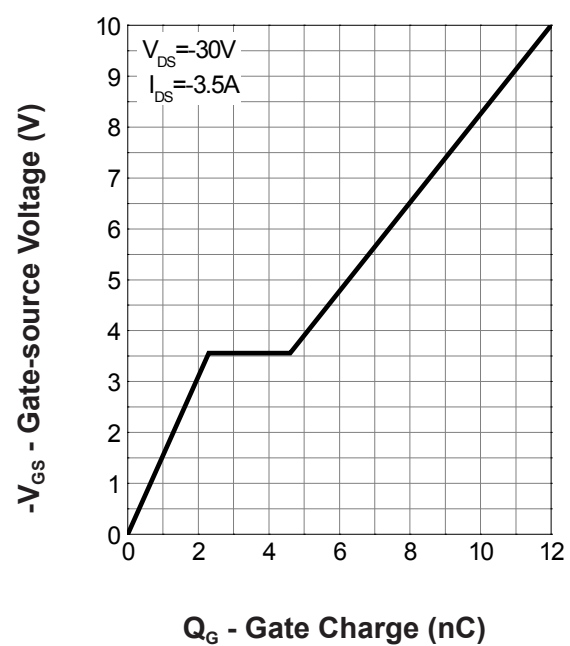
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


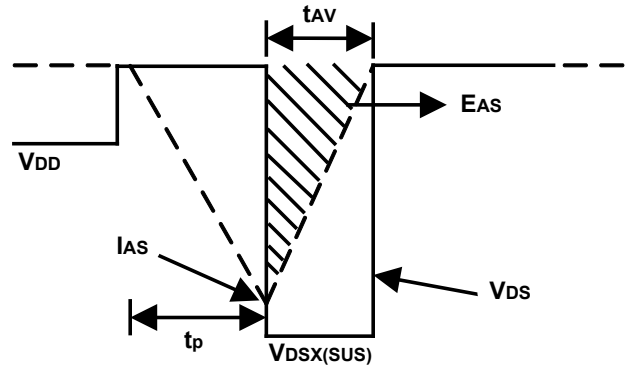
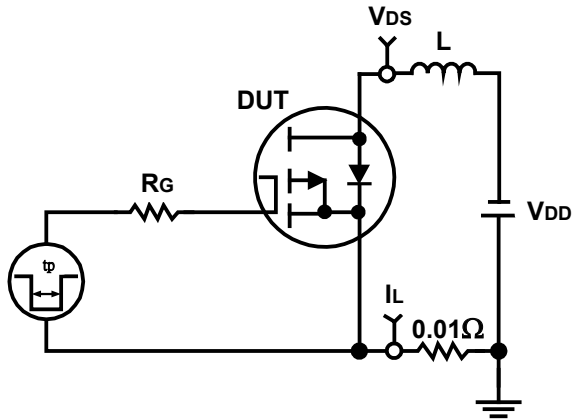
Typical Operating Characteristics(Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


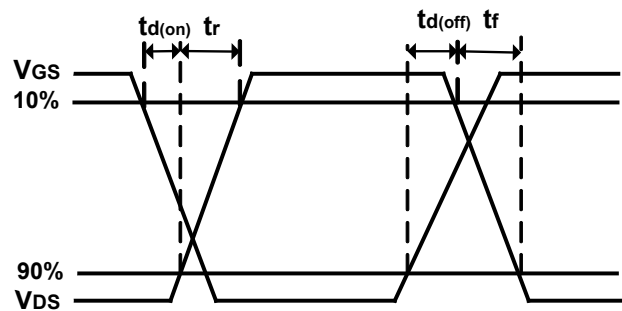
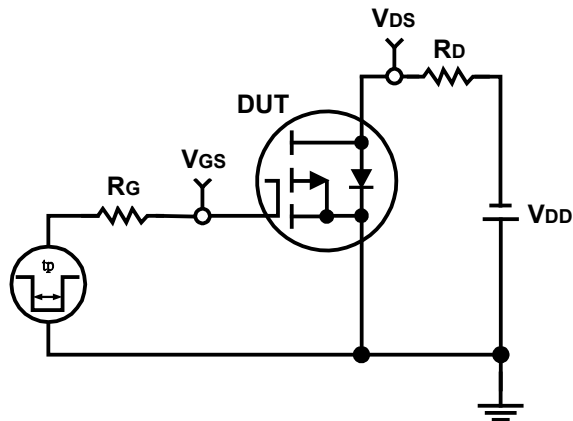
Typical Operating Characteristics(Cont.)

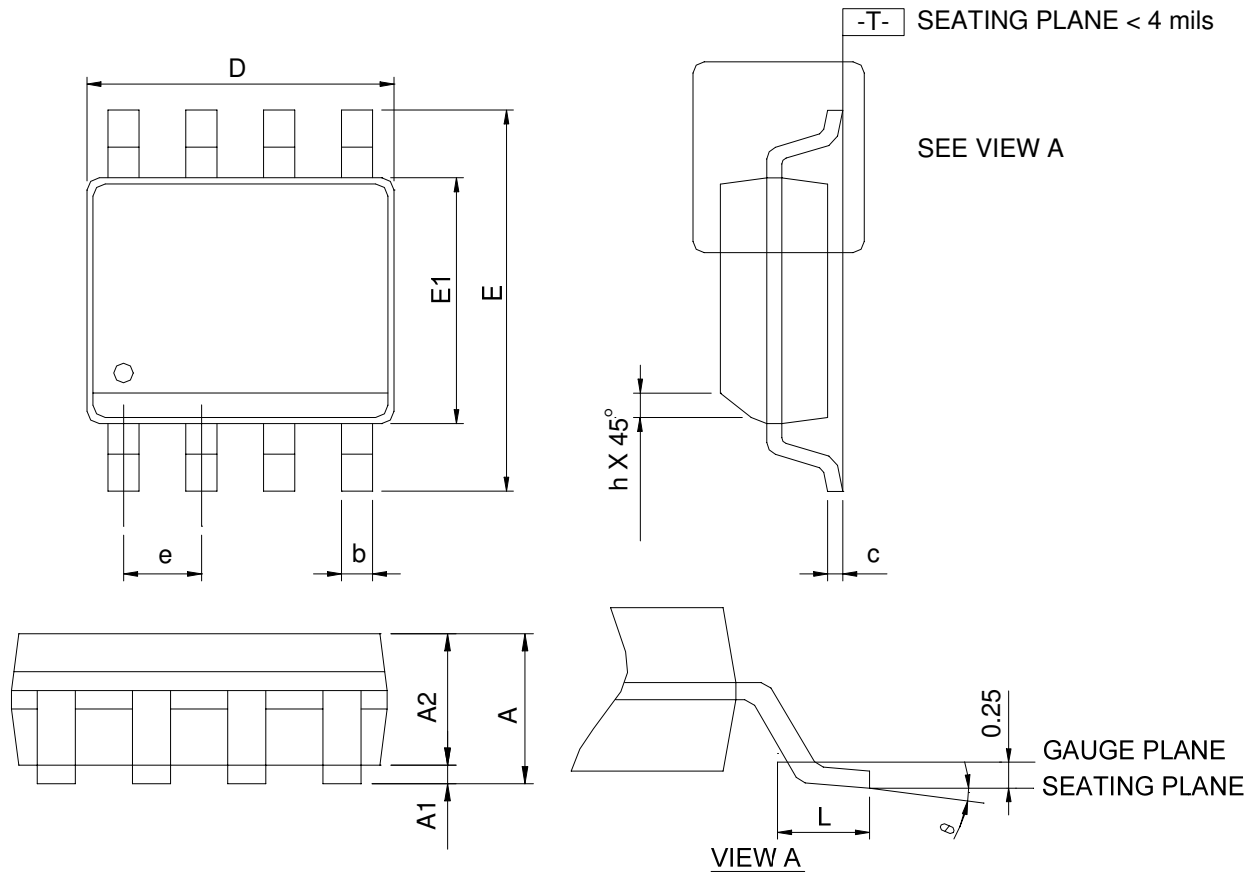
Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms





DIMENSIONS	SOP-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	-	1.75	-	0.069
A1	0.10	0.25	0.004	0.010
A2	1.25	-	0.049	-
b	0.31	0.51	0.012	0.020
c	0.17	0.25	0.007	0.010
D	4.80	5.00	0.189	0.197
E	5.80	6.20	0.228	0.244
E1	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
h	0.25	0.50	0.010	0.020
L	0.40	1.27	0.016	0.050
θ	0°	8°	0°	8°

- Note: 1. Follow JEDEC MS-012 AA.
 2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side.
 3. Dimension " " does not include inter-lead flash or protrusions. Inter-lead flash and protrusions shall not exceed 10 mil per side.

RECOMMENDED LAND PATTERN

