

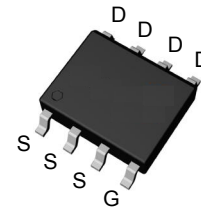
Features

- 40V/18A
 $R_{DS(ON)} = 5m\Omega (typ.) @ V_{GS} = 10V$
 $R_{DS(ON)} = 7m\Omega (typ.) @ V_{GS} = 4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

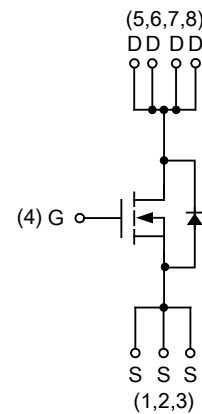
Applications

- SMPS Synchronous Rectification.
- Load Switch.
- DC-DC Conversion.

Pin Description



Top View of SOP-8



N-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		40	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	18	A
I _D	Continuous Drain Current	T _A =25°C	18	A
		T _A =70°C	13.5	
I _{DM} ^a	Pulse Drain Current	T _A =25°C	54	A
P _D	Maximum Power Dissipation	T _A =25°C	1.6	W
		T _A =70°C	1	
R _{θJA} ^b	Thermal Resistance-Junction to Ambient	t ≤ 10s	36	°C/W
		Steady State	78	
I _{AS} ^c	Avalanche Current, Single pulse	L=0.1mH	30	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.1mH	45	mJ

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

Note b : Surface mounted on 1in² pad area, steady state $t = 999\text{s}$.

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

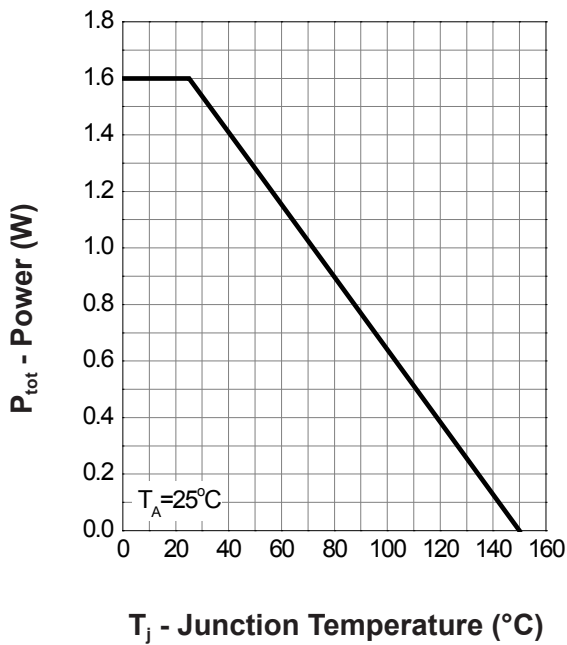
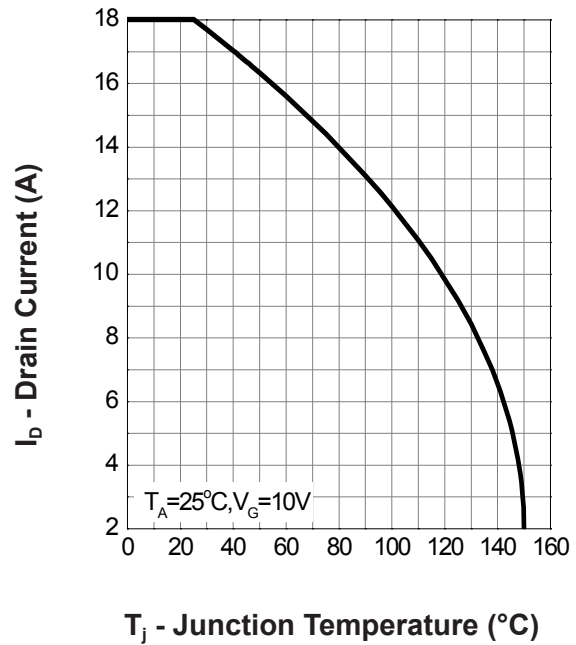
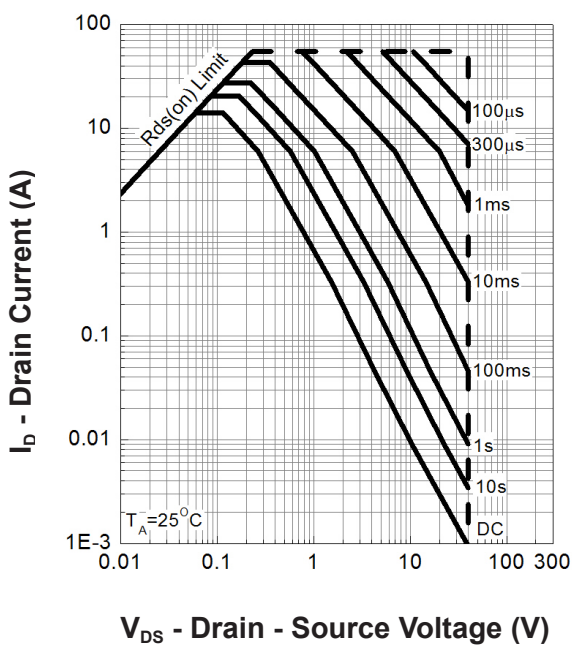
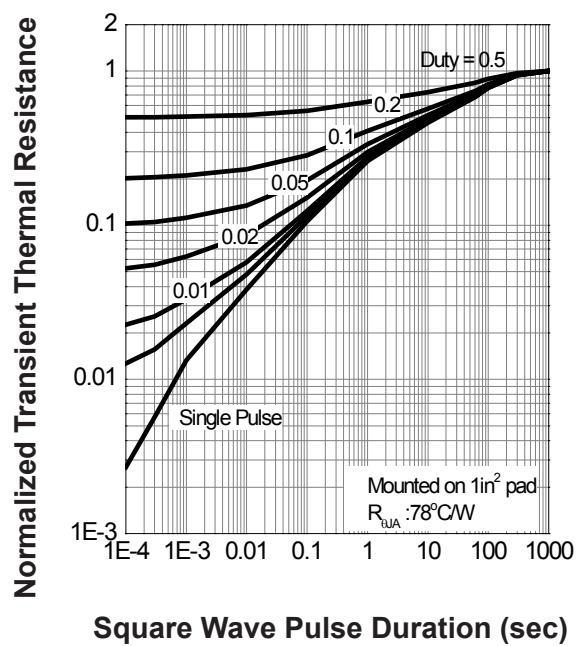
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.3	1.7	2.5	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} =14A T _J =125°C V _{GS} =4.5V, I _{DS} =12A	- - -	5 6.5 7	6.5 - 9	mΩ
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =8A	-	21	-	S
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _{DS} =14A, dI _{SD} /dt=100A/μs	-	26	-	ns
t _a	Charge Time		-	15	-	
t _b	Discharge Time		-	11	-	
Q _{rr}	Reverse Recovery Charge		-	18.5	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	1	2	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	-	3875	4048	pF
C _{oss}	Output Capacitance		-	382	-	
C _{rss}	Reverse Transfer Capacitance		-	247	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _L =20Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	14.4	26	ns
t _r	Turn-on Rise Time		-	9.3	17	
t _{d(OFF)}	Turn-off Delay Time		-	34	62	
t _f	Turn-off Fall Time		-	24.7	45	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =14A	-	26.2	36.7	nC
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _{DS} =14A	-	12.4	-	
Q _{gth}	Threshold Gate Charge		-	2.8	-	
Q _{gs}	Gate-Source Charge		-	4.5	-	
Q _{gd}	Gate-Drain Charge		-	3.6	-	

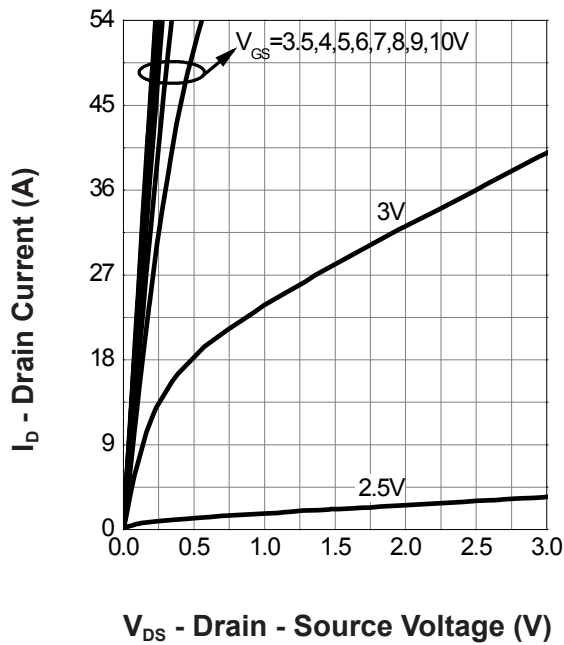
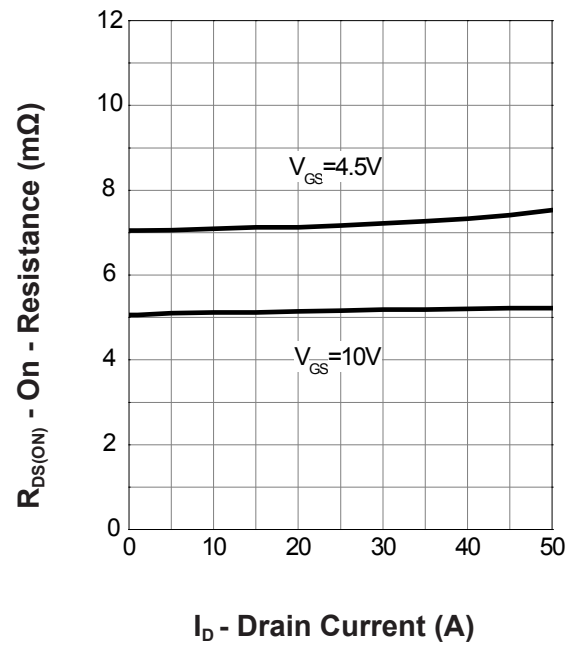
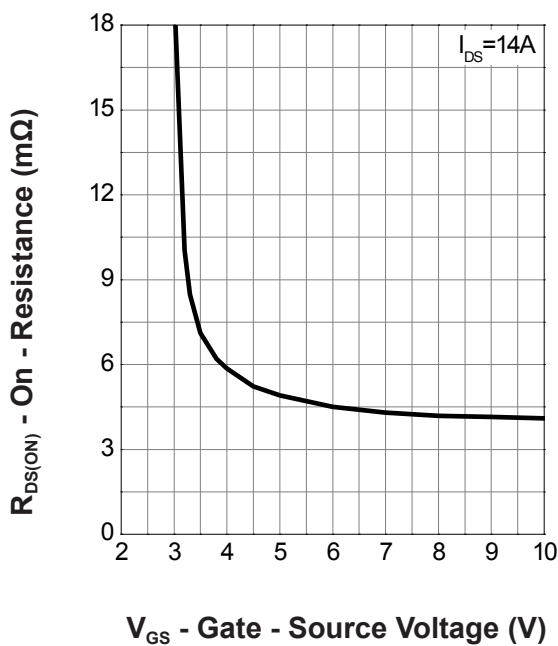
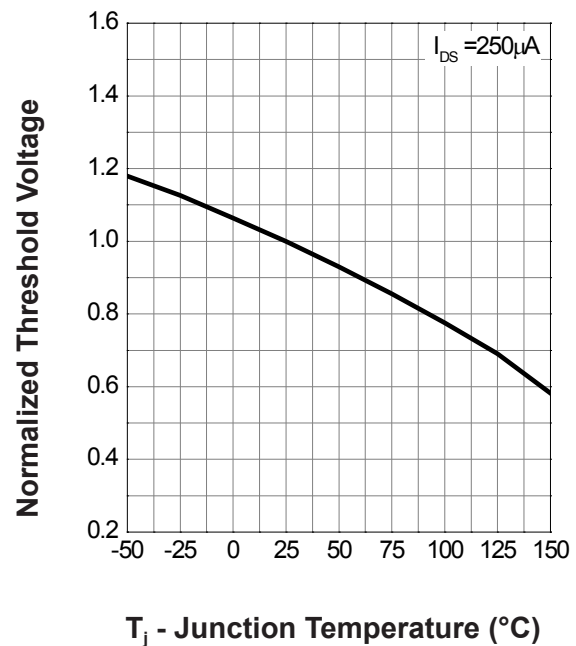
Note d : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

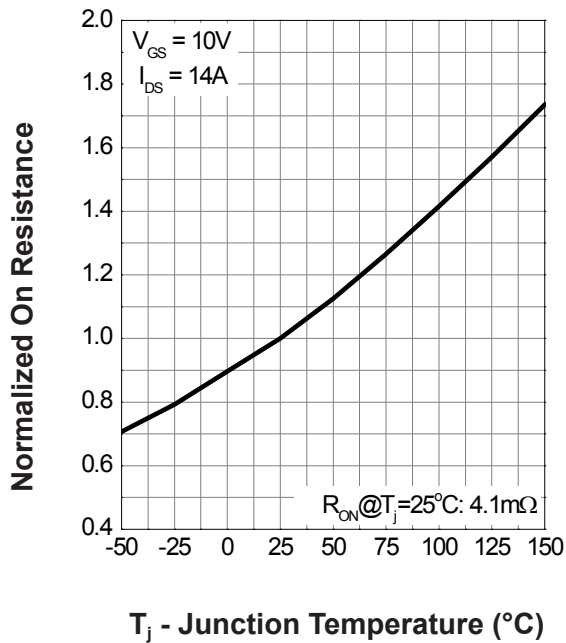
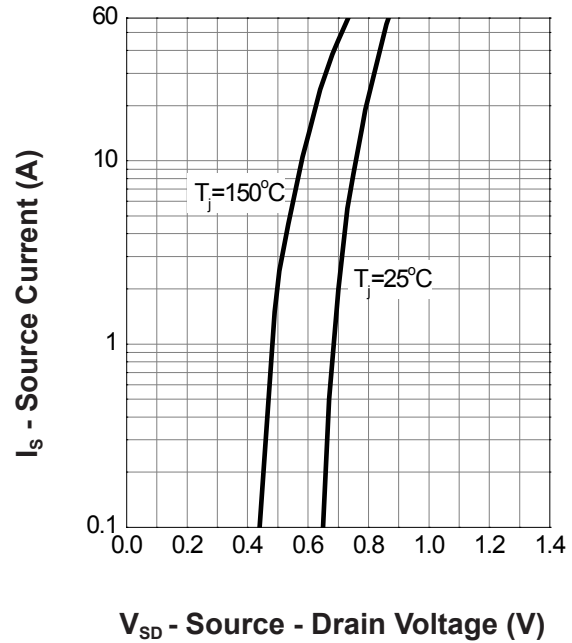
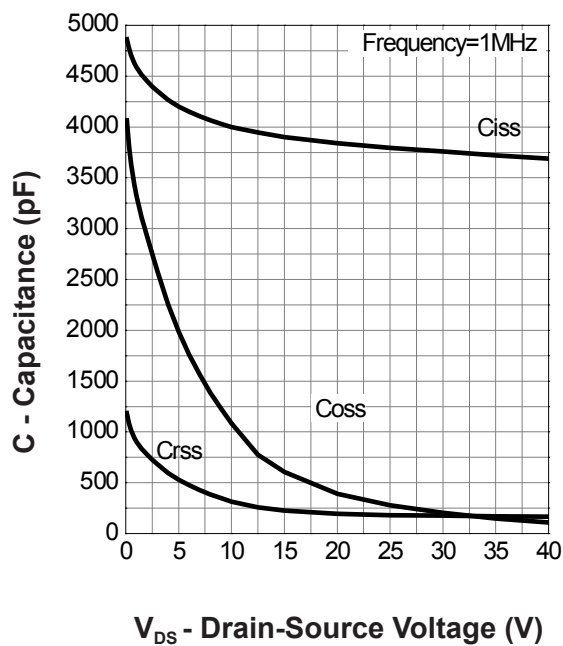
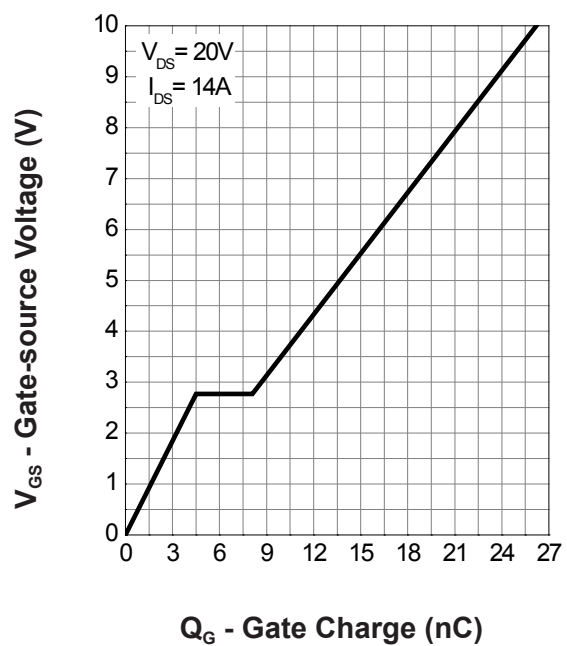
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


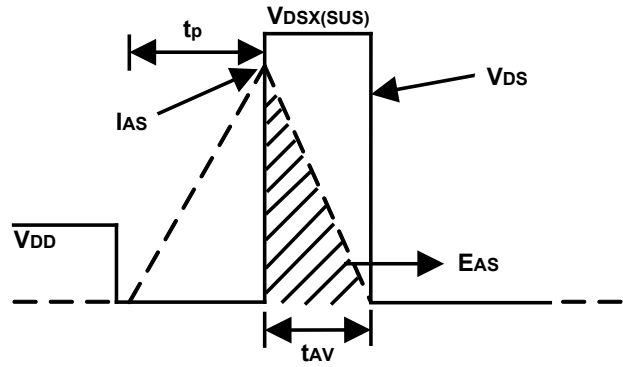
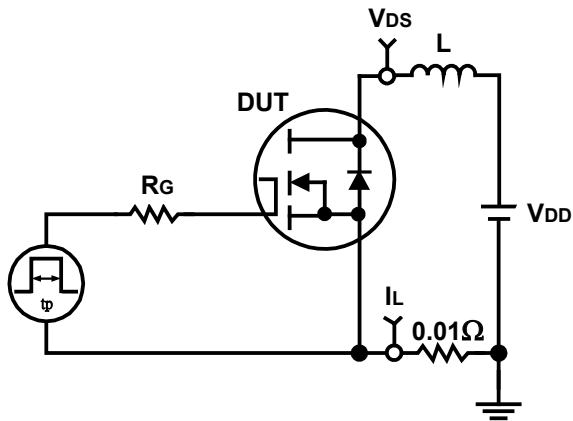
Typical Operating Characteristics(Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


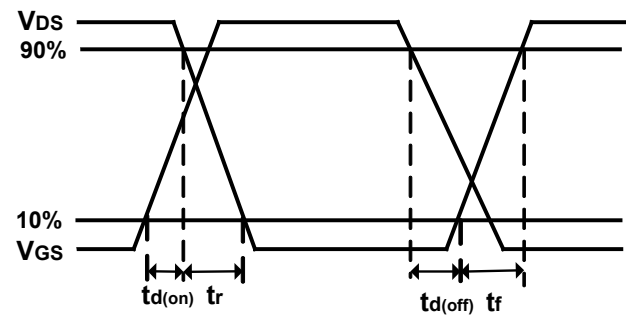
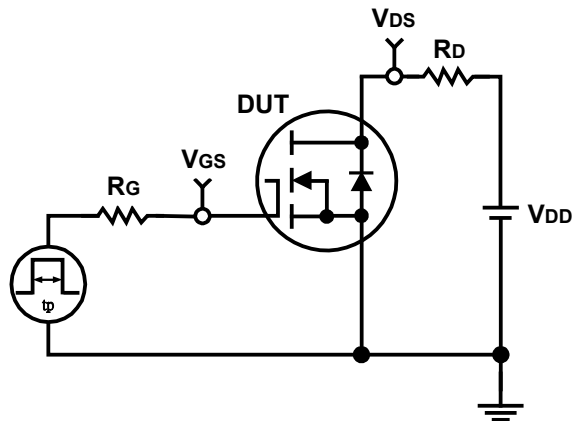
Typical Operating Characteristics(Cont.)

Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

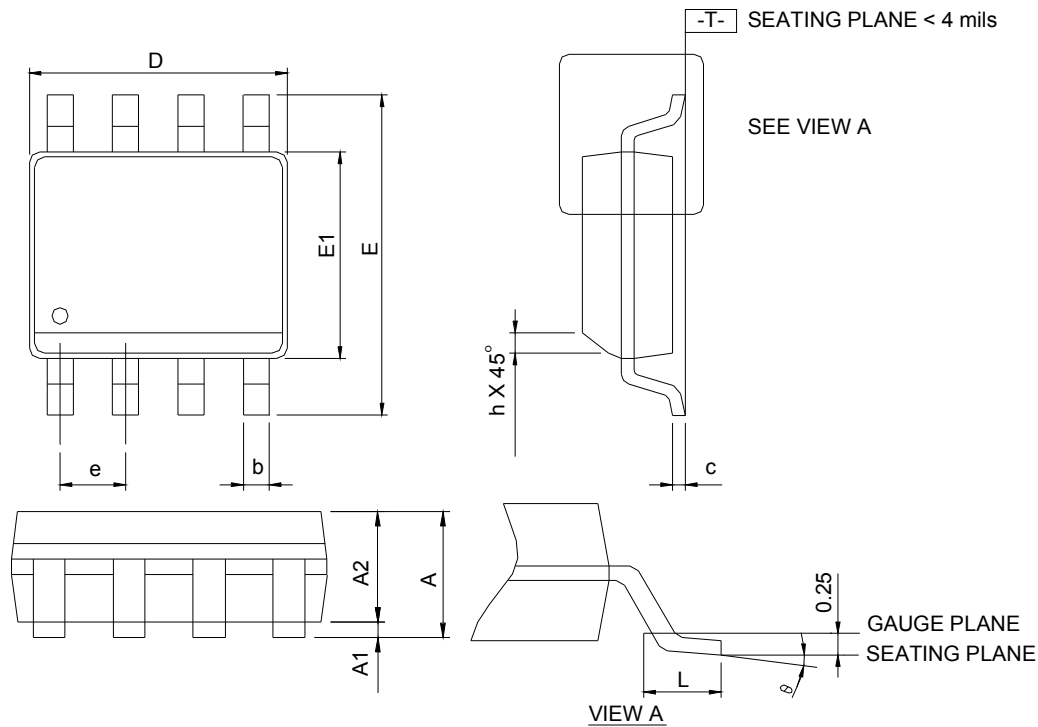


Switching Time Test Circuit and Waveforms



Package Information

SOP-8



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.

- Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusion or gate burrs shall not exceed 6 mil per side.
- Dimension "E" does not include inter-lead flash or protrusions. Inter-lead flash and protrusions shall not exceed 10 mil per side.

RECOMMENDED LAND PATTERN

