

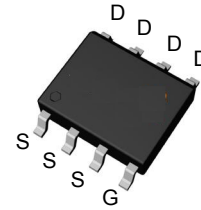
Pin Description

Features

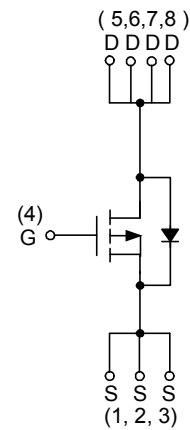
- 60V/-4.6A,
 $R_{DS(ON)} = 5.5\text{ m}\Omega(\text{typ.}) @ V_{GS} = -10\text{V}$
 $R_{DS(ON)} = 7.5\text{ m}\Omega(\text{typ.}) @ V_{GS} = -4.5\text{V}$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

Applications

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



Top View of SOP8



P-Channel MOSFET

Maximum ratings, at $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		-60	V
I_S	Diode continuous forward current	$T_A = 25^\circ\text{C}$	-4.6	A
I_D	Continuous drain current @ $V_{GS} = 10\text{V}$	$T_A = 25^\circ\text{C}$	-4.6	A
		$T_A = 100^\circ\text{C}$	-3.45	A
I_{DM}	Pulse drain current tested ②	$T_A = 25^\circ\text{C}$	-13.2	A
P_D	Power dissipation	$T_A = 25^\circ\text{C}$	3.1	W
V_{GS}	Gate-Source voltage		± 20	V
T_{STG}	Storage temperature range		-55 to 150	$^\circ\text{C}$
T_J	Maximum Junction Temperature①		150	$^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance-Junction to Case		24	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		40	$^\circ\text{C/W}$

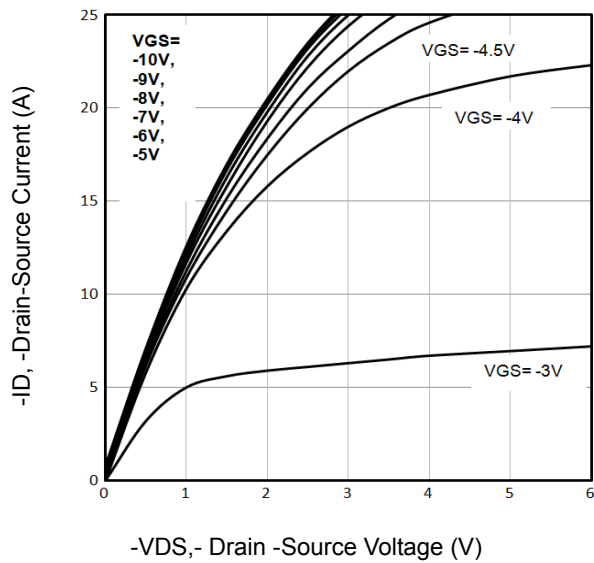
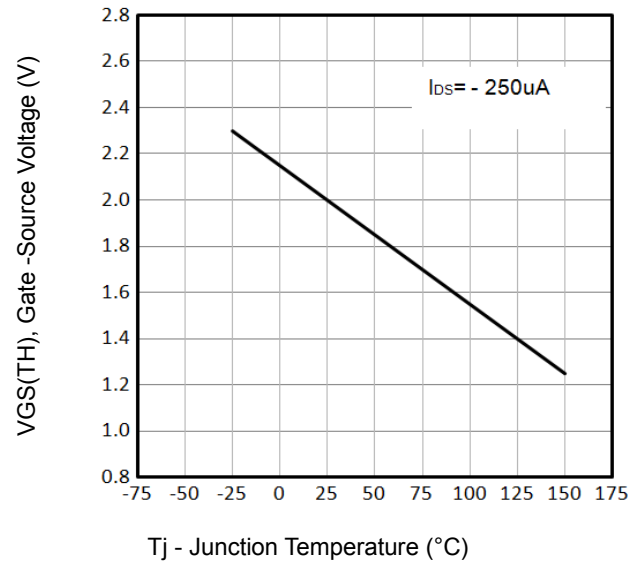
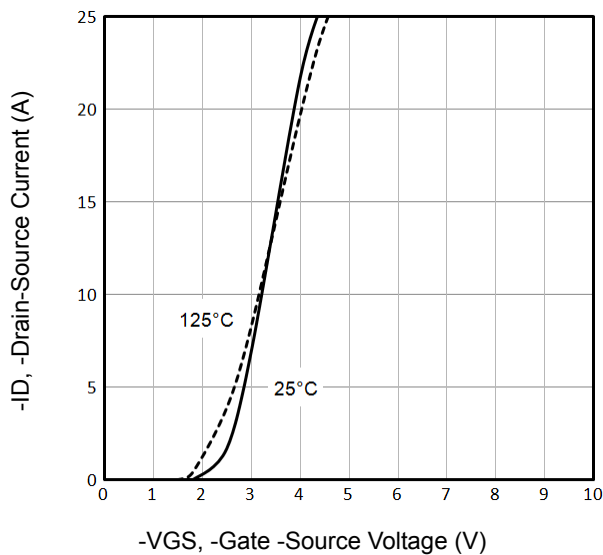
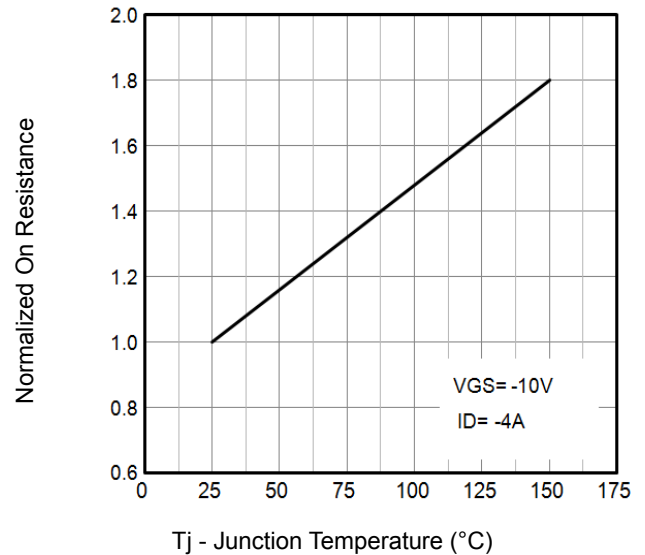
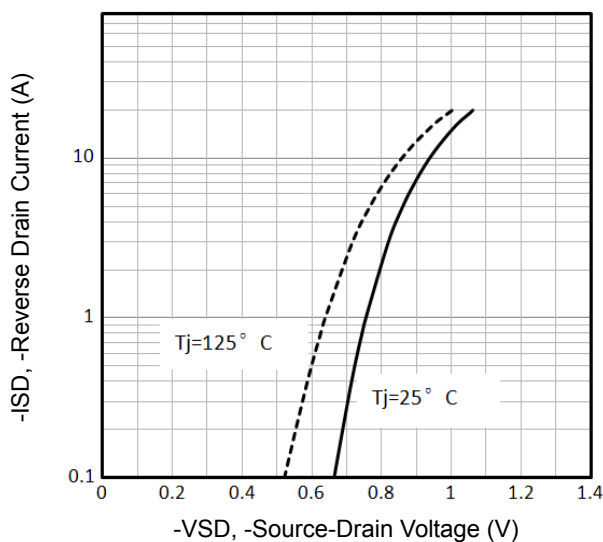
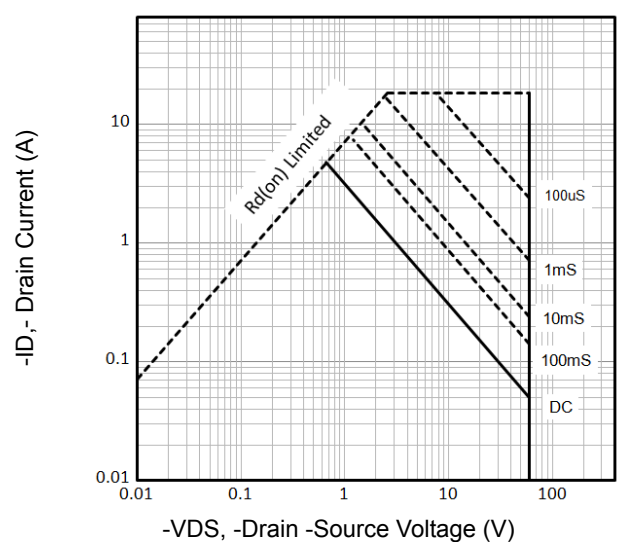
Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T _A = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =-250μA	-60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current(T _A =25°C)	V _{DS} =-60V,V _{GS} =0V	--	--	-1	μA
	Zero Gate Voltage Drain Current(T _A =125°C)	V _{DS} =-60V,V _{GS} =0V	--	--	-100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,I _D =-250μA	-1.0	-1.7	-3.0	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =-10V, I _D =-4A	--	55	75	mΩ
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =-4.5V, I _D =-2A	--	75	100	mΩ
Dynamic Electrical Characteristics @ T _A = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-30V,V _{GS} =0V, f=1MHz	--	940	--	pF
C _{oss}	Output Capacitance		--	55	--	pF
C _{rss}	Reverse Transfer Capacitance		--	40	--	pF
Q _g	Total Gate Charge	V _{DS} =-30V,I _D =-4A, V _{GS} =-10V	--	17.5	--	nC
Q _{gs}	Gate-Source Charge		--	2.8	--	nC
Q _{gd}	Gate-Drain Charge		--	3.6	--	nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay Time	V _{DD} =-30V, I _D =-4A, R _G =6.8Ω, V _{GS} =-10V	--	9	--	nS
t _r	Turn-on Rise Time		--	4	--	nS
t _{d(off)}	Turn-Off Delay Time		--	33	--	nS
t _f	Turn-Off Fall Time		--	8	--	nS
Source- Drain Diode Characteristics@ T _A = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	I _{SD} =-4A,V _{GS} =0V	--	-0.85	-1.2	V
t _{rr}	Reverse Recovery Time	T _J =25°C,I _{sd} =-4A, V _{GS} =0V	--	32	--	nS
Q _{rr}	Reverse Recovery Charge	di/dt=-100A/μs	--	39	--	nC

NOTE:

① Repetitive rating; pulse width limited by max. junction temperature.

② Pulse width ≤ 300μs; duty cycles ≤ 2%.

Typical Characteristics


Fig1. Typical Output Characteristics

Fig2. $V_{GS(TH)}$ Gate-Source Voltage Vs. T_j

Fig3. Typical Transfer Characteristics

Fig4. Normalized On-Resistance Vs. T_j

Fig5. Typical Source-Drain Diode Forward Voltage

Fig6. Maximum Safe Operating Area

Typical Characteristics

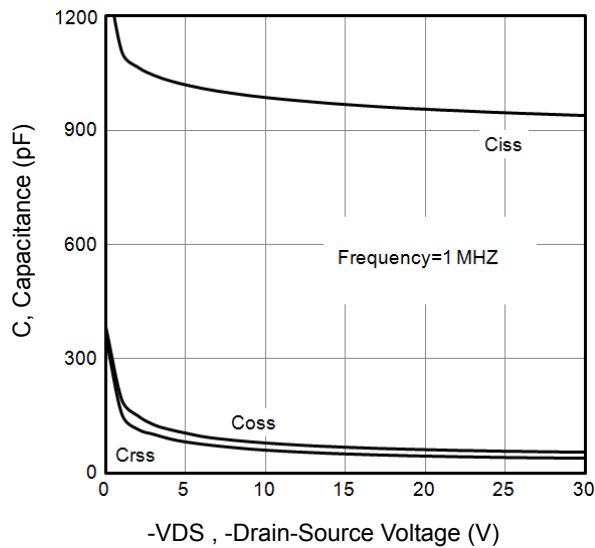


Fig7. Typical Capacitance Vs. Drain-Source Voltage

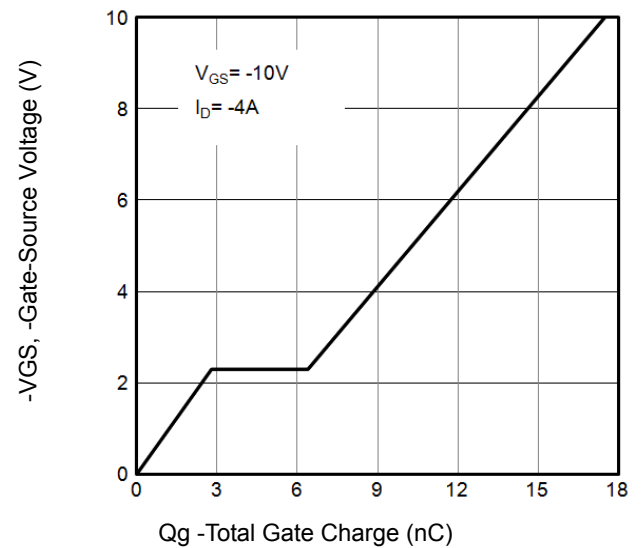


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

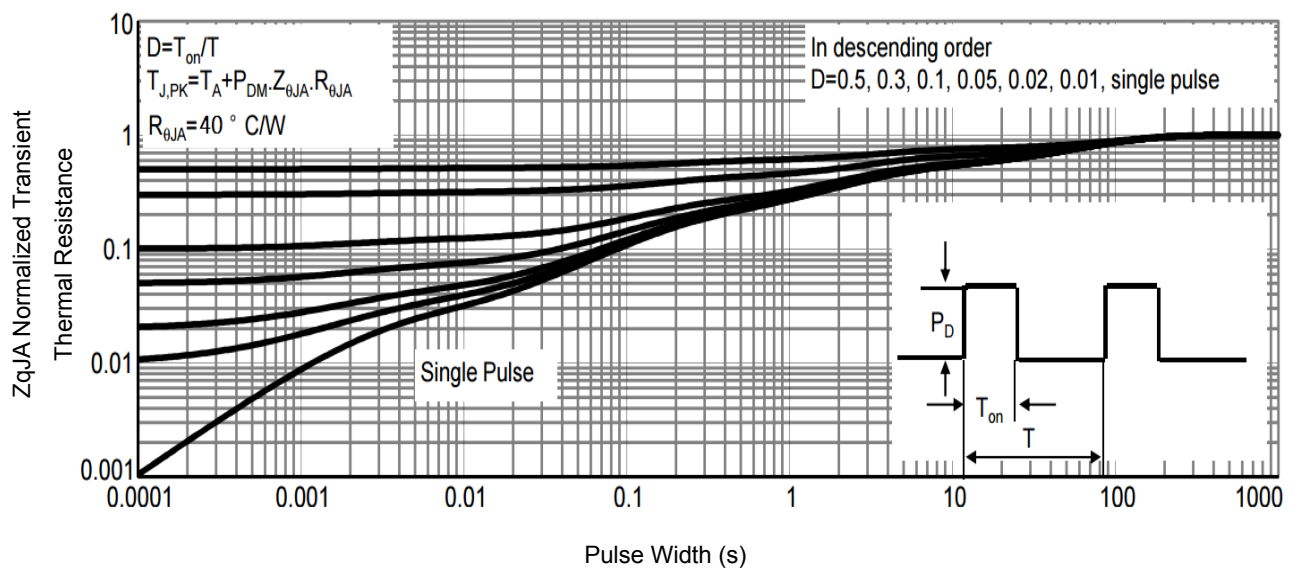
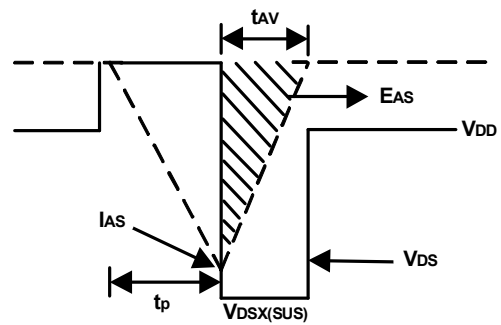
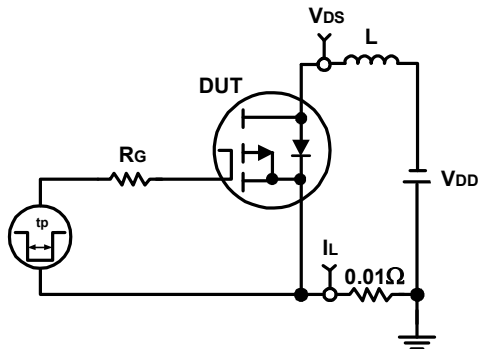
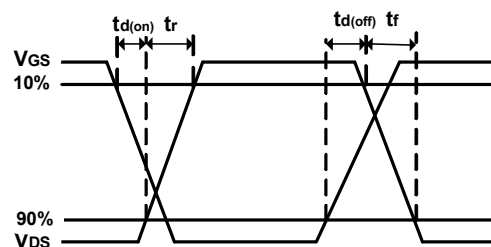
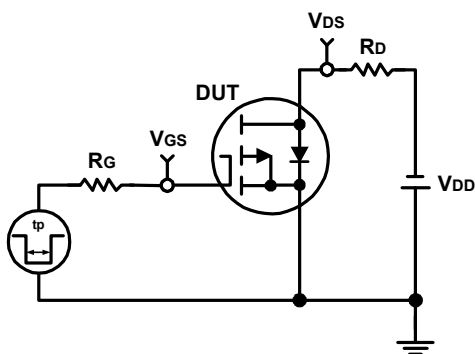


Fig9. Normalized Maximum Transient Thermal Impedance

Avalanche Test Circuit and Waveforms

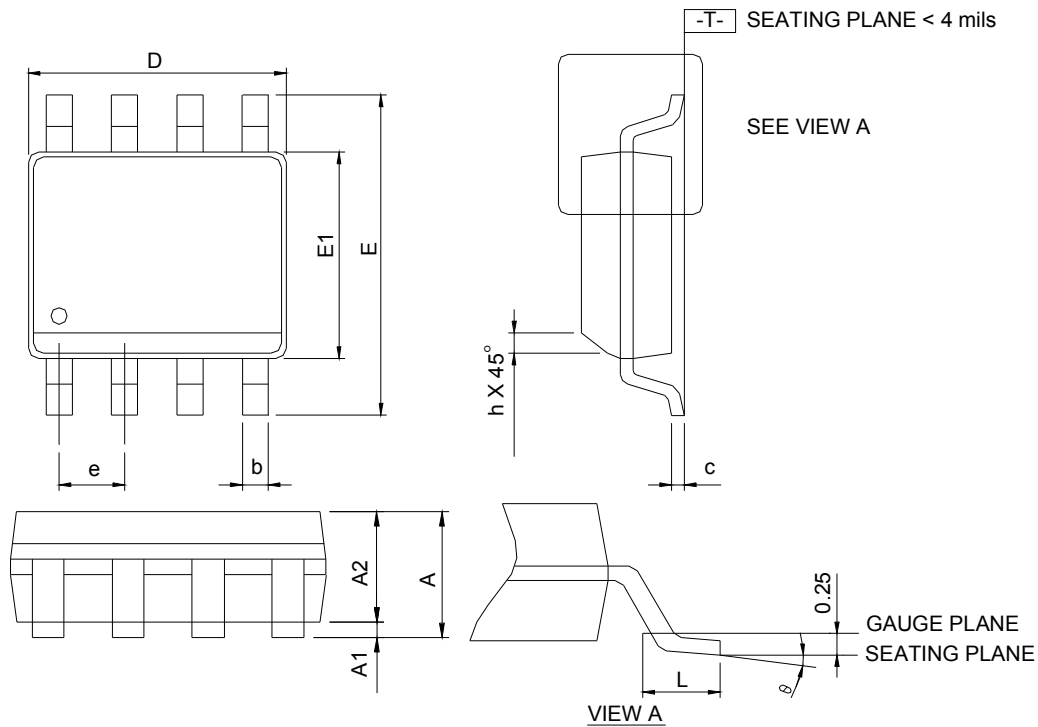


Switching Time Test Circuit and Waveforms



Package Information

SOP8



SOP8	SOP8			
	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 "E" does not include inter-lead flash or protrusions. Inter-lead flash and protrusions shall not exceed 10 mil per side.

RECOMMENDED LAND PATTERN

