

Features

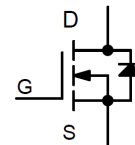
- 40V/11A,
 $R_{DS(ON)} = 13m\Omega$ (Max.) @ $V_{GS} = 10V$
 $R_{DS(ON)} = 16m\Omega$ (Max.) @ $V_{GS} = 4.5V$
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

Pin Description

Top View of SOP-8

Applications

- Power Management in Desktop Computer or DC/DC Converters.



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°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		
I _S	Diode Continuous Forward Current	T _A =25°C	2	A
I _D	Continuous Drain Current	T _A =25°C	11	A
		T _A =70°C	8.4	
I _{DM} ^a	Pulsed Drain Current	T _A =25°C	30	
P _D	Maximum Power Dissipation	T _A =25°C	2.08	W
		T _A =70°C	1.3	
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	30	°C/W
		Steady State	60	
R _{θJL}	Thermal Resistance-Junction to Lead	Steady State	20	
I _{AS} ^b	Avalanche Current, Single pulse	L=0.1mH	23	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.1mH	26	mJ

Note a : Max. current is limited by bonding wire.

Note b : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).

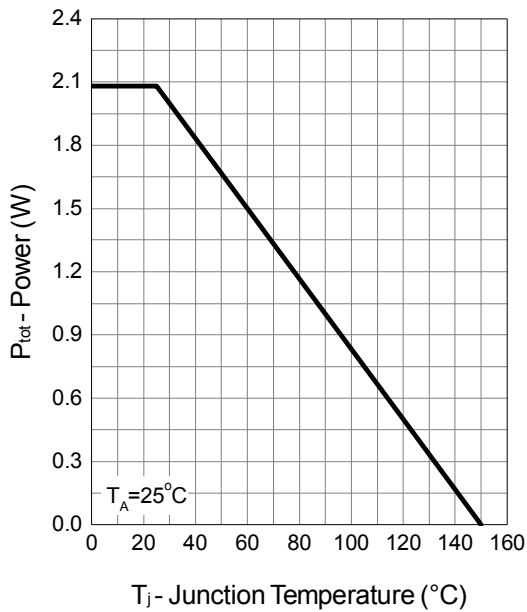
Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=32V, V_{GS}=0V$	-	-	1	μA
		$T_J=85^\circ\text{C}$	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.5	1.8	2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
$R_{DS(ON)}^c$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=7A$	-	10.5	13	m Ω
		$T_J=125^\circ\text{C}$	-	15.75	-	
		$V_{GS}=4.5V, I_{DS}=5A$	-	12	16	
Gfs	Forward Transconductance	$V_{DS}=5V, I_{DS}=15A$	-	31	-	S
Diode Characteristics						
V_{SD}^c	Diode Forward Voltage	$I_{SD}=10A, V_{GS}=0V$	-	0.9	1.1	V
t_{rr}	Reverse Recovery Time	$V_{DD}=20V,$ $I_{SD}=10A, di_{SD}/dt=100A/\mu s$	-	15.2	-	ns
t_a	Charge Time		-	9.4	-	
t_b	Discharge Time		-	5.8	-	
Q_{rr}	Reverse Recovery Charge		-	9.5	-	
Dynamic Characteristics ^d						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	0.7	1.1	1.8	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=20V,$ Frequency=1.0MHz	-	1125	-	pF
C_{oss}	Output Capacitance		-	132	-	
C_{rss}	Reverse Transfer Capacitance		-	70	-	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=20V, R_L=20\Omega,$ $I_{DS}=1A, V_{GEN}=10V,$ $R_G=1\Omega$	-	12.6	-	ns
t_r	Turn-on Rise Time		-	10	-	
$t_{d(OFF)}$	Turn-off Delay Time		-	23.6	-	
t_f	Turn-off Fall Time		-	6	-	
Gate Charge Characteristics ^d						
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=4.5V,$ $I_{DS}=7A$	-	9.4	-	nC
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=10V,$ $I_{DS}=7A$	-	20	28	
Q_{gth}	Threshold Gate Charge		-	2	-	
Q_{gs}	Gate-Source Charge		-	3.9	-	
Q_{gd}	Gate-Drain Charge		-	3	-	

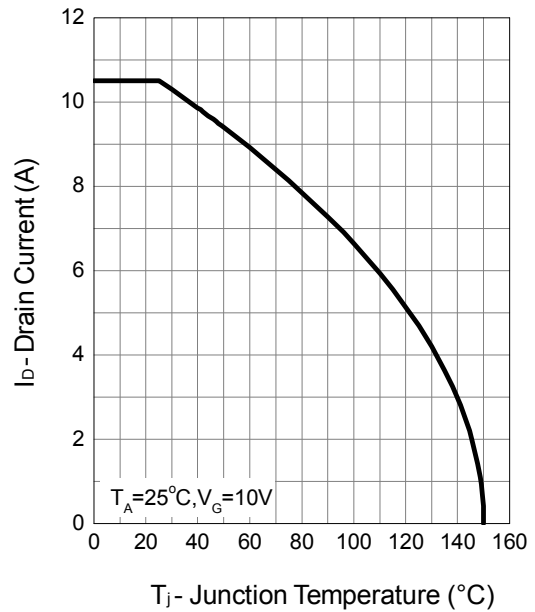
Note c : Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Operating Characteristics

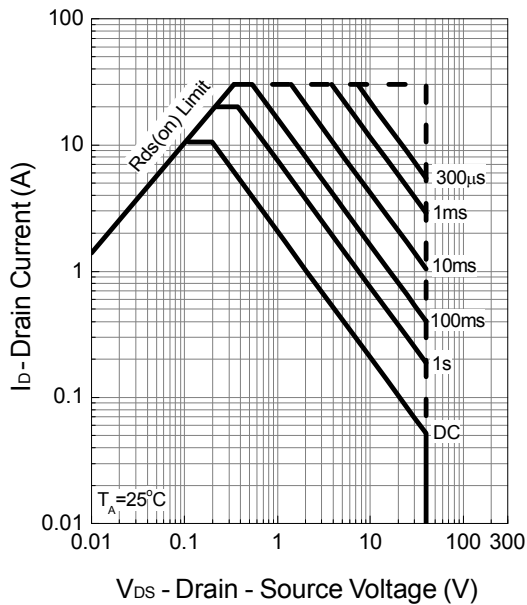
Power Dissipation



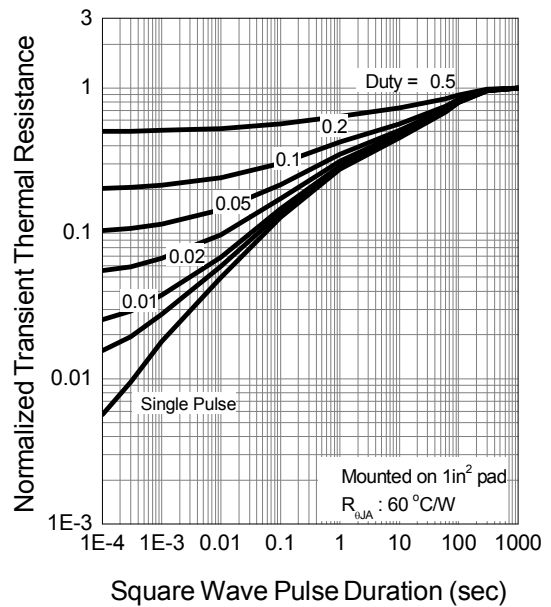
Drain Current



Safe Operation Area

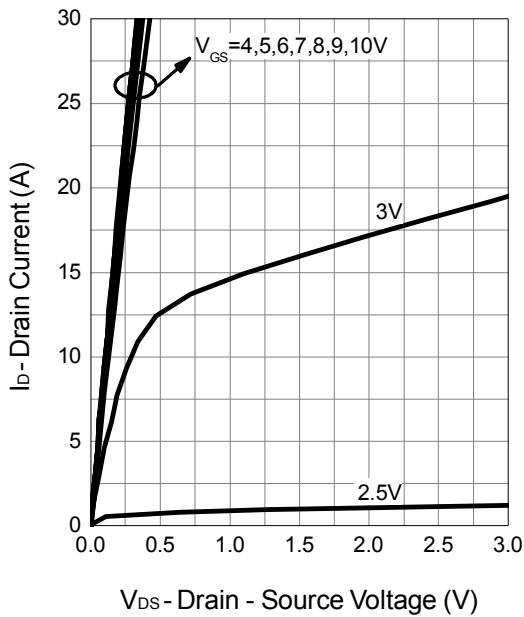


Thermal Transient Impedance

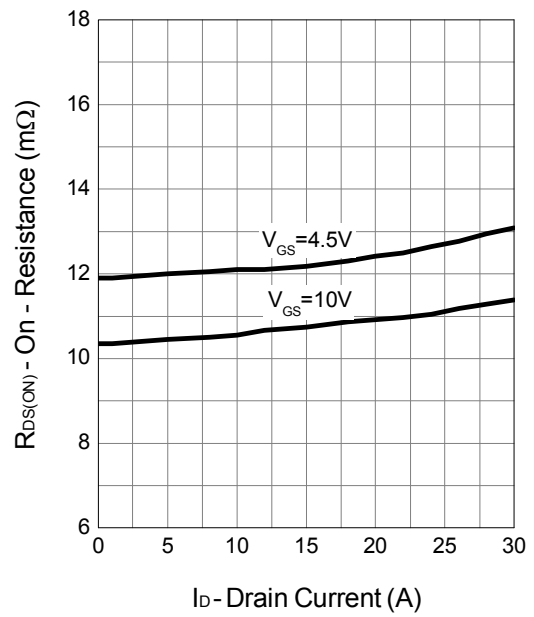


Typical Operating Characteristics (Cont.)

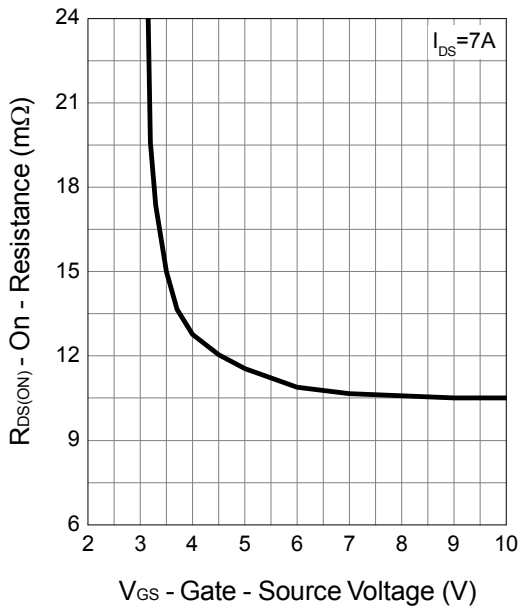
Output Characteristics



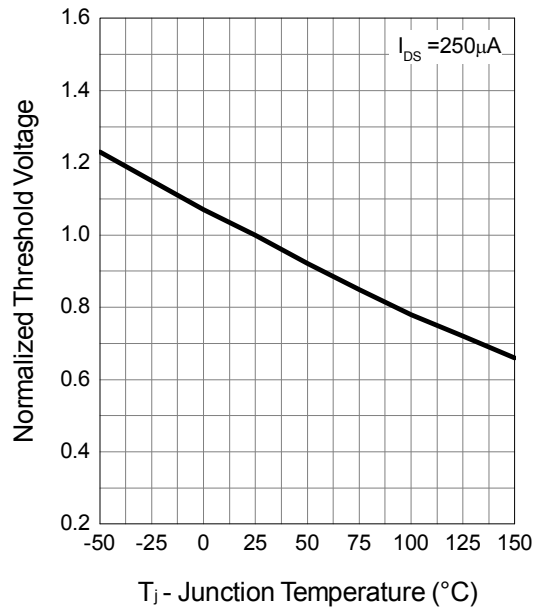
Drain-Source On Resistance



Gate-Source On Resistance

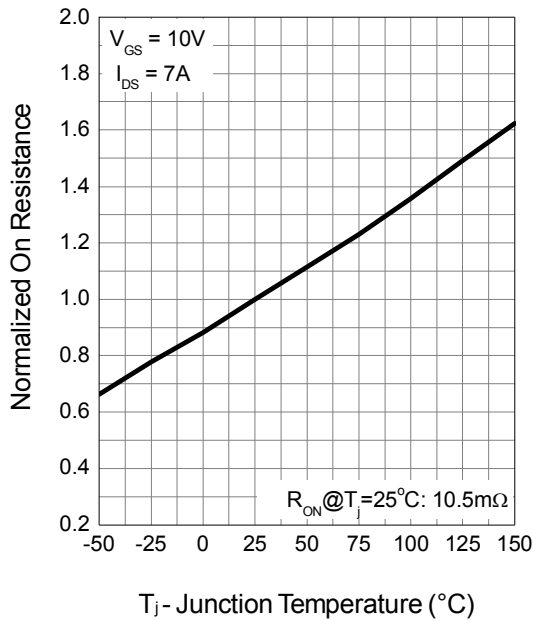


Gate Threshold Voltage

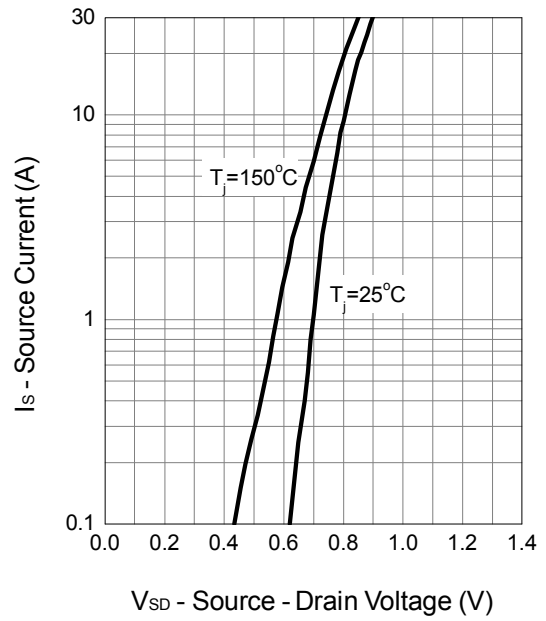


Typical Operating Characteristics (Cont.)

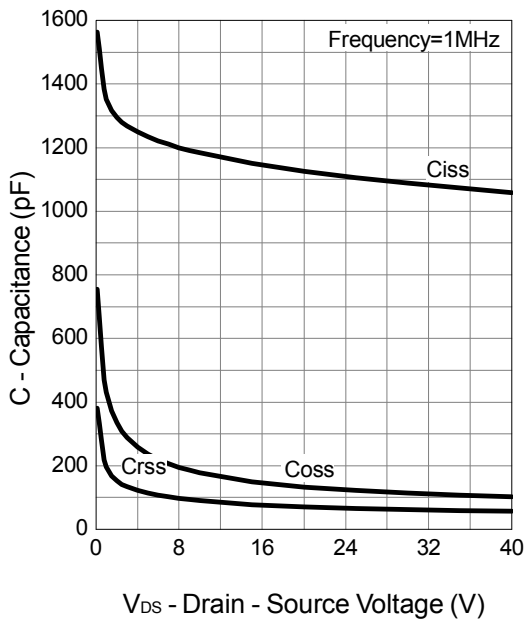
Drain-Source On Resistance



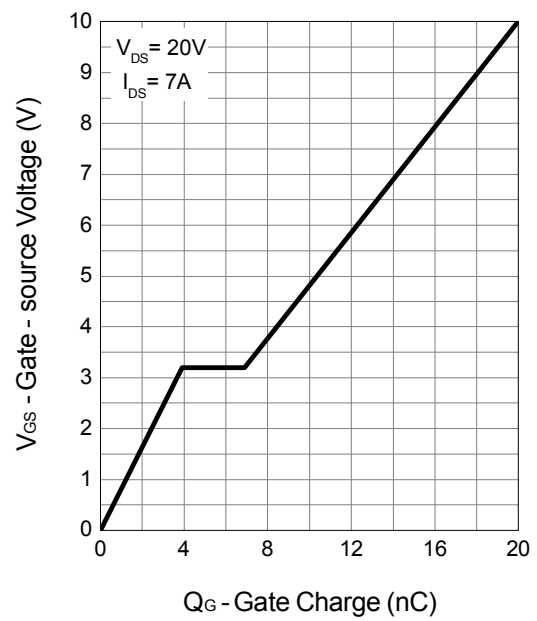
Source-Drain Diode Forward



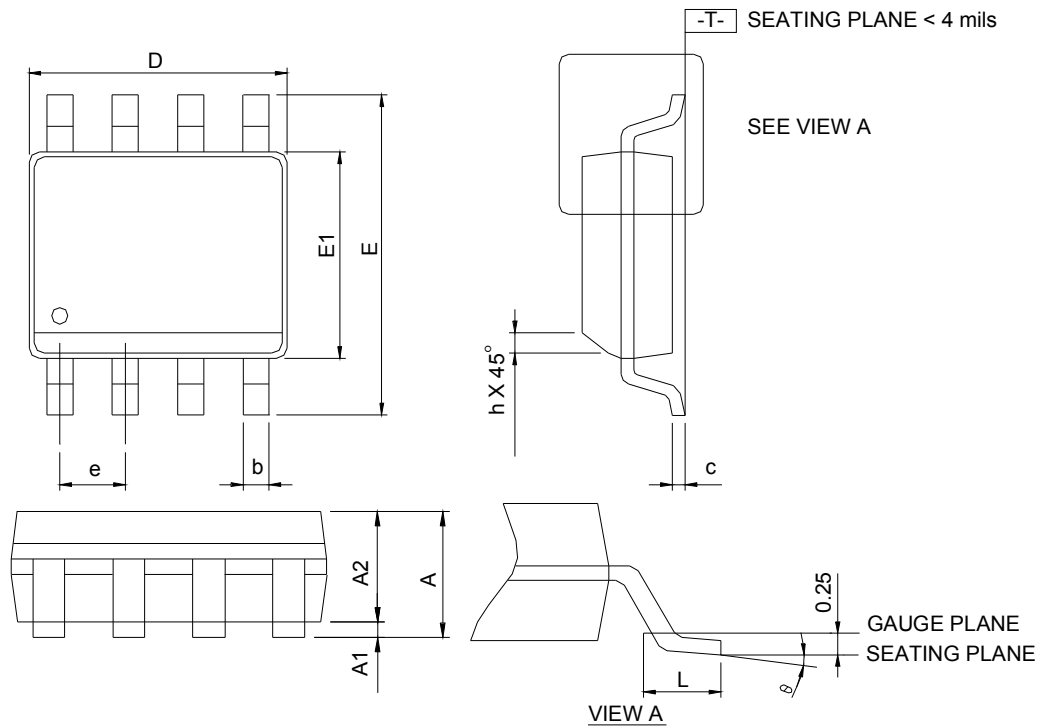
Capacitance



Gate Charge

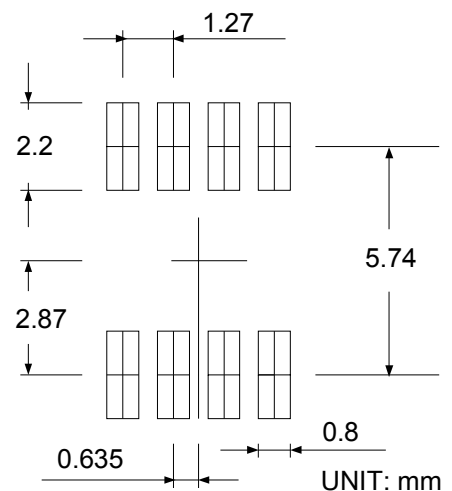


Package Information:SOP-8



S O P - 8	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°

RECOMMENDED LAND PATTERN



- 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.



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