

Description:

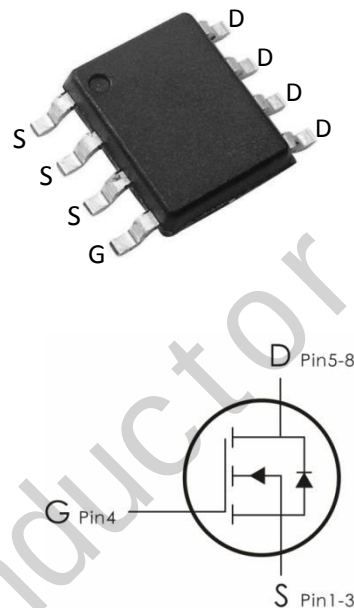
This N-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=30V, I_D=11A, R_{DS(on)} < 10m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_A=25^\circ C$) ¹	11	A
	Drain Current – Continuous ($T_A=100^\circ C$) ¹	7	
I_{DM}	Drain Current – Pulsed ²	36	
E_{AS}	Single Pulse Avalanche Energy ³	24.2	mj
I_{AS}	Avalanche Current	22	A
P_D	Power Dissipation ($T_A=25^\circ C$) ⁴	1.5	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ¹	25	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient ¹	85	

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

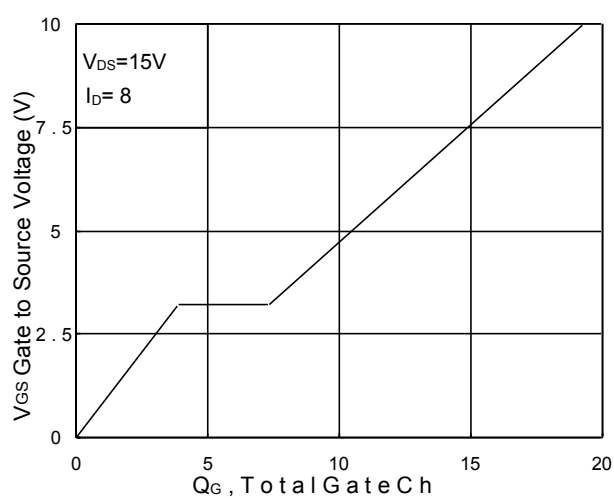
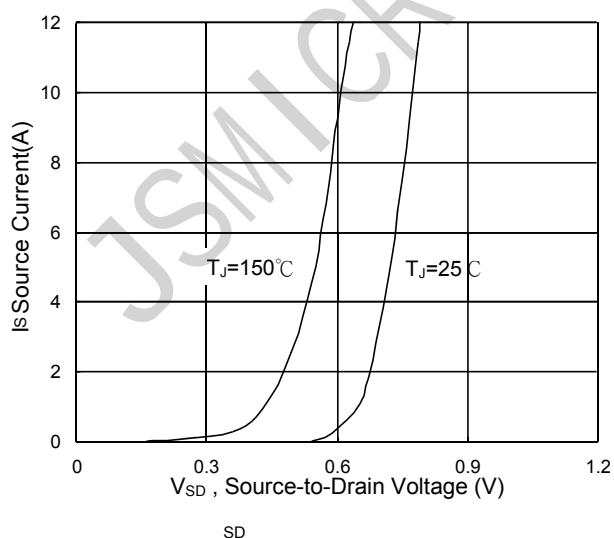
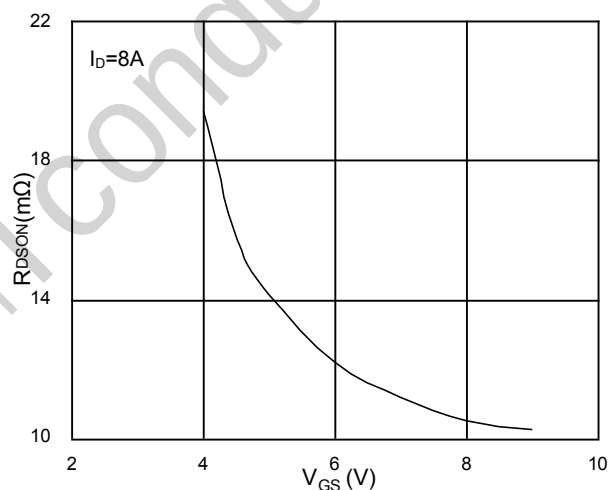
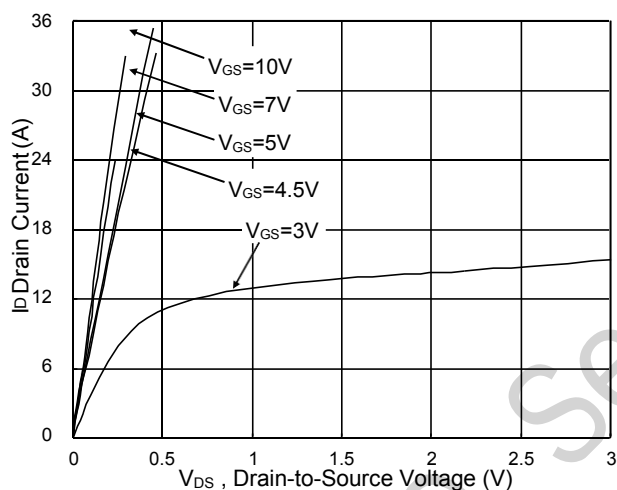
Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\text{ }\mu\text{ A}$	30	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=150V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
On Characteristics ³						
$V_{GS(th)}$	GATE-Source Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\text{ }\mu\text{ A}$	1.2	1.5	2.5	V
$R_{DS(ON)}$	Static Drain-Source On Resistance ²	$V_{GS}=10V, I_D=8A$	---	9	10	m Ω
		$V_{GS}=4.5V, I_D=6A$	---	12	18	
G_{FS}	Forward Transconductance	$V_{DS}=5V, I_D=8A$	---	24	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	940	1316	pF
C_{oss}	Output Capacitance		---	131	183	
C_{rss}	Reverse Transfer Capacitance		---	109	153	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V, ,$ $R_{GEN}=1.5\text{ }\Omega, V_{GS}=10V$ $I_D=8A$	---	4.2	8.4	ns
t_r	Rise Time		---	8.2	15	ns
$t_{d(off)}$	Turn-Off Delay Time		---	31	62	ns
t_f	Fall Time		---	4	8	ns
Q_g	Total Gate Charge	$V_{GS}=4.5V, V_{DS}=15V,$ $I_D=8A$	---	9.63	13.5	nC
Q_{gs}	Gate-Source Charge		---	3.88	5.4	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	3.44	4.8	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1	V

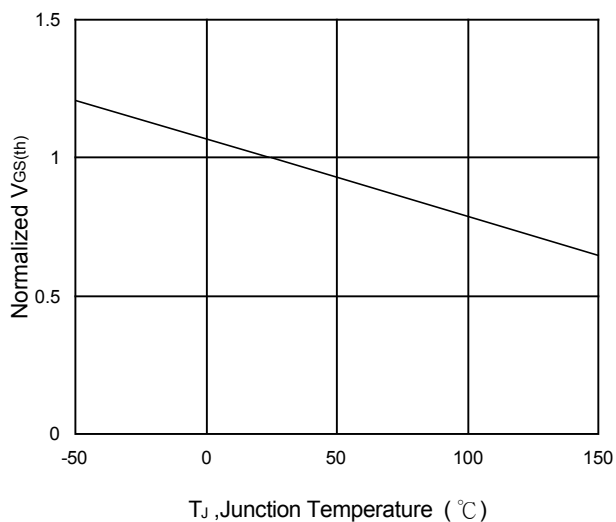
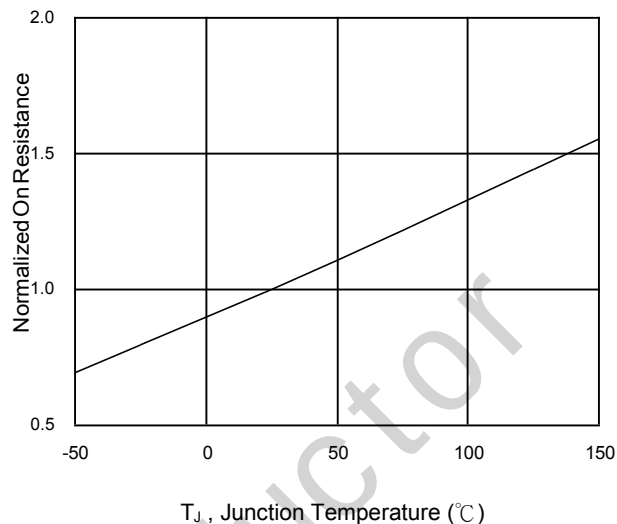
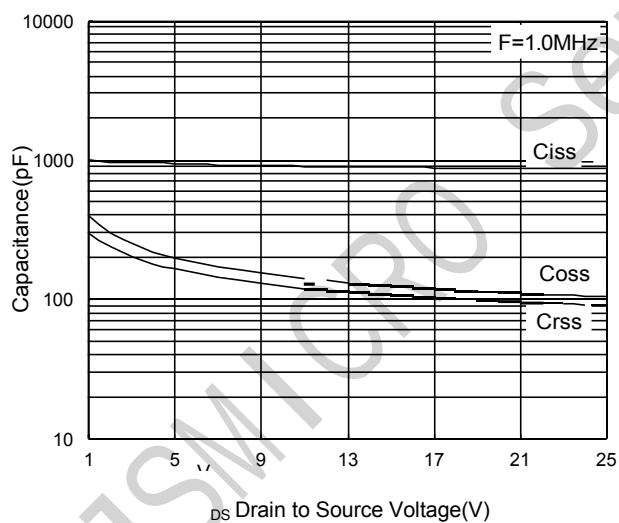
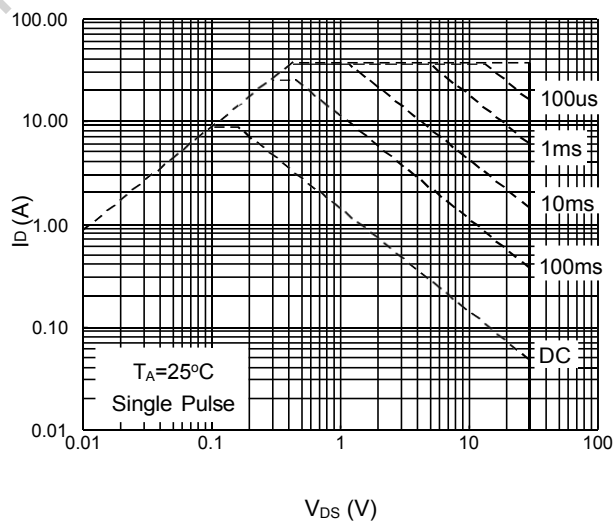
I_S	Continuous Source Current ^{1,5}	$V_G=V_D=0V$, Force Current	---	---	9	A
I_{SM}	Pulsed Source Current ^{2,5}		---	---	36	
T_{rr}	Body Diode Reverse Recovery Time	$I_F=8A$, $dI/dt=100A/\mu s$, $T_J=25^\circ C$	---	8	---	Ns
Q_{rr}	Body Diode Reverse Recovery Charge		---	2.9	---	Nc

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=22A$
4. The power dissipation is limited by $150^\circ C$ junction temperature
5. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

Typical Characteristics:




Fig.5 Normalized $V_{GS(th)}$ vs. T_J

Fig.6 Normalized $R_{DS(on)}$ vs. T_J

Fig.7 Capacitance

Fig.8 Safe Operating Area

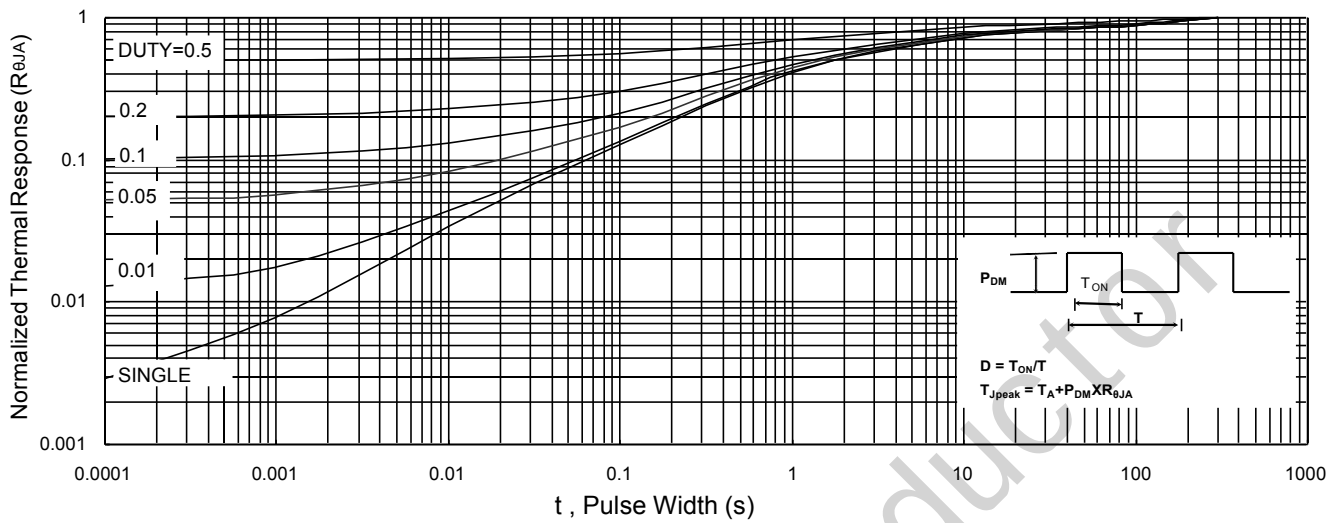
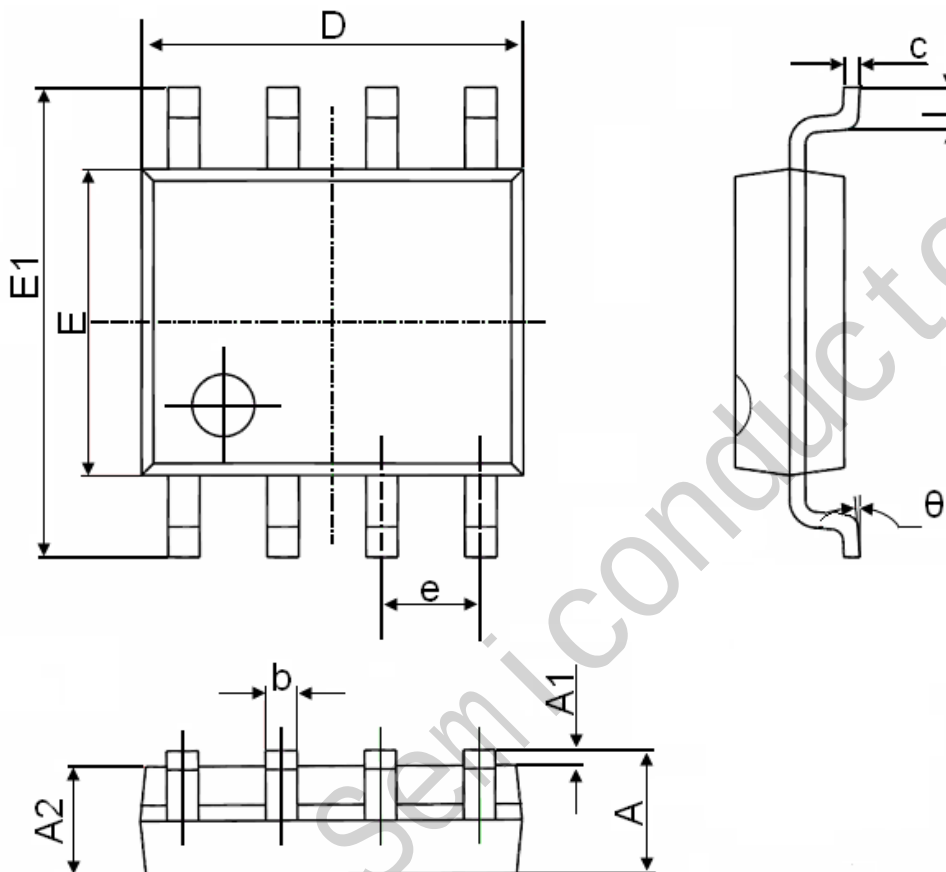


Fig.9 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°