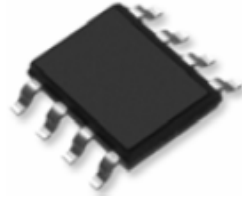
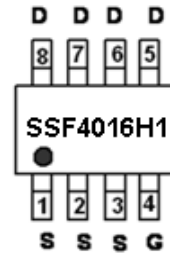


Main Product Characteristics:

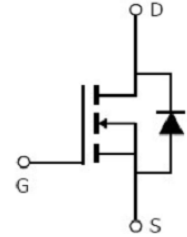
V_{DSS}	40V
$R_{DS(on)}$	12.9mΩ(typ.)
I_D	9A



SOP-8 top view



Marking and Pin Assignment



Schematic diagram

Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150°C operating temperature



Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute max Rating: •

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	9	A
I_D @ TC = 100°C	Continuous Drain Current, V_{GS} @ 10V ①	6.4	
I_{DM}	Pulsed Drain Current ②	40	
P_D @TC = 25°C	Power Dissipation ③	2	W
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-to-Source Voltage	± 20	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	°C

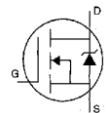
Thermal Resistance

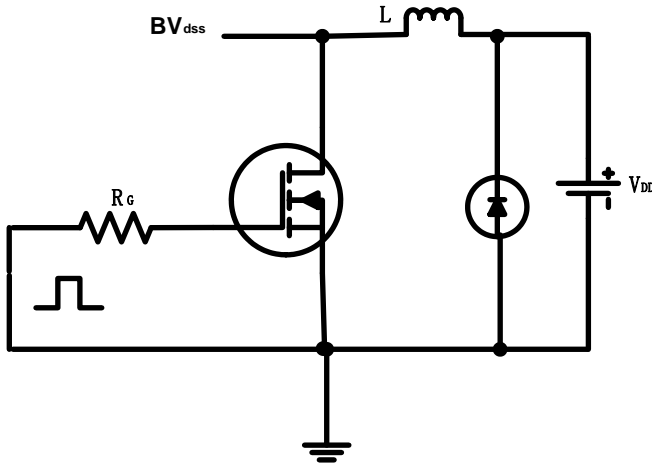
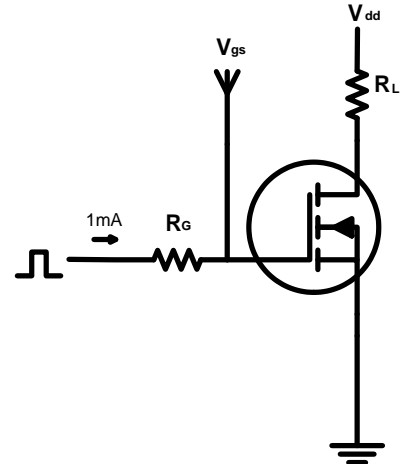
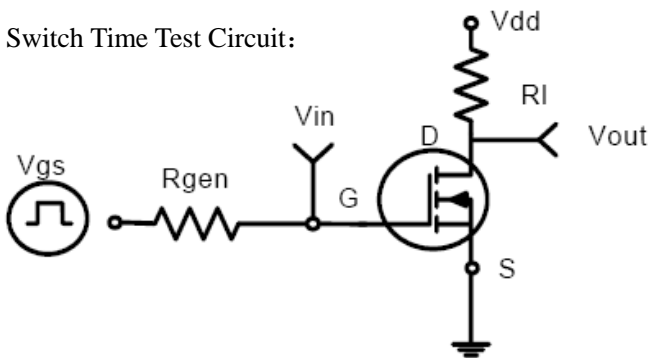
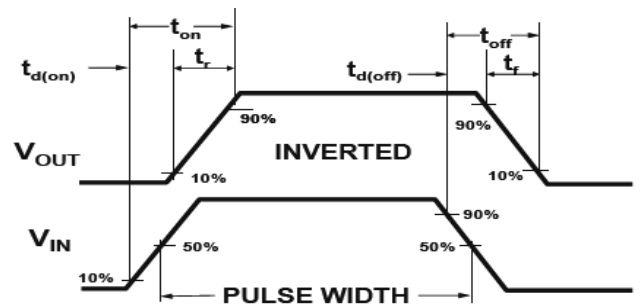
	Parameter	Min.	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient ④	—	—	62.5	

Electrical Characterizes @ $T_A=25^\circ\text{C}$ unless otherwise specified

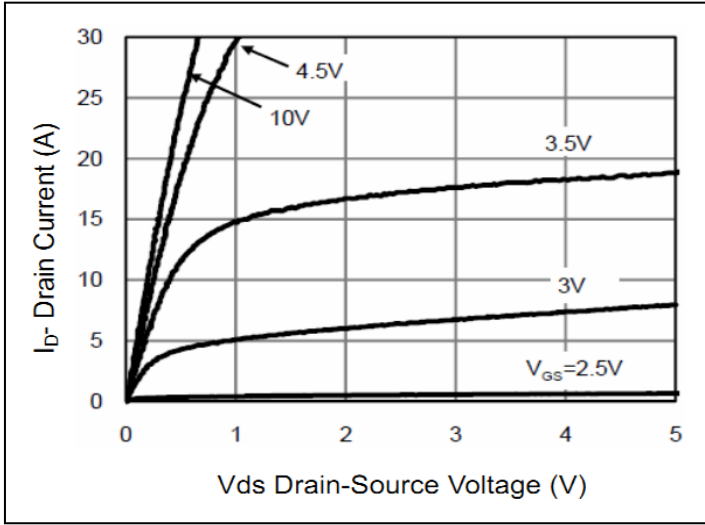
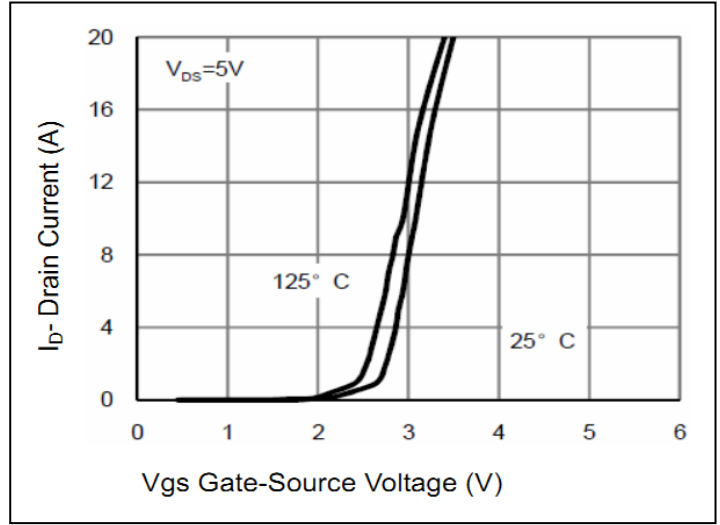
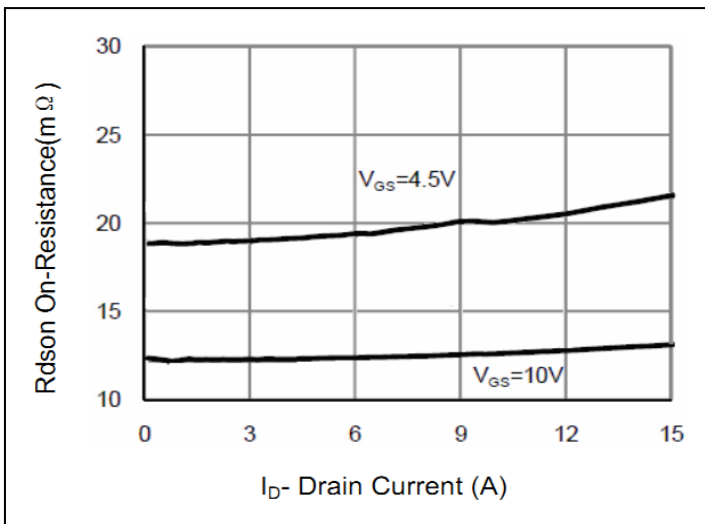
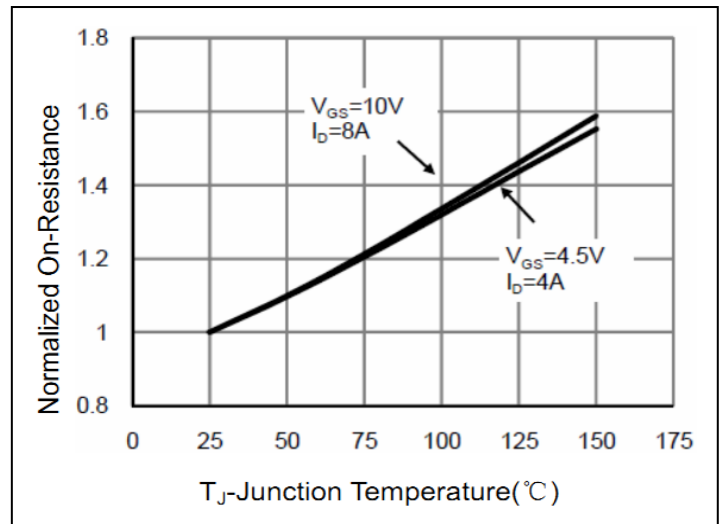
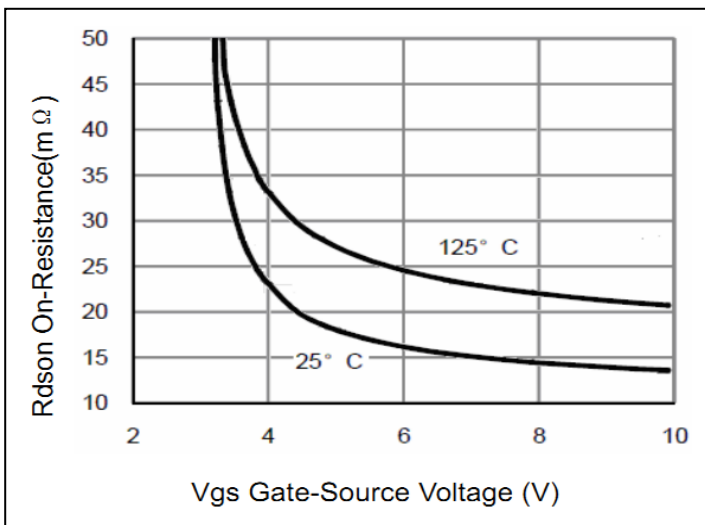
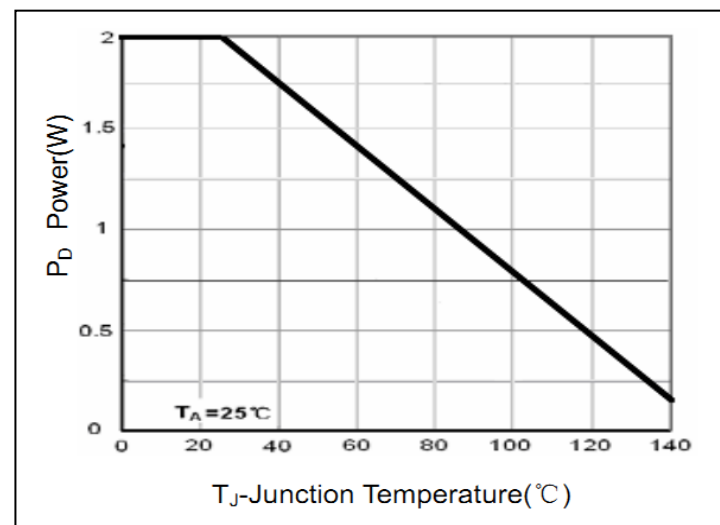
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	40	—	—	V	$V_{GS}=0V, I_D=250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	12.9	16	m Ω	$V_{GS}=10V, I_D=8A$
		—	18.9	24		$V_{GS}=4.5V, I_D=4A$
$V_{GS(th)}$	Gate threshold voltage	1		2	V	$V_{DS}=V_{GS}, I_D=250\mu A$
g_{fs}	Forward transconductance	33	—	—	S	$V_{DS}=5V, I_D=8A$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS}=40V, V_{GS}=0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS}=20V$
	Gate-to-Source reverse leakage	—	—	-100		$V_{GS}=-20V$
Q_g	Total gate charge	—	22	—	nC	$I_D=8A$
Q_{gs}	Gate-to-Source charge	—	3.2	—		$V_{DD}=20V$
Q_{gd}	Gate-to-Drain("Miller") charge	—	5	—		$V_{GS}=10V$
$t_{d(on)}$	Turn-on delay time	—	5	—	nS	$V_{DD}=20V$
t_r	Rise time	—	12	—		$R_L=2.5\Omega$
$t_{d(off)}$	Turn-Off delay time	—	22	—		$R_G=3\Omega$
t_f	Fall time	—	10	—		$V_{GS}=10V$
C_{iss}	Input capacitance	—	960	—	pF	$V_{GS}=0V$
C_{oss}	Output capacitance	—	100	—		$V_{DS}=20V$
C_{rss}	Reverse transfer capacitance	—	90	—		$f=1.0\text{MHZ}$

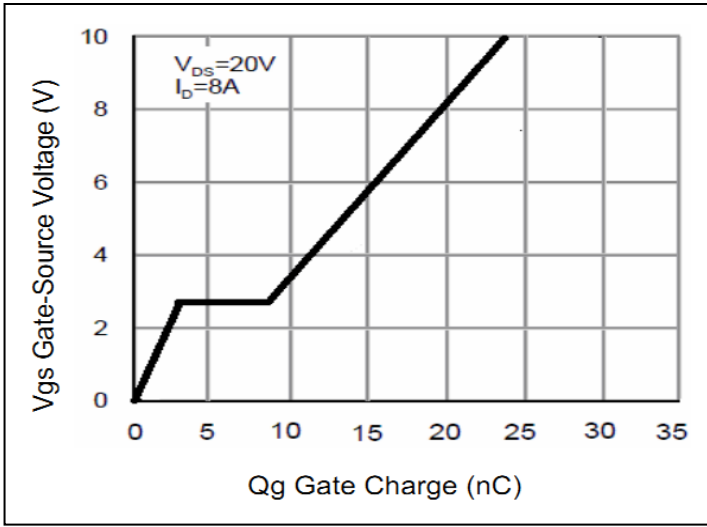
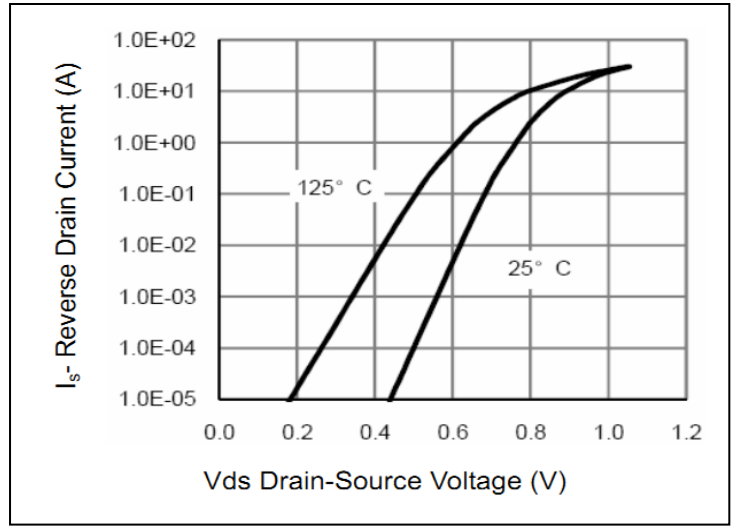
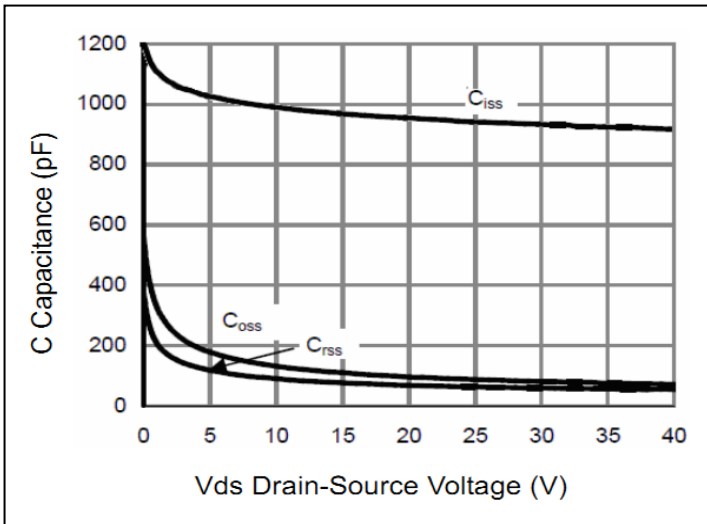
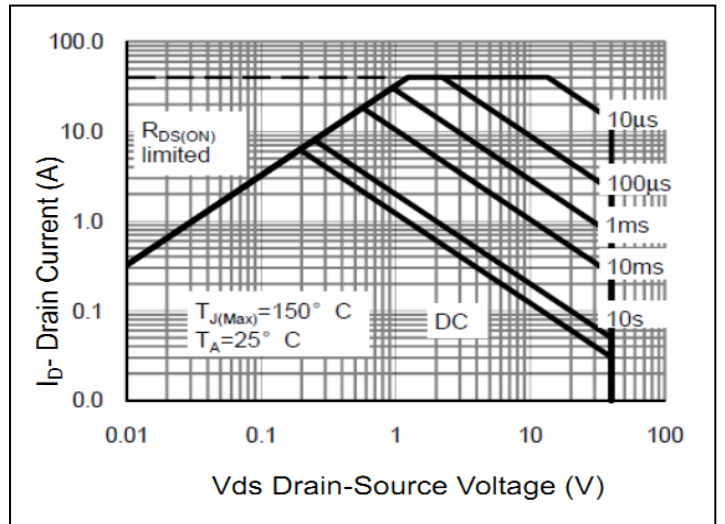
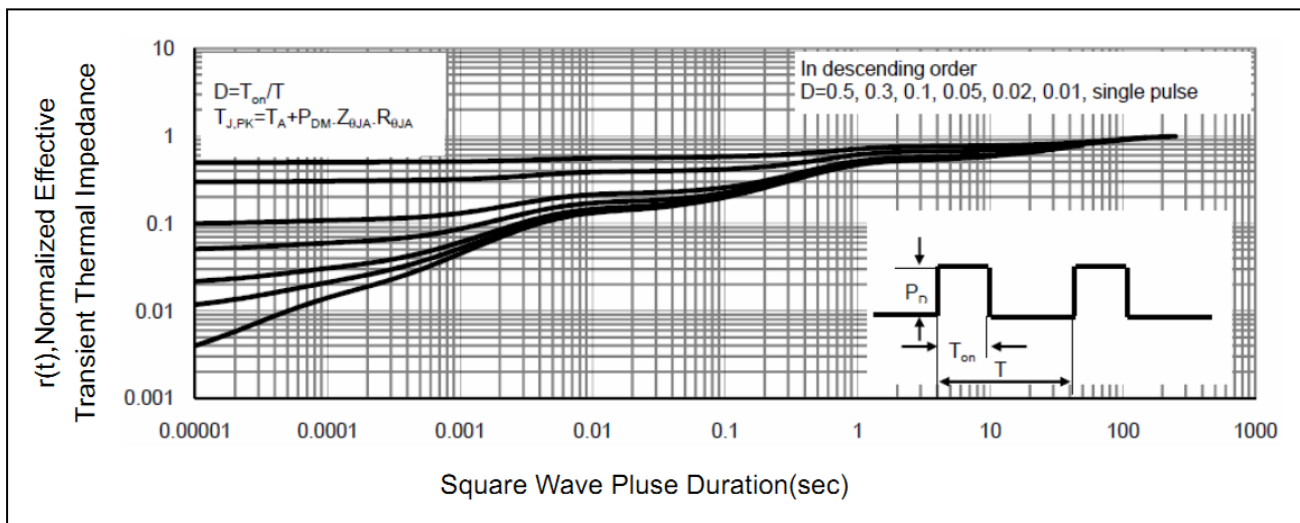
Source-Drain Ratings and Characteristics

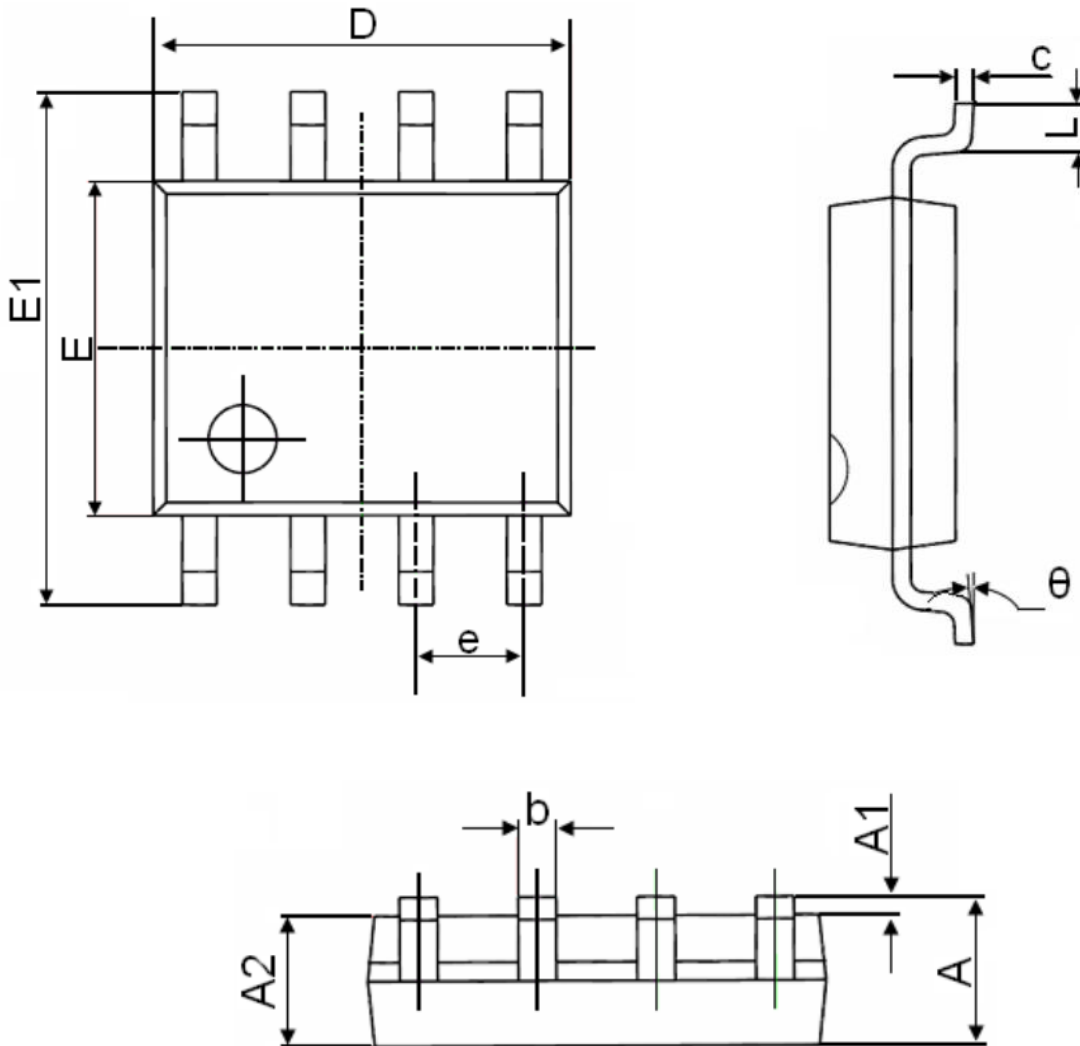
	Parameter	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	9	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	40		
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$T_J=25^\circ\text{C}, I_S=9A, V_{GS}=0V$

Test circuits and Waveforms
EAS test circuit:

Gate charge test circuit:

Switch Time Test Circuit:

Switch Waveforms:

Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ C$

Typical electrical and thermal characteristics

Figure 1: Typical Output Characteristics

Figure 2: Transfer Characteristics

Figure 3: On-Resistance vs. Drain Current

Figure 4: On-Resistance vs. Junction Temperature

Figure 5: On-Resistance vs. Gate-Source Voltage

Figure 6: Power Dissipation

Typical electrical and thermal characteristics

Figure 7: Gate Charge

Figure 8: Source-Drain Diode Forward

Figure 9: Capacitance

Figure 10: Safe Operation Area

Figure 11: Transient Thermal Impedance

Mechanical Data:


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°

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