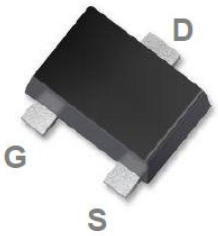
Main Product Characteristics:

V_{DSS}	20V
R_{DS}(on)	200mΩ (typ.)
I_D	800mA



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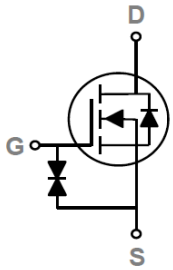


Schematic diagram

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
- High Power and current handing capability
- Fully Avalanche Rated

Description:

It utilizes the advanced trench processing techniques to achieve extremely low on resistance and low gate charge. These features combine to make this design an extremely efficient and reliable device for use in PWM, load switching and a wide variety of other applications.

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ T_C = 25°C	Continuous Drain Current, V_{GS} @ 10V①	800	mA
I_D @ T_C = 100°C	Continuous Drain Current, V_{GS} @ 10V①	510	
I_{DM}	Pulsed Drain Current②	3200	
P_D @T_C = 25°C	Power Dissipation③	450	W
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 8	V
T_J	Operating Junction and	-55 to + 150	°C
T_{STG}	Storage Temperature Range	-55 to + 150	°C

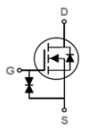
Thermal Resistance

Symbol	Characterizes	Value	Unit
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	280	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

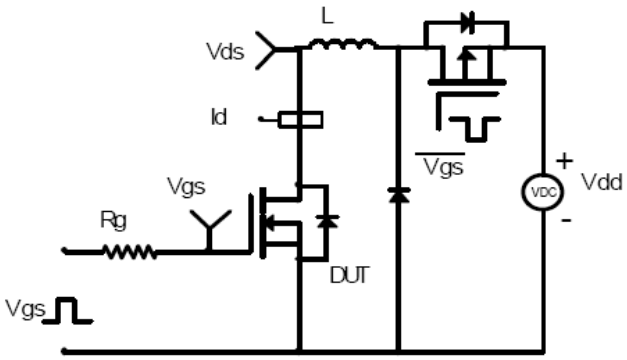
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
BV_{DSS}	Drain-to-Source breakdown voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	200	300	mΩ	V_{GS}=4.5V,I_D = 0.5A
			300	450		V_{GS}=2.5V,I_D = 0.4A
			500	700		V_{GS}=1.8V,I_D = 0.2A
			800	1200		V_{GS}=1.5V,I_D = 0.1A
			1200	2500		V_{GS}=1.2V,I_D =0.1A
$V_{GS(th)}$	Gate threshold voltage	0.3	0.5	0.85	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =20V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	20	uA	V_{GS} =8V
	Gate-to-Source reverse leakage	—	—	-20		V_{GS} = -8V
Q_g	Total gate charge	—	1	2	nC	I_D = 0.5A, V_{DS}=10V, V_{GS} = 4.5V
Q_{gs}	Gate-to-Source charge	—	0.26	0.5		
Q_{gd}	Gate-to-Drain("Miller") charge	—	0.2	0.4		
$t_{d(on)}$	Turn-on delay time	—	5	10	ns	V_{GS}=4.5V, V_{DS}=10V, R_{GEN}=10Ω, I_D =0.5A
t_r	Rise time	—	3.5	7		
$t_{d(off)}$	Turn-Off delay time	—	14	28		
t_f	Fall time	—	6	12		
Ciss	Input capacitance	—	38	75	pF	V_{DS}=10V, V_{GS}=0V, f=1MHZ
Coss	Output capacitance	—	14	29		
Crss	Reverse transfer capacitance	—	6	12		

Source-Drain Ratings and Characteristics

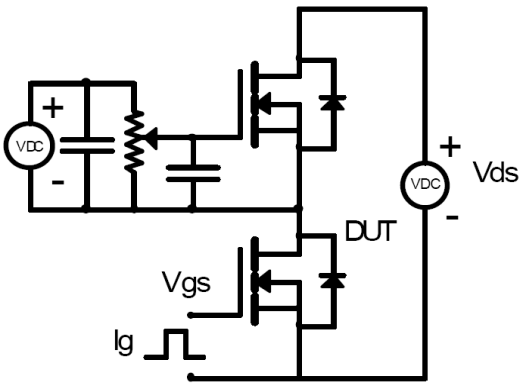
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Maximum Body-Diode Continuous Current	—	0.8	—	A	MOSFET symbo showing the integral reverse p-n junction diode. 
I_{SM}	Maximum Body-Diode Pulse Current	—	1.6	—	A	
V_{SD}	Diode Forward Voltage	—	—	1	V	T_J=25℃,I_S=0.2A,V_{GS}=0V

Test circuits and Wave forms

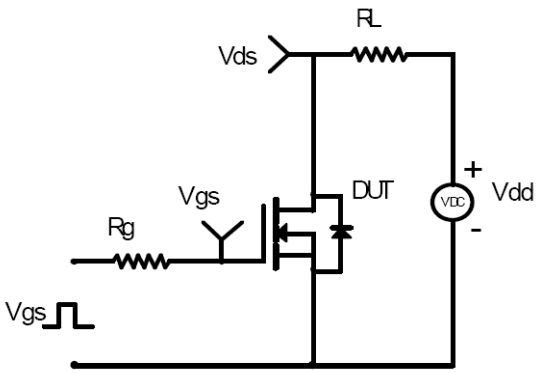
EAS Test Circuit:



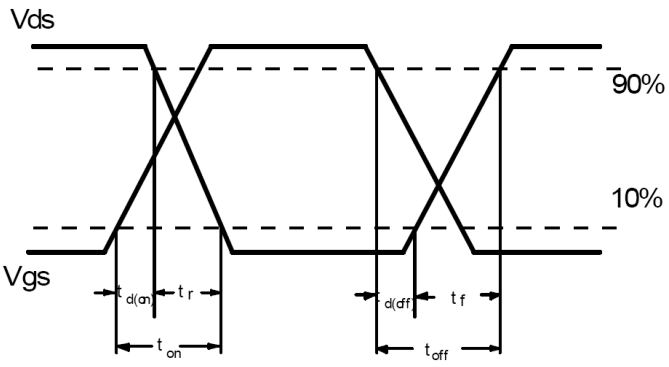
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

④The 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°C

Typical electrical and thermal characteristics

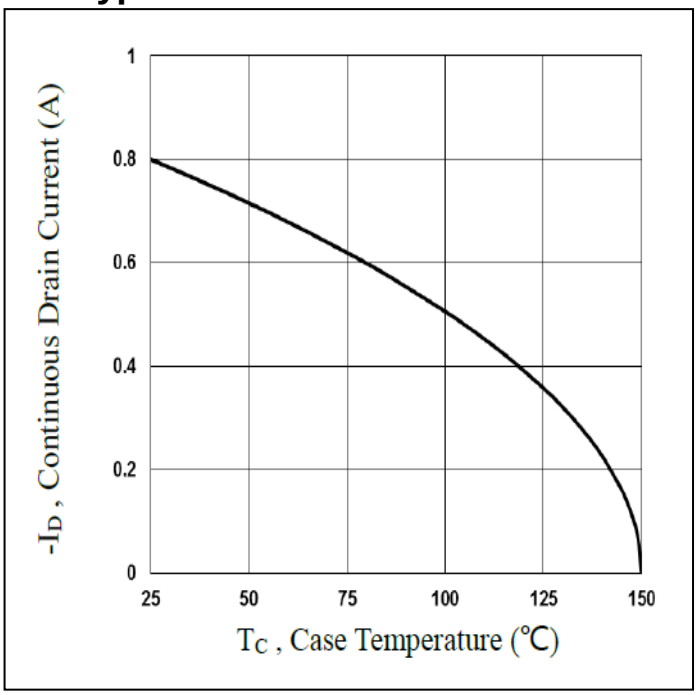


Figure 1: Continuous Drain Current

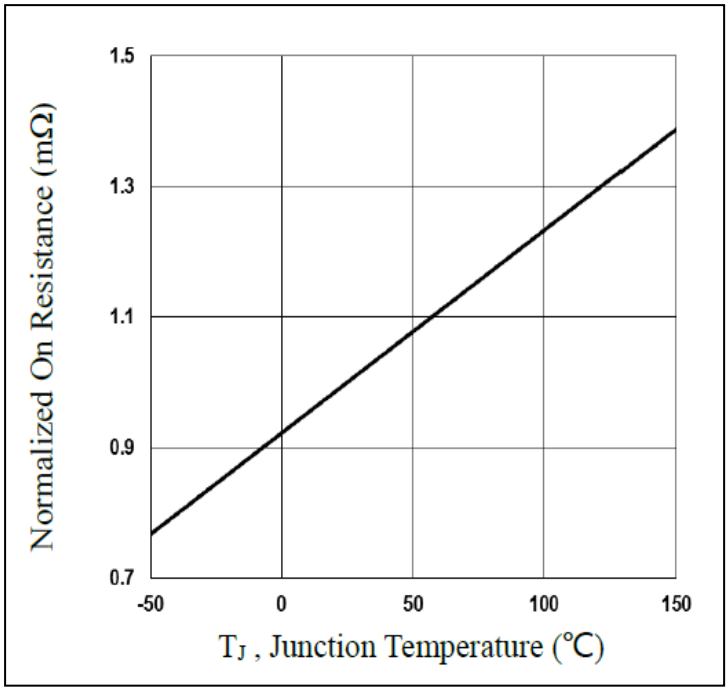


Figure 2. Normalized Rdson Vs. T_J

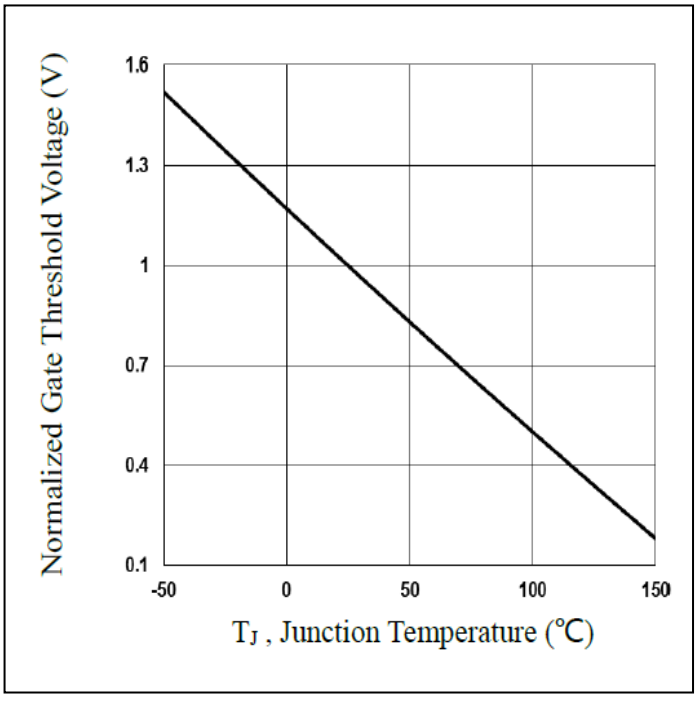


Figure 3. Normalized V_{th} Vs. T_J

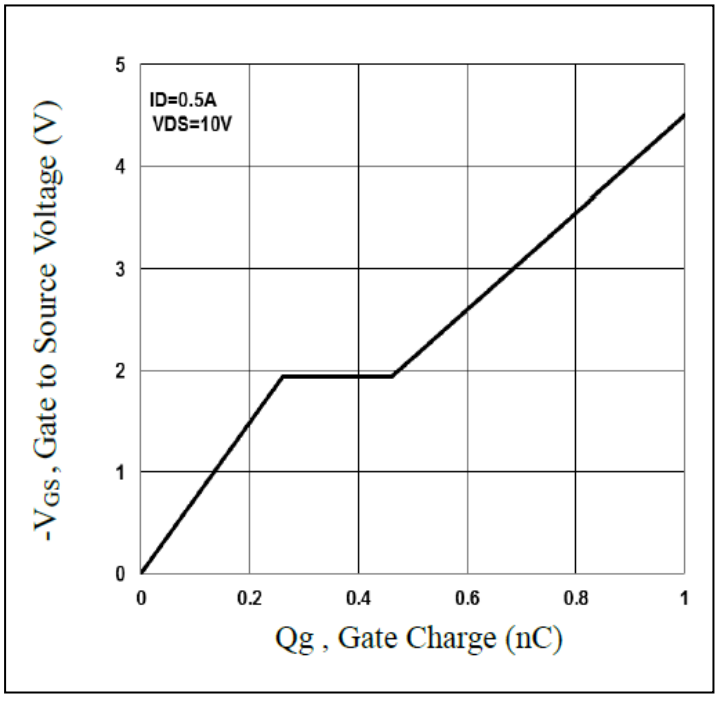


Figure 4: Gate Charge Waveform

Typical electrical and thermal characteristics

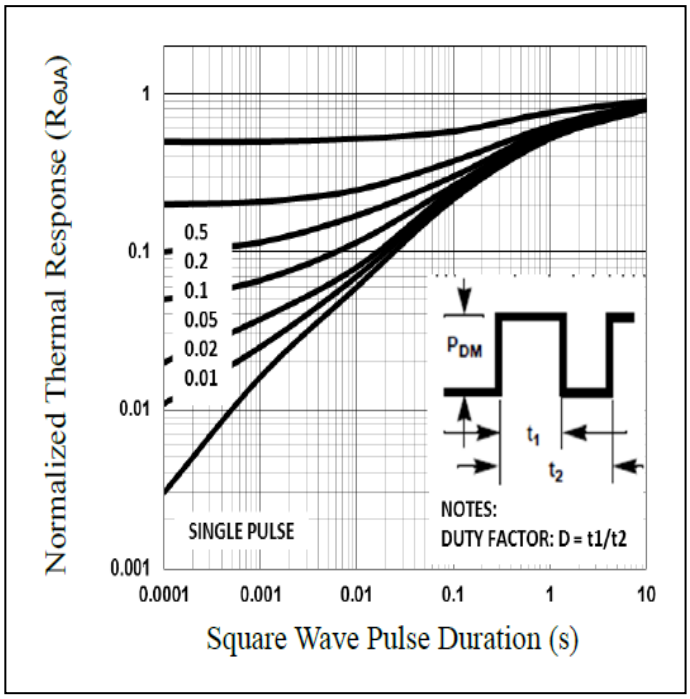


Figure 5. Normalized Transient Response

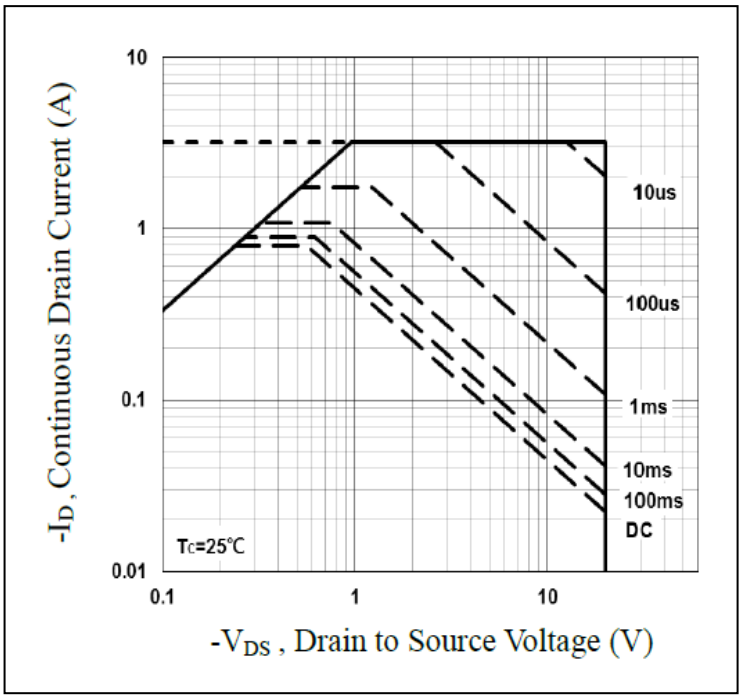


Figure 6. Maximum Safe Operation Area

Mechanical Data：

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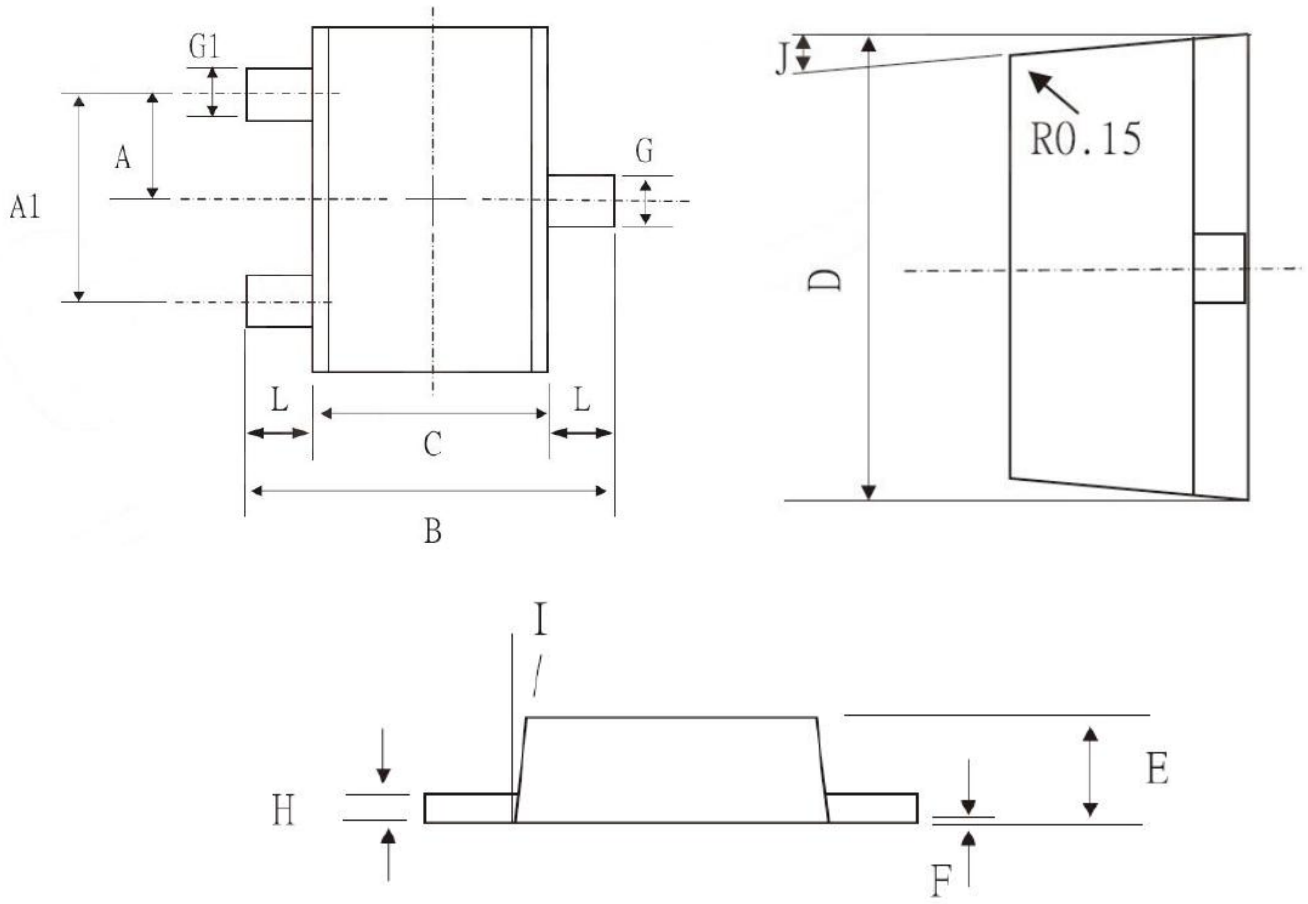

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.4BSC		0.016BSC	
A1	0.8BSC		0.031BSC	
B	1.250	1.150	0.049	0.045
C	0.850	0.750	0.033	0.030
D	1.250	1.150	0.049	0.045
E	0.390	0.370	0.015	0.015
F	0.050	0.000	0.002	0.000
G	0.270	0.220	0.011	0.009
G1	0.220	0.170	0.009	0.007
H	0.110	0.009	0.004	0.000
I	13°	9°	13°	9°
L	0.250	0.150	0.010	0.006
J	11°	7°	11°	7°

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