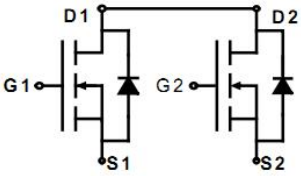
Main Product Characteristics:

V_{DSS}	20V
R_{DS}(on)	19.6mΩ (typ.)
I_D	6A

TSSOP-8

Marking and Pin Assignments



Schematic Diagram

Features and Benefits:

- Advanced 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℃ 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	6	A
I_{DM}	Pulsed Drain Current ②	25	
P_D @TC = 25°C	Power Dissipation ③	1.5	W
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 10	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.5mH	12	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

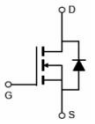
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	83	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

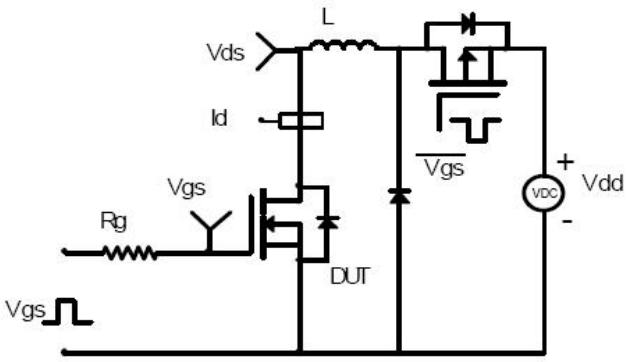
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	19.6	27.5	mΩ	V_{GS}=4.5V,I_D =4.5A
		—	24.3	37.5		V_{GS}=2.5V,I_D =3.5A
$V_{GS(th)}$	Gate threshold voltage	0.5	—	1.2	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =18V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =10V
		—	—	-100		V_{GS} = -10V
Q_g	Total gate charge	—	10	—	nC	I_D = 6A,
Q_{gs}	Gate-to-Source charge	—	2.3	—		V_{DS}=10V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	3	—		V_{GS} = 4.5V
$t_{d(on)}$	Turn-on delay time	—	10	—	ns	V_{GS}=4.5V, V_{DS}=10V, R_{GEN}=6Ω I_D = 1A
t_r	Rise time	—	11	—		
$t_{d(off)}$	Turn-Off delay time	—	35	—		
t_f	Fall time	—	30	—		
C_{iss}	Input capacitance	—	409	—	pF	V_{GS} = 0V V_{DS} = 8V f = 1MHz
C_{oss}	Output capacitance	—	95	—		
C_{rss}	Reverse transfer capacitance	—	69	—		

Source-Drain Ratings and Characteristics

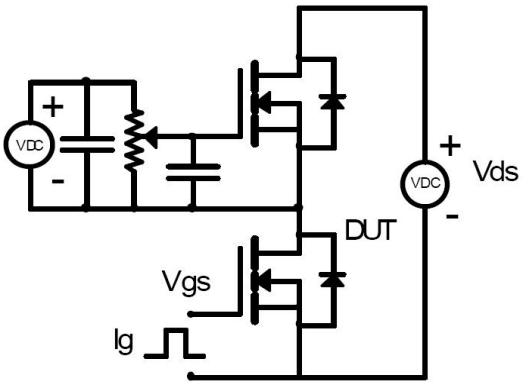
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	1.7	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{SD}	Diode Forward Voltage	—	0.8	1.2	V	I_S=1.7A, V_{GS}=0V

Test circuits and Waveforms

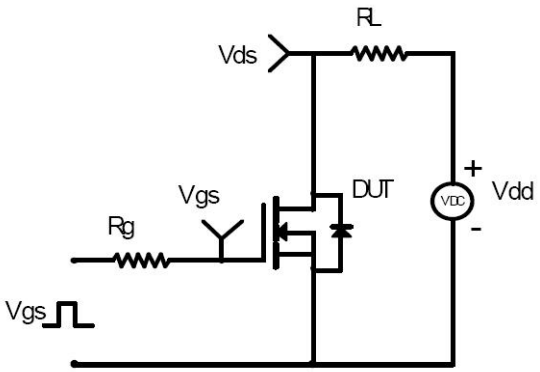
EAS Test Circuit:



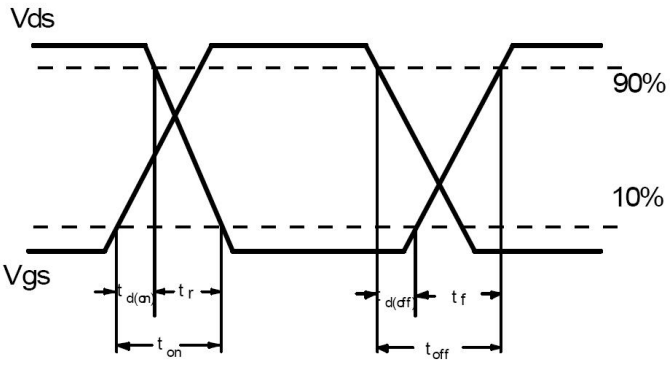
Gate charge test circuit:



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 PD 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 TA =25°C

Typical Electrical and Thermal Characteristics

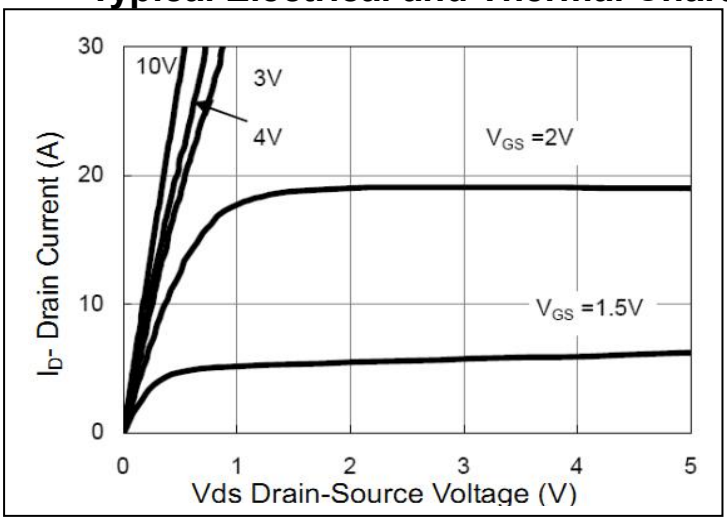


Figure 1. Typical Output Characteristics

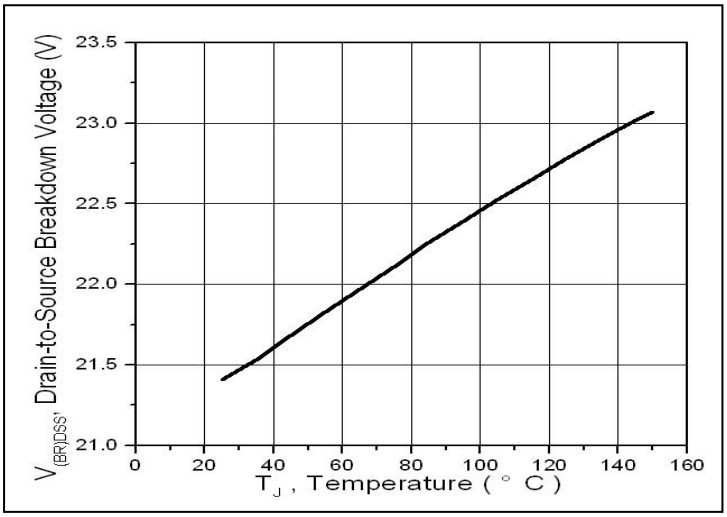


Figure 2.Drain-to-Source Breakdown Voltage vs. Temperature

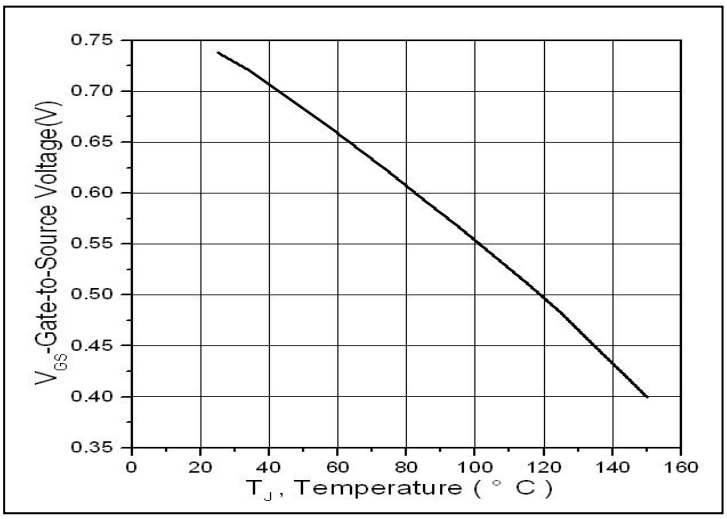


Figure 3. Gate to source cut-off voltage

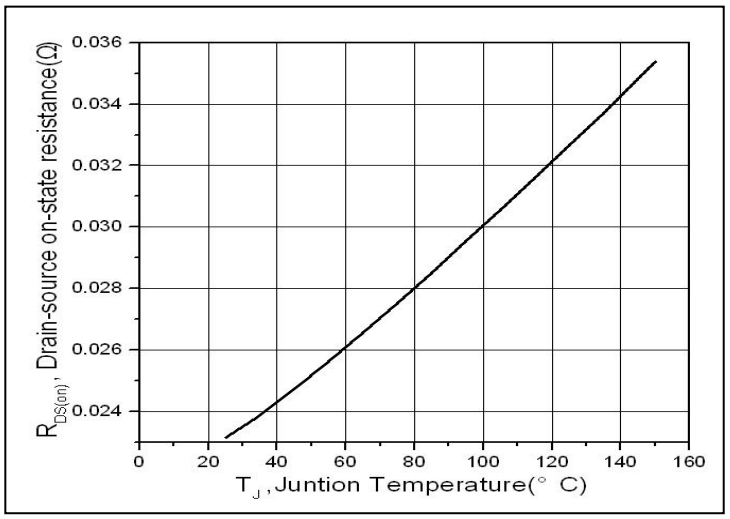


Figure 4. Normalized On-Resistance vs. Case Temperature

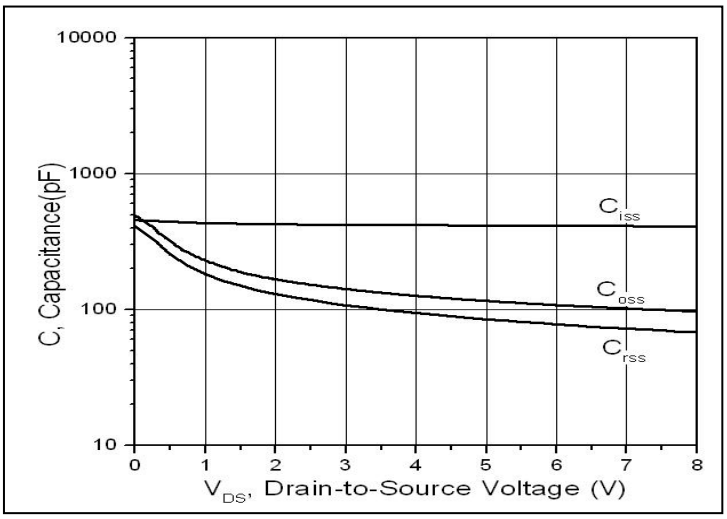


Figure 5.Capacitance

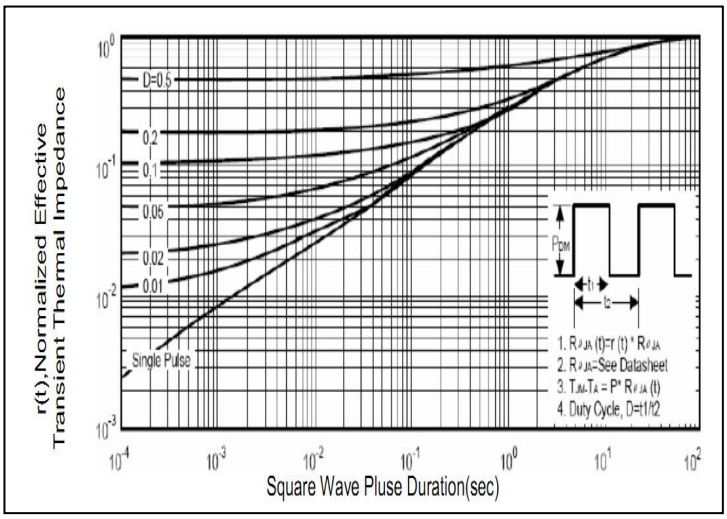
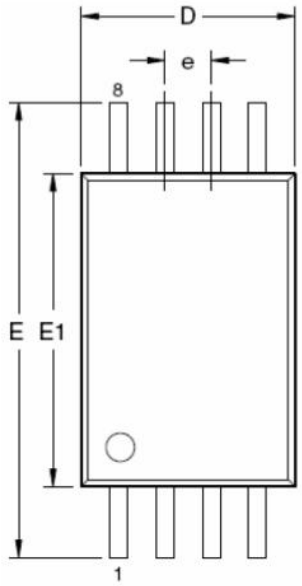
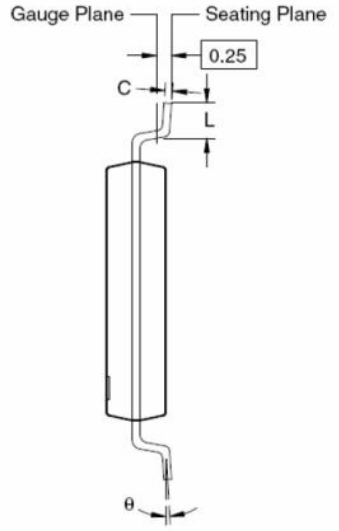


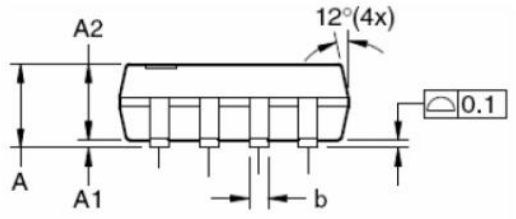
Figure 6. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Mechanical Data：

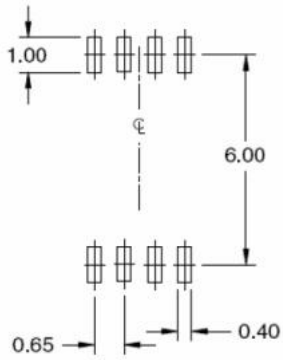


Dimensions in Millimeters (UNIT:mm)





RECOMMENDED LAND PATTERN



UNIT: mm

Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	—	—	1.20
A1	0.05	—	0.15
A2	0.80	1.00	1.05
b	0.19	—	0.30
C	0.09	—	0.20
D	2.90	3.00	3.10
E	6.40 BSC		
E1	4.30	4.40	4.50
e	0.65 BSC		
L	0.45	0.60	0.75
θ	0°	—	8°

Dimensions in inches

Symbols	Min.	Nom.	Max.
A	—	—	0.047
A1	0.002	—	0.006
A2	0.031	0.039	0.041
b	0.007	—	0.012
C	0.004	—	0.008
D	0.114	0.118	0.122
E	0.252 BSC		
E1	0.169	0.173	0.177
e	0.026 BSC		
L	0.018	0.024	0.030
θ	0°	—	8°

NOTES：

1. All dimensions are in millimeters.
2. Dimensions are inclusive of plating
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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