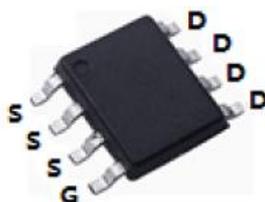
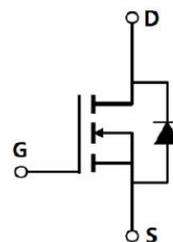


Main Product Characteristics

V_{DSS}	100V
$R_{DS(on)}$	17m Ω (typ.)
I_D	8A ①



SOP-8



Schematic Diagram

Features and Benefits

- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and reverse body recovery
- 150°C operating temperature



Applications

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor

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	8	A
I_{DM}	Pulsed Drain Current ②	32	
P_D @TC = 25°C	Power Dissipation ③	3.5	W
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.5mH	42	mJ
I_{AS}	Avalanche Current @ L=0.5mH	13	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

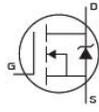
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	—	35.7	°C/W

Electrical Characterizes @T_A=25°C unless otherwise specified

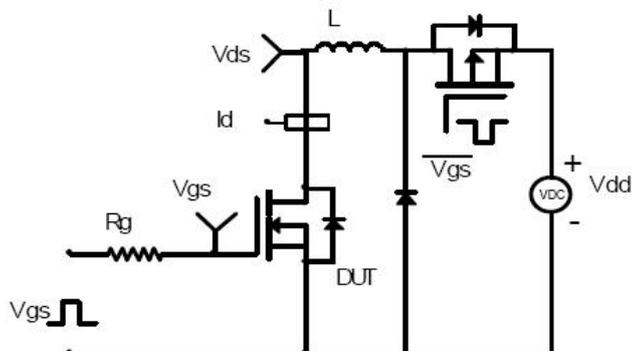
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source breakdown voltage	100	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	16	20	mΩ	V _{GS} =10V, I _D =10A
		—	—	26		V _{GS} =4.5V, I _D =7A
V _{GS(th)}	Gate threshold voltage	1	—	2.5	V	V _{DS} = V _{GS} , I _D =250μA
I _{DSS}	Drain-to-Source leakage current	—	—	1	μA	V _{DS} =100V, V _{GS} = 0V
I _{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V _{GS} =20V
		—	—	-100		V _{GS} = -20V
Q _g	Total gate charge	—	19	—	nC	I _D = 5A, V _{DS} =50V, V _{GS} = 10V
Q _{gs}	Gate-to-Source charge	—	2.5	—		
Q _{gd}	Gate-to-Drain("Miller") charge	—	5	—		
t _{d(on)}	Turn-on delay time	—	8.1	—	ns	V _{GS} =10V, V _{DD} =50V, R _{GEN} =3Ω I _D =10A
t _r	Rise time	—	11.7	—		
t _{d(off)}	Turn-Off delay time	—	23.3	—		
t _f	Fall time	—	5.7	—		
C _{iss}	Input capacitance	—	927	—	pF	V _{GS} = 0V V _{DS} = 50V f = 1MHz
C _{oss}	Output capacitance	—	108	—		
C _{rss}	Reverse transfer capacitance	—	2.5	—		

Source-Drain Ratings and Characteristics

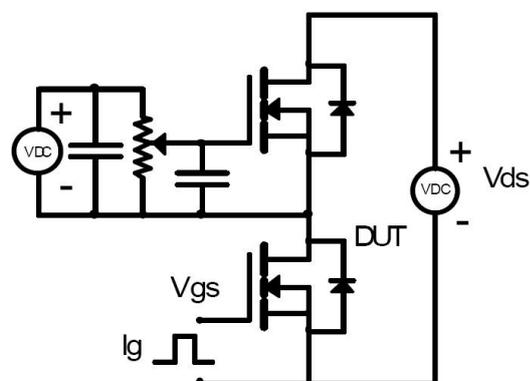
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode) ①	—	—	8	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode)	—	—	32	A	
V _{SD}	Diode Forward Voltage	—	—	1.3	V	I _S =20A, V _{GS} =0V, T _J = 25°C
t _{rr}	Reverse Recovery Time	—	50	—	ns	T _J = 25°C, I _F =5A, di/dt =
Q _{rr}	Reverse Recovery Charge	—	65	—	nC	100A/μs

Test Circuits and Waveforms

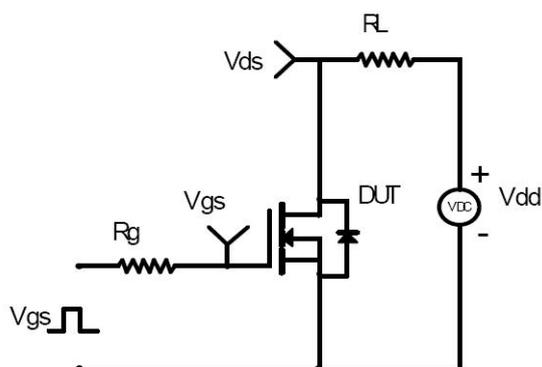
EAS Test Circuit:



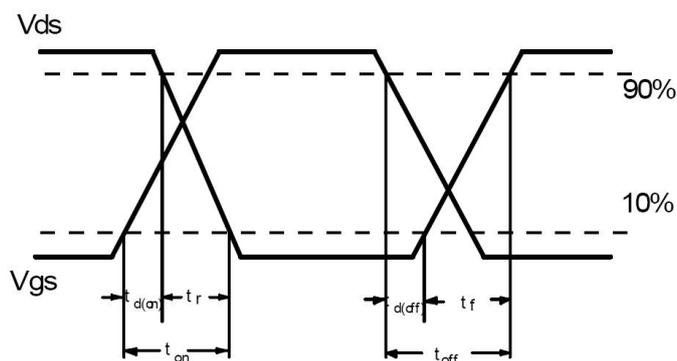
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching 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 PD 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 $T_A = 25^\circ\text{C}$

Typical Electrical and Thermal Characteristics

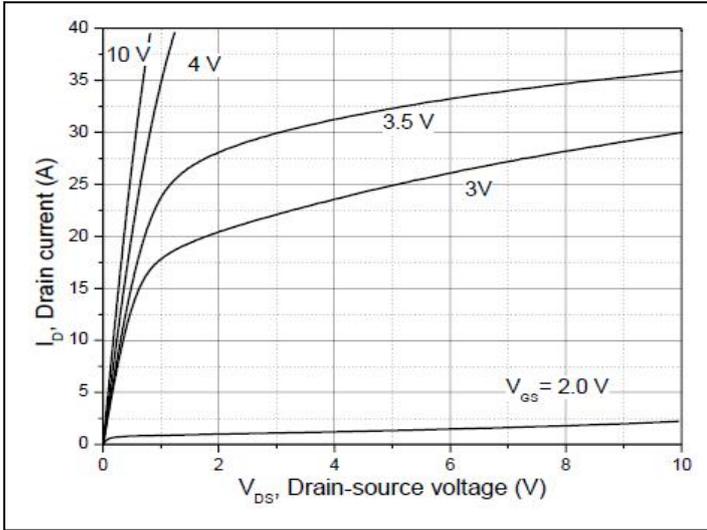


Figure 1. Typical Output Characteristics

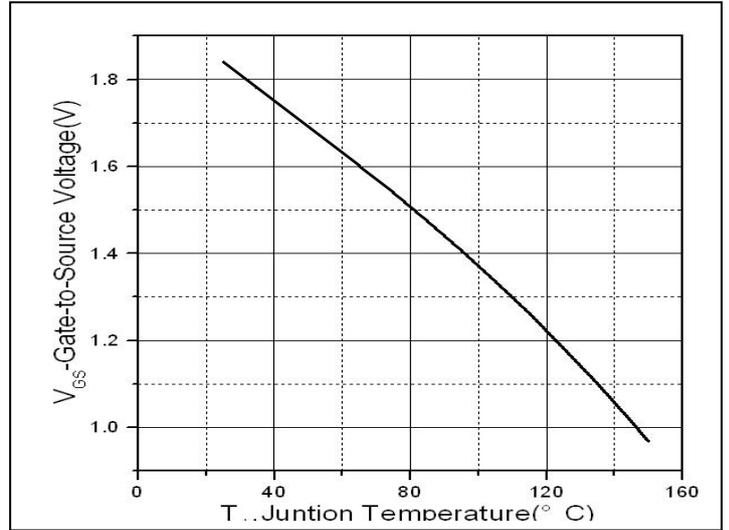


Figure 2. Gate to Source Cut-off Voltage

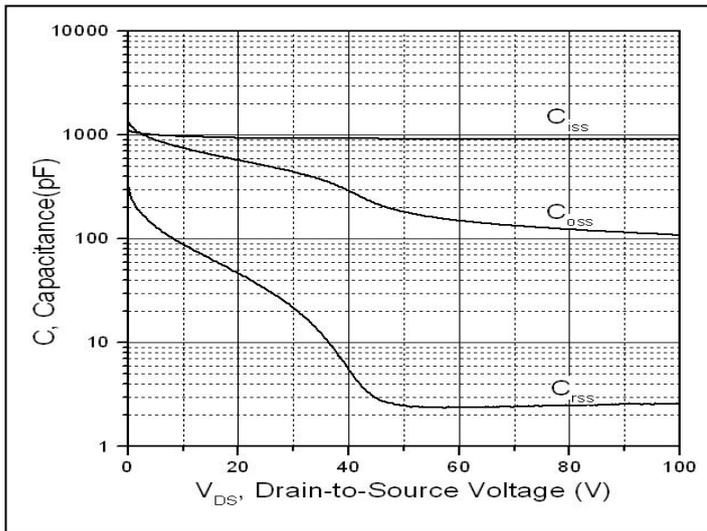


Figure 3. Typical Capacitances

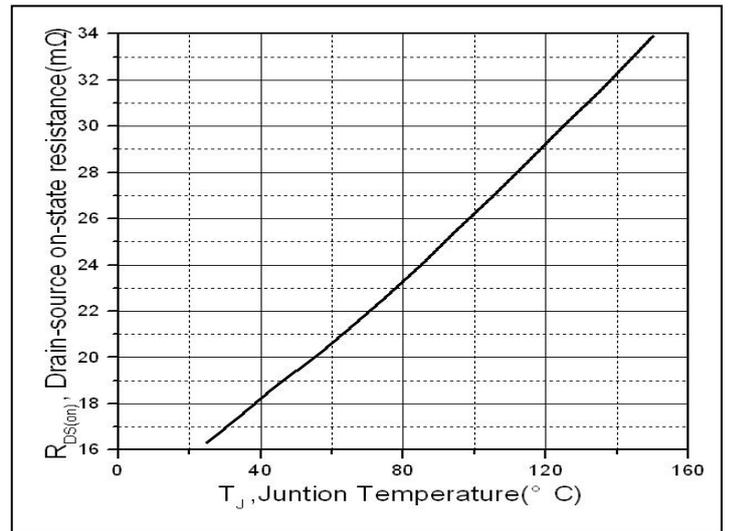


Figure 4. Drain-to-Source On-state Resistance

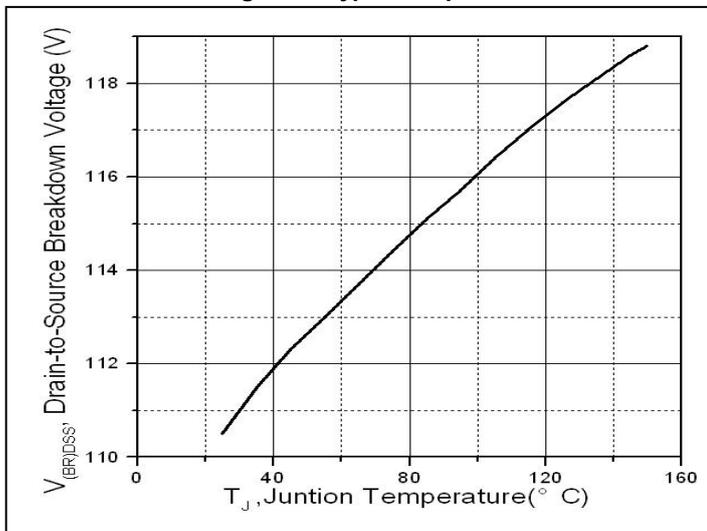


Figure 5. Drain-to-Source Breakdown Voltage

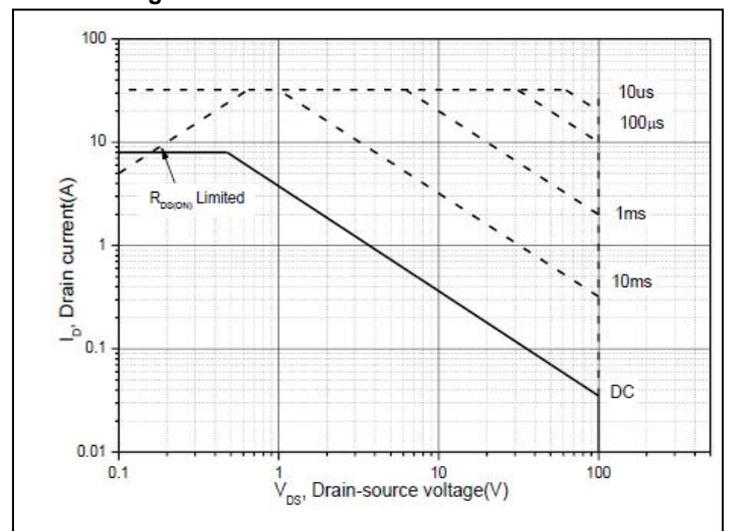
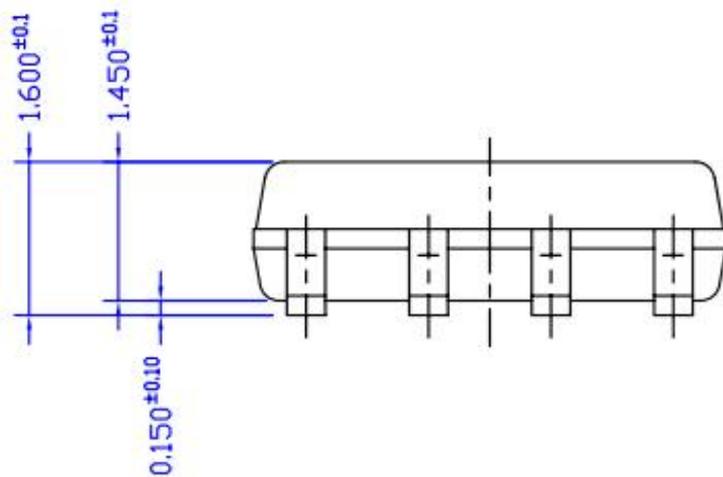
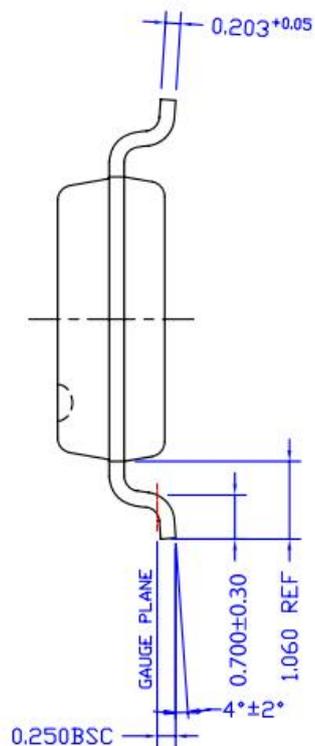
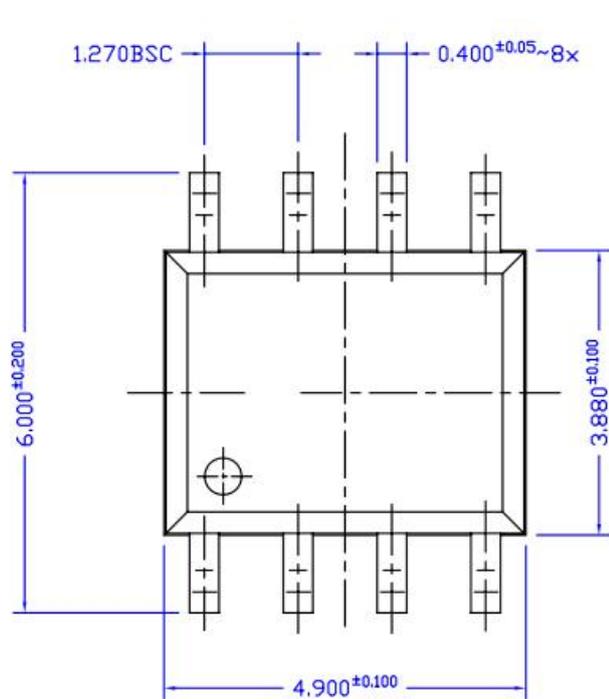


Figure 6. Safe Operation Area ($T_C=25^\circ\text{C}$)

Mechanical Data:



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