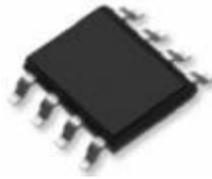
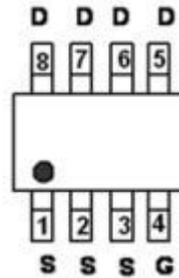
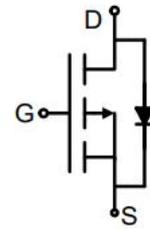


Main Product Characteristics:

V_{DSS}	-30V
$R_{DS(on)}$	11.5m Ω (typ.)
I_D	-10A ^①


SOP-8

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°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
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ^①	-10	A
I_{DM}	Pulsed Drain Current ^②	-50	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ^③	3.1	W
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.5mH	81	mJ
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

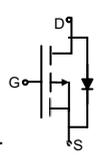
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10s$) ④	—	40	°C/W

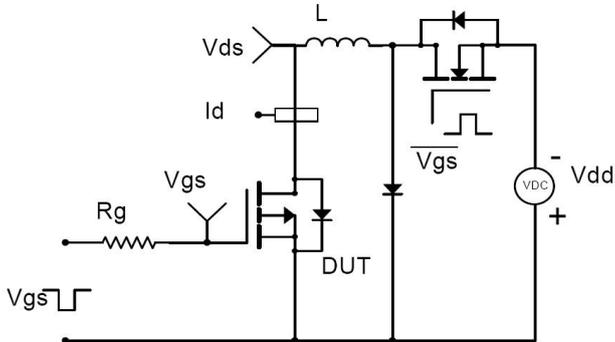
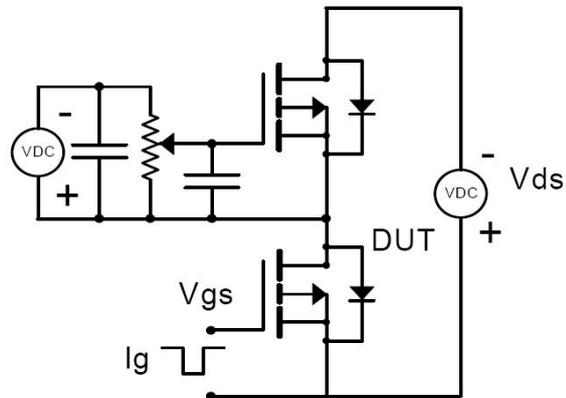
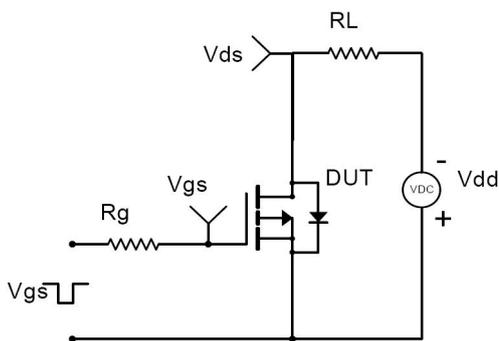
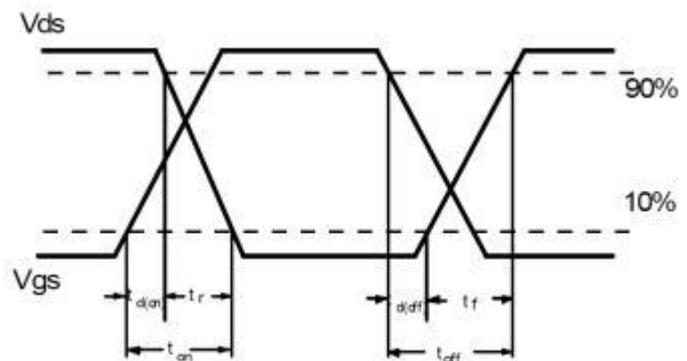
Electrical Characterizes @ $T_A=25^\circ C$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-30	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	11.5	15	m Ω	$V_{GS}=-10V, I_D = -8A$
		—	16	20	m Ω	$V_{GS}=-4.5V, I_D = -4A$
$V_{GS(th)}$	Gate threshold voltage	-1	—	-2.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	-1	μA	$V_{DS} = -30V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
		—	—	-100		$V_{GS} = -20V$
Q_g	Total gate charge	—	50	—	nC	$I_D = -20A,$ $V_{DS}=-15V,$ $V_{GS} = -10V$
Q_{gs}	Gate-to-Source charge	—	7	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	10	—		
$t_{d(on)}$	Turn-on delay time	—	17.6	—	ns	$V_{GS}=-10V, V_{DS} = -10V,$ $R_{GEN}=3\Omega, I_D = -20A$
t_r	Rise time	—	33.7	—		
$t_{d(off)}$	Turn-Off delay time	—	24.8	—		
t_f	Fall time	—	19.6	—		
C_{iss}	Input capacitance	—	2170	—	pF	$V_{GS} = 0V$ $V_{DS} = -15V$ $f = 1MHz$
C_{oss}	Output capacitance	—	270	—		
C_{rss}	Reverse transfer capacitance	—	259	—		

Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	-10	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-50	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	$I_S=-20A, V_{GS}=0V$

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

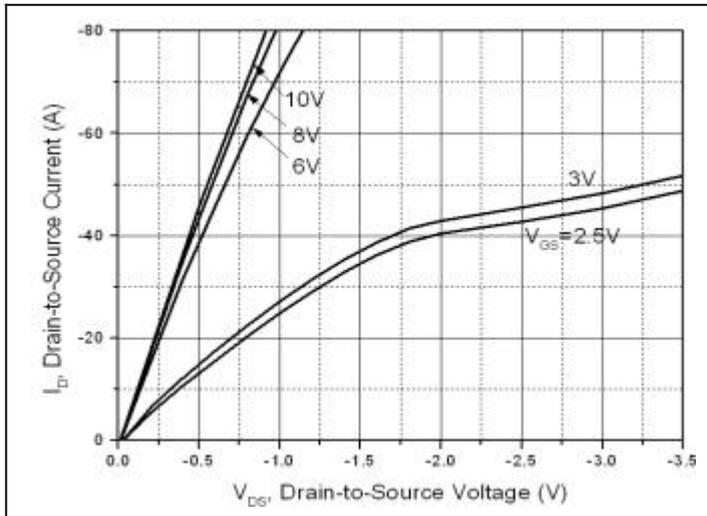


Figure 1. Typical Output Characteristics

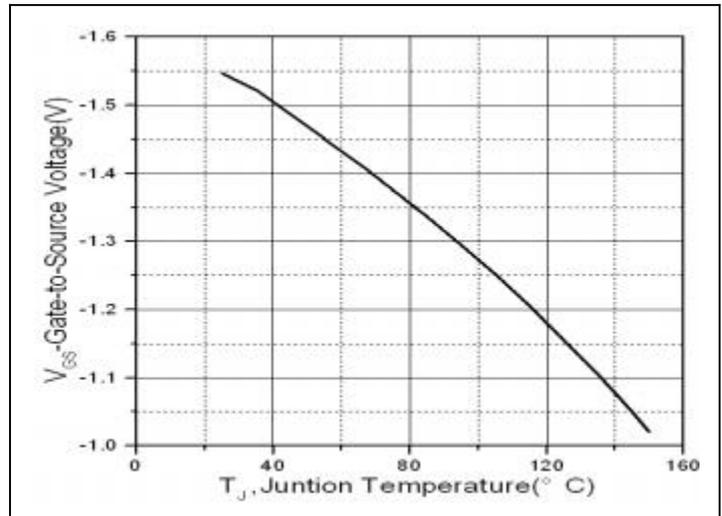


Figure 2. Normalized $V_{GS(th)}$ vs. Junction Temperature

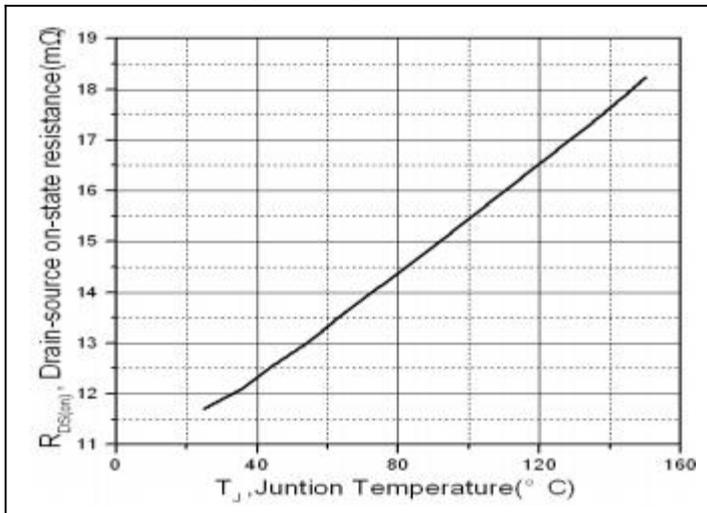


Figure 3. Normalized On-Resistance vs. Junction Temperature

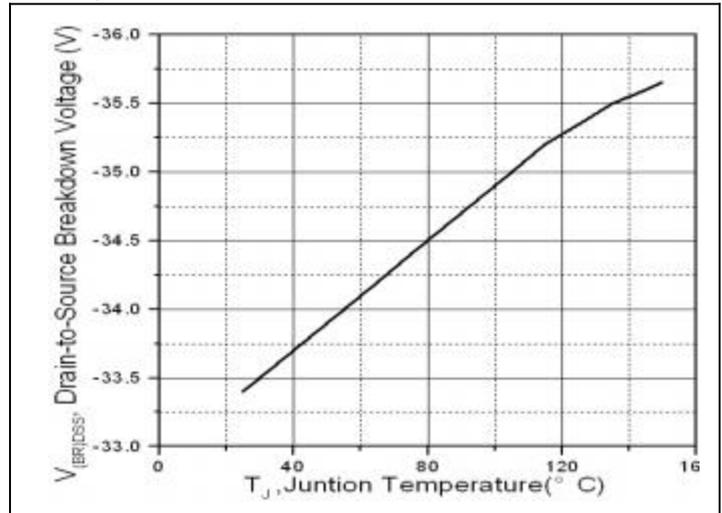


Figure 4. Drain-to-Source Breakdown Voltage vs. Junction Temperature

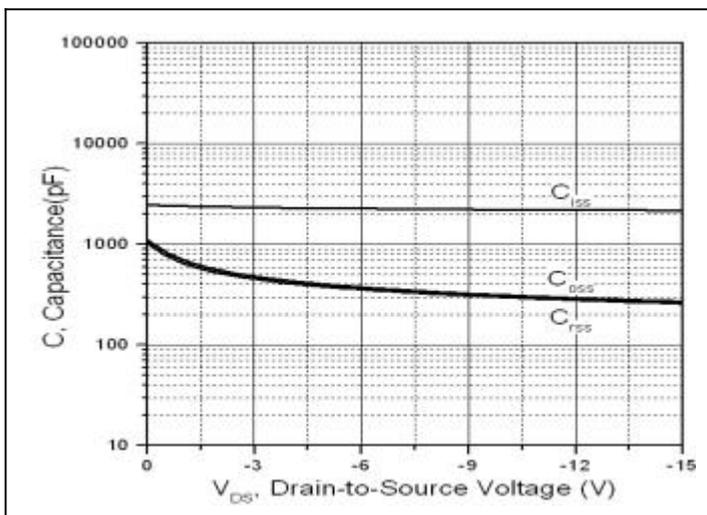
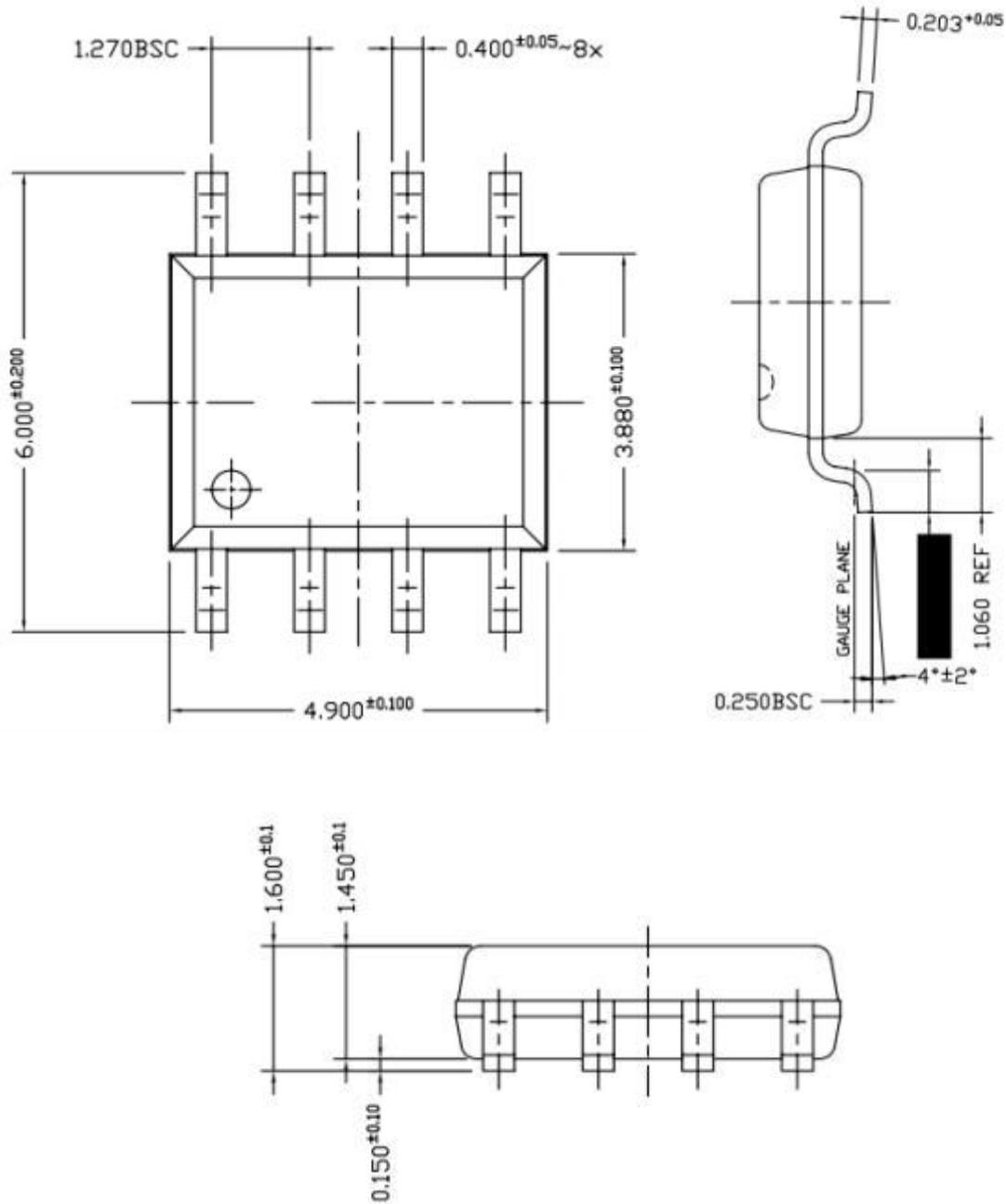


Figure 5. Capacitance Characteristics

Mechanical Data:

SOP-8 Package Outline (Unit:mm)



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