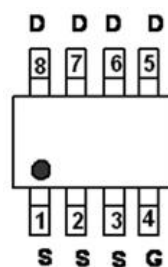
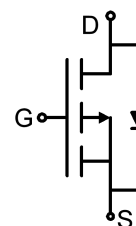


**Main Product Characteristics:**

$V_{DSS}$	-60V
$R_{DS(on)}$	34m $\Omega$
$I_D$	-9A


**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
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^{\text{①}}$	-9	A
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	-36	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation <sup>③</sup>	60	W
$V_{DS}$	Drain-Source Voltage	-60	V
$V_{GS}$	Gate-to-Source Voltage	$\pm 20$	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

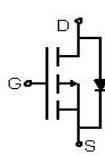
## Thermal Resistance

Symbol	Characteristics	Typ.	Max.	Units
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient <sup>④</sup>	—	41.7	°C/W

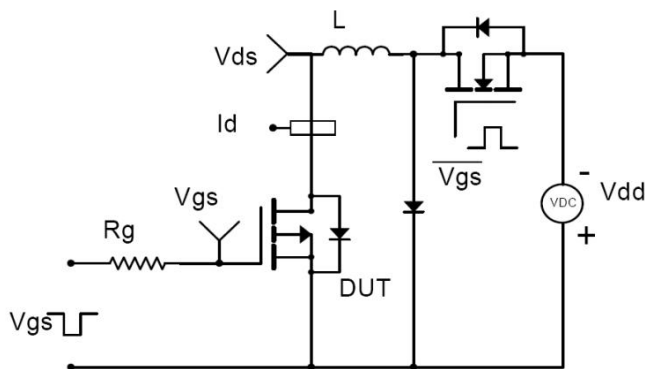
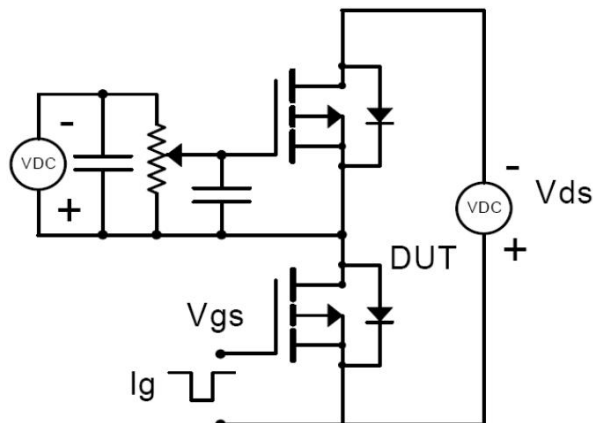
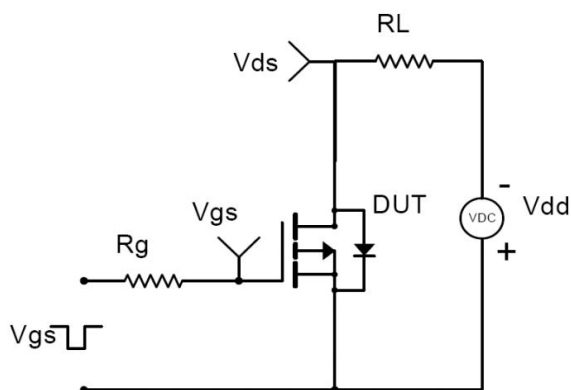
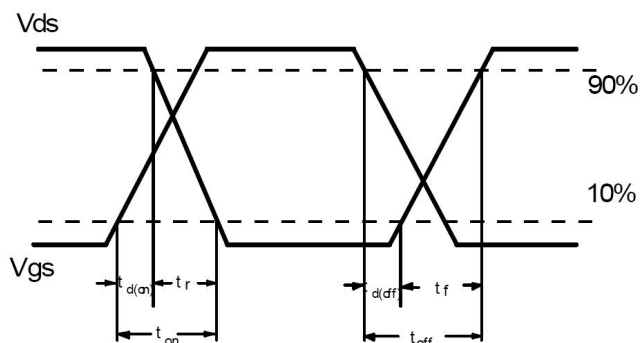
## Electrical Characteristics @T<sub>A</sub>=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source breakdown voltage	-60	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
R <sub>DS(on)</sub>	Static Drain-to-Source on-resistance	—	34	43	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -20A
		—	45	58		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -20A
V <sub>GS(th)</sub>	Gate threshold voltage	-1	—	-2.5	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250μA
I <sub>DSS</sub>	Drain-to-Source leakage current	—	—	1	μA	V <sub>DS</sub> = -48V, V <sub>GS</sub> = 0V
I <sub>GSS</sub>	Gate-to-Source forward leakage	—	—	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
g <sub>FS</sub>	Forward Transconductance	5	—	—	S	V <sub>DS</sub> = -5V, I <sub>D</sub> = -20A
Q <sub>g</sub>	Total gate charge	—	48	—	nC	V <sub>DS</sub> = -30V
Q <sub>gs</sub>	Gate-to-Source charge	—	11	—		I <sub>D</sub> = -20A
Q <sub>gd</sub>	Gate-to-Drain("Miller") charge	—	10	—		V <sub>GS</sub> = -10V
t <sub>d(on)</sub>	Turn-on delay time	—	14	—	ns	V <sub>DS</sub> = -30V
t <sub>r</sub>	Rise time	—	20	—		V <sub>GS</sub> = -10V
t <sub>d(off)</sub>	Turn-Off delay time	—	40	—		R <sub>GEN</sub> = 3Ω
t <sub>f</sub>	Fall time	—	19	—		I <sub>D</sub> = -1A
C <sub>iss</sub>	Input capacitance	—	3060	—	pF	V <sub>DS</sub> = -30V
C <sub>oss</sub>	Output capacitance	—	300	—		V <sub>GS</sub> = 0V
C <sub>rss</sub>	Reverse transfer capacitance	—	205	—		f = 1.0MHz

## Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode)	—	—	-9	A	MOSFET symbol showing the integral reverse p-n junction diode 
I <sub>SM</sub>	Pulsed Source Current (Body Diode)	—	—	-40	A	
V <sub>SD</sub>	Diode Forward Voltage	—	-0.72	-1	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1A
t <sub>rr</sub>	Reverse Recovery Time	—	40	—	ns	I <sub>F</sub> = -20A, dI/dt = 100A/μs
Q <sub>rr</sub>	Reverse Recovery Charge	—	56	—	nC	

## Test Circuits and Waveforms

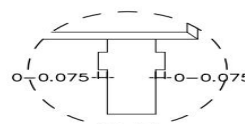
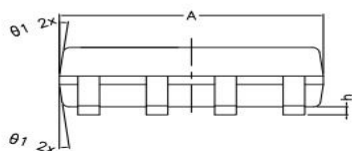
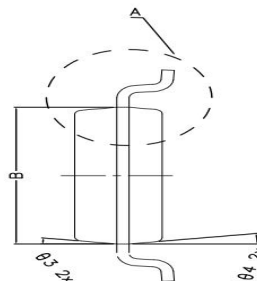
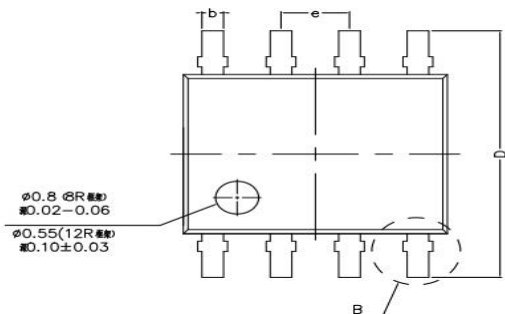
**EAS Test Circuit:**

**Gate Charge Test Circuit:**

**Switching Time Test Circuit:**

**Switching Waveforms:**


### Notes:

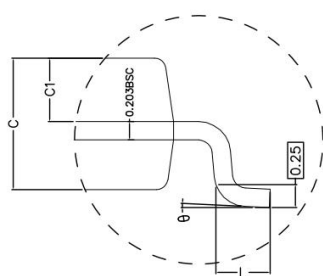
- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation  $P_D$  is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of  $R_{\theta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

**Mechanical Data:**

SOP-8 Package Outline (Unit : mm)



DETAIL B



DETAIL A

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A	4.800	4.900	5.000
B	3.800	3.900	4.000
C	1.350	1.450	1.550
C1	0.650	0.700	0.750
D	5.840	6.040	6.240
L	0.400	0.600	0.800
b	0.350	0.400	0.450
h	0.020	0.100	0.250
e	1.270TYPE		
$\theta_1$	7° TYPE(8R)   12° TYPE(12R)		
$\theta_2$	7° TYPE(8R)   10° TYPE(12R)		
$\theta_3$	8° TYPE(8R)   12° TYPE(12R)		
$\theta_4$	8° TYPE(8R)   10° TYPE(12R)		
$\theta$	0° ~ 8°		

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