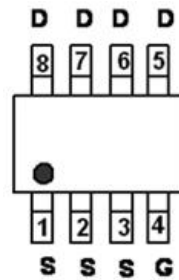
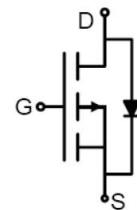


**Main Product Characteristics:**

$V_{DSS}$	-40V
$R_{DS(on)}$	46m $\Omega$ (typ.)
$I_D$	-4.2A


**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	-4.2	A
$I_D @ T_A = 100^\circ\text{C}$	Continuous Drain Current ①	-2.7	
$I_{DM}$	Pulsed Drain Current ②	-16.8	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ③	1.83	W
$V_{DS}$	Drain-Source Voltage	-40	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**

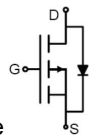
Symbol	Characterizes	Typ.	Max.	Units
R <sub>θJA</sub>	Junction-to-ambient (t ≤ 10s) ④	—	68	°C/W

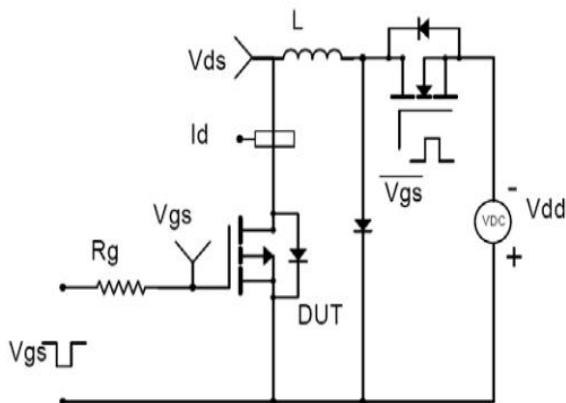
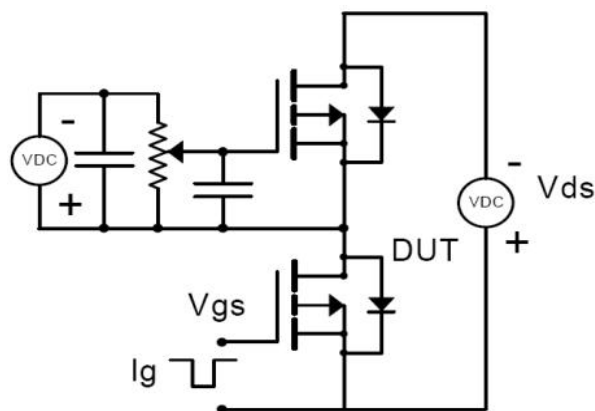
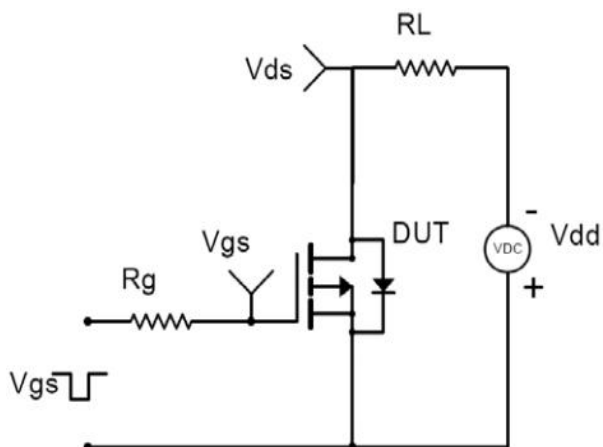
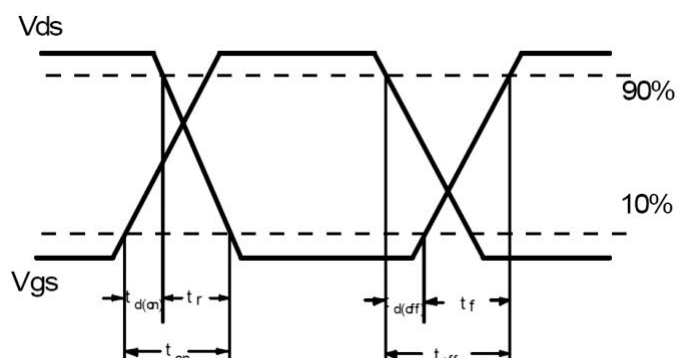
**Electrical Characteristics @T<sub>A</sub>=25°C unless otherwise specified**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V <sub>(BR)DSS</sub>	Drain-to-Source breakdown voltage	-40	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
R <sub>DS(on)</sub>	Static Drain-to-Source on-resistance	—	46	60	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4A
		—	59	78		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3A
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> = -40V, V <sub>GS</sub> = 0V
I <sub>GSS</sub>	Gate-to-Source forward leakage	—	—	100	nA	V <sub>GS</sub> = 20V
		—	—	-100		V <sub>GS</sub> = -20V
Q <sub>g</sub>	Total gate charge	—	12	—	nC	I <sub>D</sub> = -4A, V <sub>DS</sub> = -20V, V <sub>GS</sub> = -10V
Q <sub>gs</sub>	Gate-to-Source charge	—	3.5	—		
Q <sub>gd</sub>	Gate-to-Drain("Miller") charge	—	2.8	—		
t <sub>d(on)</sub>	Turn-on delay time	—	7.6	—	ns	V <sub>GS</sub> = -10V, V <sub>DS</sub> = -20V, R <sub>GEN</sub> = 3Ω, R <sub>L</sub> = 5Ω
t <sub>r</sub>	Rise time	—	3.6	—		
t <sub>d(off)</sub>	Turn-Off delay time	—	19	—		
t <sub>f</sub>	Fall time	—	4.6	—		
C <sub>iss</sub>	Input capacitance	—	905	—	pF	V <sub>GS</sub> = 0V V <sub>DS</sub> = -20V f = 1MHz
C <sub>oss</sub>	Output capacitance	—	60	—		
C <sub>riss</sub>	Reverse transfer capacitance	—	46	—		

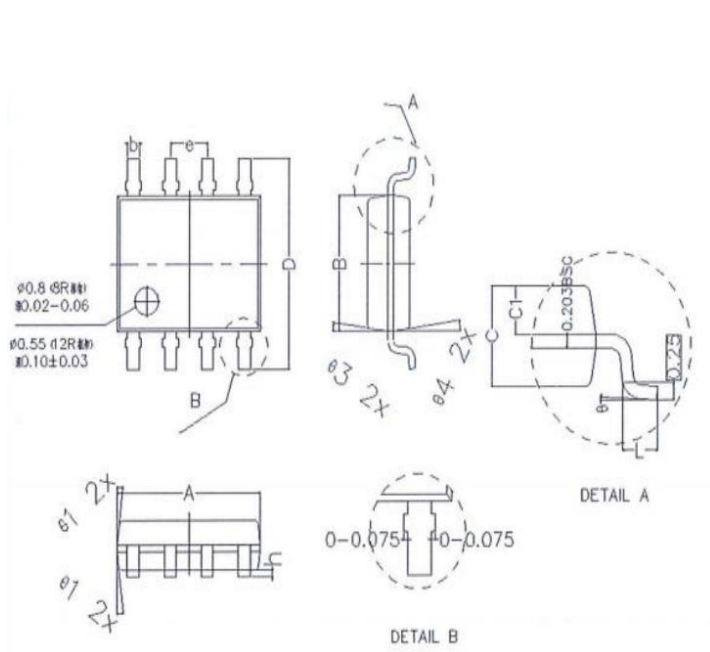
**Source-Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode) ①	—	—	-4.2	A	MOSFET symbol showing the integral reverse p-n junction diode
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	—	—	-16.8	A	
V <sub>SD</sub>	Diode Forward Voltage	—	—	-1.2	V	I <sub>S</sub> = -4A, V <sub>GS</sub> = 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  $P_D$  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)**


COMMON DIMENSIONS (UNITS OF MEASURE 15 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	5.950	6.120	6.280
L	0.500	0.600	0.700
b	0.350	0.400	0.450
h	0.070	0.150	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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