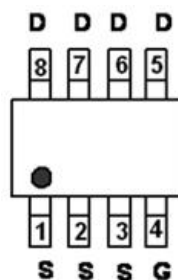
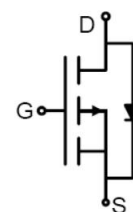


**Main Product Characteristics:**

$V_{DSS}$	-30V
$R_{DS(on)}$	10.3m $\Omega$ (typ.)
$I_D$	-12.5A 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
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current ①	-12.5	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current ①	-7.9	
$I_{DM}$	Pulsed Drain Current ②	-50	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ③	3.5	W
$V_{DS}$	Drain-Source Voltage	-30	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**

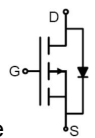
Symbol	Characterizes	Typ.	Max.	Units
R <sub>θJA</sub>	Junction-to-ambient (t ≤ 10s) ④	—	35	°C/W

**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	-30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
R <sub>DS(on)</sub>	Static Drain-to-Source on-resistance	—	10.3	13.4	mΩ	V <sub>GS</sub> =-10V, I <sub>D</sub> = -6A
		—	14.1	18.7	mΩ	V <sub>GS</sub> =-4.5V, I <sub>D</sub> = -4A
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> = -30V, 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	—	40	—	nC	I <sub>D</sub> = -6A, V <sub>DS</sub> =-15V, V <sub>GS</sub> = -10V
Q <sub>gs</sub>	Gate-to-Source charge	—	8	—		
Q <sub>gd</sub>	Gate-to-Drain("Miller") charge	—	9	—		
t <sub>d(on)</sub>	Turn-on delay time	—	15	—	ns	V <sub>GS</sub> =-10V, V <sub>DS</sub> = -15V, R <sub>GEN</sub> =3Ω, R <sub>L</sub> =2.5Ω
t <sub>r</sub>	Rise time	—	3	—		
t <sub>d(off)</sub>	Turn-Off delay time	—	91	—		
t <sub>f</sub>	Fall time	—	36	—		
C <sub>iss</sub>	Input capacitance	—	1470	—	pF	V <sub>GS</sub> = 0V V <sub>DS</sub> = -15V f = 1MHz
C <sub>oss</sub>	Output capacitance	—	165	—		
C <sub>rss</sub>	Reverse transfer capacitance	—	130	—		

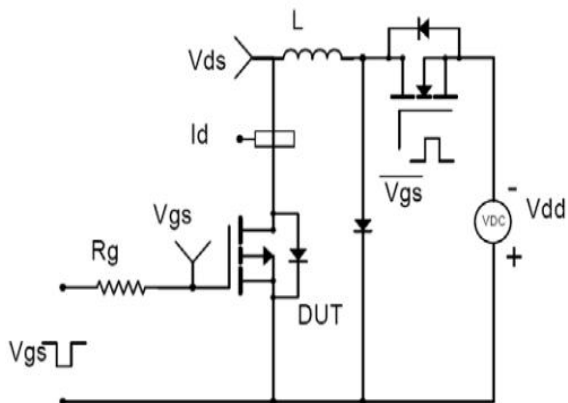
**Source-Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I <sub>S</sub>	Continuous Source Current (Body Diode) ①	—	—	-12.5	A	MOSFET symbol showing the integral reverse p-n junction diode
I <sub>SM</sub>	Pulsed Source Current (Body Diode) ①	—	—	-50	A	
V <sub>SD</sub>	Diode Forward Voltage	—	—	-1.2	V	I <sub>S</sub> =-6A, V <sub>GS</sub> =0V
t <sub>rr</sub>	Reverse Recovery Time	—	14	—	ns	T <sub>J</sub> = 25°C, I <sub>F</sub> = -3A,
Q <sub>rr</sub>	Reverse Recovery Charge	—	5	—	nC	di/dt = -100A/μs

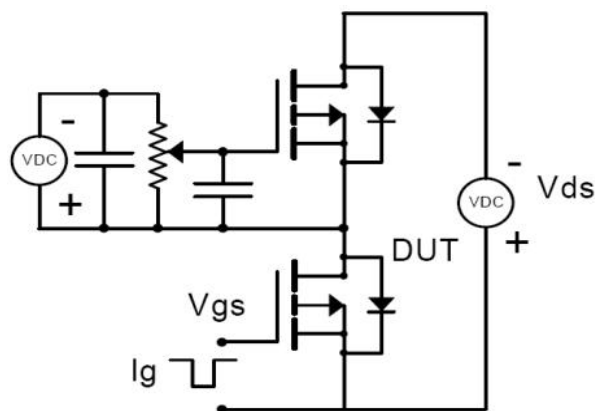


## Test Circuits and Waveforms

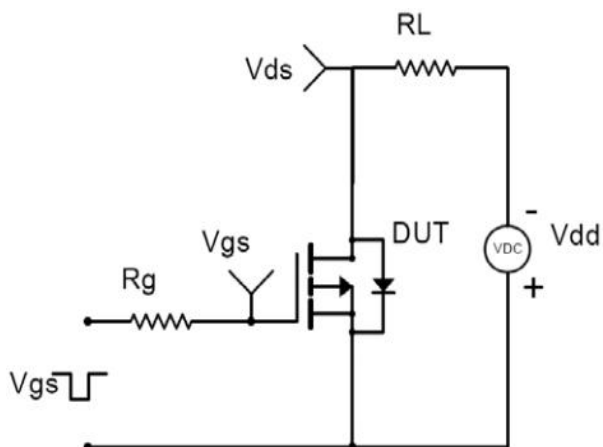
EAS Test Circuit:



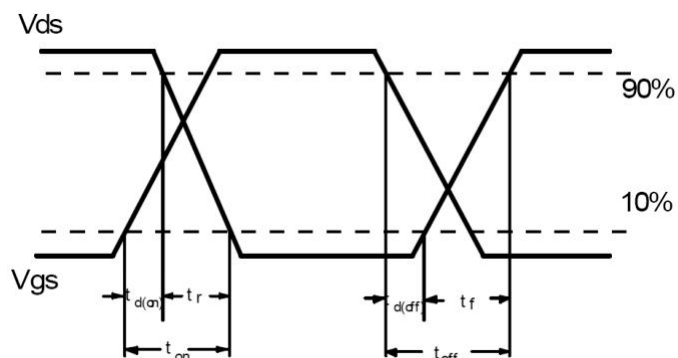
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:

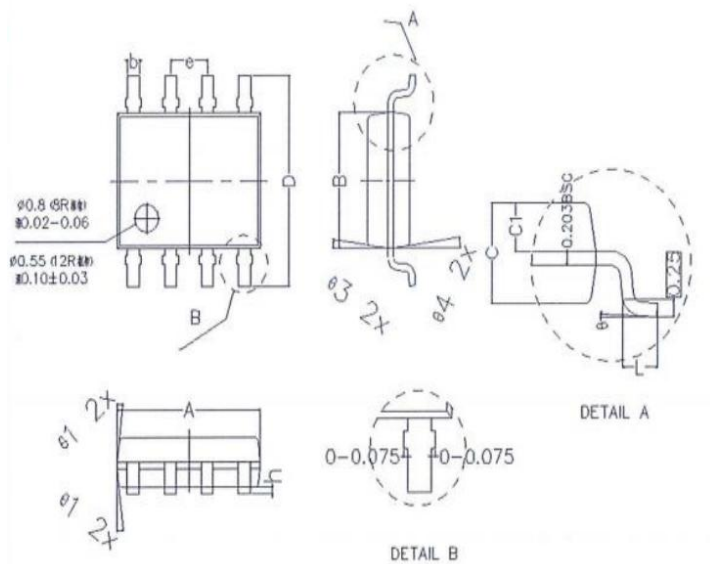


### Notes:

- 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  $T_A = 25^\circ\text{C}$

**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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