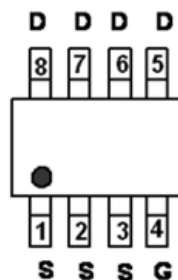
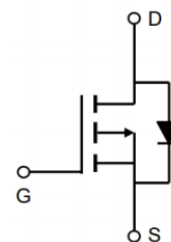


Main Product Characteristics:

V_{DSS}	-40V
$R_{DS(on)}$	60m Ω (typ.)
I_D	-6A ①


SOP-8

Pin Assignment

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	-6	A
$I_D @ T_A = 100^\circ\text{C}$	Continuous Drain Current ①	-3	
I_{DM}	Pulsed Drain Current ②	-16	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ③	1.5	W
V_{DS}	Drain-Source Voltage	-40	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.1mH	21	mJ
I_{AS}	Avalanche Current @ L=0.1mH	-20.5	A
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

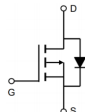
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	50	$^{\circ}C/W$
$R_{\theta JA}$	Junction-to-ambient ($t \leq 10s$) ④	—	85	$^{\circ}C/W$

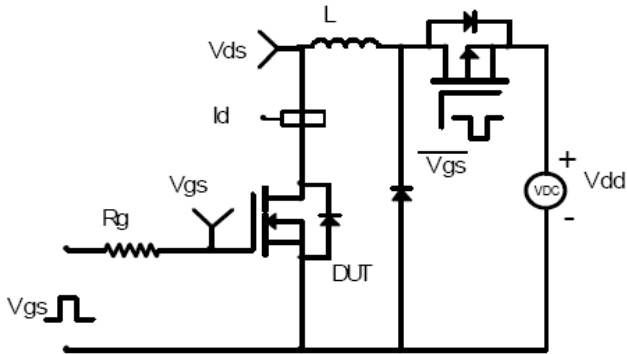
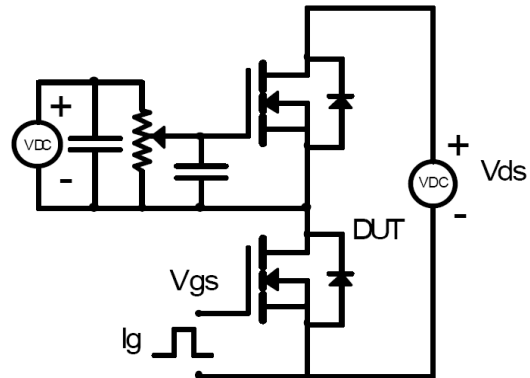
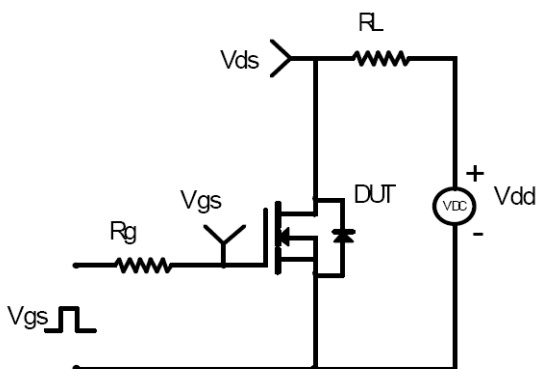
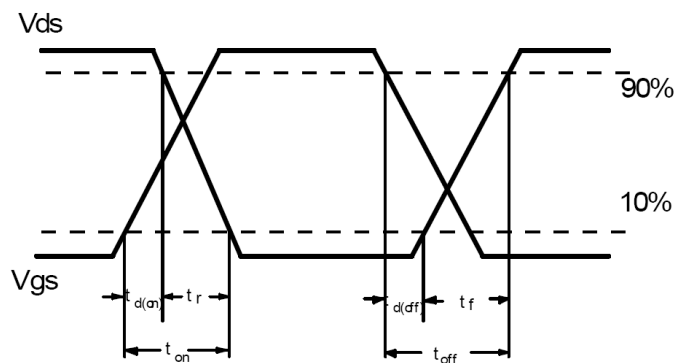
Electrical Characterizes @ $T_A=25^{\circ}C$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-40	—	—	V	$V_{GS} = 0V, I_D = -250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	60	65	$m\Omega$	$V_{GS} = -4.5V, I_D = -3A$
		—	85	100	$m\Omega$	$V_{GS} = -2.5V, I_D = -2A$
$V_{GS(th)}$	Gate threshold voltage	-1	-1.5	-2.5	V	$V_{DS} = V_{GS}, I_D = -250\mu A$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = -24V, V_{GS} = 0V$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20V$
		—	—	-100		$V_{GS} = -20V$
Q_g	Total gate charge	—	6.2	—	nC	$I_D = -3A,$ $V_{DS} = -32V,$ $V_{GS} = -4.5V$
Q_{gs}	Gate-to-Source charge	—	1.9	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	2.2	—		
$t_{d(on)}$	Turn-on delay time	—	4	—	ns	$V_{GS} = -4.5V, V_{DS} = -20V,$ $R_{GEN} = 3.3\Omega, I_D = -3A$
t_r	Rise time	—	21	—		
$t_{d(off)}$	Turn-Off delay time	—	26	—		
t_f	Fall time	—	20	—		
C_{iss}	Input capacitance	—	615	—	pF	$V_{GS} = 0V$ $V_{DS} = -15V$ $f = 1MHz$
C_{oss}	Output capacitance	—	65	—		
C_{riss}	Reverse transfer capacitance	—	51	—		

Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	-3.2	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	-16.1	A	
V_{SD}	Diode Forward Voltage	—	—	-1	V	$I_S = -1A, V_{GS} = 0V$

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

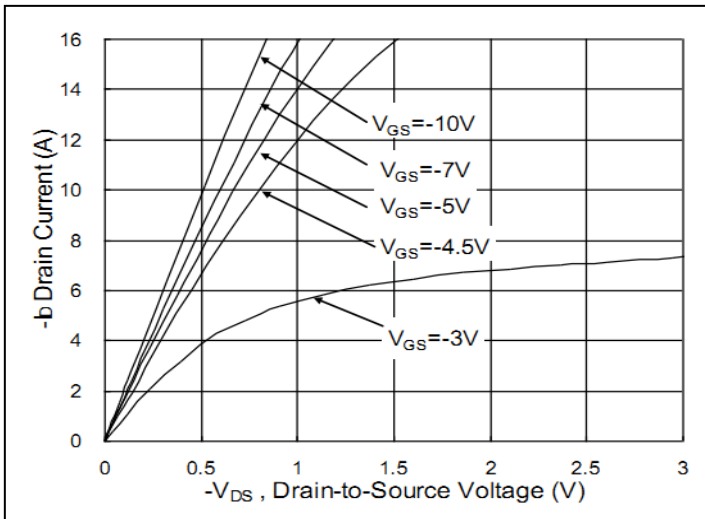


Figure 1: Typical Output Characteristics

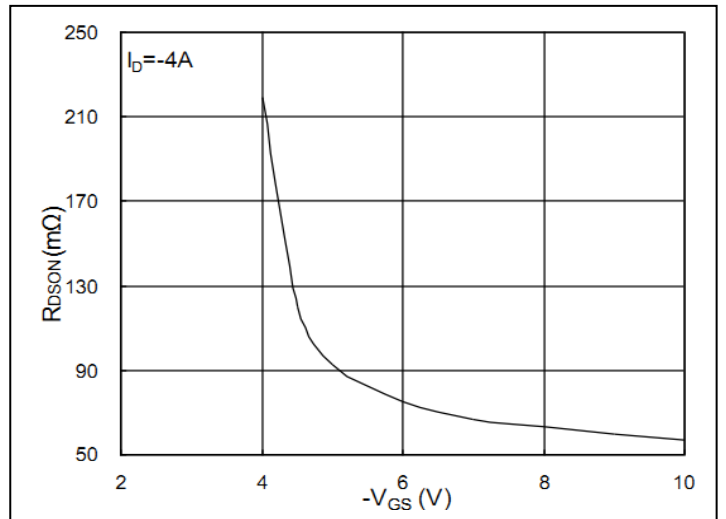


Figure 2: On-Resistance vs. Gate-Source Voltage

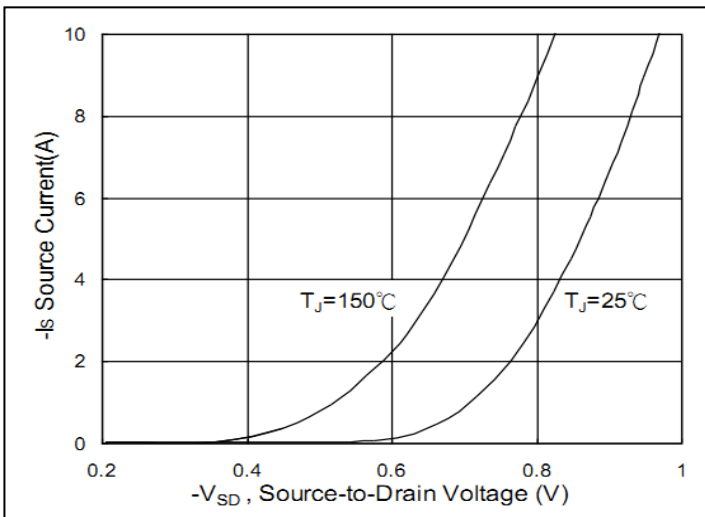


Figure 3: Forward Characteristics Of Reverse

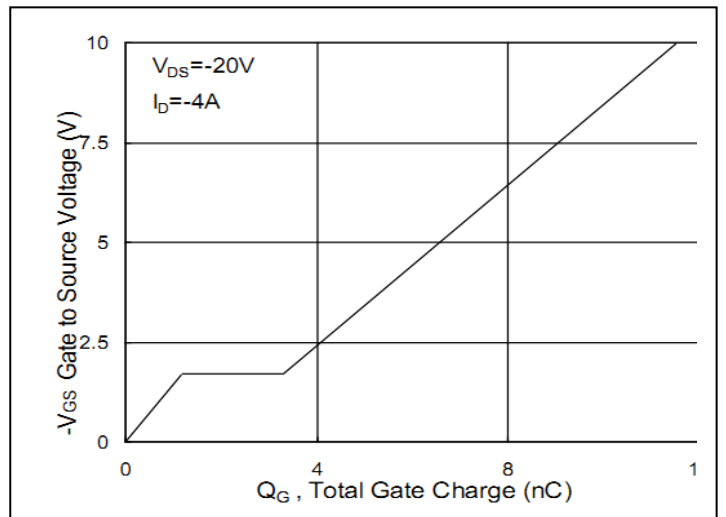


Figure 4: Gate Charge Characteristics

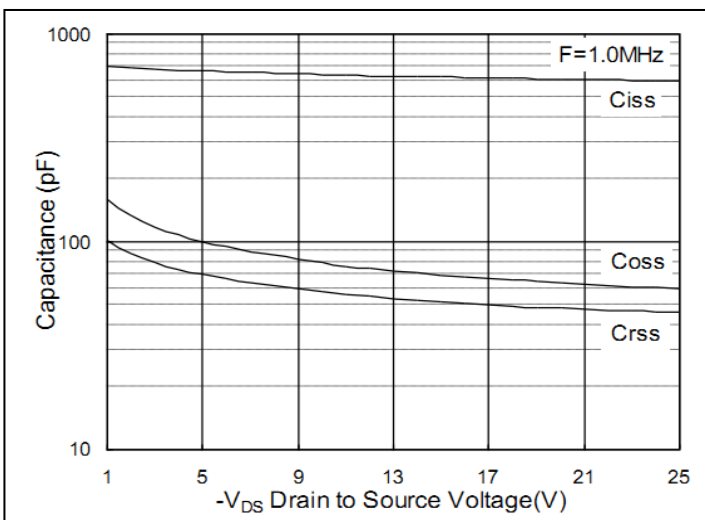
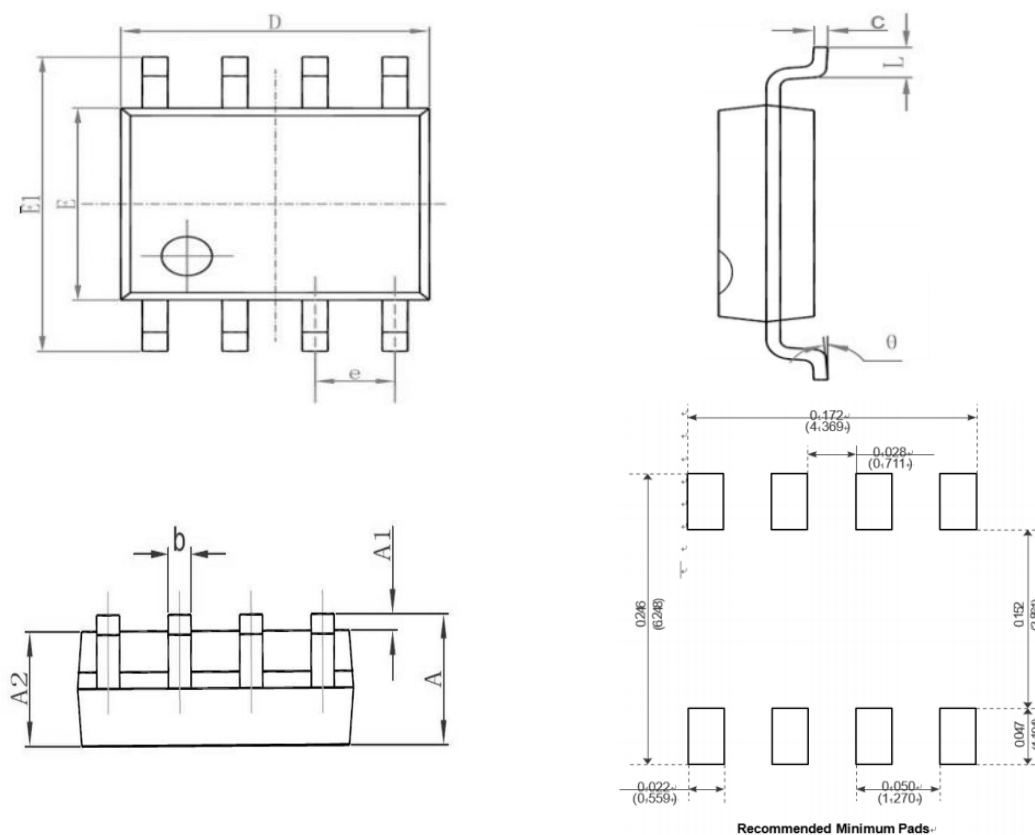


Figure 5: Capacitance Characteristics

Mechanical Data:


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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