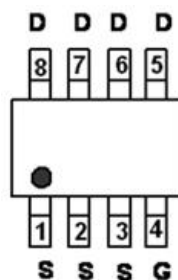
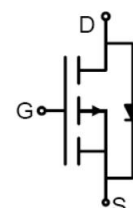


Main Product Characteristics:

V_{DSS}	-30V
$R_{DS(on)}$	19.5mΩ (typ.)
I_D	-7.8A 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	-7.8	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current ①	-4.9	
I_{DM}	Pulsed Drain Current ②	-31.2	
$P_D @ T_A = 25^\circ\text{C}$	Power Dissipation ③	2.4	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	95	mJ
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	°C

Thermal Resistance

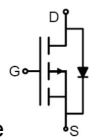
Symbol	Characterizes	Typ.	Max.	Units
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	—	52	°C/W

Electrical Characteristics @T_A=25°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 = -250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	19.5	25	mΩ	V _{GS} = -10V, I _D = -7.5A
		—	31	41	mΩ	V _{GS} = -4.5V, I _D = -5A
V _{GS(th)}	Gate threshold voltage	-1	—	-2.5	V	V _{DS} = V _{GS} , I _D = -250μA
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	—	22	—	nC	I _D = -20A, V _{DS} = -15V, V _{GS} = -10V
Q _{gs}	Gate-to-Source charge	—	1.5	—		
Q _{gd}	Gate-to-Drain("Miller") charge	—	4	—		
t _{d(on)}	Turn-on delay time	—	12	—	ns	V _{GS} = -10V, V _{DS} = -15V, R _{GEN} = 3Ω, R _L = 0.75Ω
t _r	Rise time	—	14	—		
t _{d(off)}	Turn-Off delay time	—	195	—		
t _f	Fall time	—	95	—		
C _{iss}	Input capacitance	—	1130	—	pF	V _{GS} = 0V V _{DS} = -15V f = 1MHz
C _{oss}	Output capacitance	—	185	—		
C _{rss}	Reverse transfer capacitance	—	115	—		

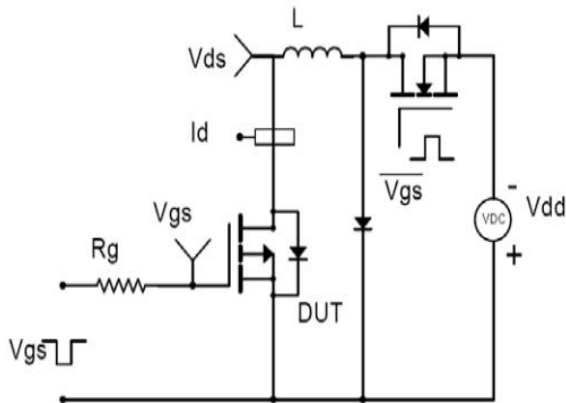
Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode) ①	—	—	-7.8	A	MOSFET symbol showing the integral reverse p-n junction diode
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	-31.2	A	
V _{SD}	Diode Forward Voltage	—	—	-1.2	V	I _S = -20A, V _{GS} = 0V
t _{rr}	Reverse Recovery Time	—	36	—	ns	T _J = 25°C, I _F = -10A,
Q _{rr}	Reverse Recovery Charge	—	34	—	nC	di/dt = 100A/μs

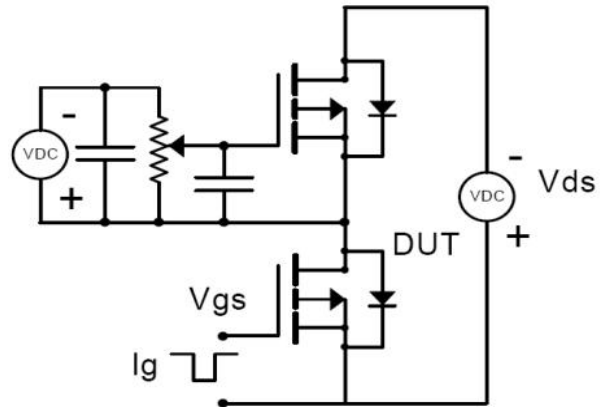


Test Circuits and Waveforms

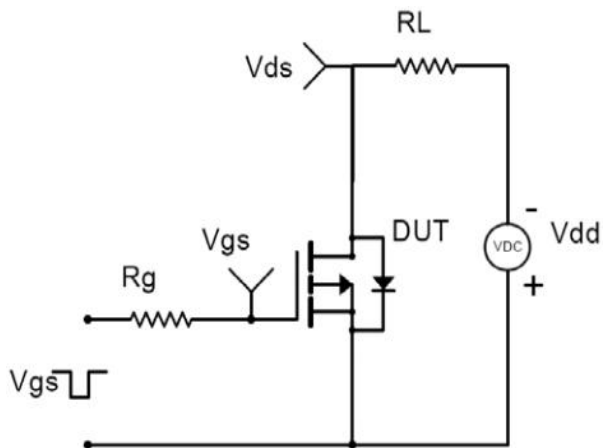
EAS Test Circuit:



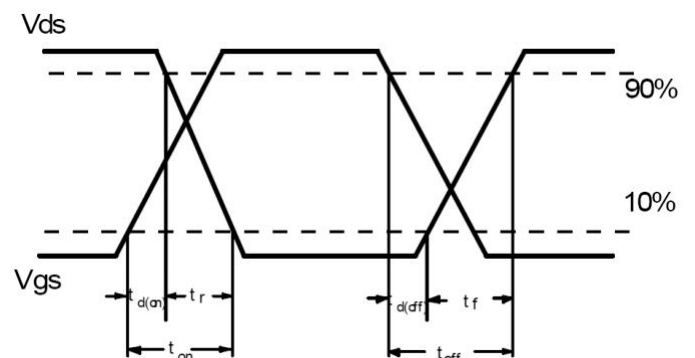
Gate Charge Test Circuit:



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

Typical Electrical and Thermal Characteristics

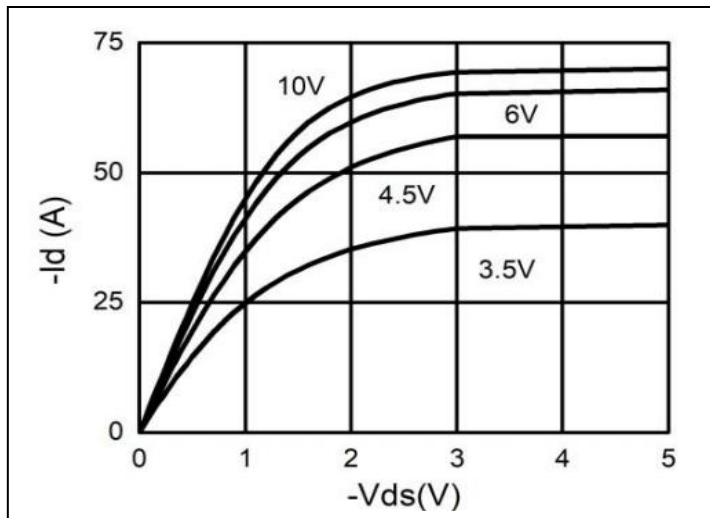


Figure 1. Typical Output Characteristics

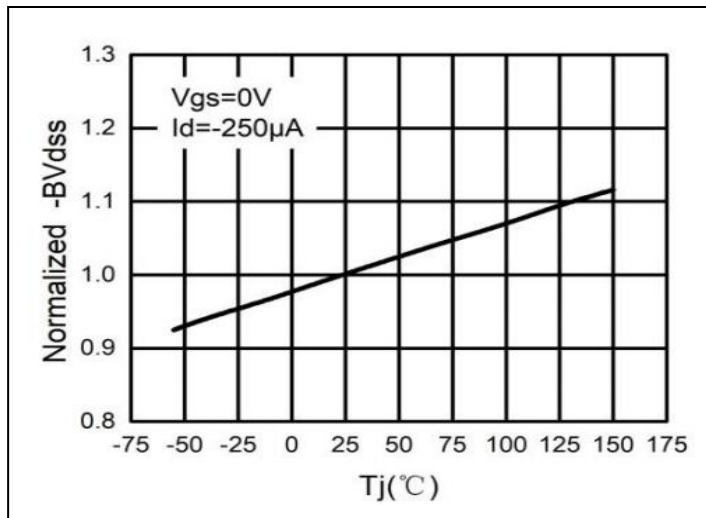


Figure 2. BVdss vs Junction Temperature

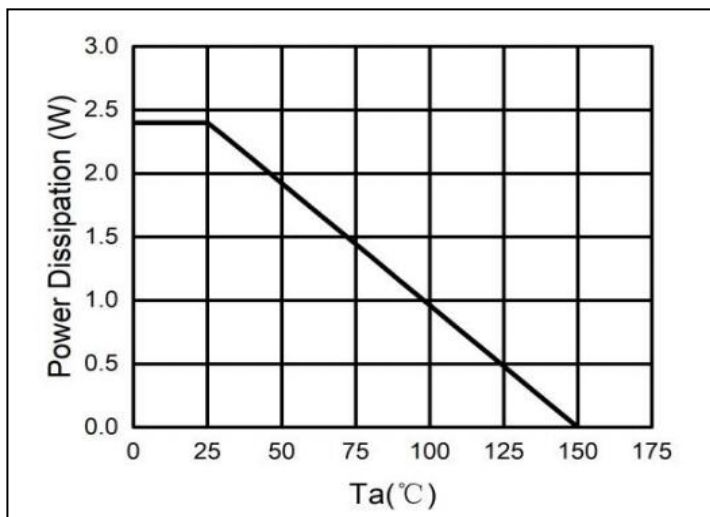


Figure 3. Power Dissipation

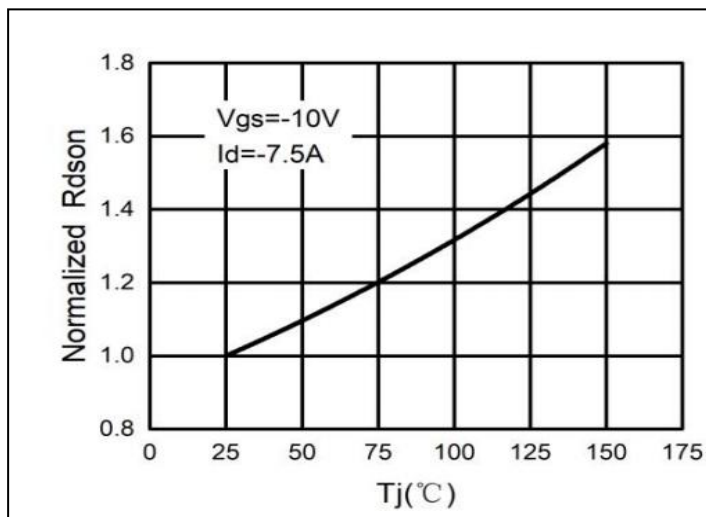


Figure 4. RDS(ON) vs Junction Temperature

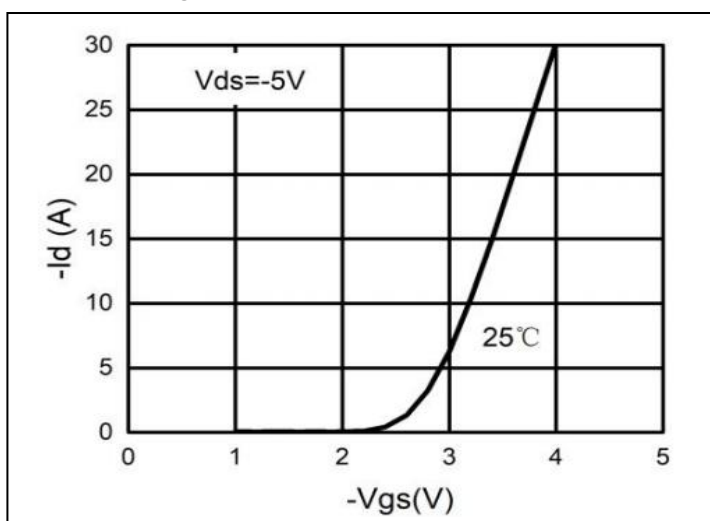


Figure 5. Transfer Characteristics

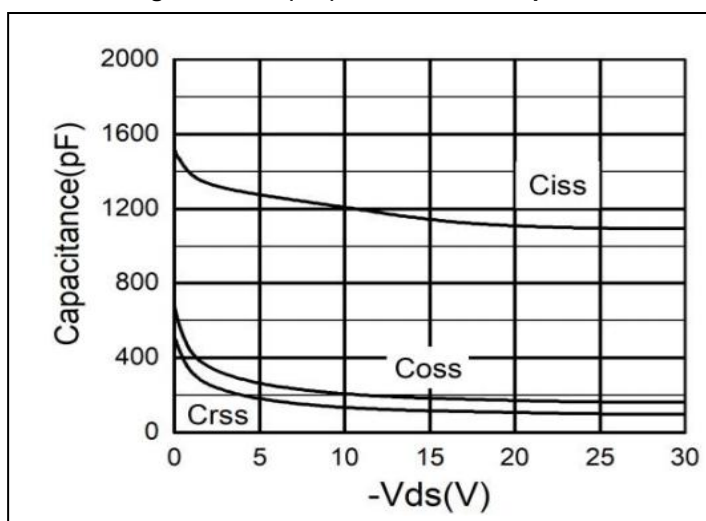


Figure 6. Capacitance Characteristics

Typical Electrical and Thermal Characteristics

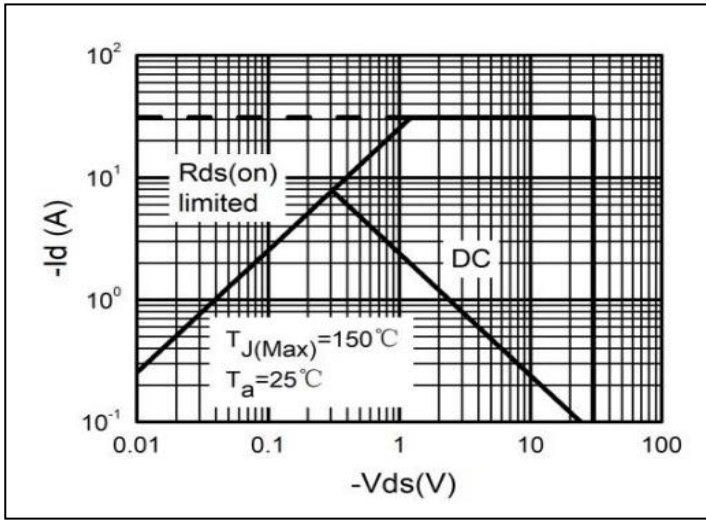


Figure 7. Safe Operation Area

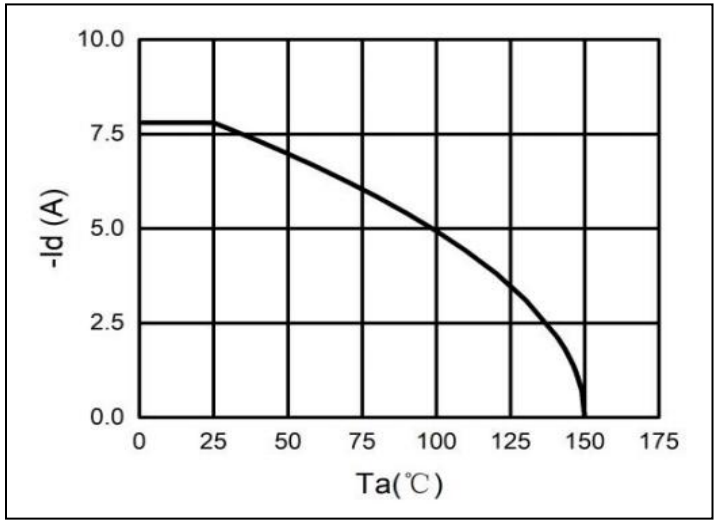


Figure 8. Drain Current

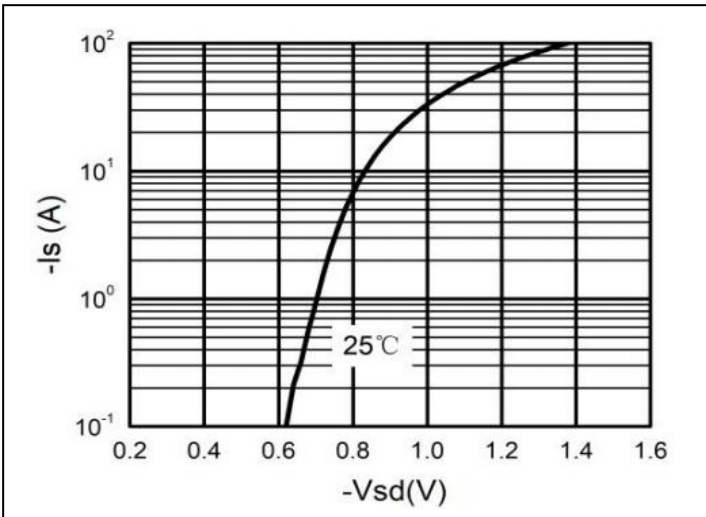


Figure 9. Body Diode Characteristics

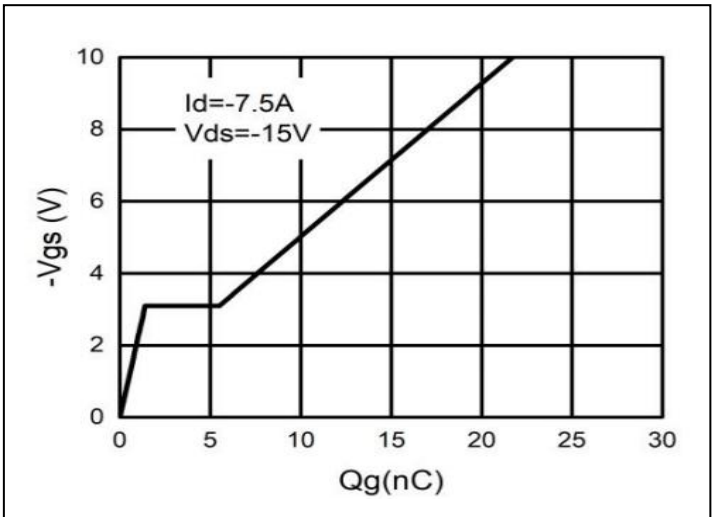
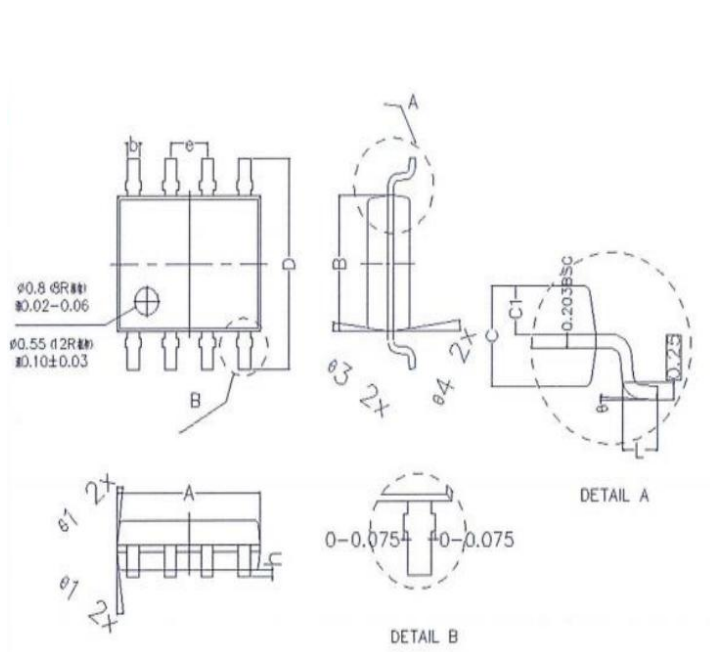


Figure 10. Gate Charge

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		
θ_1	7° TYPE(8R) 12° TYPE(12R)		
θ_2	7° TYPE(8R) 10° TYPE(12R)		
θ_3	8° TYPE(8R) 12° TYPE(12R)		
θ_4	8° TYPE(8R) 10° TYPE(12R)		
θ	0° ~ 8°		

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