

Main Product Characteristics:

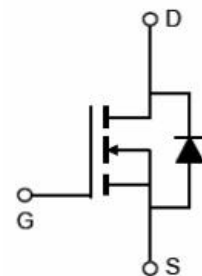
V_{DSS}	68V
$R_{DS(on)}$	5.3m Ω (Typ.)
I_D	80A



TO-252 (DPAK)



Marking and 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, $V_{GS} @ 10\text{V}$ ①	80	A
I_{DM}	Pulsed Drain Current ②	320	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ③	75	W
V_{DS}	Drain-Source Voltage	68	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ $L=0.5\text{mH}$	240	mJ
I_{AS}	Avalanche Current	31	A
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

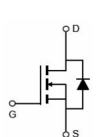
Thermal Resistance

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	1.7	$^{\circ}\text{C}/\text{W}$

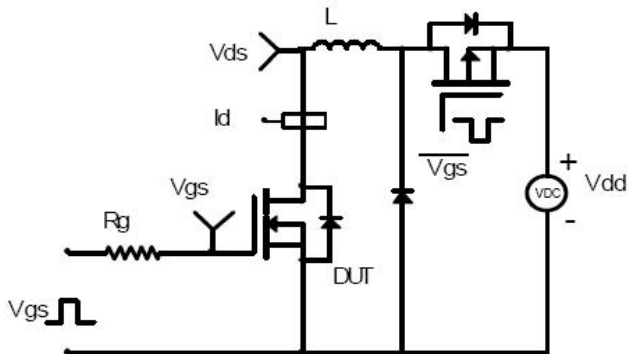
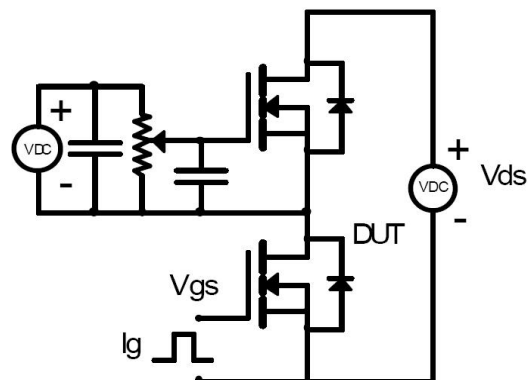
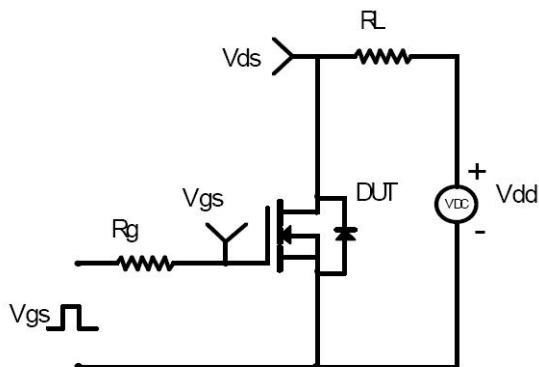
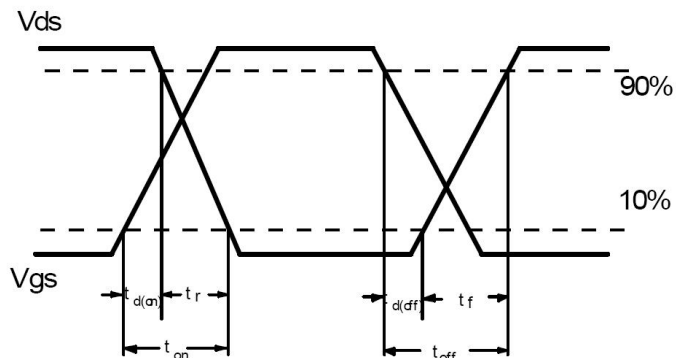
Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	68	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	5.3	8	m Ω	$V_{GS}=10\text{V}, I_D=20\text{A}$
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	$V_{DS} = 60\text{V}, V_{GS} = 0\text{V}$
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 20\text{V}$
		—	—	-100		$V_{GS} = -20\text{V}$
Q_g	Total gate charge	—	68	—	nC	$I_D = 20\text{A},$ $V_{DS}=30\text{V},$ $V_{GS} = 10\text{V}$
Q_{gs}	Gate-to-Source charge	—	13	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	20	—		
$t_{d(on)}$	Turn-on delay time	—	22.7	—	ns	$V_{GS}=10\text{V}, V_{DS}=30\text{V},$ $R_{GEN}=3\Omega$ $I_D = 30\text{A}$
t_r	Rise time	—	19.8	—		
$t_{d(off)}$	Turn-Off delay time	—	43.6	—		
t_f	Fall time	—	8.2	—		
C_{iss}	Input capacitance	—	4380	—	pF	$V_{GS} = 0\text{V}$ $V_{DS} = 60\text{V}$ $f = 1\text{MHz}$
C_{oss}	Output capacitance	—	188	—		
C_{rss}	Reverse transfer capacitance	—	175	—		

Source-Drain Ratings and Characteristics

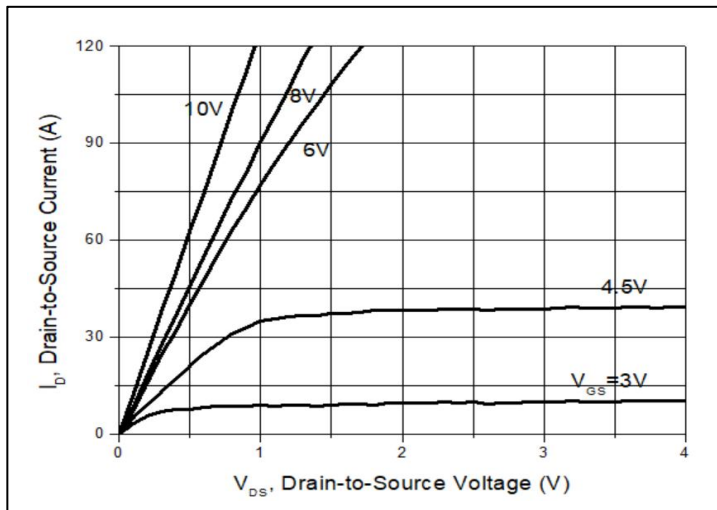
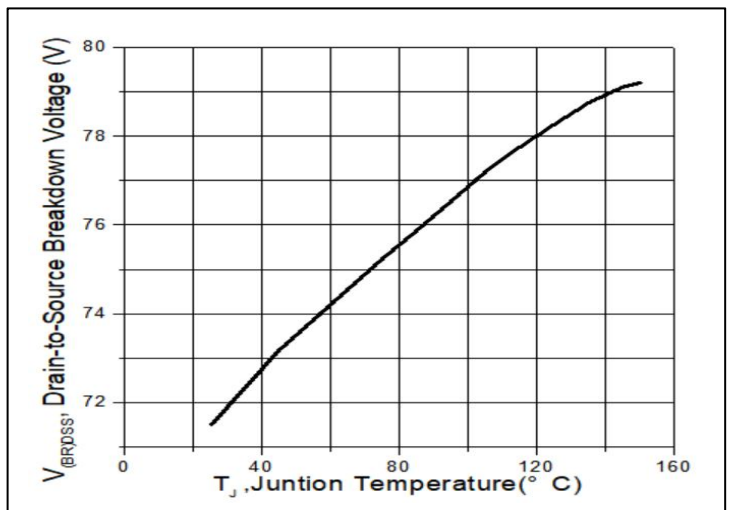
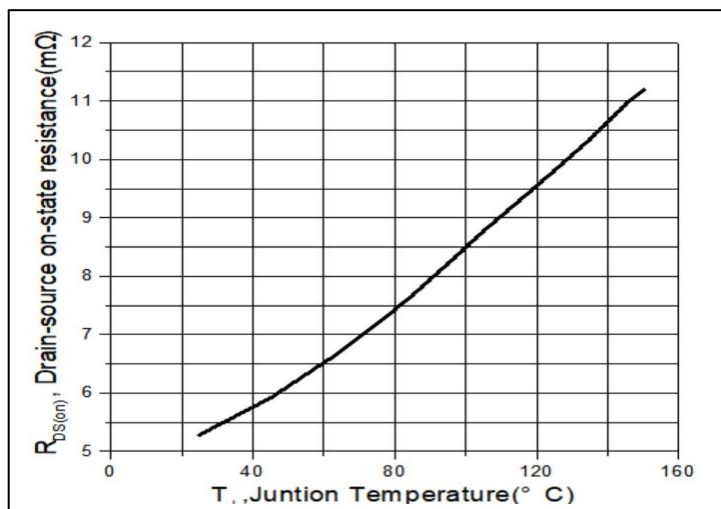
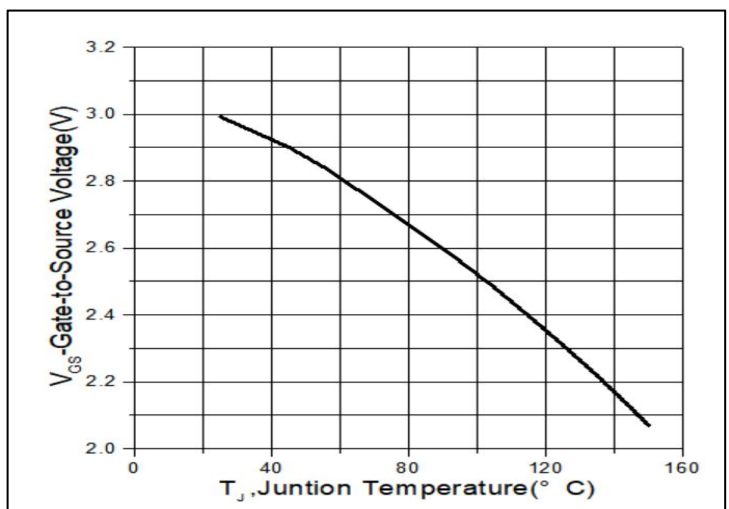
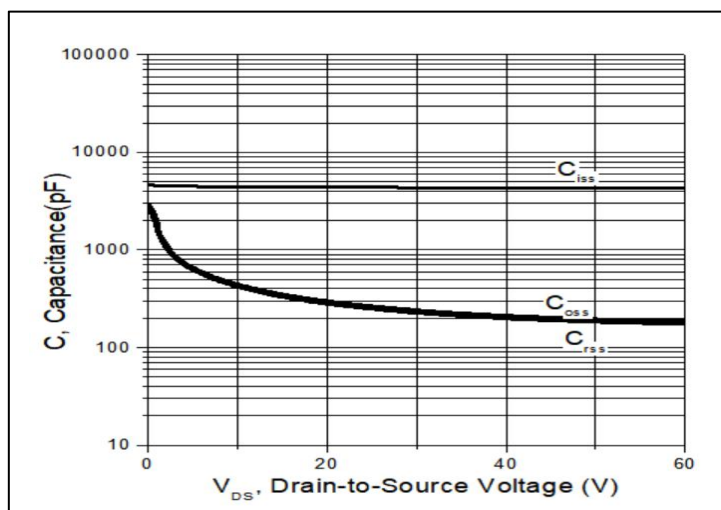
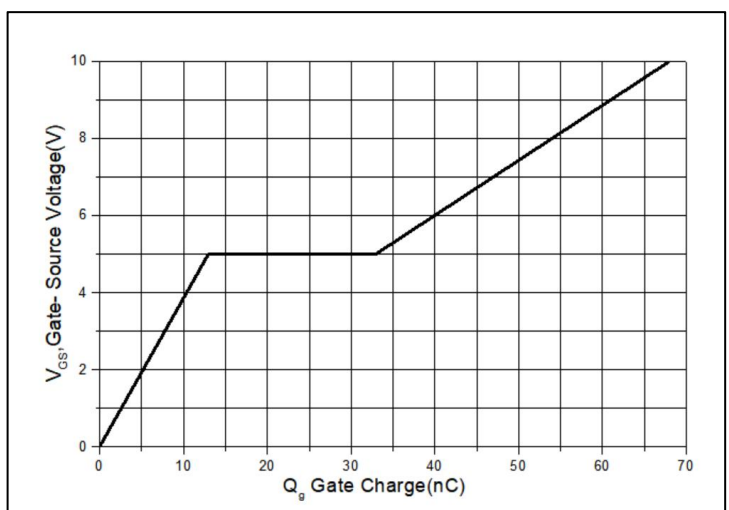
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	80	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	320	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$I_S=20\text{A}, V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	25	—	ns	$I_S=20\text{A}, di/dt=100\text{A}/\mu\text{s}$
Q_{rr}	Reverse Recovery Charge	—	30	—	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.

Typical Electrical and Thermal Characteristics

Figure1. Typical Output Characteristics

Figure2. Drain-to-Source Breakdown Voltage vs. Junction Temperature

Figure3. $R_{DS(on)}$ vs. Junction Temperature

Figure4. V_{th} vs. Junction Temperature

Figure5. Capacitance

Figure6. Gate Charge

Typical Electrical and Thermal Characteristics

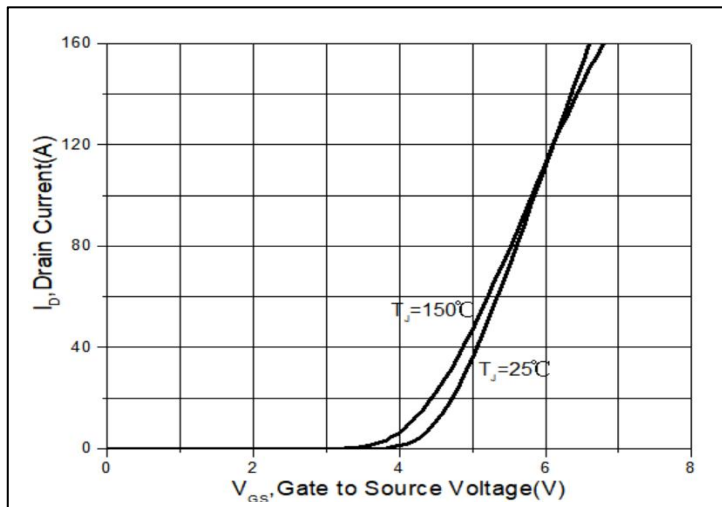


Figure7. Transfer Characteristics

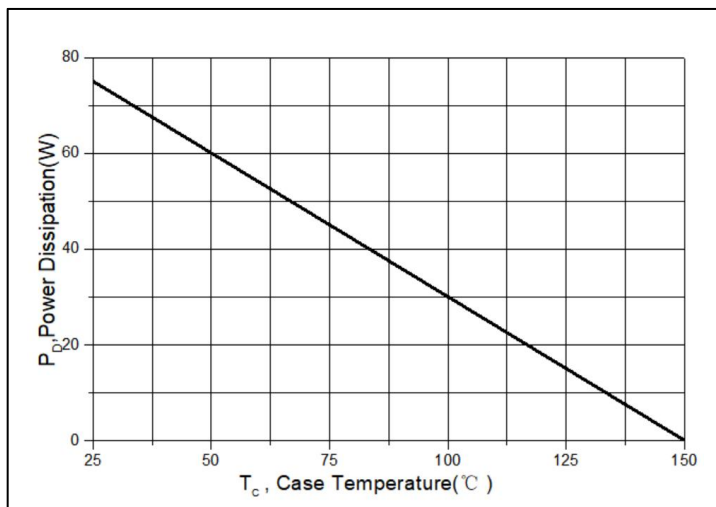
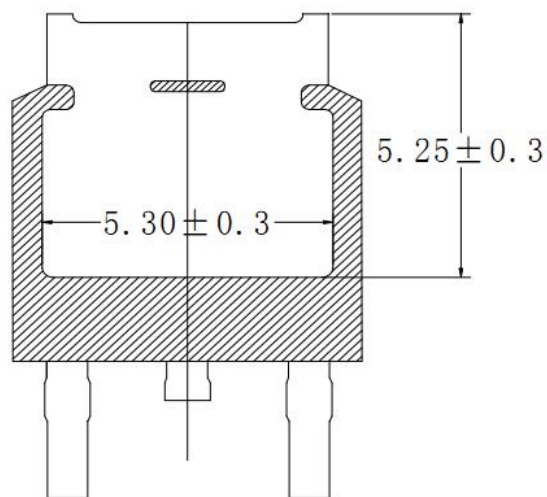
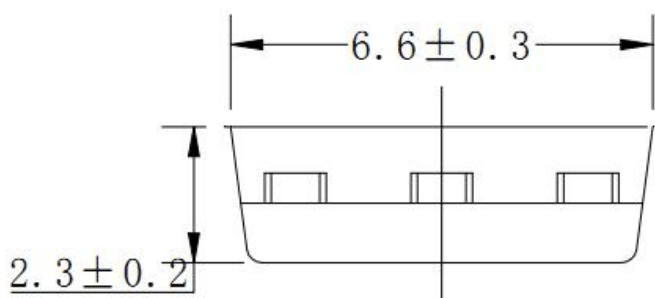
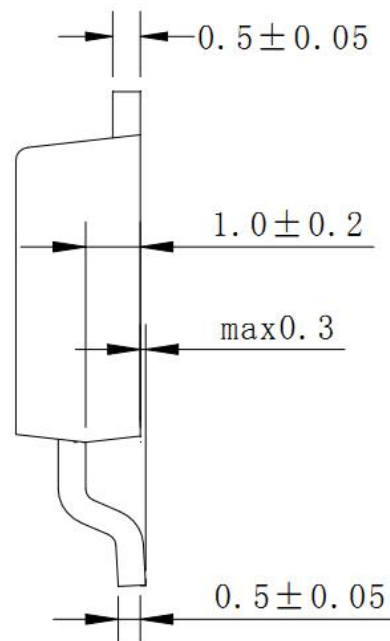
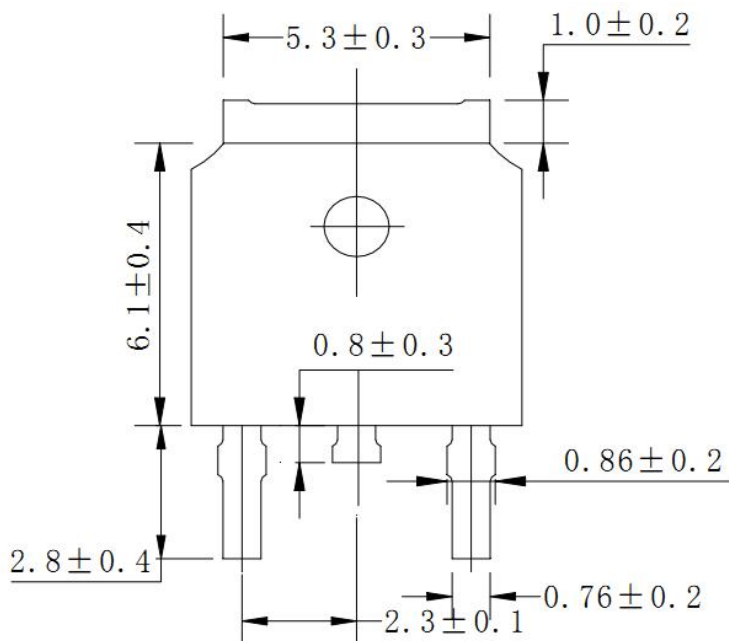


Figure8. Power Dissipation

Mechanical Data:

TO-252 Package Outline(Unit:mm)



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