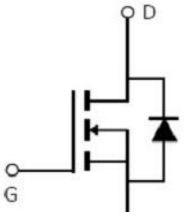
Main Product Characteristics:

V_{DSS}	150V
R_{DS}(on)	4.4mΩ (typ.)
I_D	150A

TO-263 (D2PAK)



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℃ 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°C	Continuous Drain Current, V_{GS} @ 10V ①	150	A
I_{DM}	Pulsed Drain Current ②	600	
P_D @T_C = 25°C	Power Dissipation ③	312	W
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.5mH	1108	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

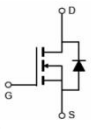
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	0.4	℃/W

Electrical Characteristics @T_A=25℃ unless otherwise specified

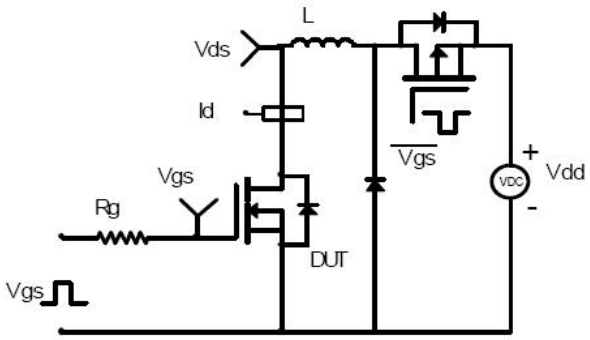
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	150	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	4.4	6	mΩ	V_{GS}=10V,I_D =30A
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =150V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	80	—	nC	I_D = 20A,
Q_{gs}	Gate-to-Source charge	—	30	—		V_{DS}=75V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	15	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	34	—	ns	V_{GS}=10V,
t_r	Rise time	—	10	—		R_{GEN}=3Ω
$t_{d(off)}$	Turn-Off delay time	—	38	—		R_L=1.07Ω
t_f	Fall time	—	4	—		V_{DS}=75V
C_{iss}	Input capacitance	—	6197	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	560	—		V_{DS} = 100V
C_{rss}	Reverse transfer capacitance	—	20	—		f = 1MHz

Source-Drain Ratings and Characteristics

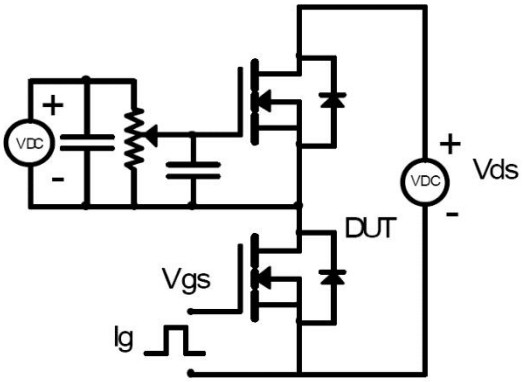
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	150	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode) ①	—	—	600	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	I_S=30A, V_{GS}=0V
trr	Reverse Recovery Time	—	120	—	ns	I_S=15A,di/dt=100A/us
Qrr	Reverse Recovery Charge	—	250	—	nC	

Test Circuits and Waveforms

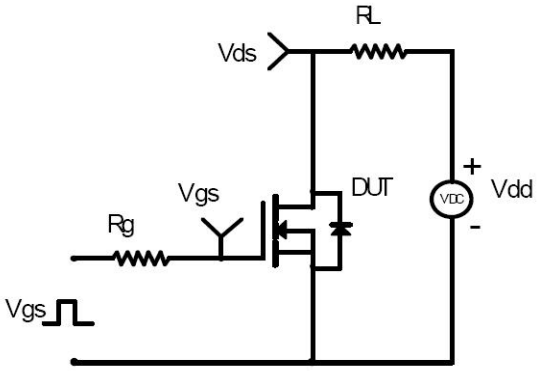
EAS Test Circuit:



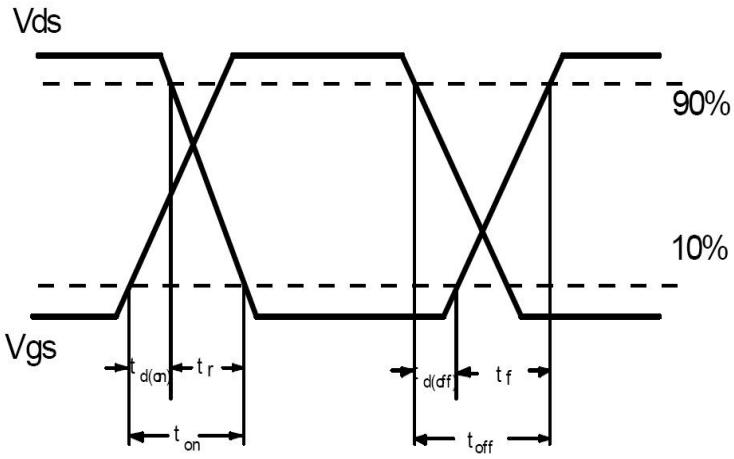
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.

Typical Electrical and Thermal Characteristics

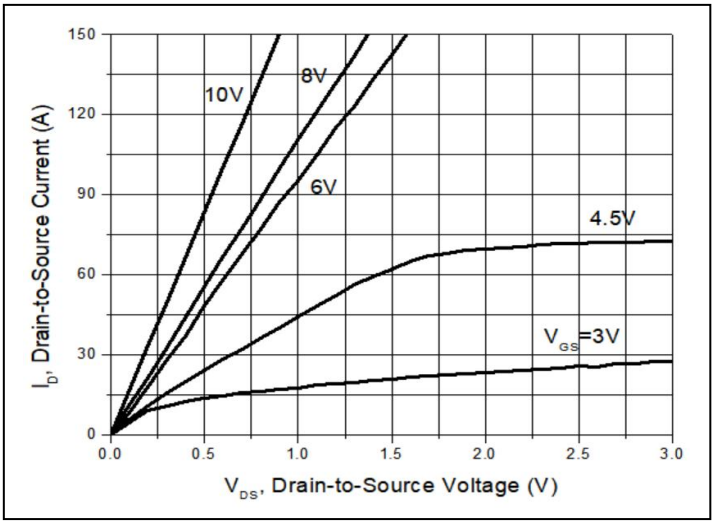


Figure1. Typical Output Characteristics

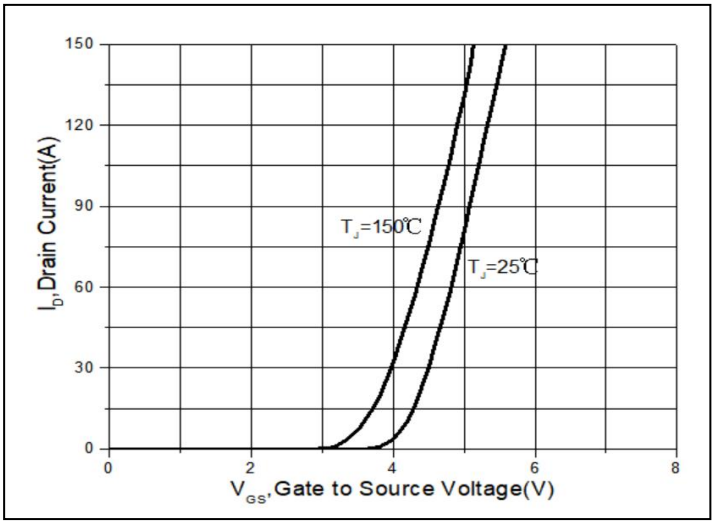


Figure2. Typical Transfer Characteristics

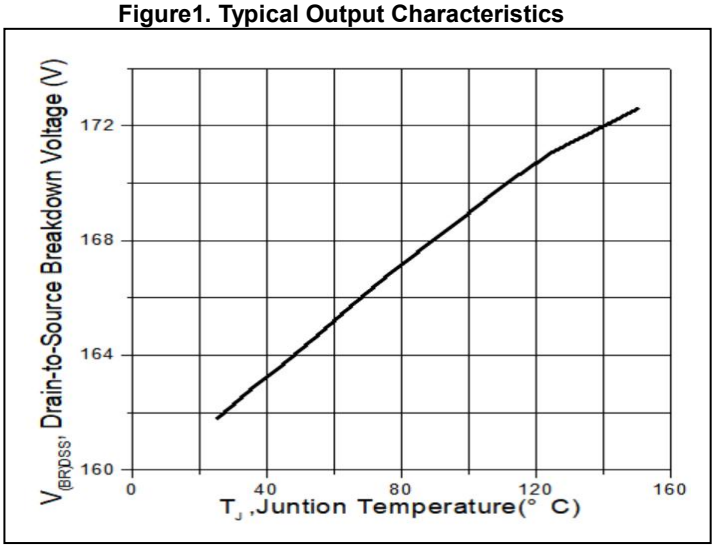


Figure3. Drain-to-Source Breakdown Voltage vs. Junction Temperature

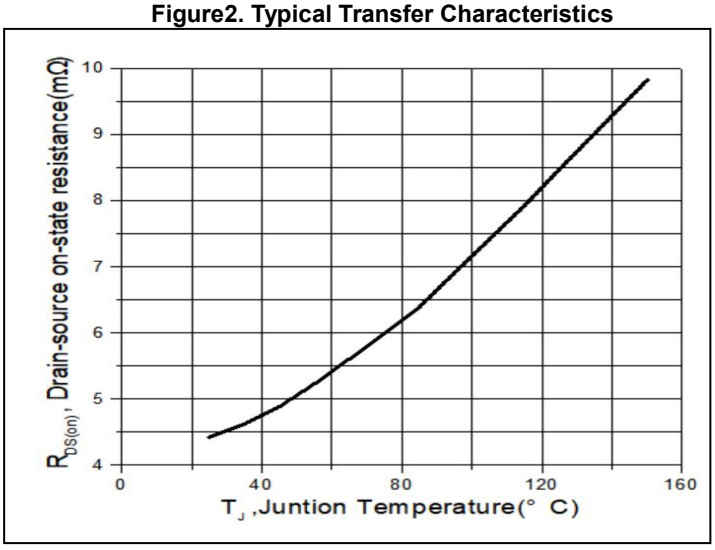


Figure4. Normalized On-Resistance vs. Junction Temperature

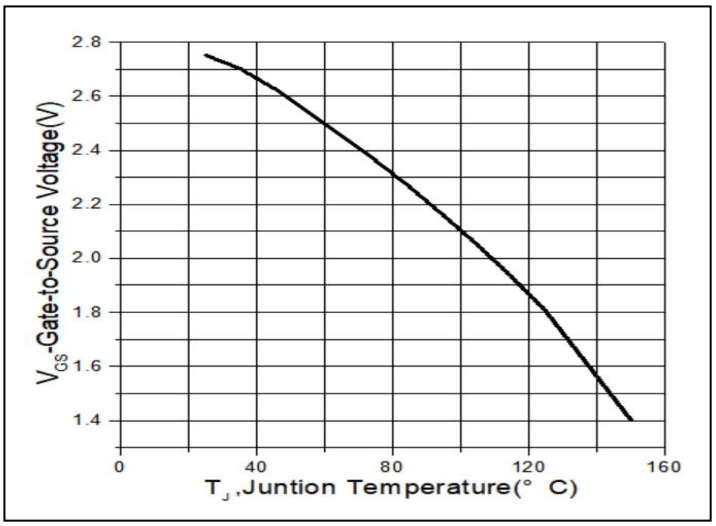


Figure5. Normalized V_{GS}(th) vs. Junction Temperature

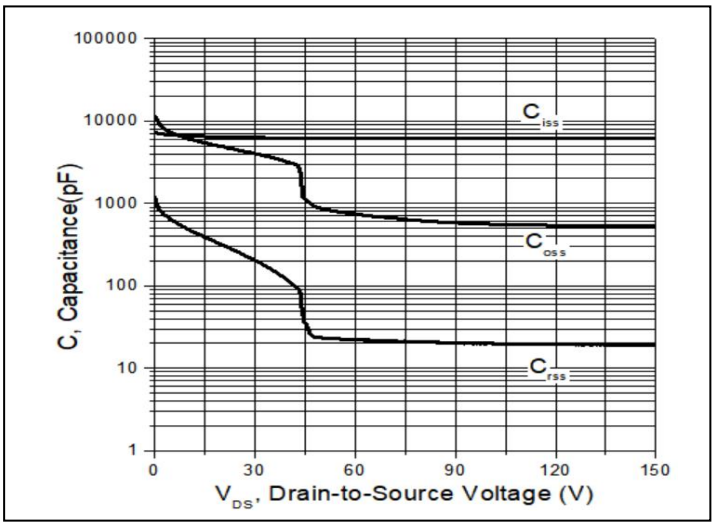
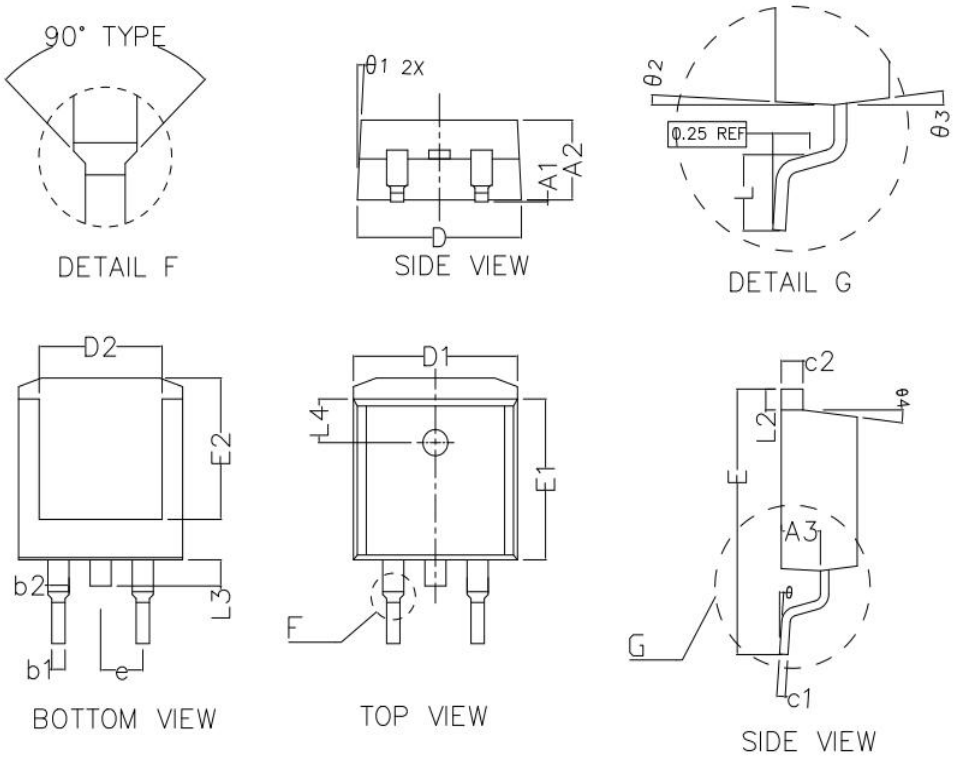


Figure6. Capacitance Characteristics

Mechanical Data：

TO-263 Package Outline (Unit:mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.020	0.100	0.200
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	0.800	0.850
b2	1.220	1.270	1.320
c1	0.450	0.500	0.550
c2	1.250	1.300	1.350
D	9.900	10.000	10.100
▲D1	9.780	9.880	9.980
▲D2	7.900	8.000	8.100
E	14.900	15.100	15.300
▲E1	9.000	9.100	9.200
▲E2	7.600	7.700	7.800
e	2.540TYPE		
L	2.100	2.300	2.500
L2	1.100	1.200	1.300
L3	1.300	1.500	1.700
▲L4	2.50 TYPE		
θ1	3° TYPE		
θ2	3° TYPE		
θ3	7° TYPE		
θ4	7° TYPE		
θ	0 ~ 8°		

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