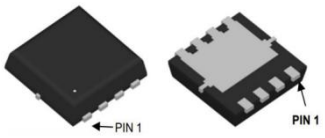
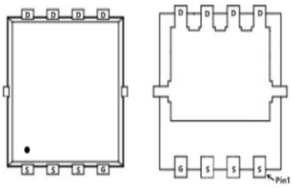
Main Product Characteristics:

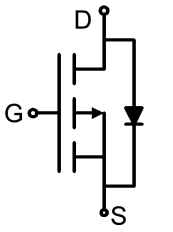
V_{DSS}	-30V
R_{DS}(on)	10.5mΩ (typ.)
I_D	-24A



PDFN 3*3-8L



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℃ 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, ①	-24	A
I_{DM}	Pulsed Drain Current ②	-96	
P_D @T_C = 25°C	Power Dissipation ③	16	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	81	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

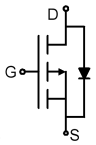
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case (t ≤ 10s) ④	—	7.75	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

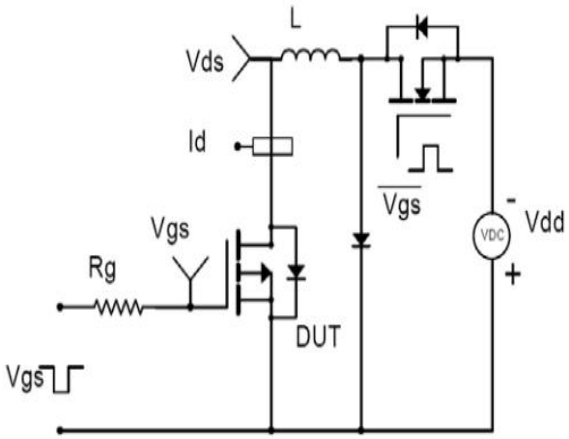
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	-30	—	—	V	V_{GS} = 0V, I_D = -250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	10.5	14	mΩ	V_{GS}=-10V,I_D = -8A
		—	15	19	mΩ	V_{GS}=-4.5V,I_D =-4A
$V_{GS(th)}$	Gate threshold voltage	-1	—	-2	V	V_{DS} = V_{GS}, I_D = -250μA
I_{DSS}	Drain-to-Source leakage current	—	—	-1	uA	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	—	50	—	nC	I_D = -20A,
Q_{gs}	Gate-to-Source charge	—	7	—		V_{DS}=-15V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	10	—		V_{GS} = -10V
$t_{d(on)}$	Turn-on delay time	—	17.6	—	ns	V_{GS}=-10V, V_{DS} =-10V, R_{GEN}=3Ω,I_D =-20A
t_r	Rise time	—	34.1	—		
$t_{d(off)}$	Turn-Off delay time	—	24.9	—		
t_f	Fall time	—	19.8	—		
C_{iss}	Input capacitance	—	2020	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	242	—		V_{DS} = -20V
C_{rss}	Reverse transfer capacitance	—	229	—		f = 1MHz

Source-Drain Ratings and Characteristics

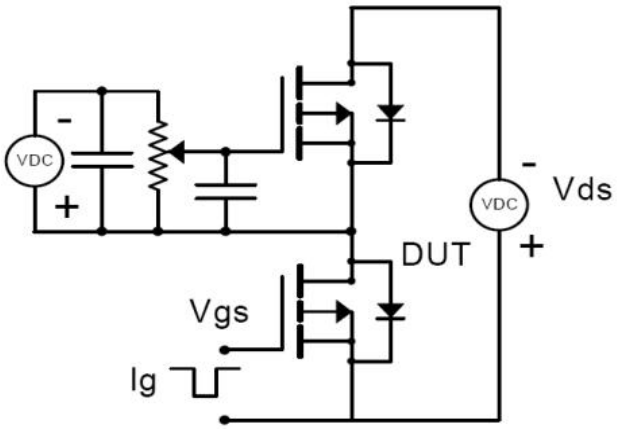
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	-24	A	MOSFET symbol showing the integral reverse p-n junction diode. 
ISP	Pulsed Source Current (Body Diode)	—	—	-96	A	
V_{SD}	Diode Forward Voltage	—	—	-1.2	V	I_S=-20A, V_{GS}=0V

Test circuits and Waveforms

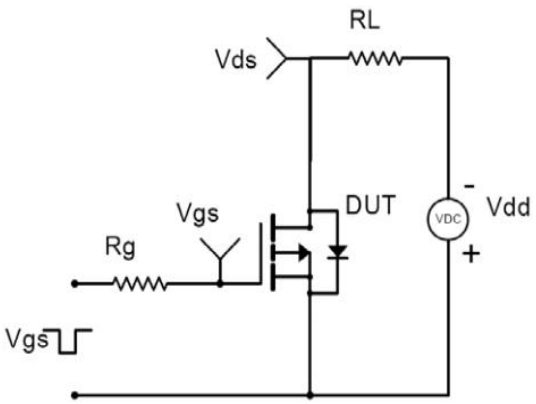
EAS Test Circuit:



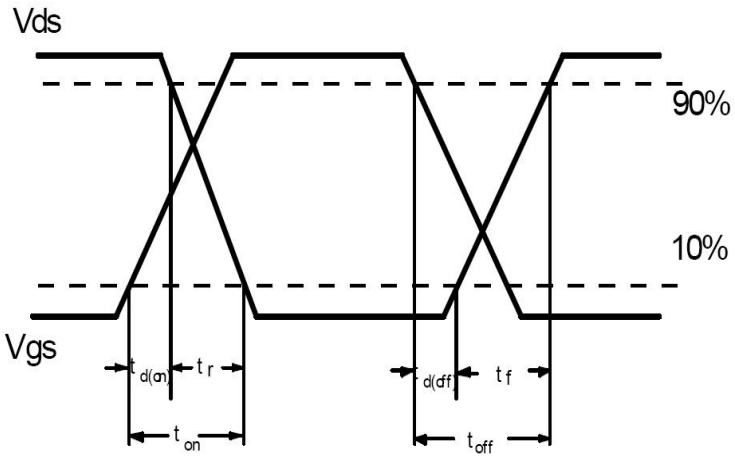
Gate charge test circuit:



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 PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The 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°C

Typical Electrical and Thermal Characteristics

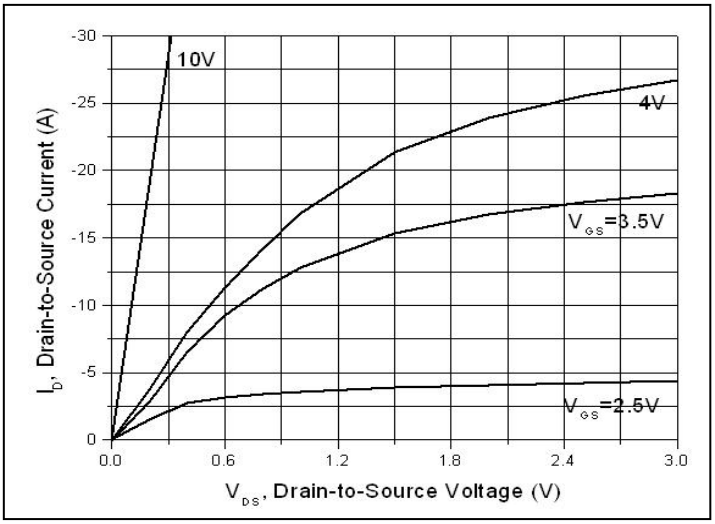


Figure 1. Typical Output Characteristics

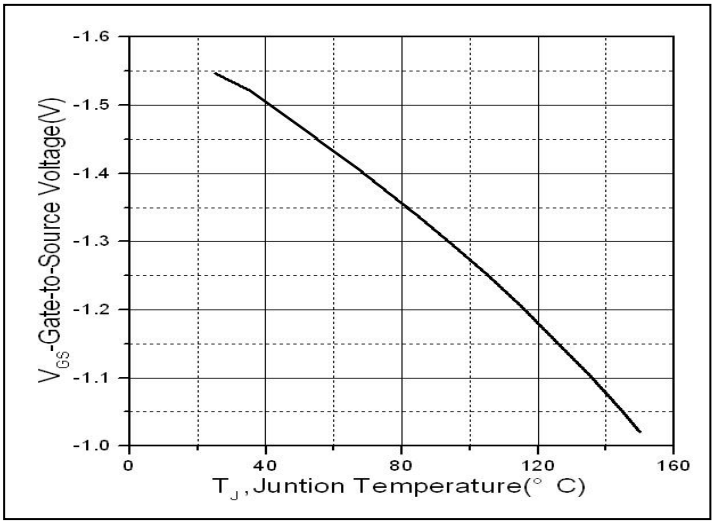


Figure 2. Normalized V_{GS}(th) vs. Junction Temperature

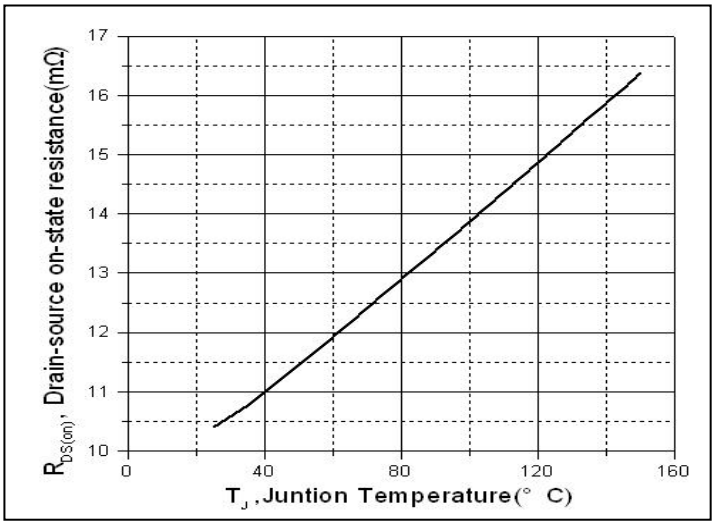


Figure 3. Normalized On-Resistance vs. Junction Temperature

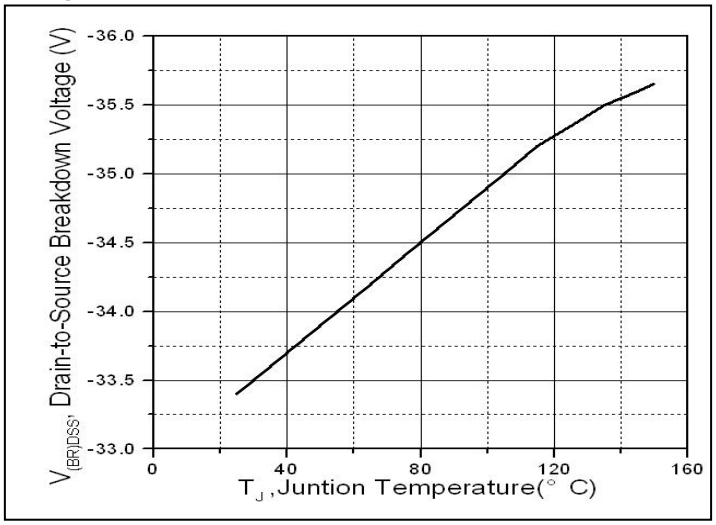


Figure 4. Drain-to-Source Breakdown Voltage vs. Junction Temperature

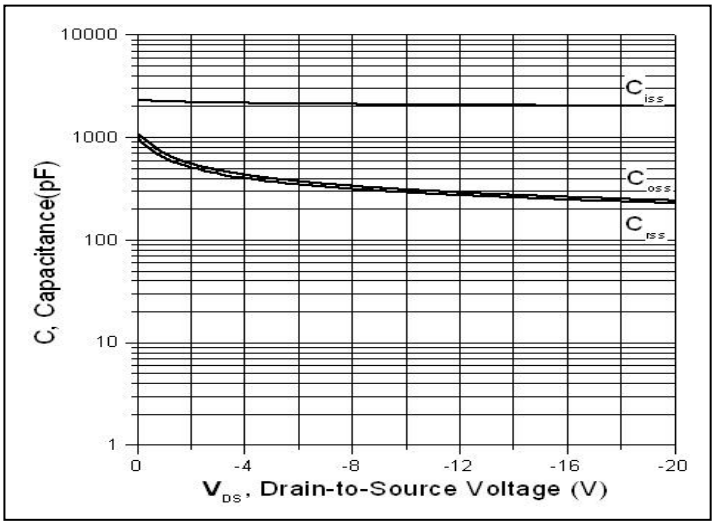
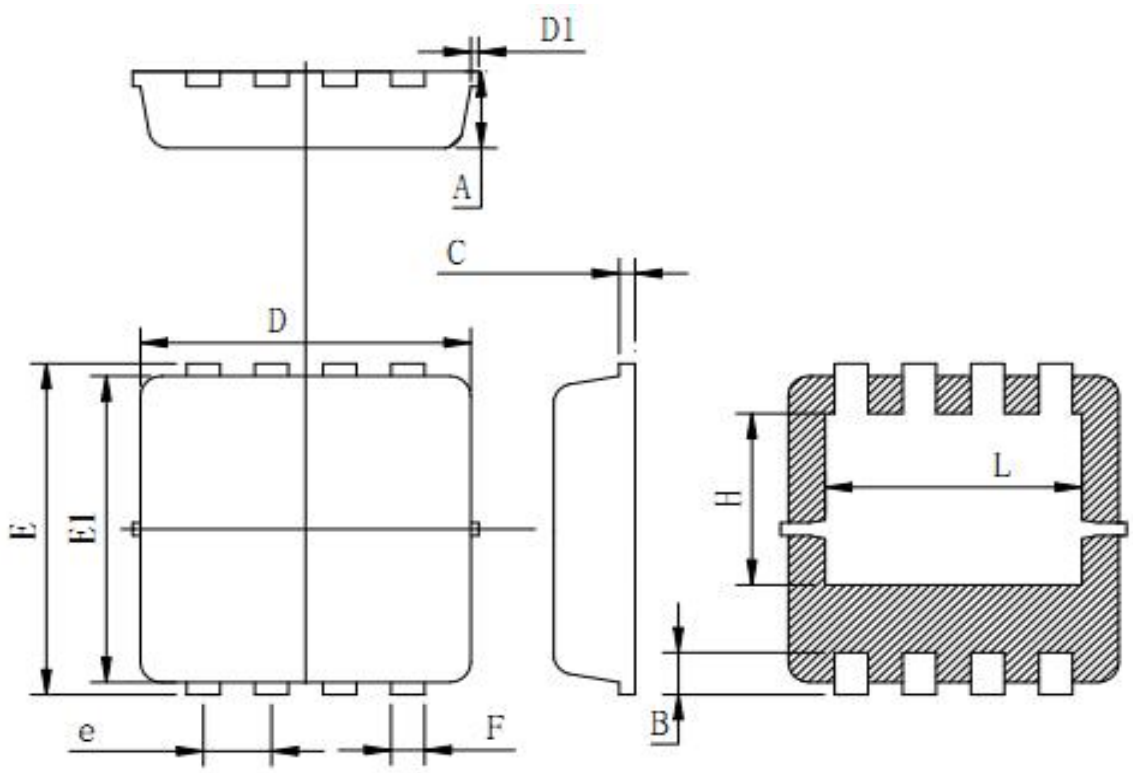


Figure 5. Capacitance Characteristics

Mechanical Data：

PDFN 3*3 Package Outline(Unit:mm)



Symbol	Min	Typ	Max
A	0.725	0.775	0.825
B	0.28	0.38	0.48
C	0.13	0.15	0.20
D	3.05	3.15	3.25
D1			0.10
E	3.25	3.35	3.45
E1	3.0	3.1	3.2
e	0.60	0.65	0.70
F	0.25	0.30	0.35
H	1.63	1.73	1.83
L	2.35	2.45	2.55

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