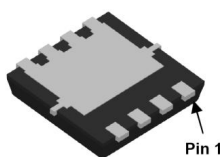
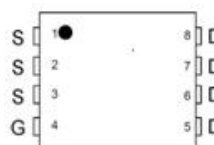


Main Product Characteristics:

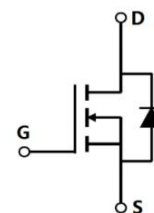
V_{DSS}	30V
$R_{DS(on)}$	6m Ω (typ.)
I_D	50A ①



PDFN3X3-8L



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
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current ①	50	A
$I_D @ T_C = 100^\circ\text{C}$	Continuous Drain Current ①	31	
I_{DM}	Pulsed Drain Current ②	200	
$P_D @ T_C = 25^\circ\text{C}$	Power Dissipation ③	30	W
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
$T_J \quad T_{STG}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

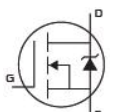
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	—	35	°C/W

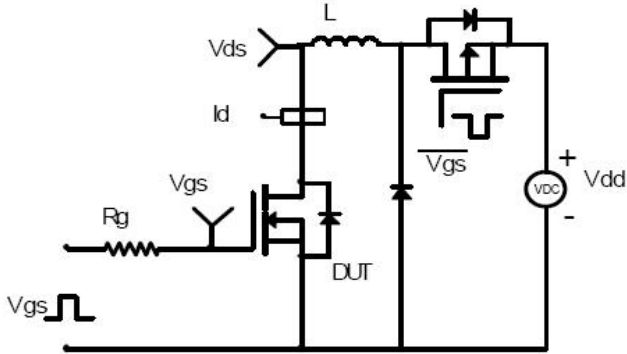
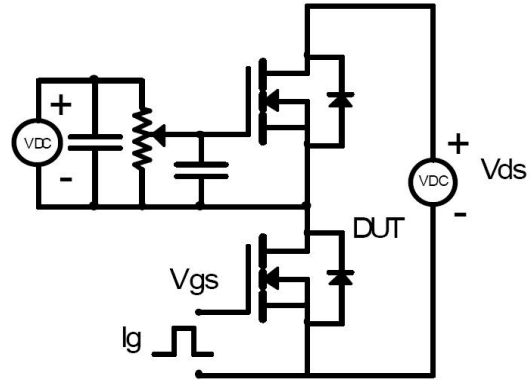
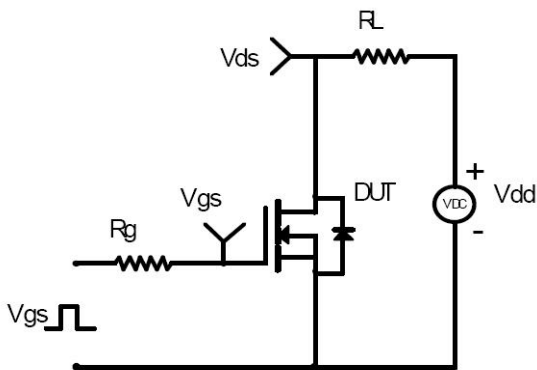
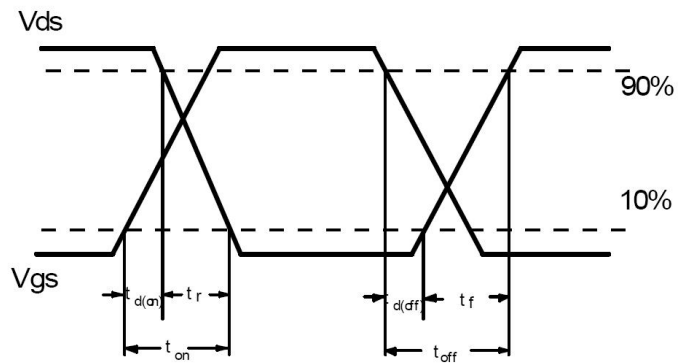
Electrical Characterizes @T_A=25°C unless otherwise specified

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	—	6	8	mΩ	V _{GS} =10V, I _D = 15A
		—	9.4	14	mΩ	V _{GS} =4.5V, I _D = 10A
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	—	13	—	nC	I _D = 15A, V _{DS} =15V, V _{GS} = 10V
Q _{gs}	Gate-to-Source charge	—	3	—		
Q _{gd}	Gate-to-Drain("Miller") charge	—	4	—		
t _{d(on)}	Turn-on delay time	—	8.5	—	ns	V _{GS} =10V, V _{DS} =22V, R _{GEN} =2.2Ω, I _D =10A
t _r	Rise time	—	19.6	—		
t _{d(off)}	Turn-Off delay time	—	23.3	—		
t _f	Fall time	—	5.7	—		
C _{iss}	Input capacitance	—	1002	—	pF	V _{GS} = 0V V _{DS} = 25V f = 1MHz
C _{oss}	Output capacitance	—	133	—		
C _{rss}	Reverse transfer capacitance	—	109	—		

Source-Drain Ratings and Characteristics

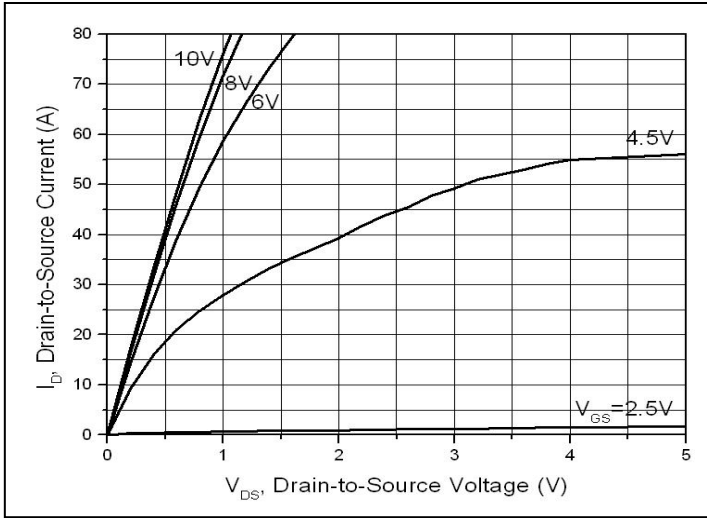
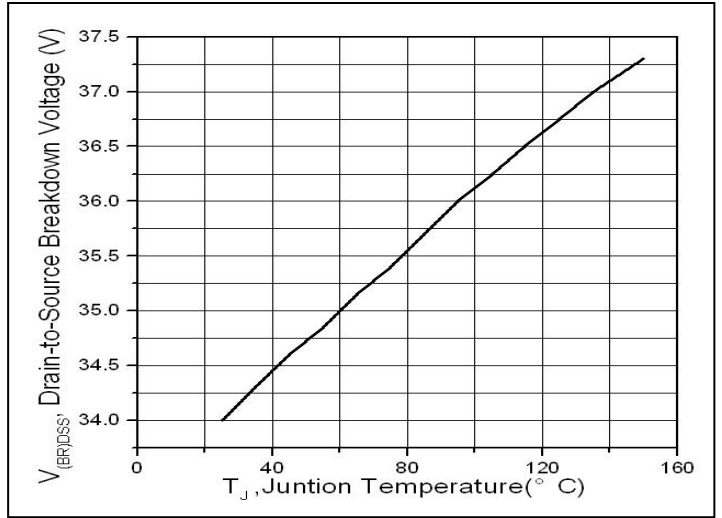
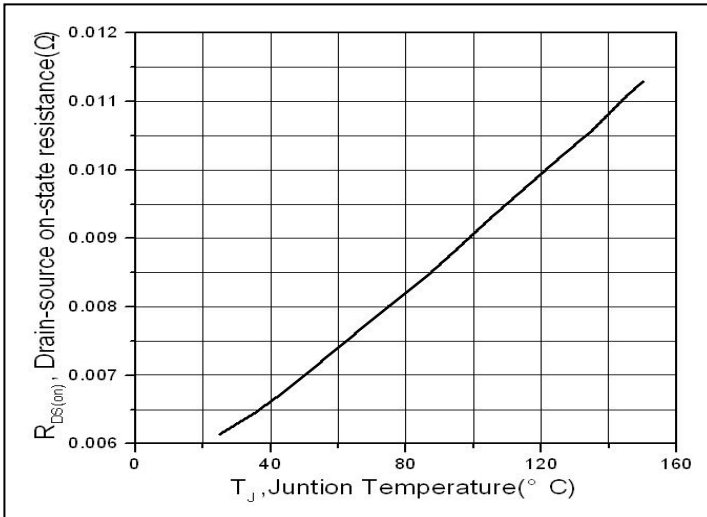
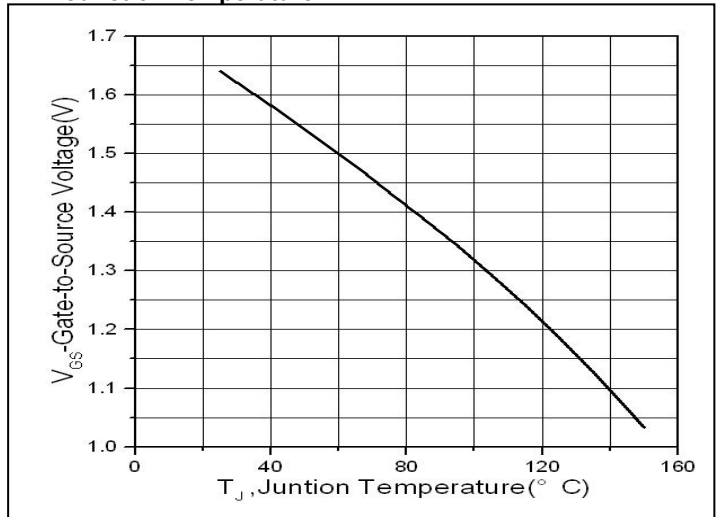
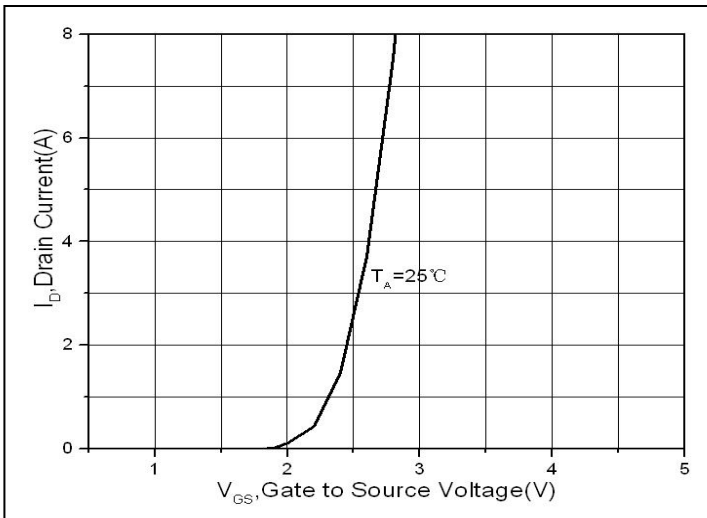
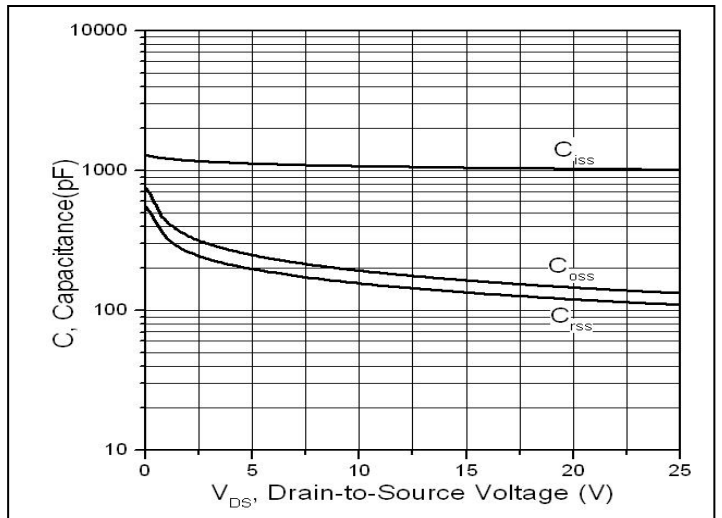
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode) ①	—	—	50	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode) ①	—	—	200	A	
V _{SD}	Diode Forward Voltage	—	—	1.2	V	I _S =15A, V _{GS} =0V
t _{rr}	Reverse Recovery Time	—	30	—	ns	T _J = 25°C, I _F =15A,
Q _{rr}	Reverse Recovery Charge	—	90	—	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

Figure1. Typical Output Characteristics

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

Figure3. Normalized On-Resistance vs. Junction Temperature

Figure4. Normalized $V_{GS(th)}$ vs. Junction Temperature

Figure 5. Transfer Characteristics

Figure 6. Capacitance Characteristics

Typical Electrical and Thermal Characteristics

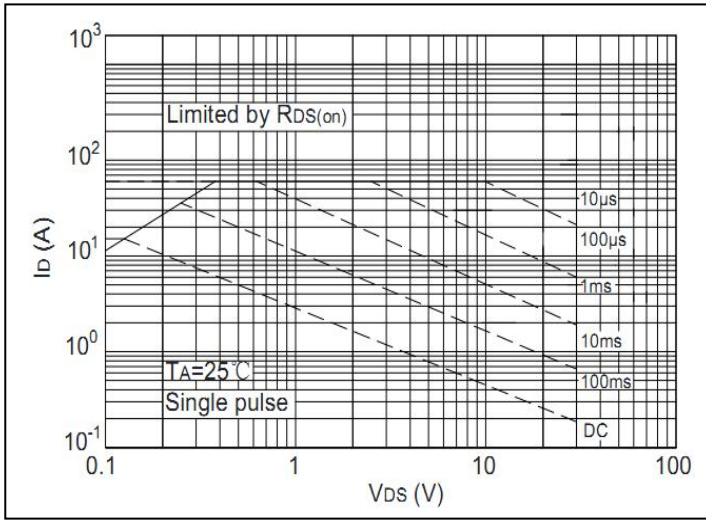


Figure7. Safe Operation Area

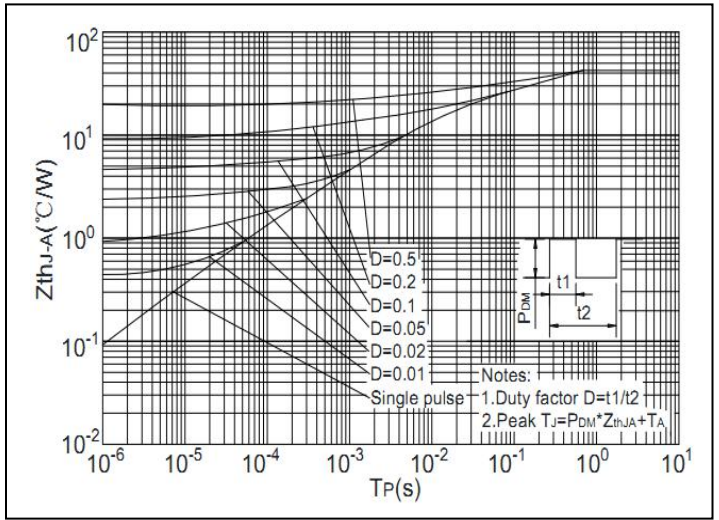
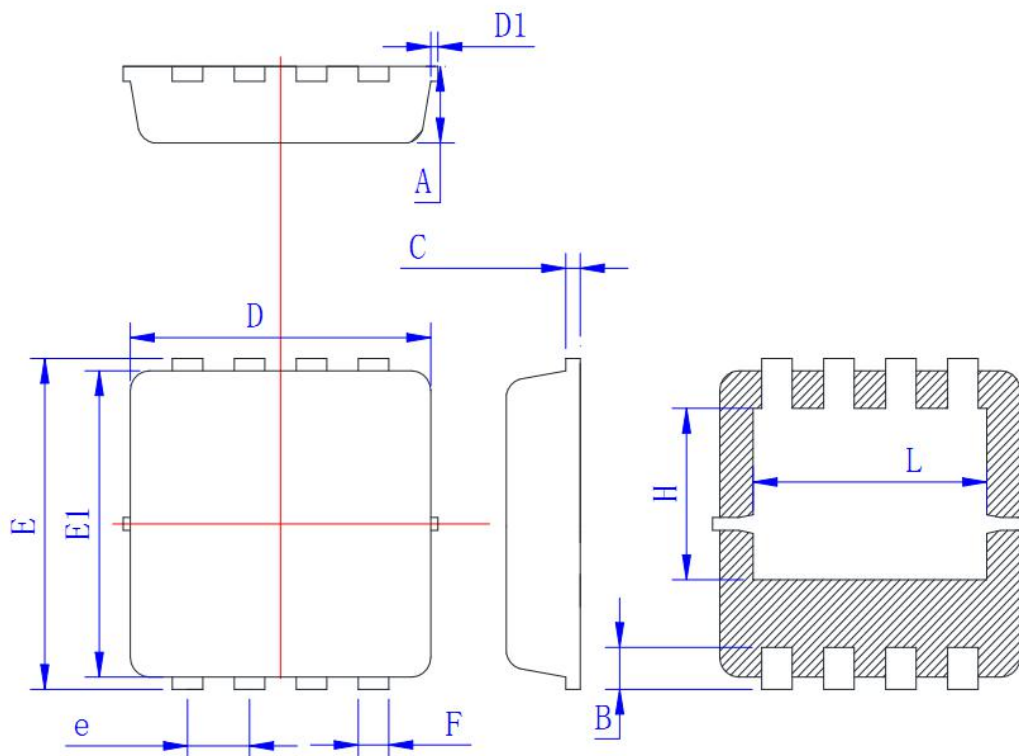


Figure8. Transient Thermal Impedance

Mechanical Data:

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	0.27	0.32	0.37
H	1.63	1.73	1.83
L	2.35	2.45	2.55

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