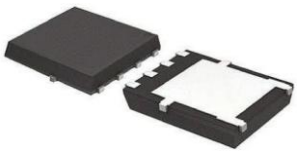
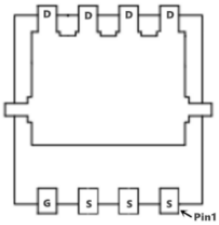
Main Product Characteristics:

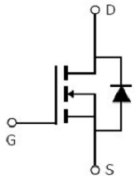
V_{DSS}	40V
R_{DS}(on)	4.8mΩ (typ.)
I_D	80A



PDFN3x3-8L



Pin Assignment



Schematic Diagram

Features and Benefits:

- Advanced trench 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 trench 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 @ TC = 25℃	Continuous Drain Current, V_{GS} @ 10V ①	80	A
I_{DM}	Pulsed Drain Current ②	150	
P_D @TC = 25℃	Power Dissipation ③	52.1	W
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.1mH	110.5	mJ
I_{AS}	Avalanche Current @L=0.1mH	47	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to + 150	℃

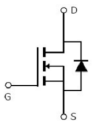
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	2.4	℃/W
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④		62	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

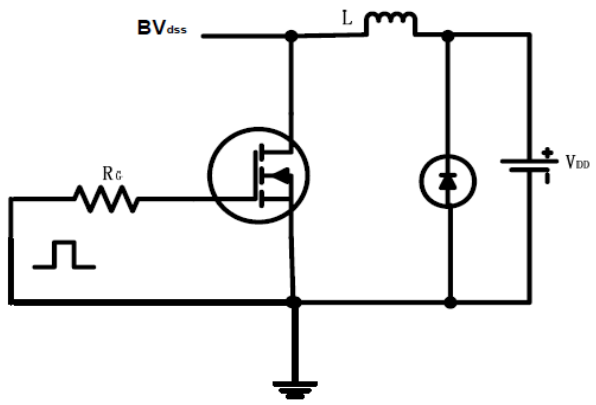
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	40	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	4.8	6.5	mΩ	V_{GS}=10V,I_D = 15A
		—	7.2	9		V_{GS}=4.5V,I_D = 12A
$V_{GS(th)}$	Gate threshold voltage	1	—	2.5	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} = 32V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	25	—	nC	I_D = 12A,
Q_{gs}	Gate-to-Source charge	—	7.5	—		V_{DS}=20V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	12.5	—		V_{GS} = 4.5V
$t_{d(on)}$	Turn-on delay time	—	20	—	ns	V_{GS}=10V, V_{DS}=15V,
t_r	Rise time	—	11	—		I_D=-20A
$t_{d(off)}$	Turn-Off delay time	—	84	—		R_{GEN}=3Ω
t_f	Fall time	—	8	—		
C_{iss}	Input capacitance	—	3350	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	270	—		V_{DS} = 15V
C_{rss}	Reverse transfer capacitance	—	200	—		f = 1MHz

Source-Drain Ratings and Characteristics

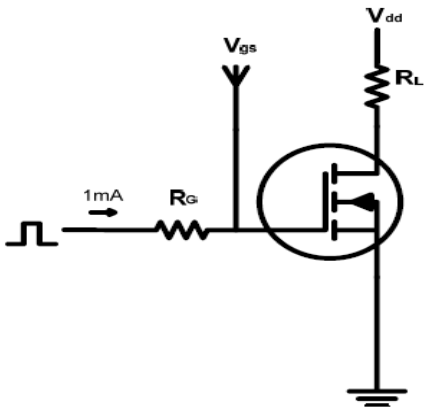
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	75	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	150	A	
V_{sd}	Diode Forward Voltage	—	—	1	V	I_S=1A, V_{GS}=0V

Test circuits and Waveforms

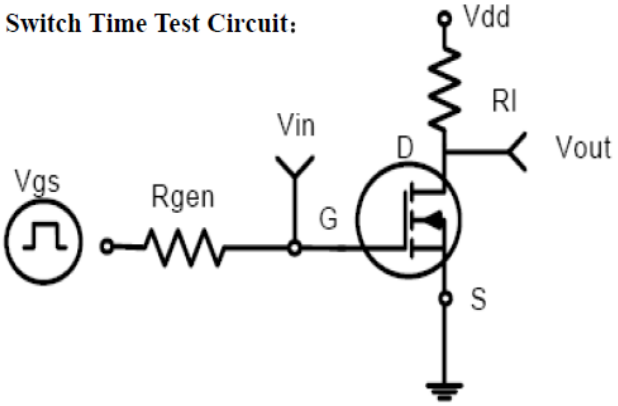
EAS test circuits:



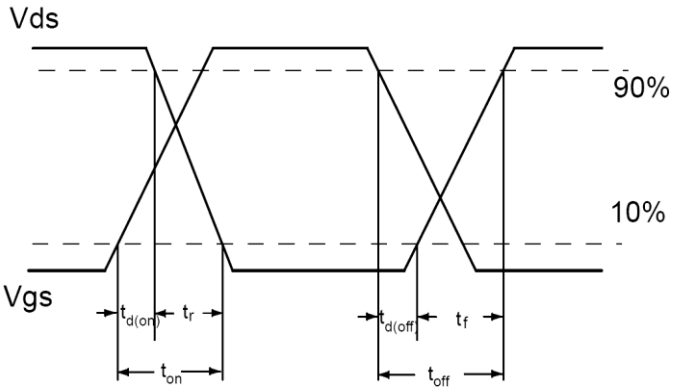
Gate charge test circuit:



Switch Time Test Circuit:



Switch Waveforms:



Notes:

①The maximum current rating is limited by bond-wires.
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 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C

Typical electrical and thermal characteristics

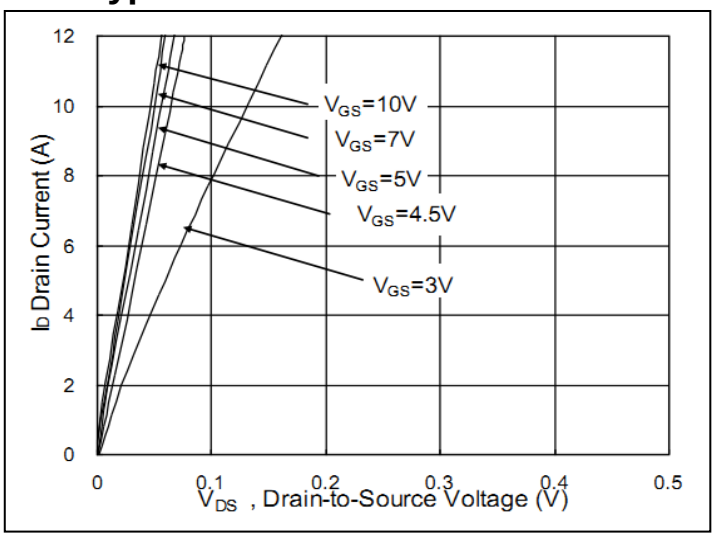


Figure 1. Typical Output Characteristics

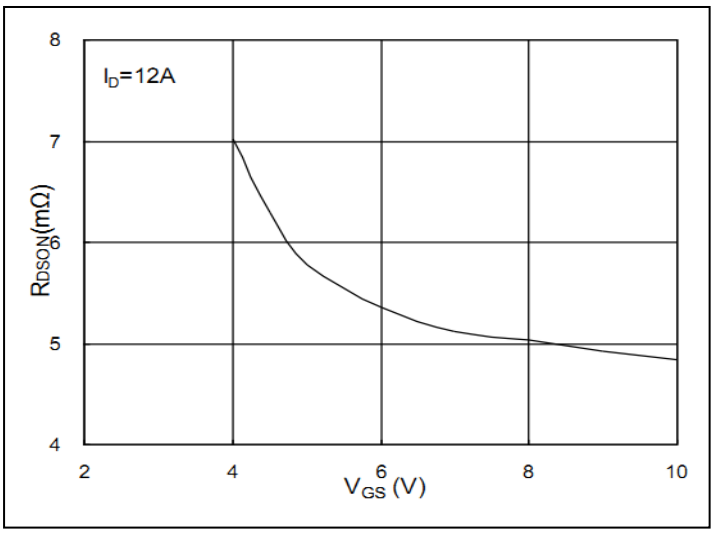


Figure 2. On-Resistance Vs. Gate-Source Voltage

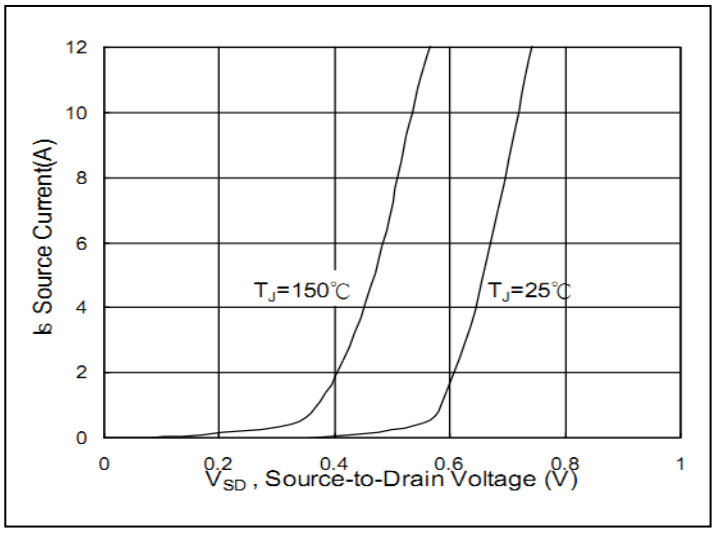


Figure 3. Forward Characteristics Of Reverse

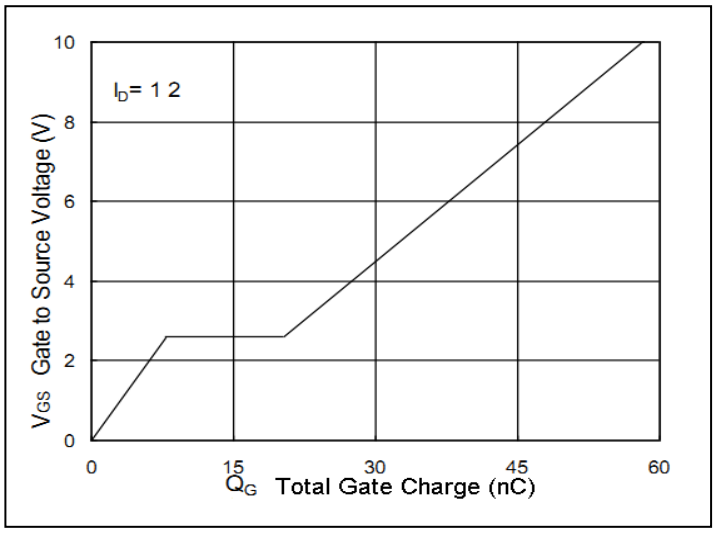


Figure 4. Transfer Characteristics

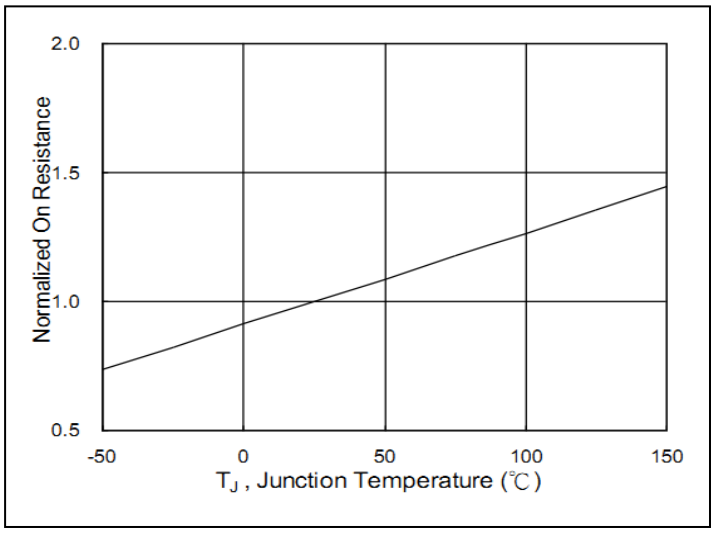


Figure 5. Normalized On-Resistance Vs. Junction Temperature

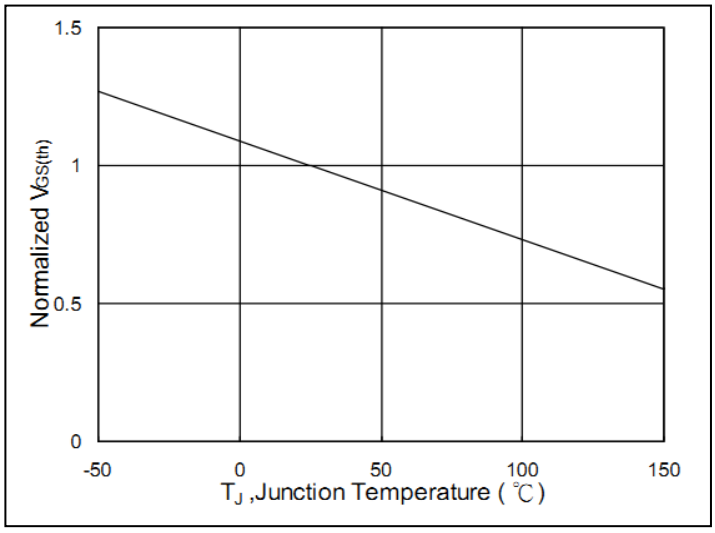


Figure 6. Normalized $V_{GS(th)}$ Vs. Junction Temperature

Typical electrical and thermal characteristics

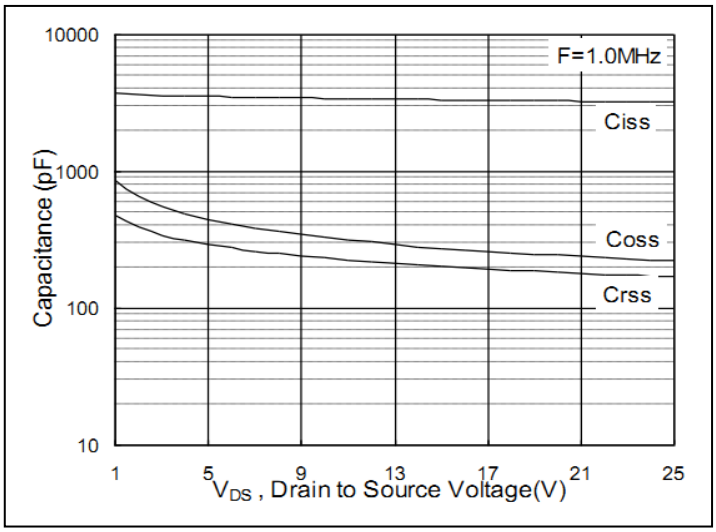


Figure 7. Capacitance

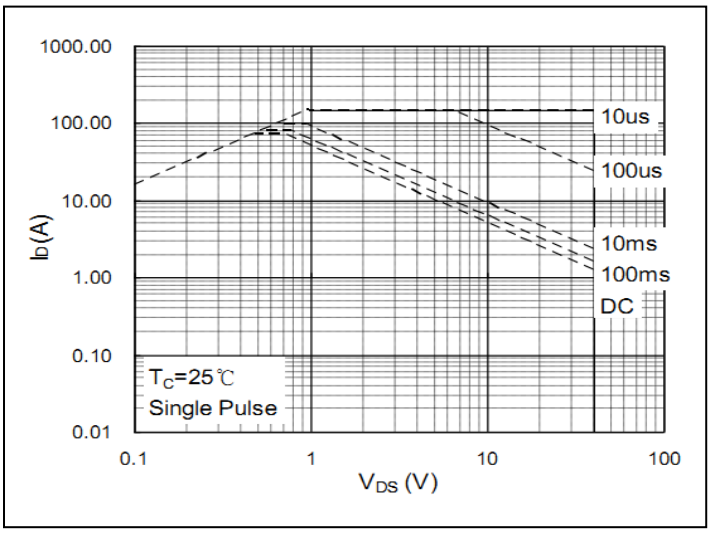


Figure 8. Safe Operating Area

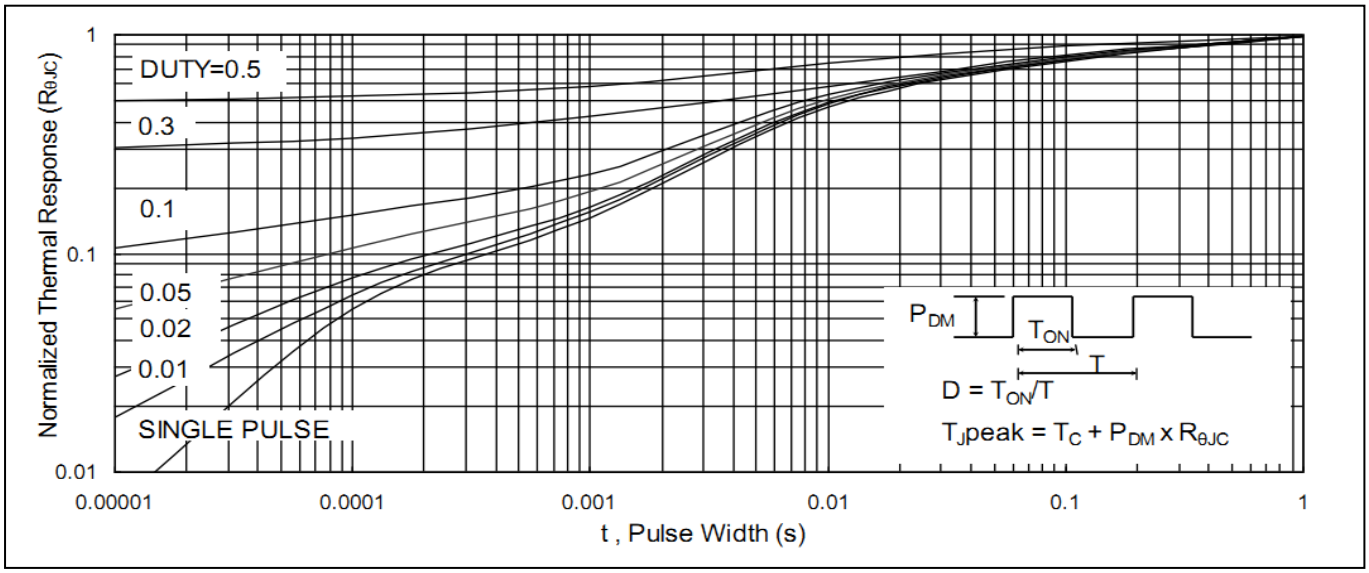
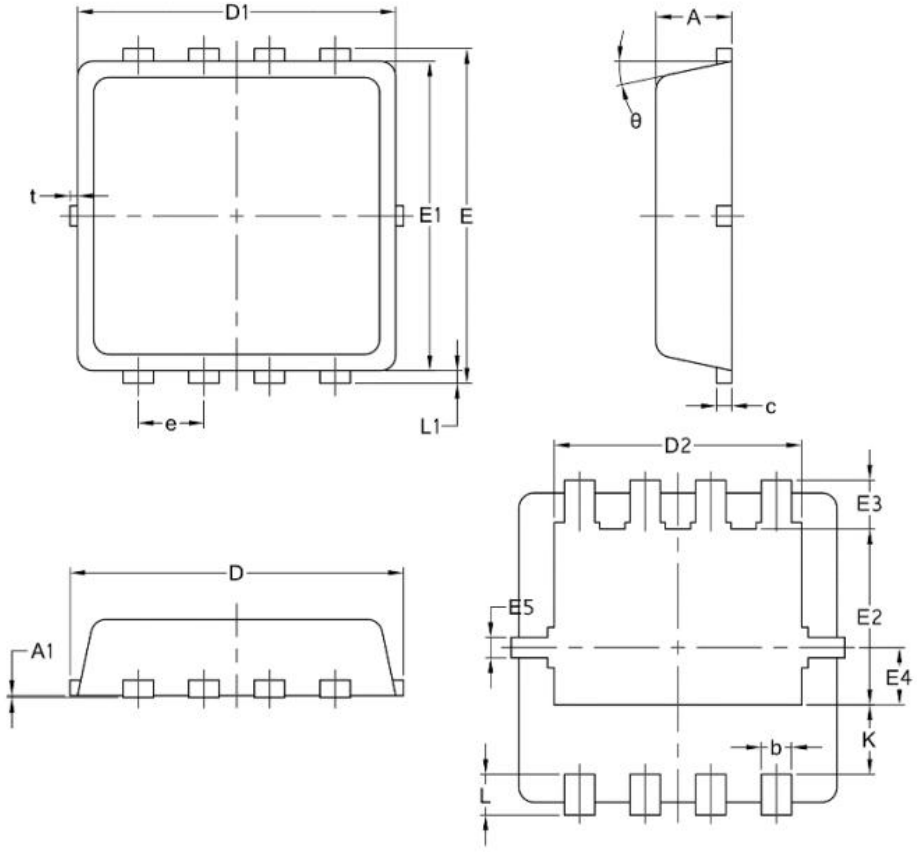


Figure 9. Maximum Effective Transient Thermal Impedance

Mechanical Data：



Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14

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