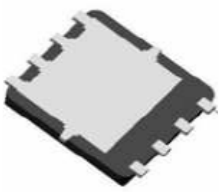
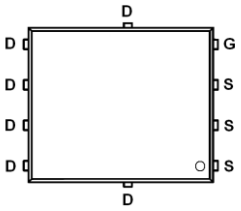
Main Product Characteristics:

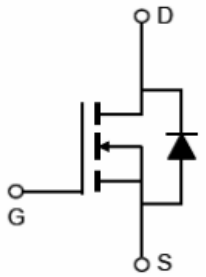
V_{DSS}	60V
R_{DS}(on)	6 mΩ (typ.)
I_D	80A



PDFN 5x6-8L



Pin Assignments



Schematic Diagram

Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for load switching and buttery protection applications
- AEC-Q101 qualified

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℃	Continuous Drain Current, V_{GS} @ 10V ①	80	A
I_{DM}	Pulsed Drain Current ②	320	
P_D @T_C = 25℃	Power Dissipation ③	108	W
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.3mH	210	mJ
I_{AS}	Avalanche Current @L=0.3mH	37	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	℃

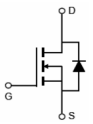
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	1.4	℃/W
$R_{\theta JA}$	Junction-to-Ambient ④	—	92	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

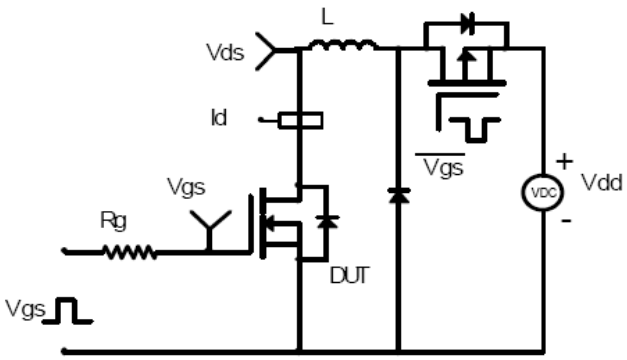
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	60	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	6	7.5	mΩ	V_{GS}=10V,I_D =30A
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =60V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	89	—	nC	I_D = 30A, V_{DS}=30V, V_{GS} = 10V
Q_{gs}	Gate-to-Source charge	—	8	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	16	—		
$t_{d(on)}$	Turn-on delay time	—	18	—	ns	V_{GS}=10V, V_{DS}=33V, R_{GEN}=2.2Ω I_D = 30A
t_r	Rise time	—	34	—		
$t_{d(off)}$	Turn-Off delay time	—	37	—		
t_f	Fall time	—	10	—		
C_{iss}	Input capacitance	—	4090	—	pF	V_{GS} = 0V V_{DS} = 50V f = 1MHz
C_{oss}	Output capacitance	—	210	—		
C_{rss}	Reverse transfer capacitance	—	188	—		

Source-Drain Ratings and Characteristics

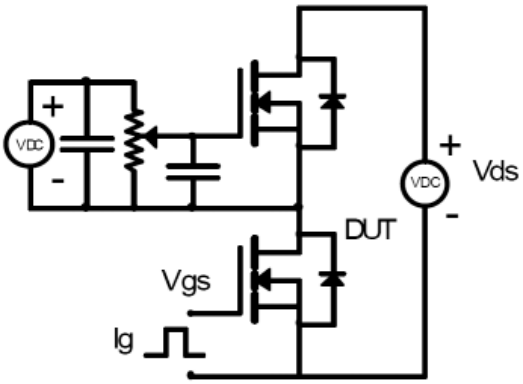
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	80	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	320	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	I_S=30A, V_{GS}=0V
trr	Reverse Recovery Time	—	32	—	ns	I_S=30A,di/dt=100A/us
Qrr	Reverse Recovery Charge	—	45	—	nC	

Test Circuits and Waveforms

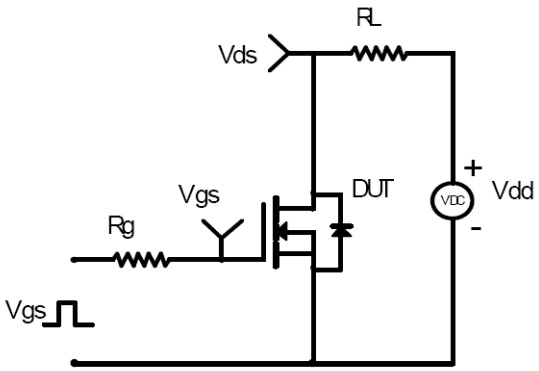
EAS Test Circuit:



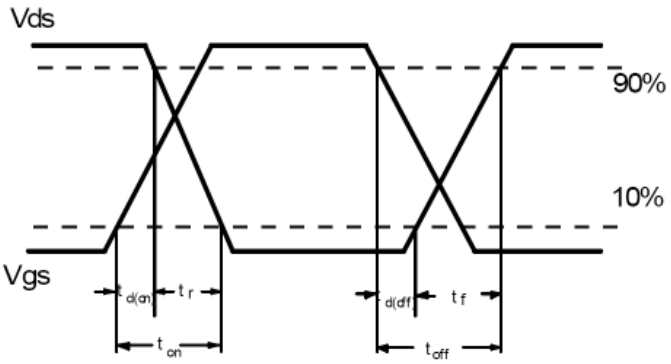
Gate Charge Test Circuit:



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 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 ℃

Typical Electrical and Thermal Characteristics

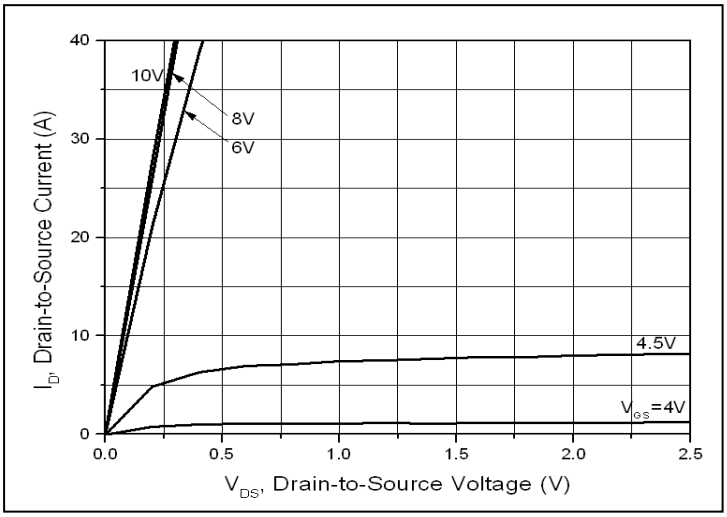


Figure1.Typical Output Characteristics

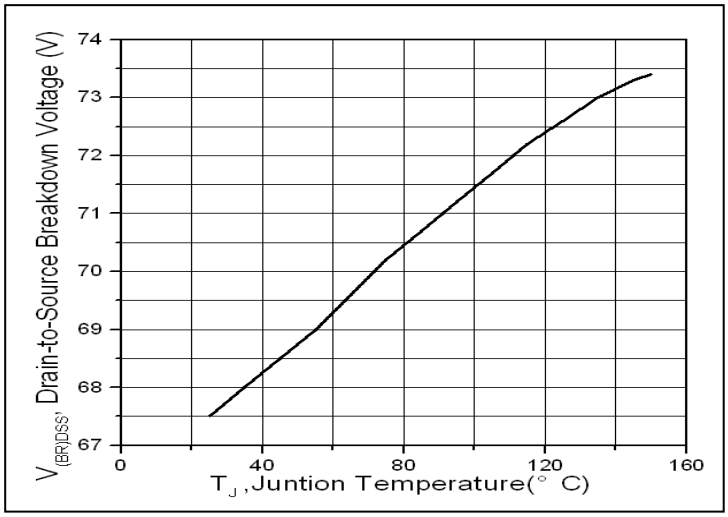


Figure2. Drain-to-Source Breakdown Voltage vs. Temperature

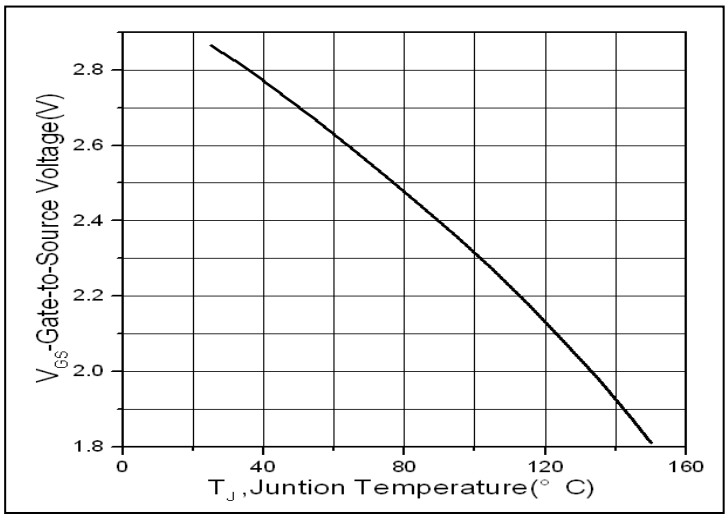


Figure3.Gate to Source Cut-off Voltage vs. Temperature

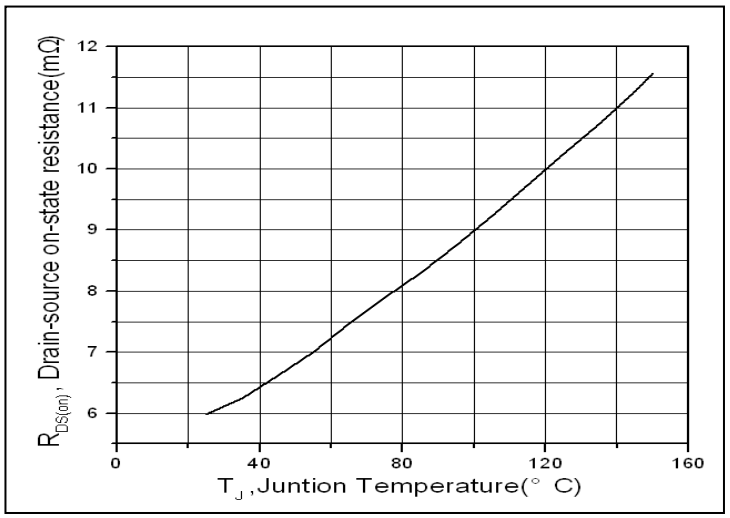


Figure4. Normalized On-Resistance vs. Junction Temperature

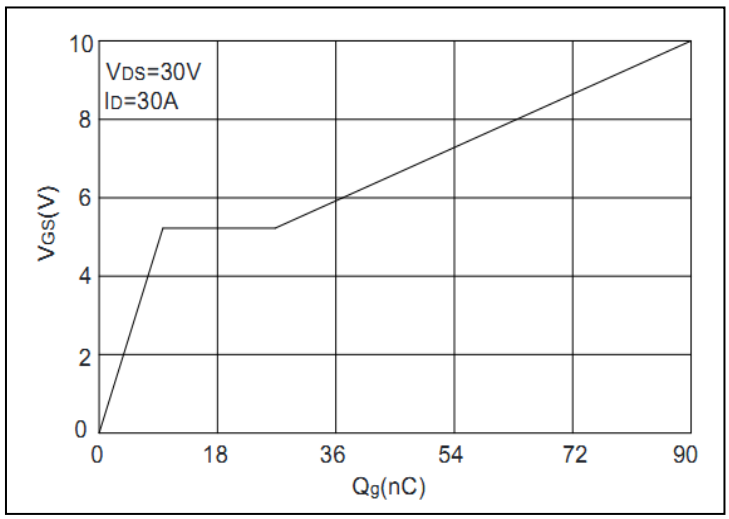


Figure5.Gate Charge

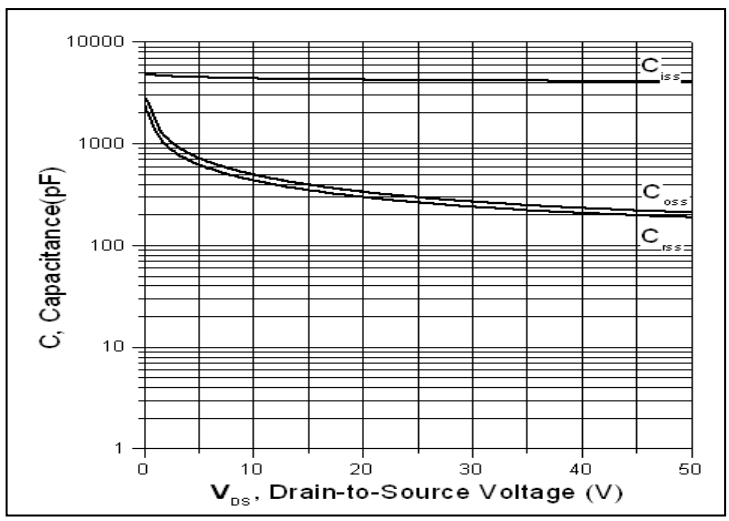


Figure6. Capacitance

Typical Electrical and Thermal Characteristics

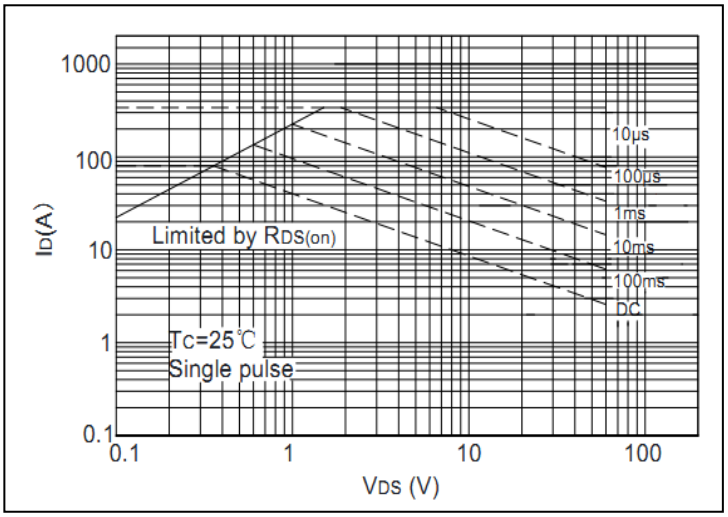


Figure7. Safe Operating Area

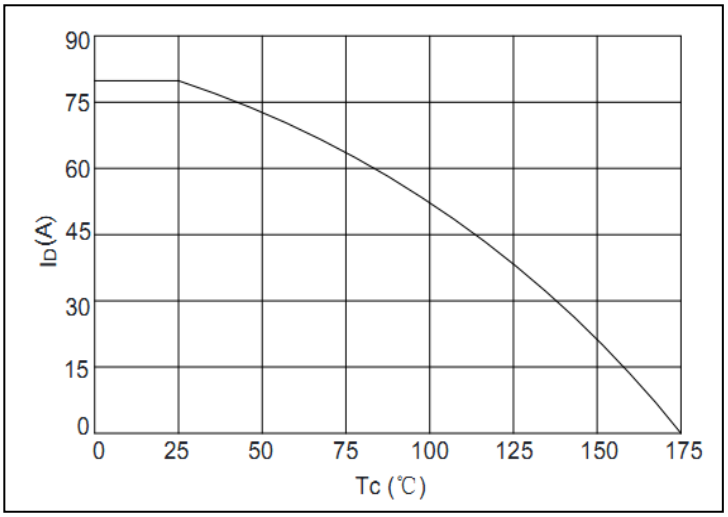


Figure8.Drain Current vs Case Temperature

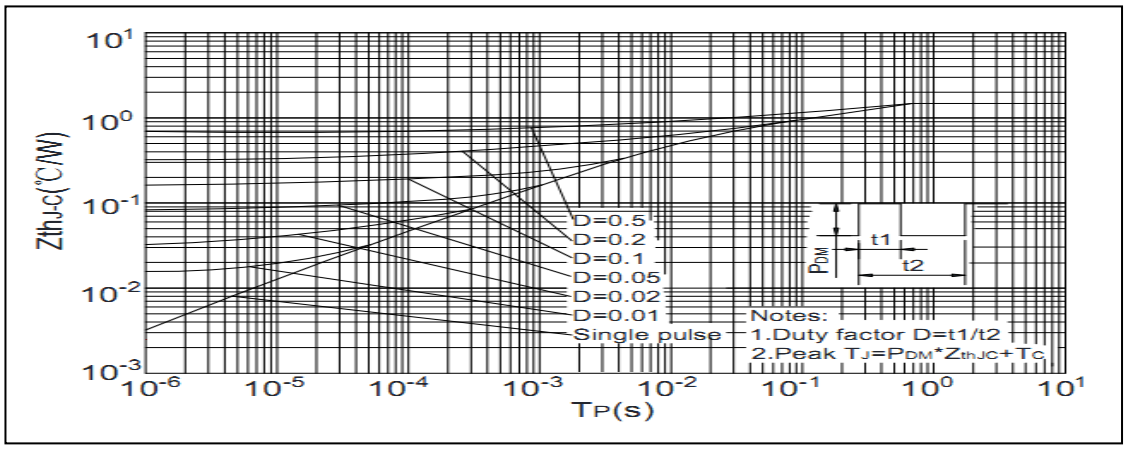
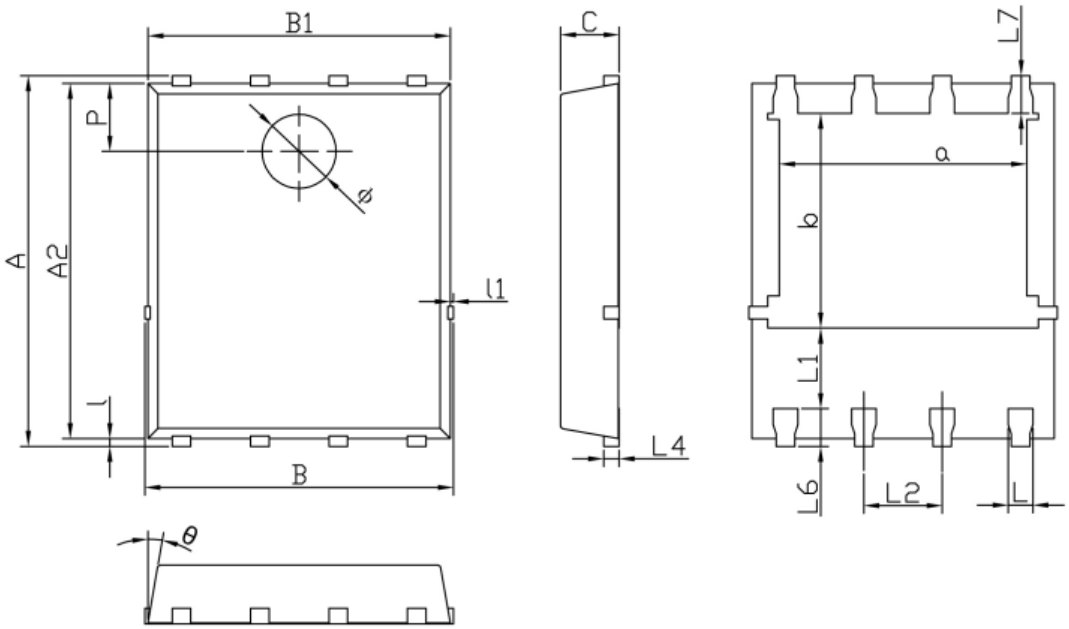


Figure9. Normalized Maximum Transient Thermal Impedance

Mechanical Data：

PDFN5x6 Package Outline(Unit:mm)



Dimensions In Millimeterer			
Symbol	MIN	TYP	MAX
A	5.90	6.00	6.10
a	3.91	4.01	4.11
A2	5.70	5.75	5.80
B	4.90	5.00	5.10
b	3.37	3.47	3.57
B1	4.80	4.90	5.00
C	0.90	0.95	1.00
L	0.35	0.40	0.45
l	0.06	0.13	0.20
L1	1.10	–	–
l1	–	–	0.10
L2	1.17	1.27	1.37
L4	0.21	0.26	0.34
L6	0.51	0.61	0.71
L7	0.51	0.61	0.71
P	1.00	1.10	1.20
θ	8°	10°	12°
Φ	1.10	1.20	1.30

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