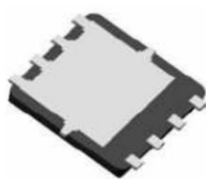
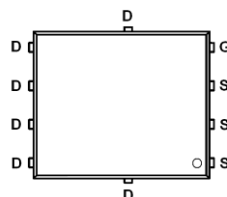
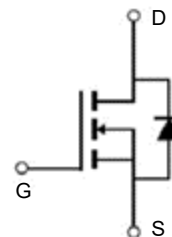


Main Product Characteristics:

V_{DSS}	60V
$R_{DS(on)}$	1.9m Ω (typ.)
I_D	160A


PDFN5x6-8L

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°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, V_{GS} @ 10V ①	160	A
I_D @ $T_c = 100^\circ\text{C}$	Continuous Drain Current, V_{GS} @ 10V ①	96	
I_{DM}	Pulsed Drain Current ②	640	
P_D @ $T_c = 25^\circ\text{C}$	Power Dissipation ③	125	W
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ $L=0.5\text{mH}$	473	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

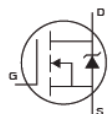
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
R _{θJC}	Junction-to-case ③	—	1	°C /W
R _{θJA}	Junction-to-ambient (t ≤ 10s) ④	—	42	°C /W

Electrical Characterizes @T_A=25°C unless otherwise specified

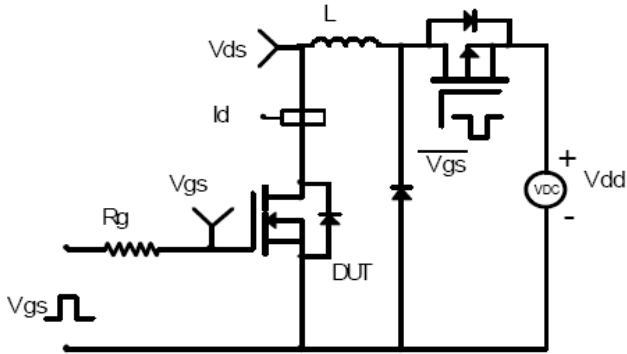
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
V _{(BR)DSS}	Drain-to-Source breakdown voltage	60	—	—	V	V _{GS} = 0V, I _D = 250μA
R _{DS(on)}	Static Drain-to-Source on-resistance	—	1.9	2.5	mΩ	V _{GS} =10V, I _D = 20A
		—	2.5	3.5		V _{GS} =4.5V, I _D = 15A
V _{GS(th)}	Gate threshold voltage	1	—	2.5	V	V _{DS} = V _{GS} , I _D = 250μA
I _{DSS}	Drain-to-Source leakage current	—	—	1	μA	V _{DS} = 60V, V _{GS} = 0V
I _{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V _{GS} = 20V
		—	—	-100		V _{GS} = -20V
C _{iss}	Input capacitance	—	5070	—	pF	V _{GS} = 0V
C _{oss}	Output capacitance	—	2070	—		V _{DS} = 25V
C _{rss}	Reverse transfer capacitance	—	138	—		f = 100kHz
Q _g	Total gate charge	—	100	—	nC	I _D = 30A,
Q _{gs}	Gate-to-Source charge	—	18	—		V _{DS} =30V,
Q _{gd}	Gate-to-Drain("Miller") charge	—	21	—		V _{GS} = 10V
t _{d(on)}	Turn-on delay time	—	15	—	ns	V _{GS} =10V, V _{DD} =30V, R _{GEN} =3Ω, I _D =30A
t _r	Rise time	—	38	—		
t _{d(off)}	Turn-Off delay time	—	75	—		
t _f	Fall time	—	95	—		

Source-Drain Ratings and Characteristics

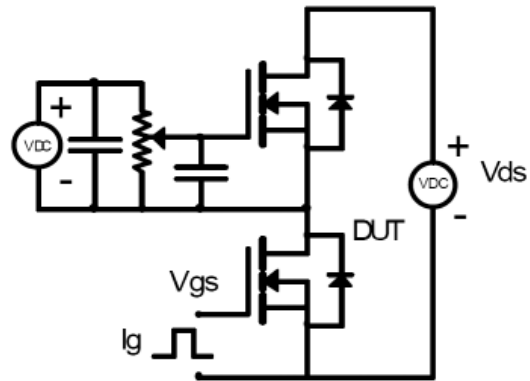
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I _S	Continuous Source Current (Body Diode)	—	—	160	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I _{SM}	Pulsed Source Current (Body Diode)	—	—	640	A	
V _{SD}	Diode Forward Voltage	—	—	1.2	V	I _S =30A, V _{GS} =0V
t _{rr}	Reverse Recovery Time	—	54.7	—	ns	T _J = 25°C, I _F =30A, di/dt =
Q _{rr}	Reverse Recovery Charge	—	60	—	nC	100A/μs

Test Circuits and Waveforms

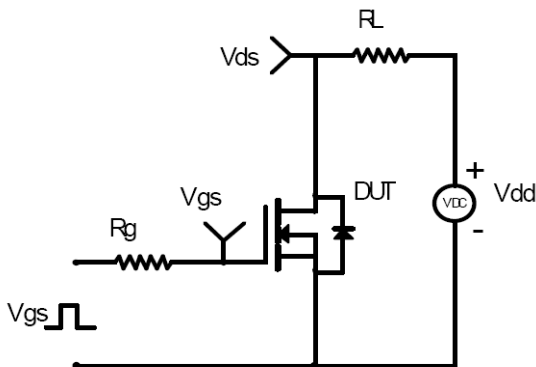
EAS Test Circuit:



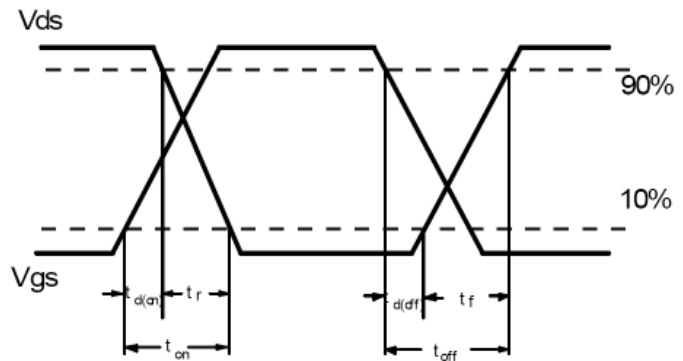
Gate Charge Test Circuit:



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

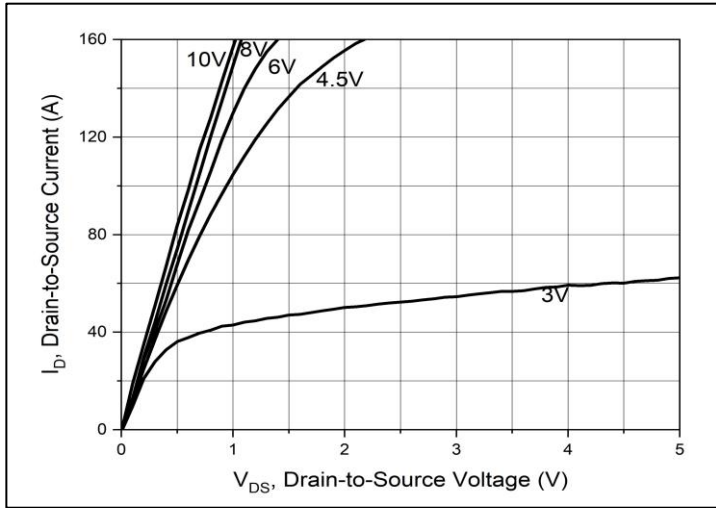


Figure1. Typical Output Characteristics

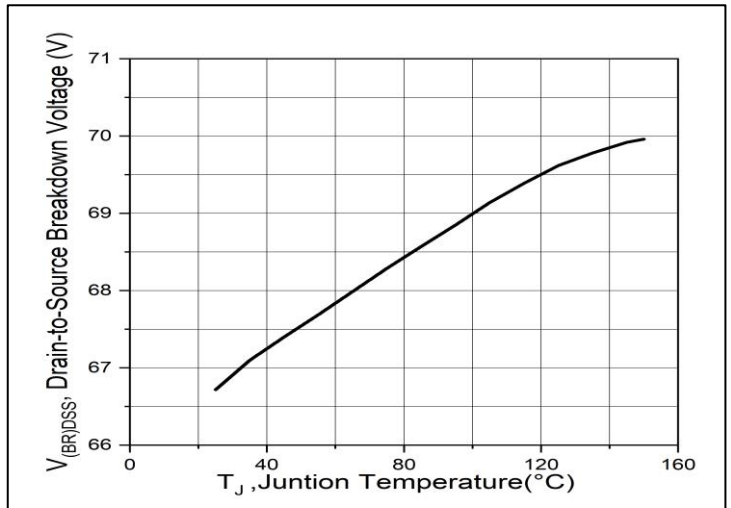


Figure2. Drain-to-Source Breakdown Voltage vs. Junction Temperature

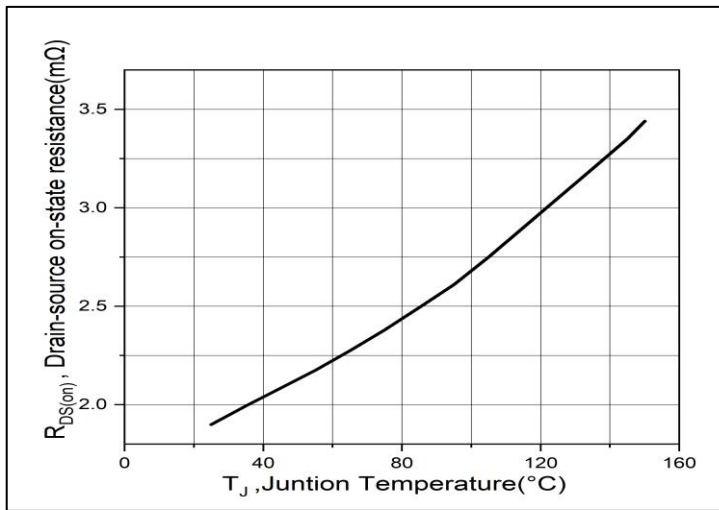


Figure3. R_DS(on) vs. Junction Temperature

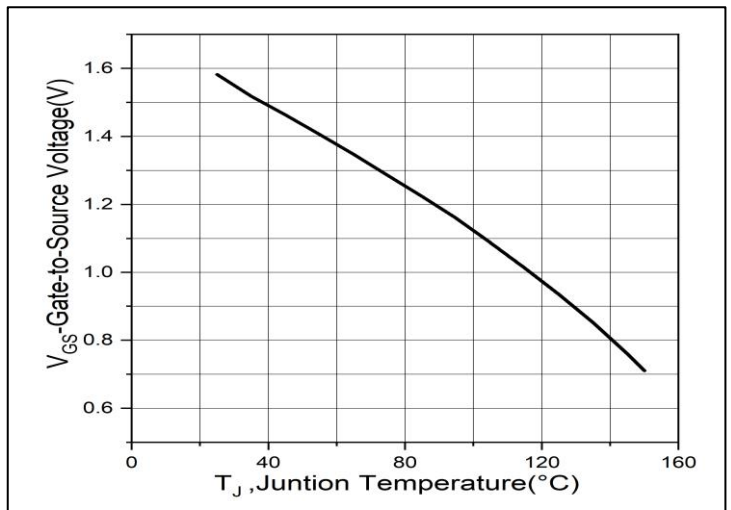


Figure4. V_{th} vs. Junction Temperature

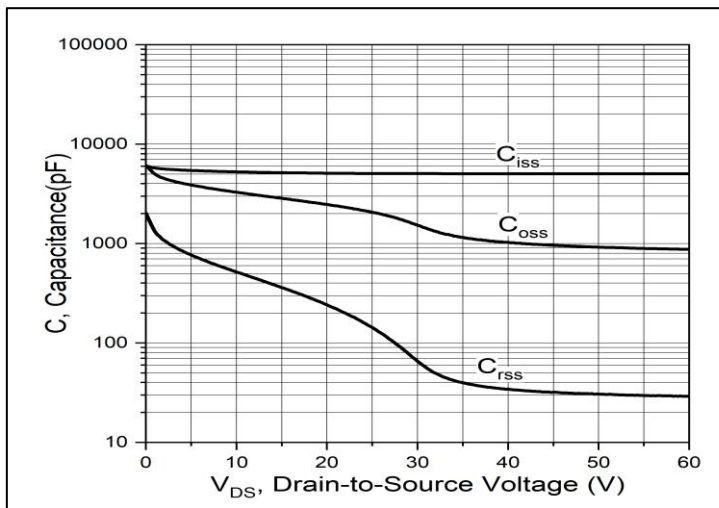


Figure5. Capacitance

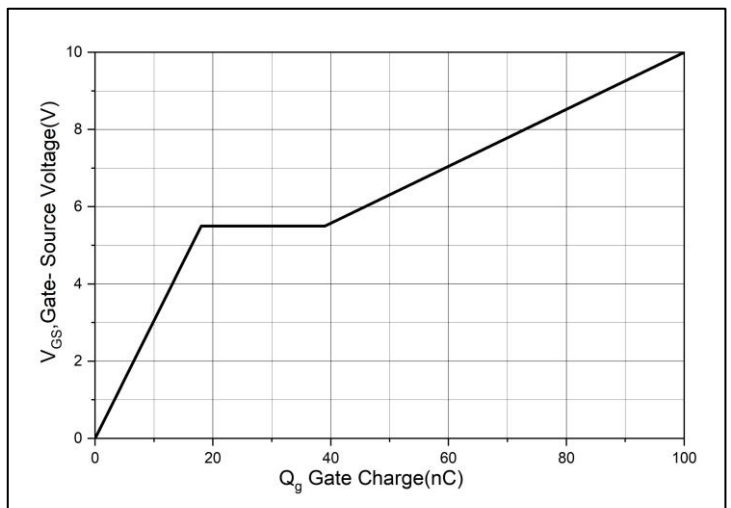


Figure6. Gate Charge

Typical Electrical and Thermal Characteristics

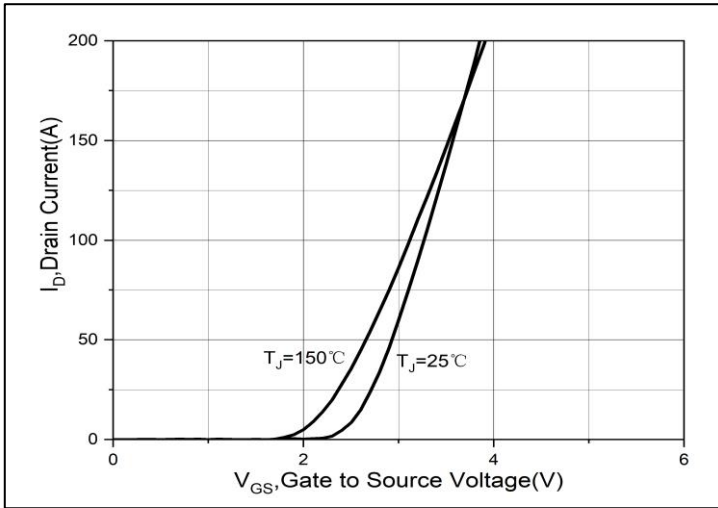


Figure7. Transfer Characteristics

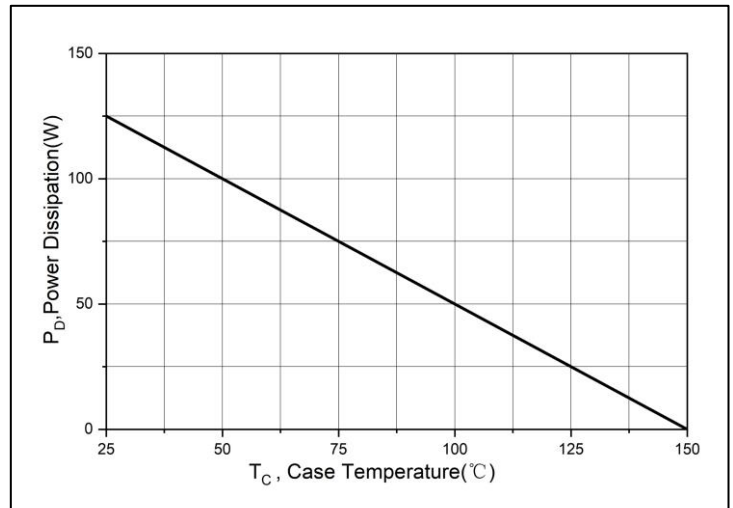
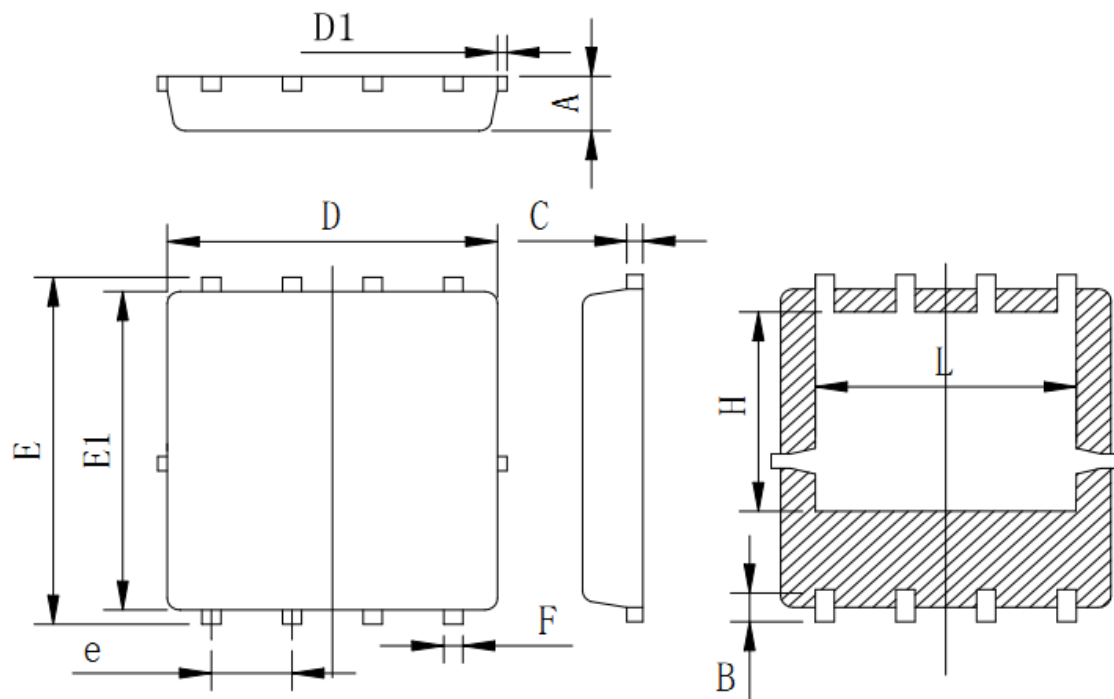
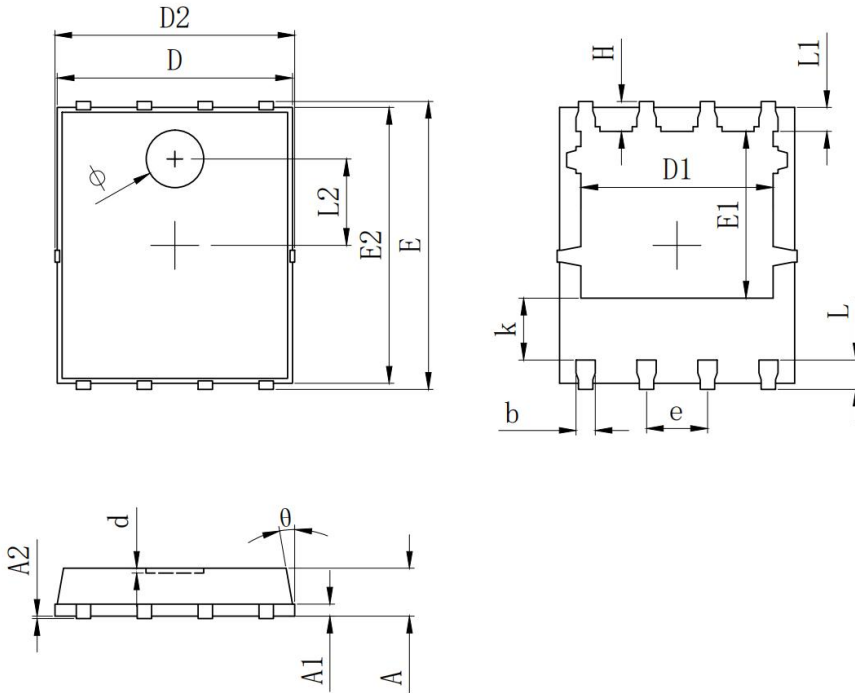


Figure8. Power Dissipation

Mechanical Data:
Option1:


Symbol	Min	Typ	Max
A	0.90	0.95	1.00
B	0.48	0.58	0.68
C	0.20	0.254	0.30
D	5.00	5.20	5.40
D1			0.15
E	5.90	6.05	6.20
E1	5.40	5.55	5.70
e	1.22	1.27	1.32
F	0.25	0.30	0.35
H	3.27	3.47	3.67
L	3.80	4.00	4.20

Option2:



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0 [~] 0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
ϕ	1.100	1.200	1.300
d			0.100

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