

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	13mΩ@10V	35A
	18mΩ@4.5V	

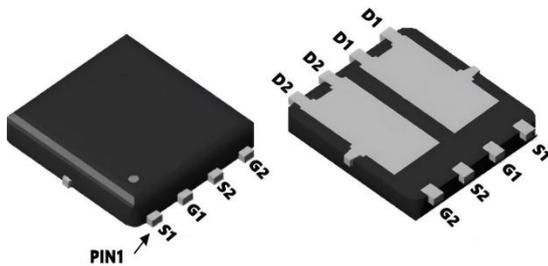
Feature

- Fast switching speed
- Surface mount package

Application

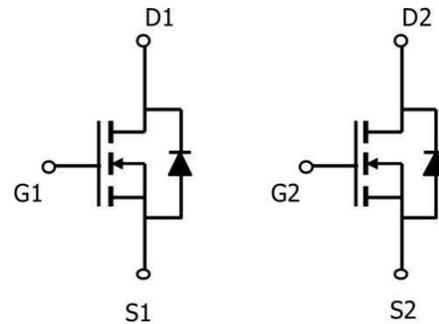
- DC-DC converters
- Motor control

Package



PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C = 25^\circ\text{C}$)	I_D	35	A
Continuous Drain Current ($T_C = 100^\circ\text{C}$)	$I_D (100^\circ\text{C})$	22	A
Pulsed Drain Current	I_{DM}	140	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	121	mJ
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	55	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.27	$^\circ\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

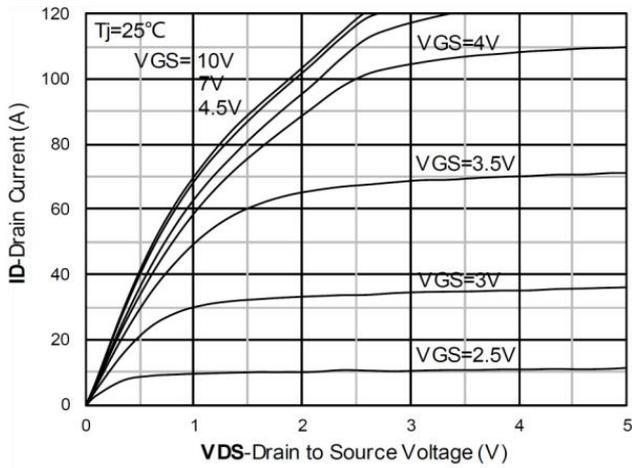
Electrical characteristics ($T_A=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.6	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 15A$		10	13	m Ω
		$V_{GS} = 4.5V, I_D = 10A$		13	18	
Dynamic characteristics²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1\text{MHz}$		1090		pF
Output Capacitance	C_{oss}			285		
Reverse Transfer Capacitance	C_{rss}			21		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 10A$		23.9		nC
Gate-Source Charge	Q_{gs}			7.2		
Gate-Drain Charge	Q_{gd}			5.2		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 30V, V_{GS} = 10V, I_D = 10A$ $R_G = 4.7\Omega$		14		nS
Turn-on rise time	t_r			26		
Turn-off delay time	$t_{d(off)}$			33.8		
Turn-off fall time	t_f			26.4		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				35	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = 1A, T_J = 25^\circ\text{C}$			1.2	V
Reverse Recovery Time	T_{rr}	$I_S = 20A, di/dt = -100A/\mu\text{s}$		36		nS
Reverse Recovery Charge	Q_{rr}	$T_J = 25^\circ\text{C}$		23		nC

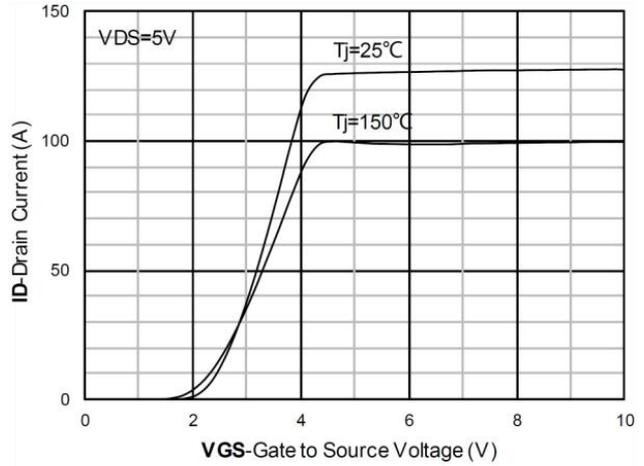
Notes:

- 1) The EAS Test condition is $V_{DD} = 30V, V_{GS} = 10V, L = 0.5\text{mH}, R_G = 25\Omega$.
- 2) Guaranteed by design, not subject to production.

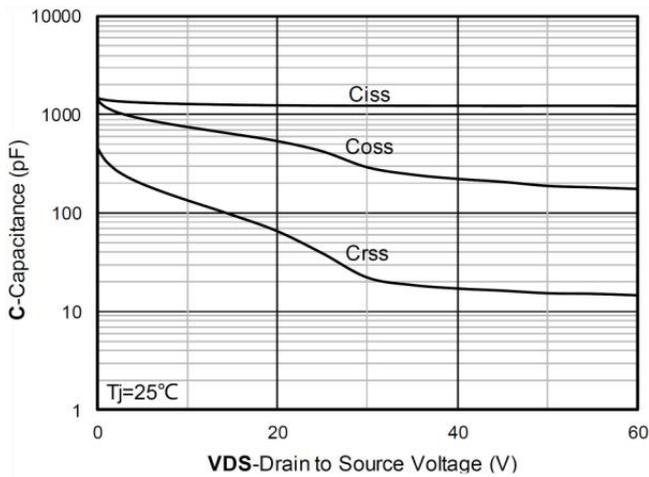
Typical Characteristics



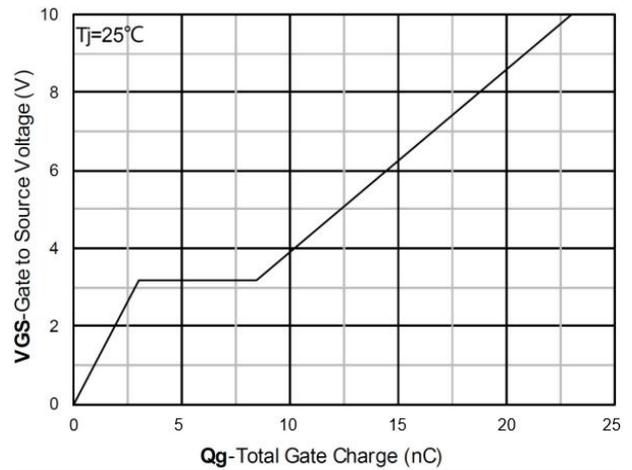
Output Characteristics



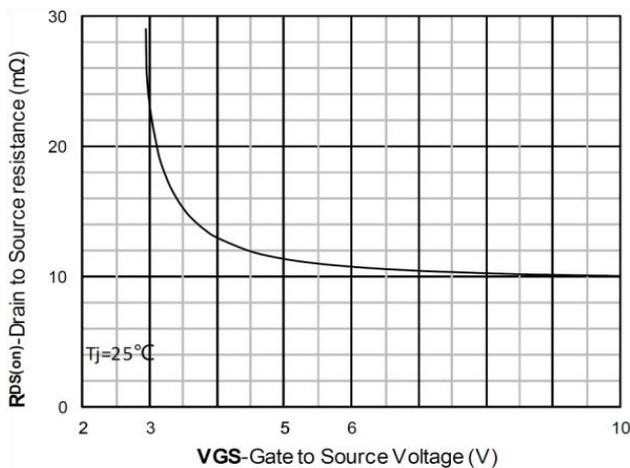
Transfer Characteristics



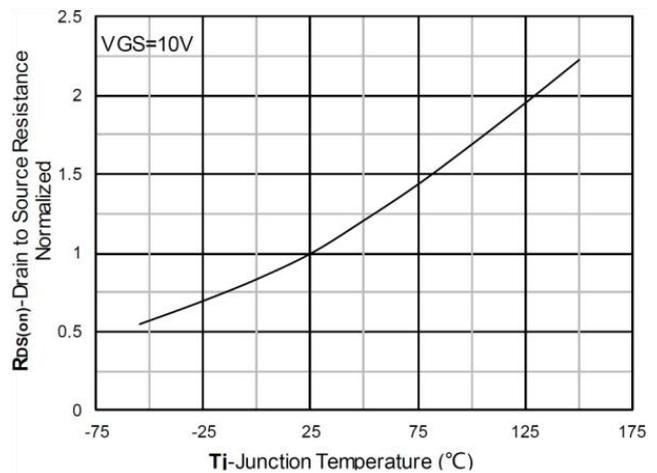
Capacitance Characteristics



Gate Charge

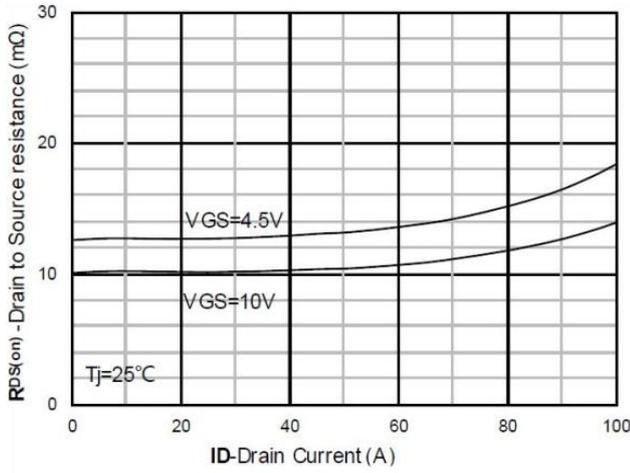


On-Resistance vs Gate to Source Voltage

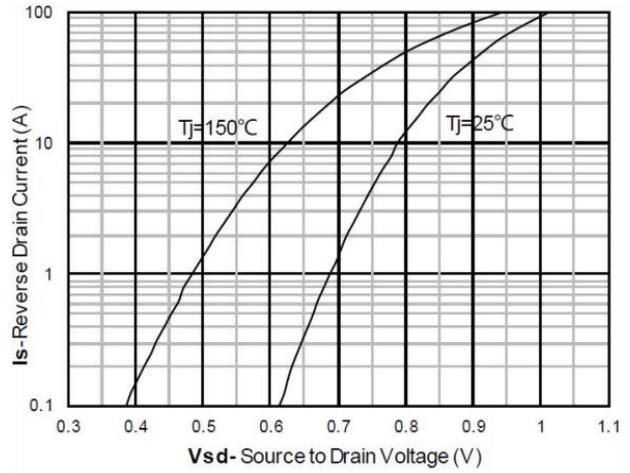


Normalized On-Resistance

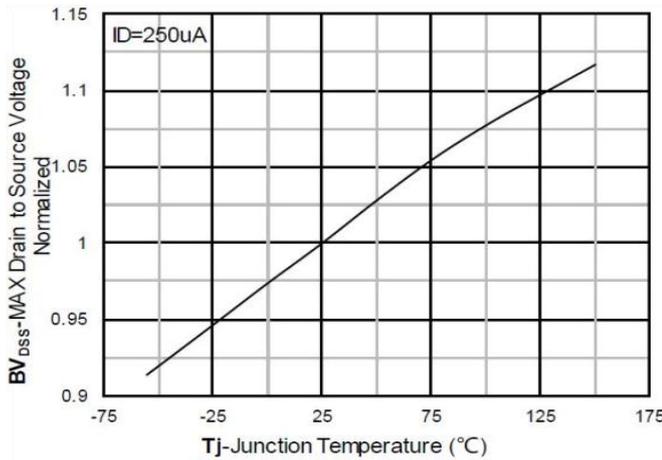
Typical Characteristics



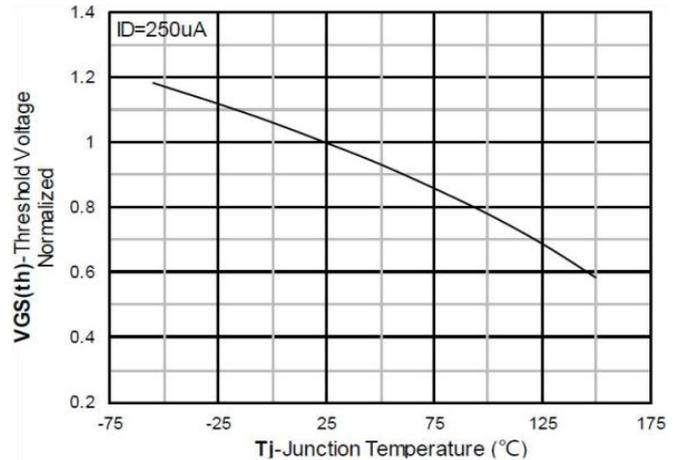
RDS(on) VS Drain Current



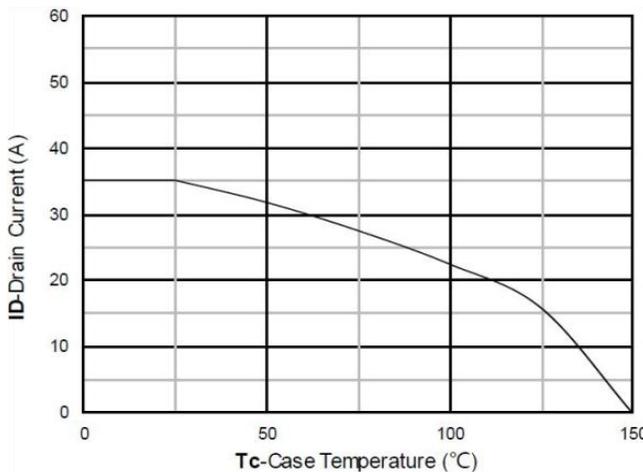
Forward characteristics of reverse diode



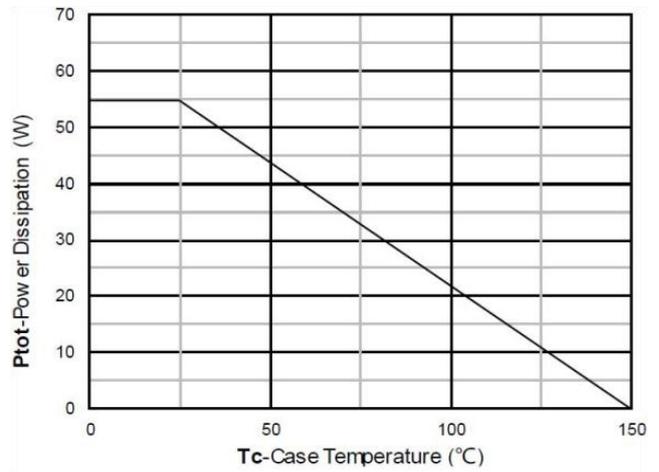
Normalized breakdown voltage



Normalized Threshold voltage

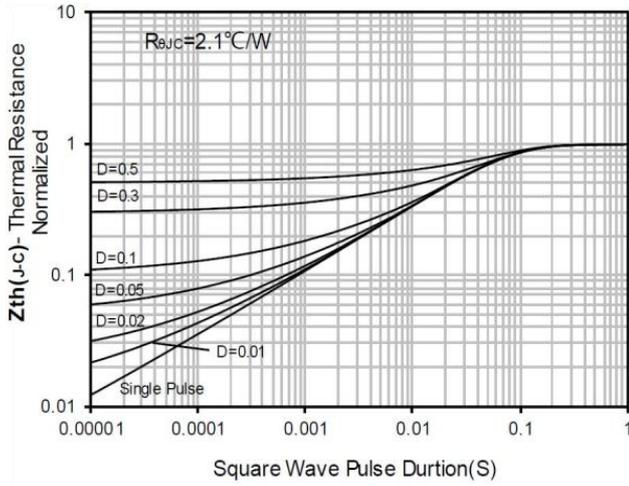


Current dissipation

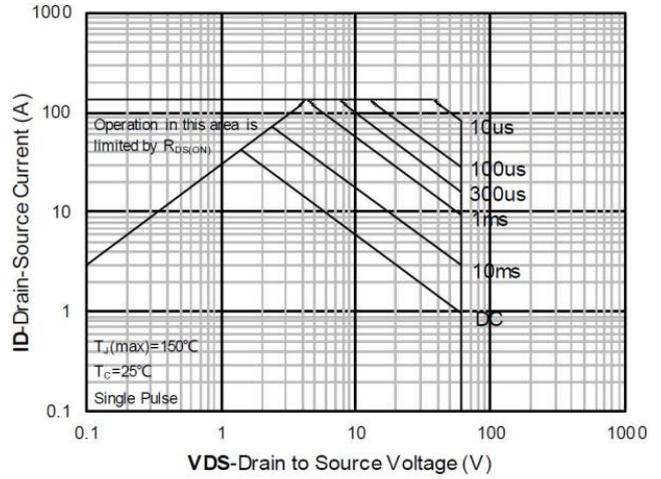


Power dissipation

Typical Characteristics

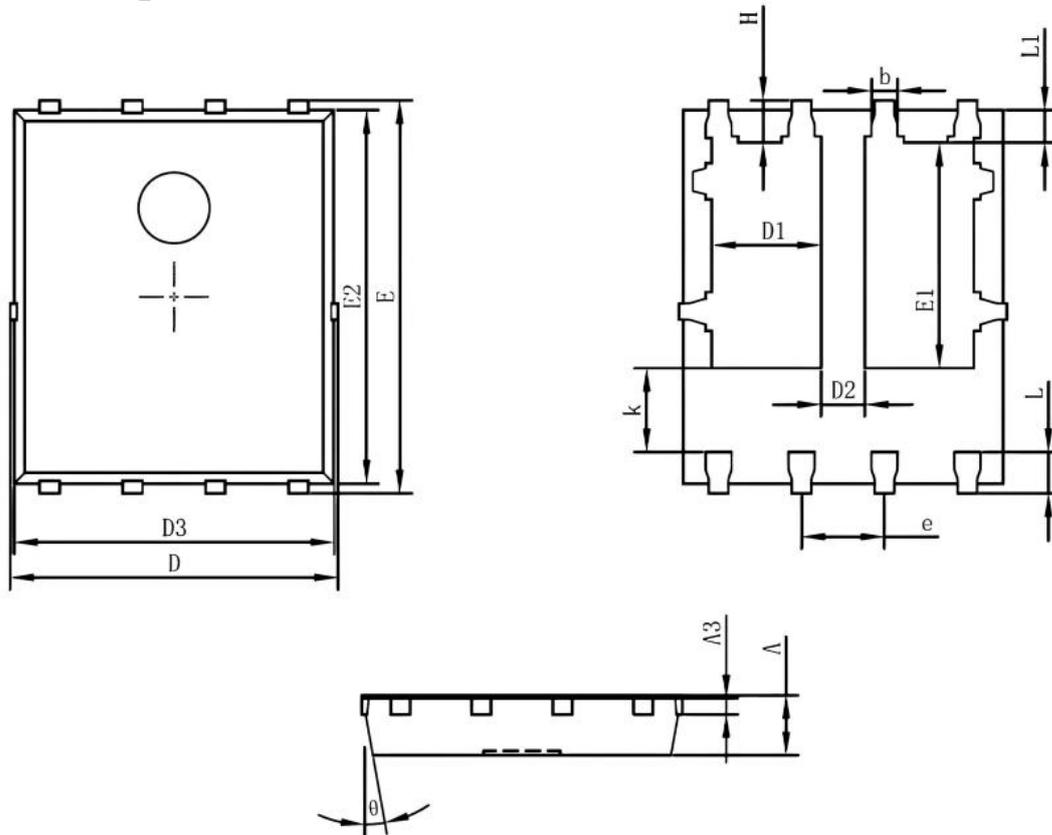


Maximum Transient Thermal Impedance



Safe Operation Area

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254 REF.		0.010 REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270 TYP.		0.050 TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°