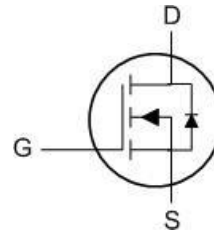




### Features

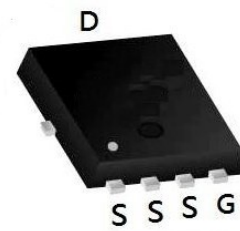
- Split Gate Trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low  $R_{DS(ON)}$



### Applications

- DC-DC Converters
- Power management functions
- Synchronous-rectification applications

### PDFN5060-8L Pin Configuration



### Product Summary

<b>BVDSS</b>	<b>RDSON</b>	<b>ID</b>
100V	7.3 mΩ	75 A

### Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	100	V
$V_{GSS}$	Gate-Source Voltage	±20	V
$I_D$	Continuous Drain Current	$T_C = 25^\circ\text{C}$	75
		$T_C = 100^\circ\text{C}$	49
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	300	A
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>	90	mJ
$P_D$	Power Dissipation	$T_C = 25^\circ\text{C}$	97
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.3	°C/W
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	°C



### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V,	-	-	1.0	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
<b>On Characteristics</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.6	2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note3</small>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	7.3	9.2	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =8A	-	9	13.5	mΩ
<b>Dynamic Characteristics</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1.0MHz	-	2046	-	pF
C <sub>oss</sub>	Output Capacitance		-	865	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	25	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =30A, V <sub>GS</sub> =10V	-	39.4	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	5.2	-	nC
Q <sub>gd</sub>	Gate-Drain("Miller") Charge		-	9.8	-	nC
<b>Switching Characteristics</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DD</sub> =50V, I <sub>D</sub> =25A, R <sub>G</sub> =6Ω, V <sub>GS</sub> =10V	-	20	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	5.2	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	49	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	12	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =30A	-	-	1	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time	T <sub>J</sub> =25°C, I <sub>F</sub> =12A, di/dt=100A/μs	-	49	-	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		-	85	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

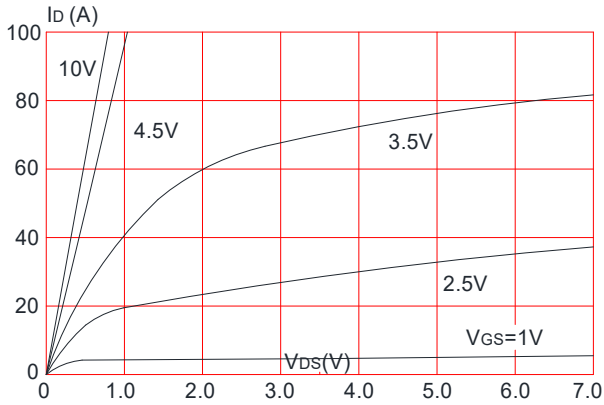
2. EAS condition: T<sub>J</sub>=25°C, V<sub>DD</sub>=50V, V<sub>G</sub>=10V, R<sub>G</sub>=25Ω, L=0.5mH, I<sub>AS</sub>=19A

3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

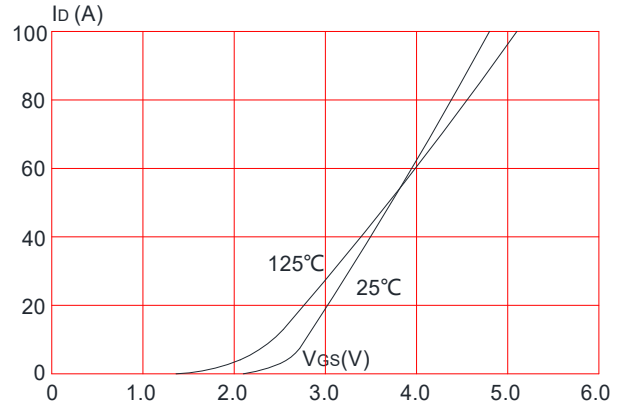


### Typical Performance Characteristics

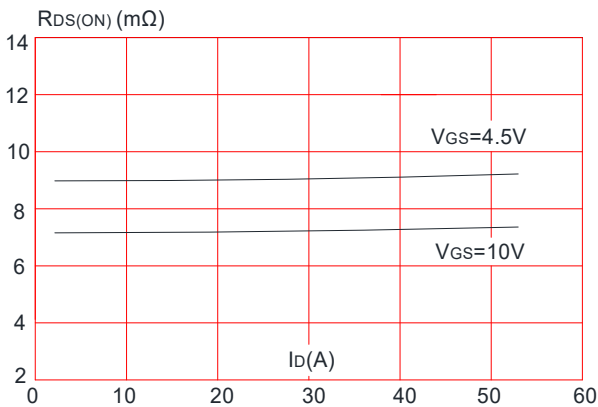
**Figure 1: Output Characteristics**



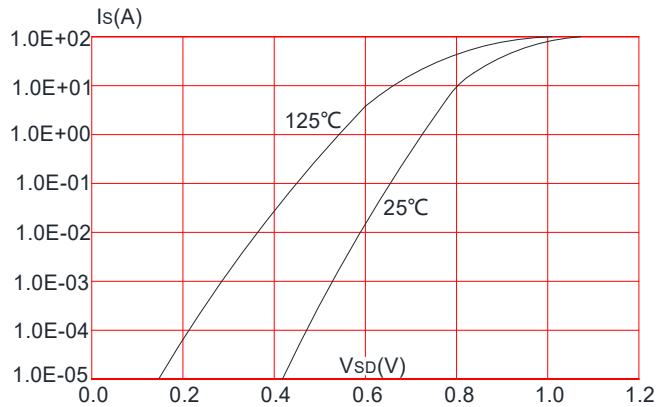
**Figure 2: Typical Transfer Characteristics**



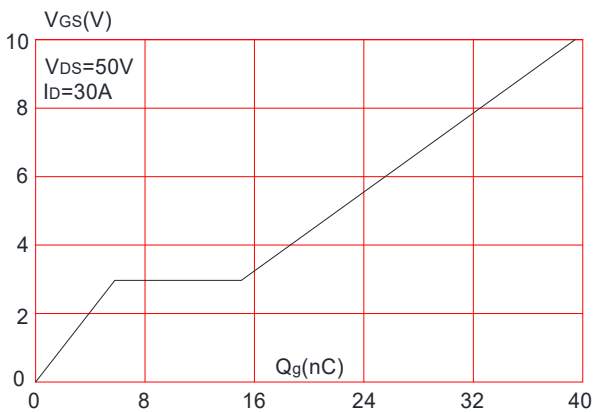
**Figure 3: On-resistance vs. Drain Current**



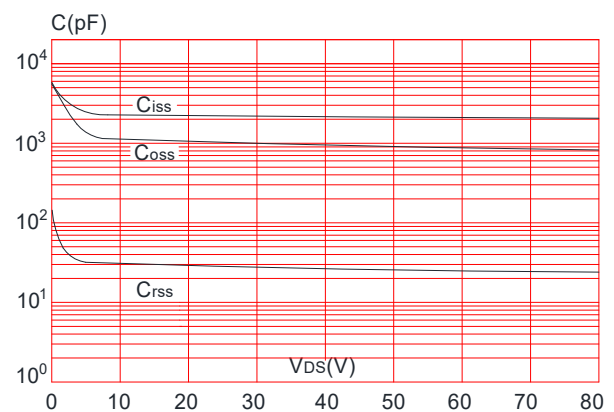
**Figure 4: Body Diode Characteristics**



**Figure 5: Gate Charge Characteristics**

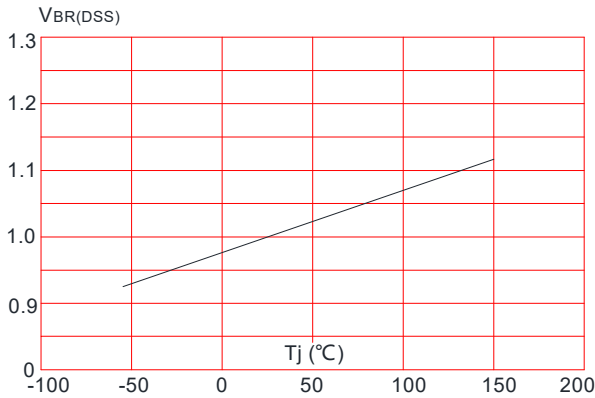


**Figure 6: Capacitance Characteristics**

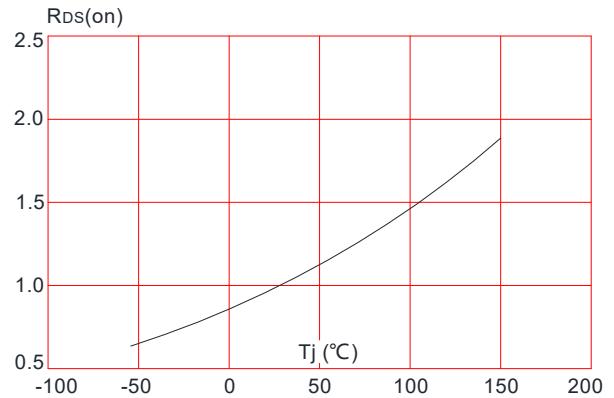




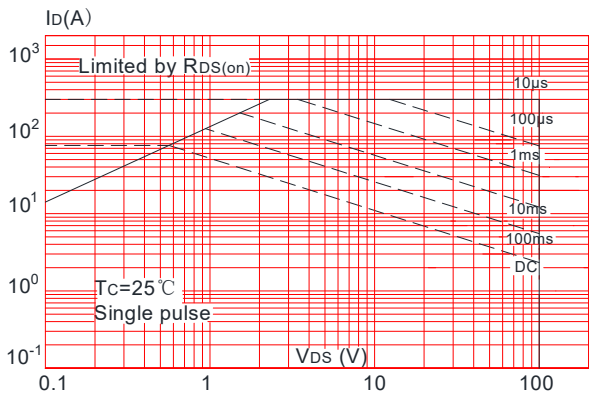
**Figure 7:** Normalized Breakdown Voltage vs. Junction Temperature



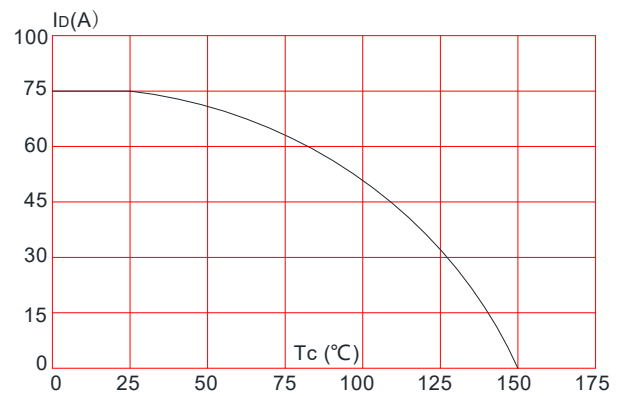
**Figure 8:** Normalized on Resistance vs. Junction Temperature



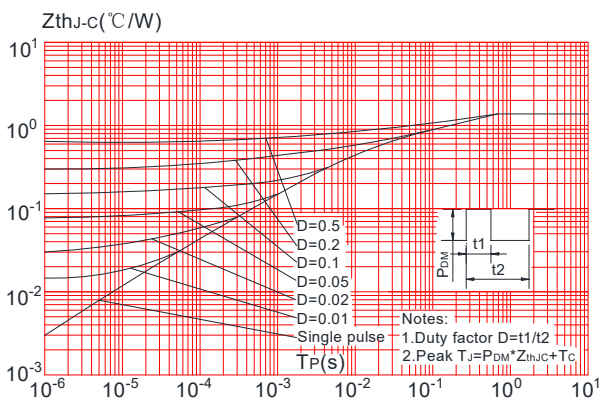
**Figure 9:** Maximum Safe Operating Area



**Figure 10:** Maximum Continuous Drain Current vs. Case Temperature



**Figure.11:** Maximum Effective Transient Thermal Impedance, Junction-to-Case





Test Circuit

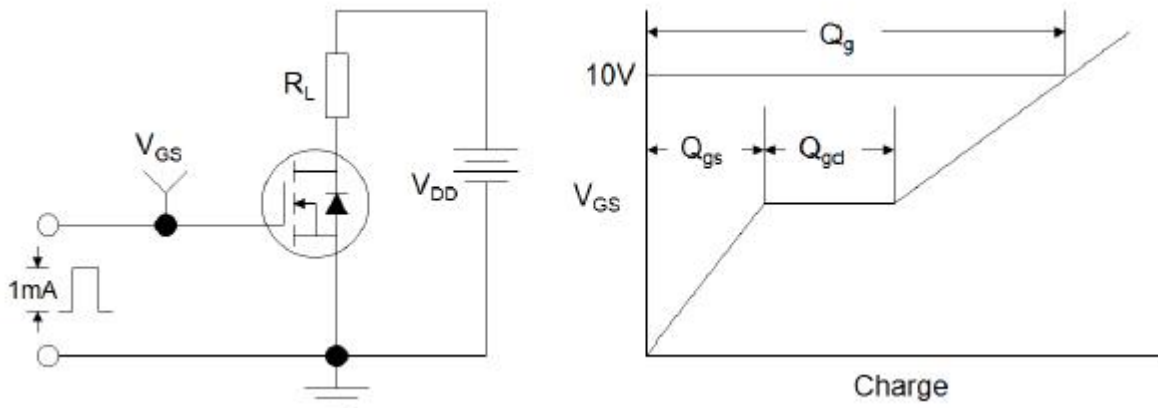


Figure1:Gate Charge Test Circuit & Waveform

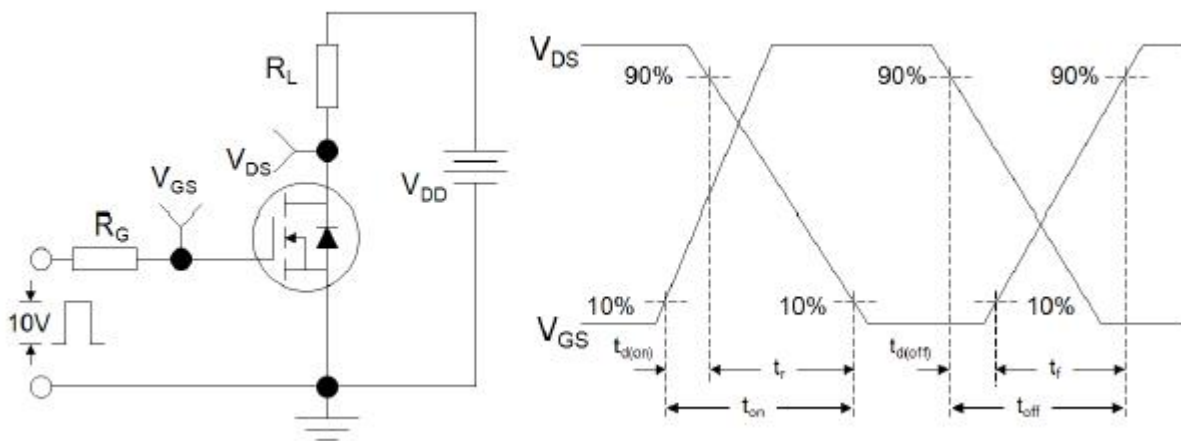


Figure 2: Resistive Switching Test Circuit & Waveforms

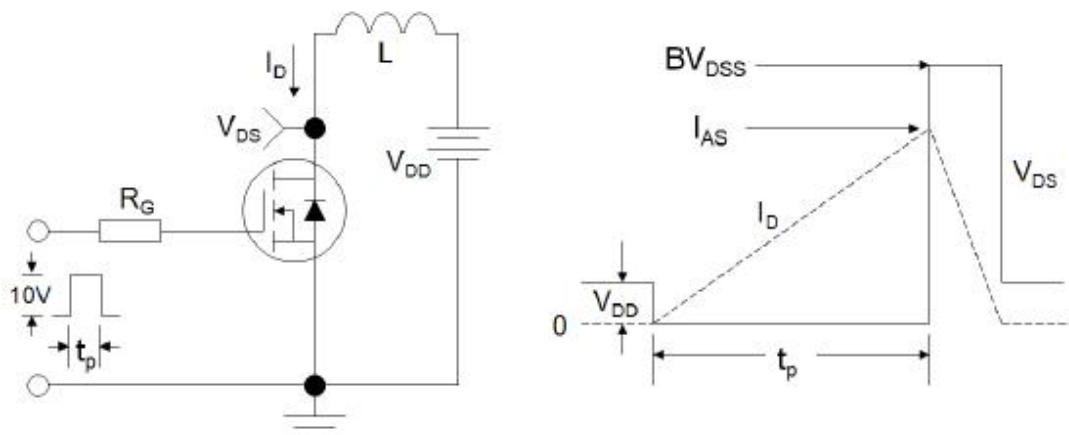
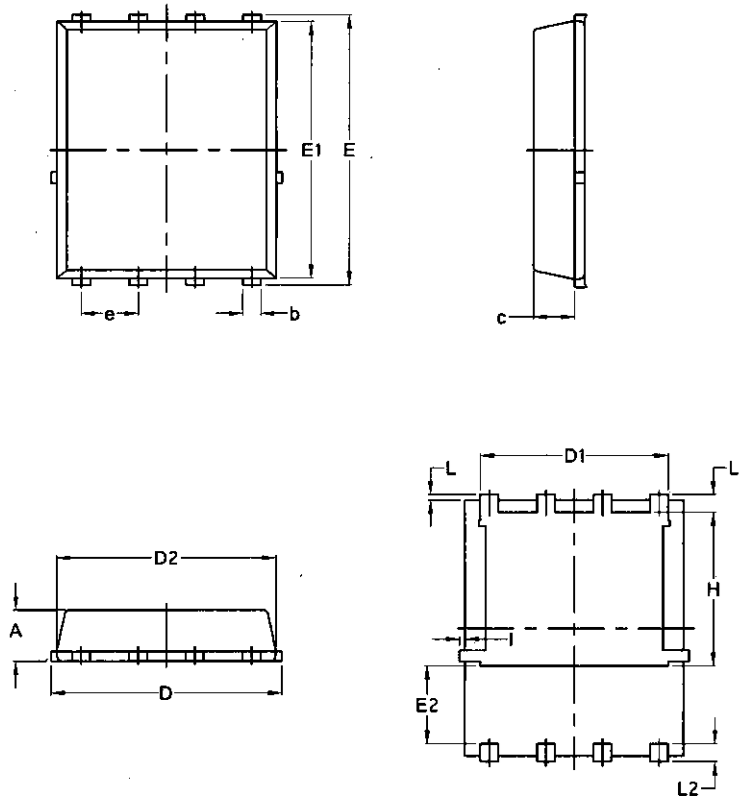


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-PDFN5060-8L- Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070



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