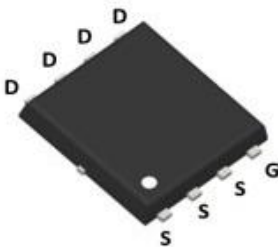
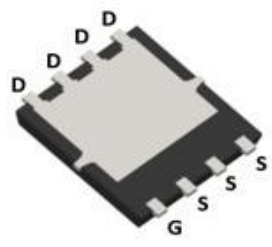
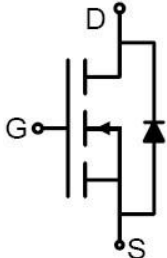




Description

<p>Features</p> <ul style="list-style-type: none"> • 30V, 100A $R_{DS(ON)} < 4.8m\Omega @ V_{GS} = 10V$ $R_{DS(ON)} < 7.5m\Omega @ V_{GS} = 4.5V$ • Advanced Trench Technology • Provide Excellent $R_{DS(ON)}$ and Low Gate Charge • Lead free product is acquired 	<p>Application</p> <ul style="list-style-type: none"> • Load Switch • PWM Application • Power management <p style="text-align: center;"><i>100% UIS TESTED!</i> <i>100% ΔV_{ds} TESTED!</i></p>	
 <p>PDFN5×6-8L</p>	 <p>Marking and pin Assignment</p>	 <p>Schematic Diagram</p>

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	30	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _C = 25°C	100
		T _C = 100°C	54
I _{DM}	Pulsed Drain Current ^{note1}	300	A
E _{AS}	Single Pulsed Avalanche Energy ^{note2}	196	mJ
P _D	Power Dissipation	56	W
R _{θJC}	Thermal Resistance, Junction to Case	2.38	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +175	°C



Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V,$	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=30A$	-	3.2	4.8	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	5.4	7.5	
Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0\text{MHz}$	-	2760	-	pF
C_{oss}	Output Capacitance		-	398	-	pF
C_{rss}	Reverse Transfer Capacitance		-	360	-	pF
Q_g	Total Gate Charge	$V_{DS}=15V, I_D=30A,$ $V_{GS}=10V$	-	32	-	nC
Q_{gs}	Gate-Source Charge		-	7.8	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	11.4	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=15V,$ $I_D=30A, R_{GEN}=3\Omega,$ $V_{GS}=10V$	-	36	-	ns
t_r	Turn-on Rise Time		-	31	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	82	-	ns
t_f	Turn-off Fall Time		-	38	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	100	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	300	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
t_{rr}	Body Diode Reverse Recovery Time	$I_F=20A, di/dt=100A/\mu s$	-	28	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	21	-	nC

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

2. EAS condition: $T_J=25^\circ\text{C}, V_{DD}=20V, V_G=10V, R_G=25\Omega, L=0.5\text{Mh}, I_{AS}=28A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Figure 1: Output Characteristics

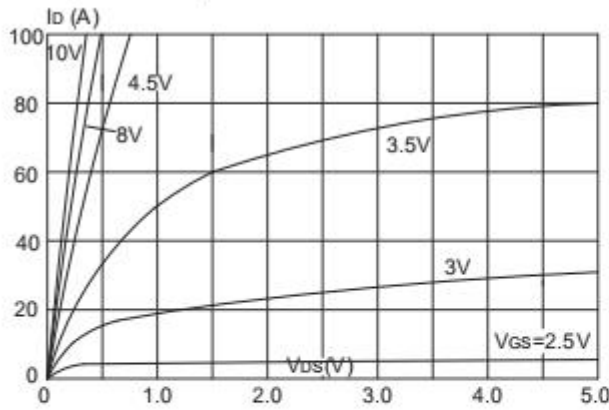


Figure 2: Typical Transfer Characteristics

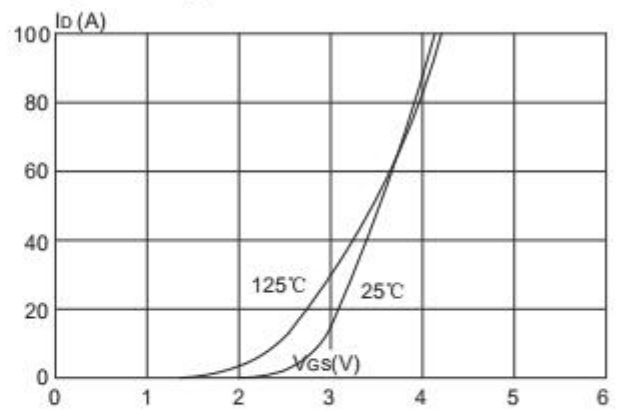


Figure 3: On-resistance vs. Drain Current

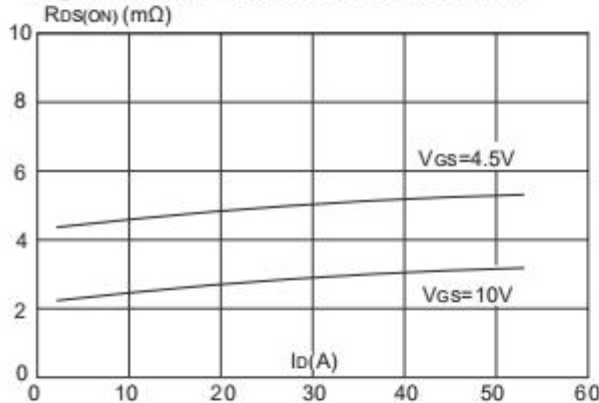


Figure 4: Body Diode Characteristics

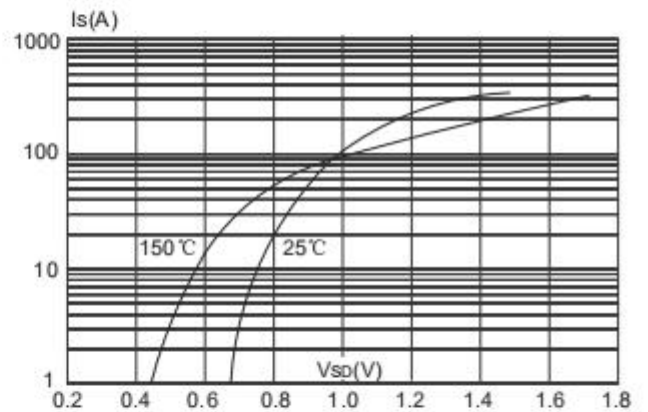


Figure 5: Gate Charge Characteristics

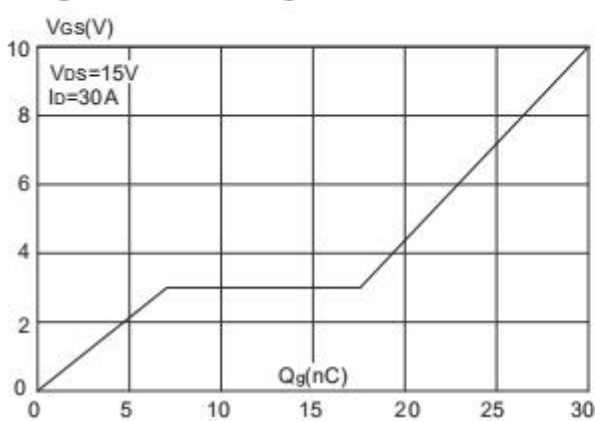


Figure 6: Capacitance Characteristics

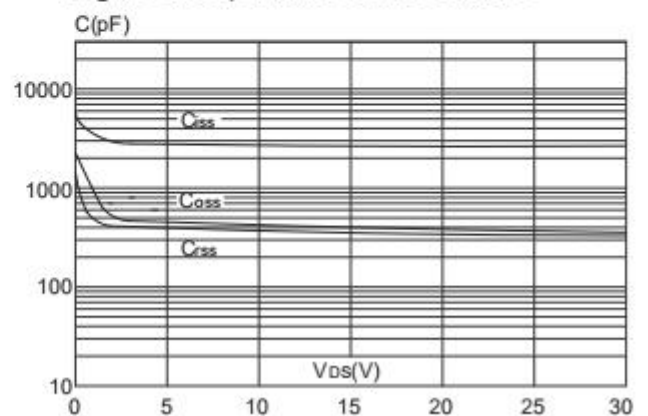




Figure 7. Maximum Safe Operating Area

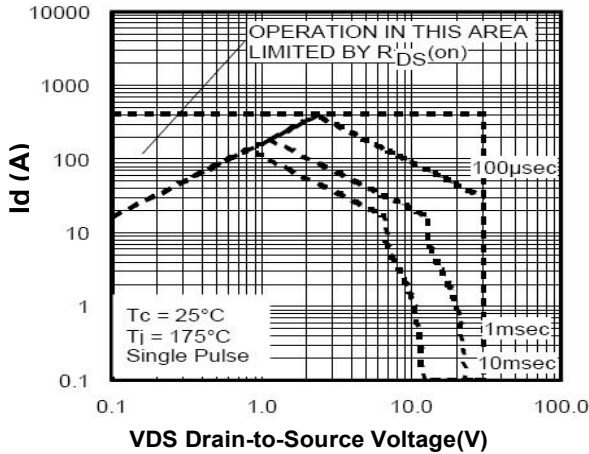


Figure 8. $R_{DS(ON)}$ vs Junction Temperature

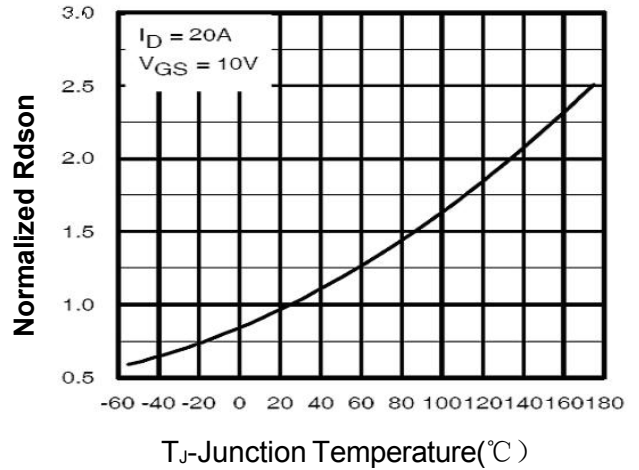


Figure 9. $V_{GS(th)}$ vs Junction Temperature

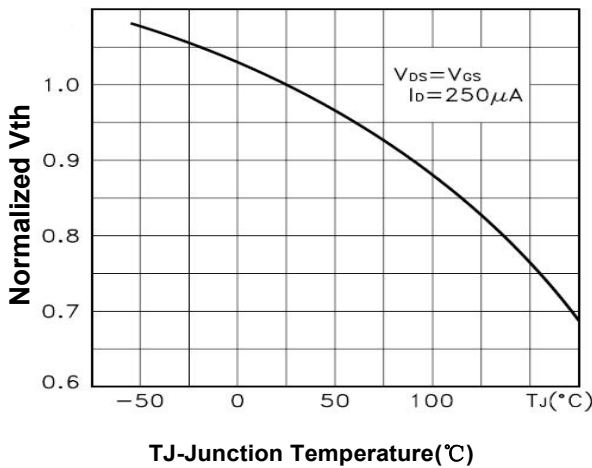
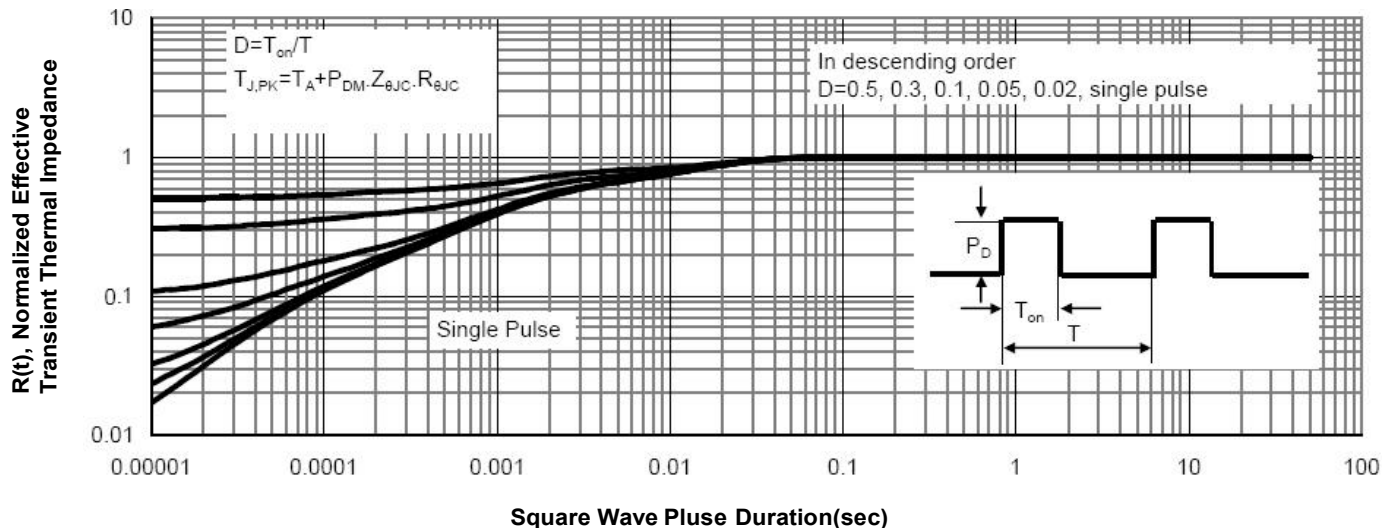


Figure 11. Normalized Maximum Transient Thermal Impedance



Test Circuit

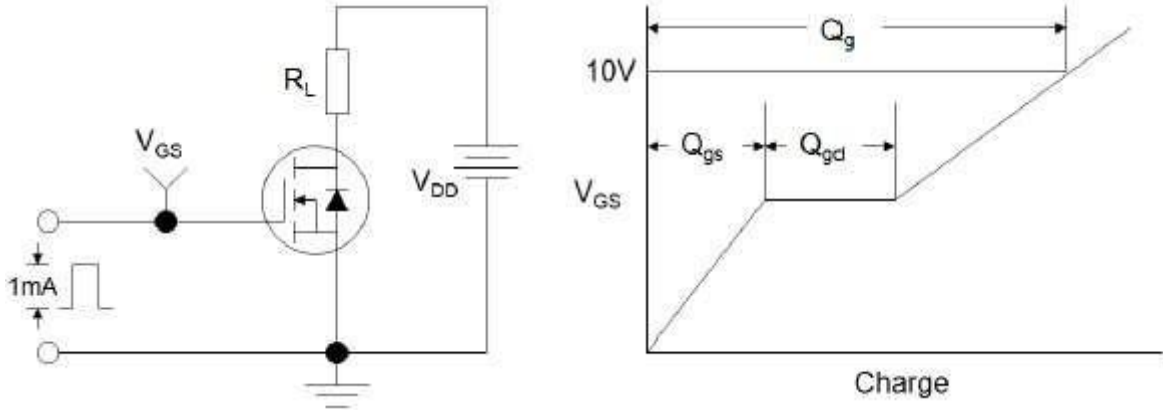


Figure 1: Gate Charge Test Circuit & Waveform

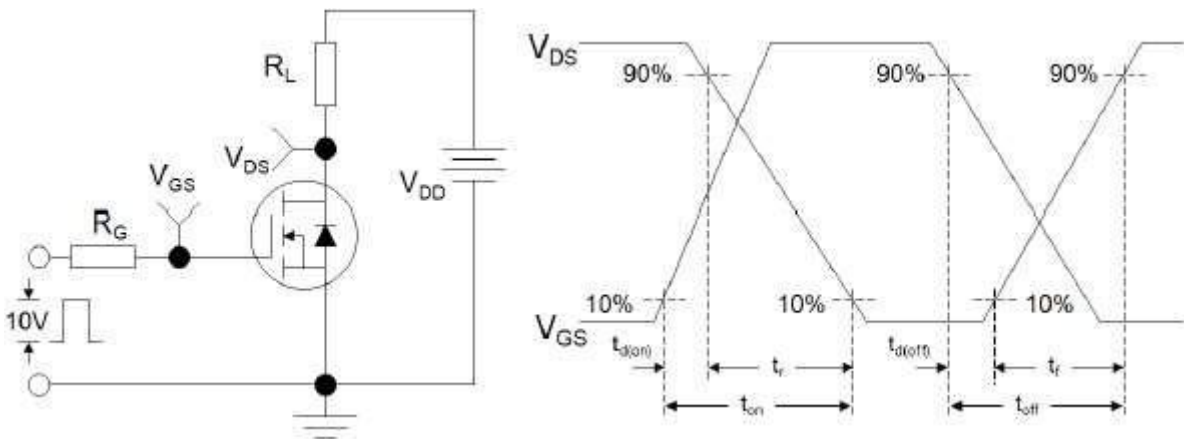


Figure 2: Resistive Switching Test Circuit & Waveforms

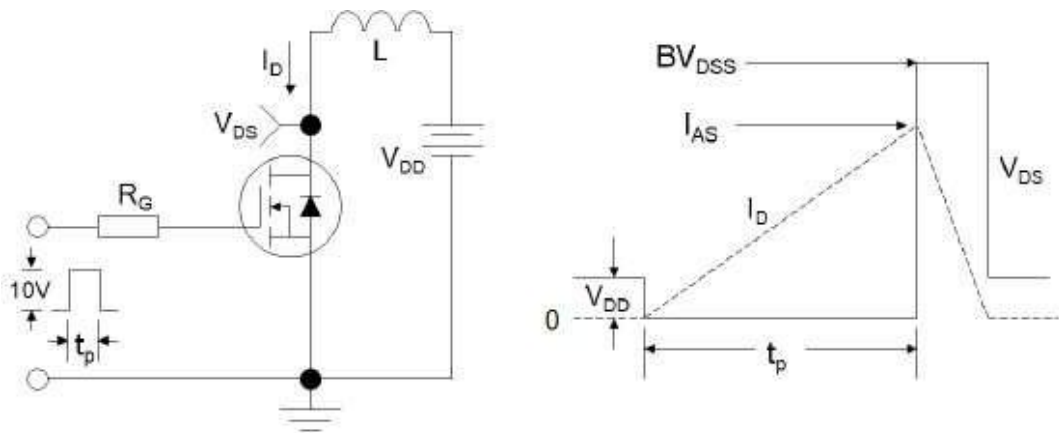
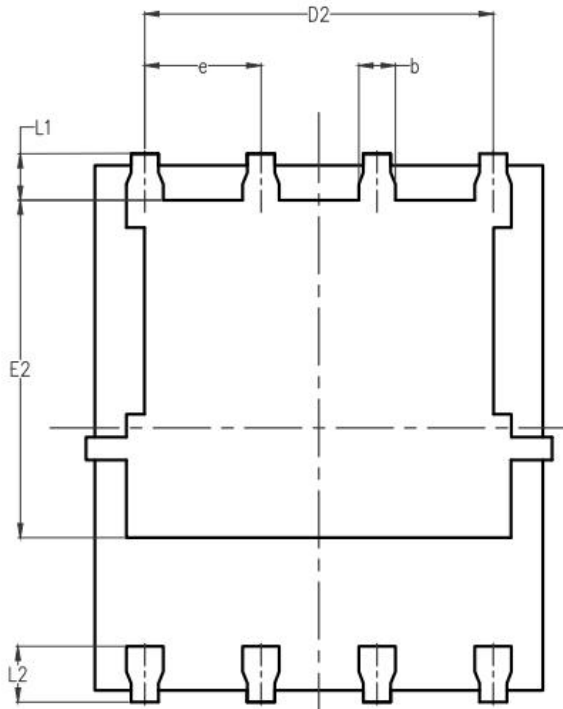
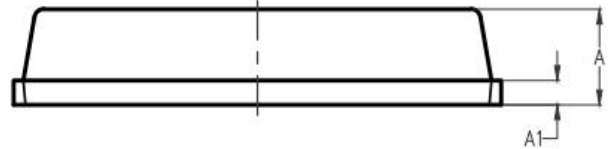
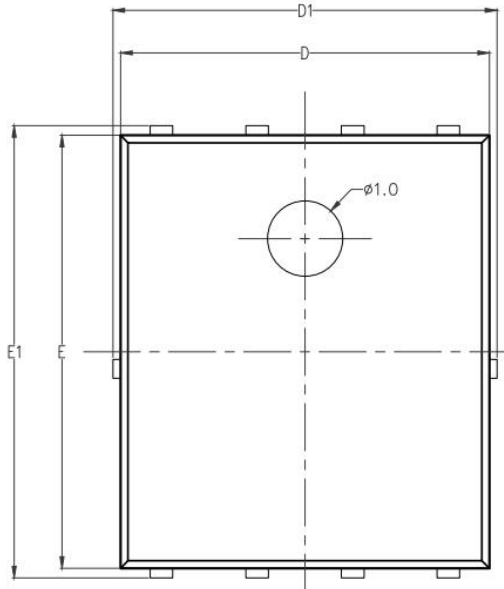


Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms



PDFN5x6-8L Package Information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.95	1.00	1.05
A1	0.254REF.		
b	0.41	0.46	0.51
D	4.85	4.90	4.95
D1	4.90	5.00	5.10
D2	3.766	3.816	3.866
E	5.696	5.746	5.796
E1	5.95	6.00	6.05
E2	3.525	3.575	3.625
e	1.22	1.27	1.32
L1	0.46	0.51	0.56
L2	0.56	0.61	0.66