

**Features**

- 100V, 75A  
 $R_{DS(ON)} < 9.2m\Omega @ V_{GS} = 10V$   
 $R_{DS(ON)} < 13.5m\Omega @ V_{GS} = 4.5V$
- Advanced Split Gate Trench Technology
- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- Lead free product is acquired

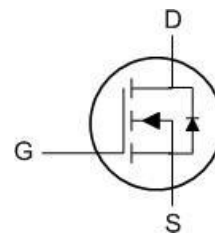
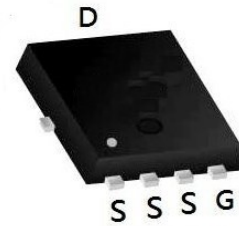

**Product Summary**

BVDSS	RDS(ON)	ID
100V	7.3 mΩ	75 A

**Application**

- Load Switch
- PWM Application
- Power management

*100% UIS TESTED!*  
*100% ΔVds TESTED!*

**PRPAK5X6 Pin Configuration**

**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	$T_C = 25^\circ C$	75	A
		$T_C = 100^\circ C$	49	A
$I_{DM}$	Pulsed Drain Current <sup>note1</sup>	300	A	
$E_{AS}$	Single Pulsed Avalanche Energy <sup>note2</sup>	90	mJ	
$P_D$	Power Dissipation	$T_C = 25^\circ C$	97	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.3	°C/W	
$T_J, T_{STG}$	Operating and Storage Temperature Range	-55 to +150	°C	

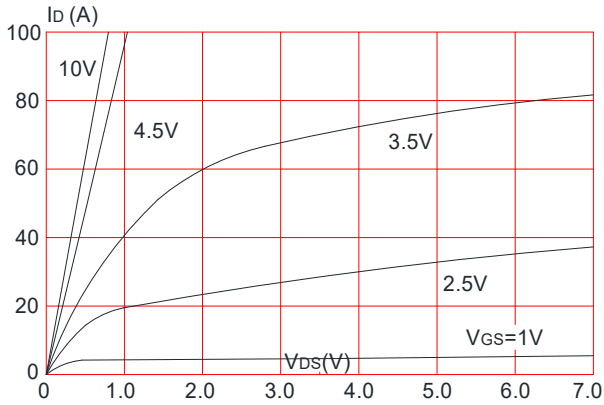
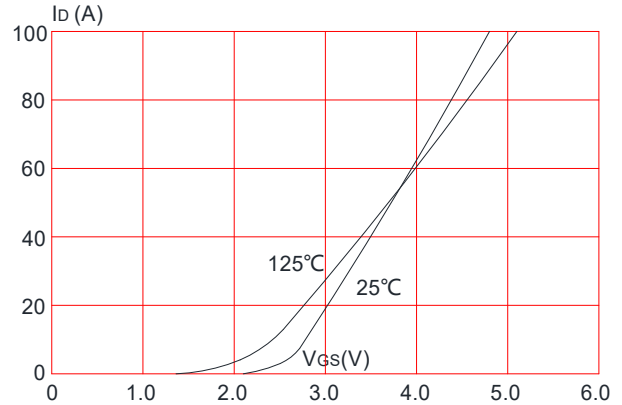
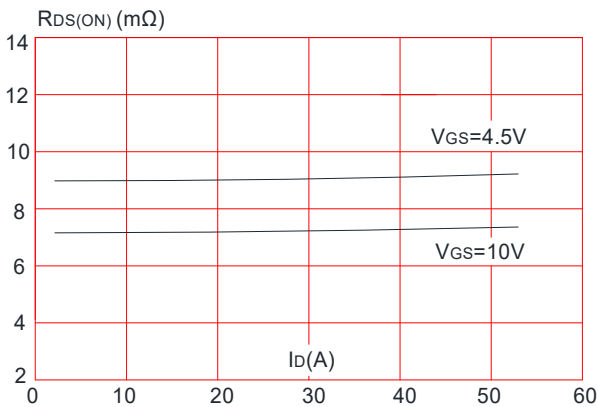
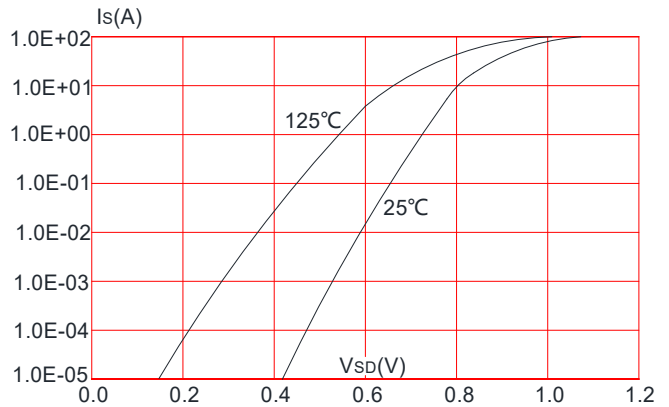
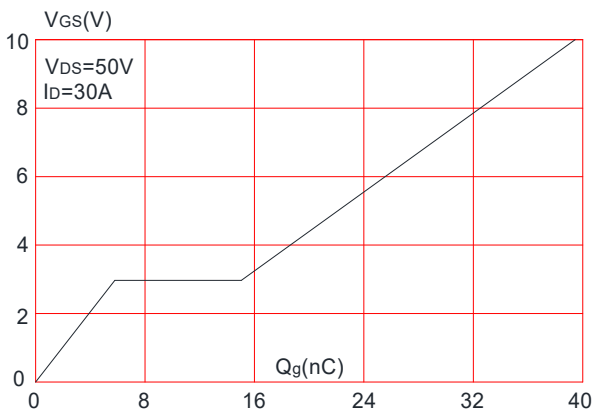
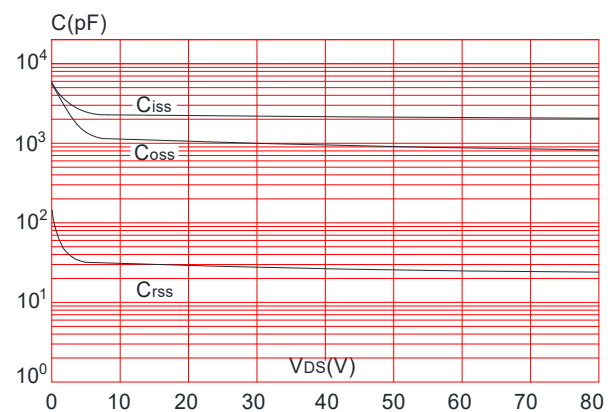
**N-Ch 100V Fast Switching MOSFETs**
**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

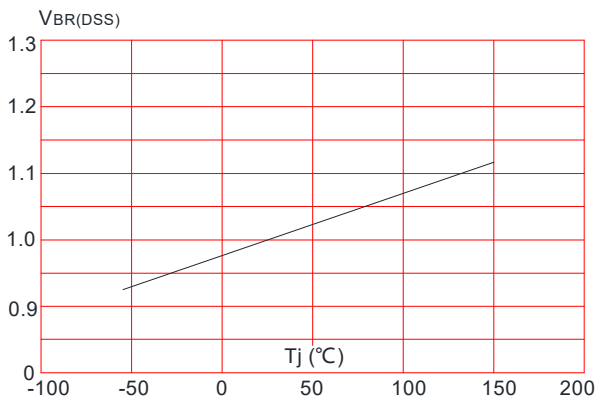
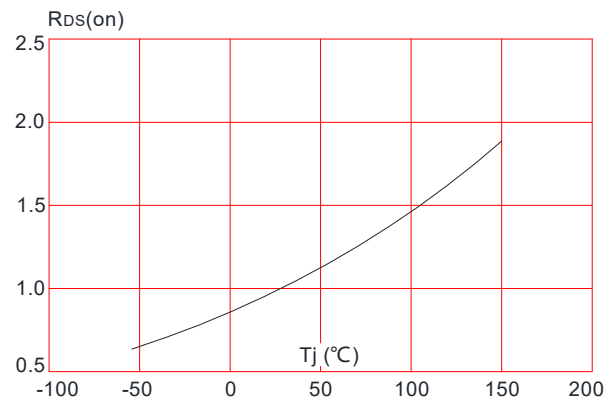
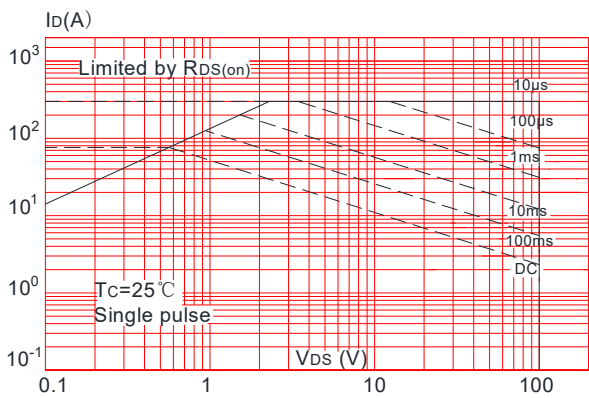
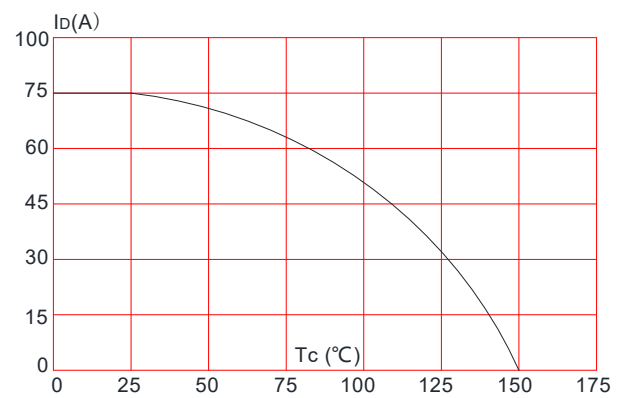
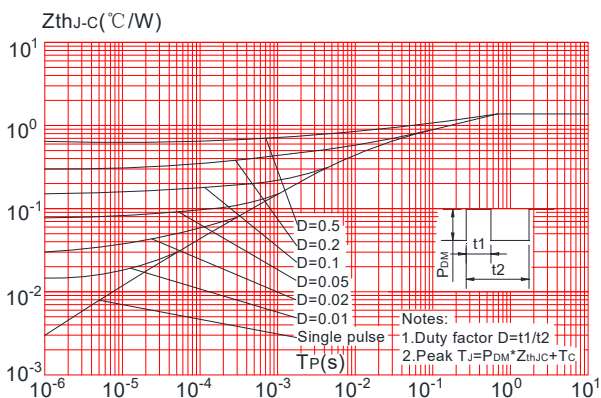
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V,$	-	-	1.0	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.6	2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance <small>note3</small>	$V_{GS}=10V, I_D=20A$	-	7.3	9.2	m $\Omega$
		$V_{GS}=4.5V, I_D=8A$	-	9	13.5	m $\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=50V, V_{GS}=0V,$ $f=1.0MHz$	-	2046	-	pF
$C_{oss}$	Output Capacitance		-	865	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	25	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=50V, I_D=30A,$ $V_{GS}=10V$	-	39.4	-	nC
$Q_{gs}$	Gate-Source Charge		-	5.2	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	9.8	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=50V, I_D=25A,$ $R_G=6\Omega, V_{GS}=10V$	-	20	-	ns
$t_r$	Turn-on Rise Time		-	5.2	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	49	-	ns
$t_f$	Turn-off Fall Time		-	12	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	75	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	V
$t_{rr}$	Body Diode Reverse Recovery Time	$T_J=25^\circ\text{C},$ $I_F=12A, di/dt=100A/\mu s$	-	49	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	85	-	nC

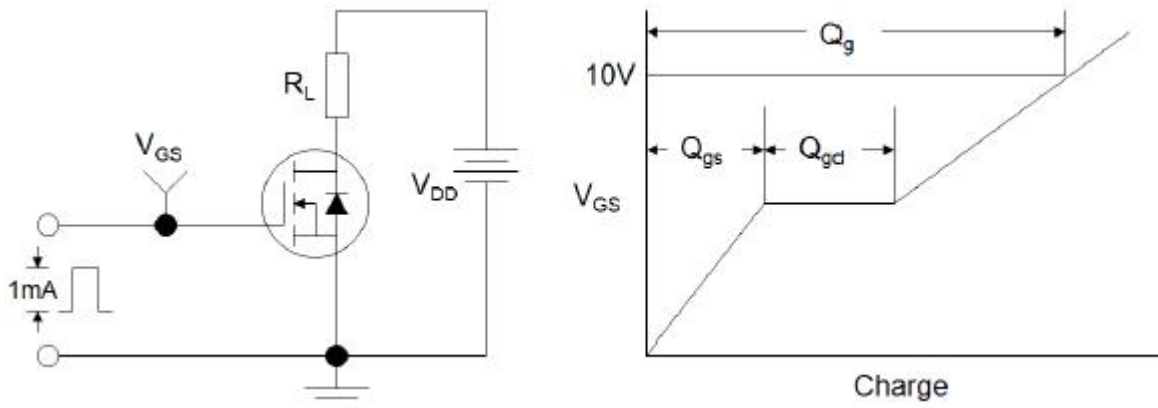
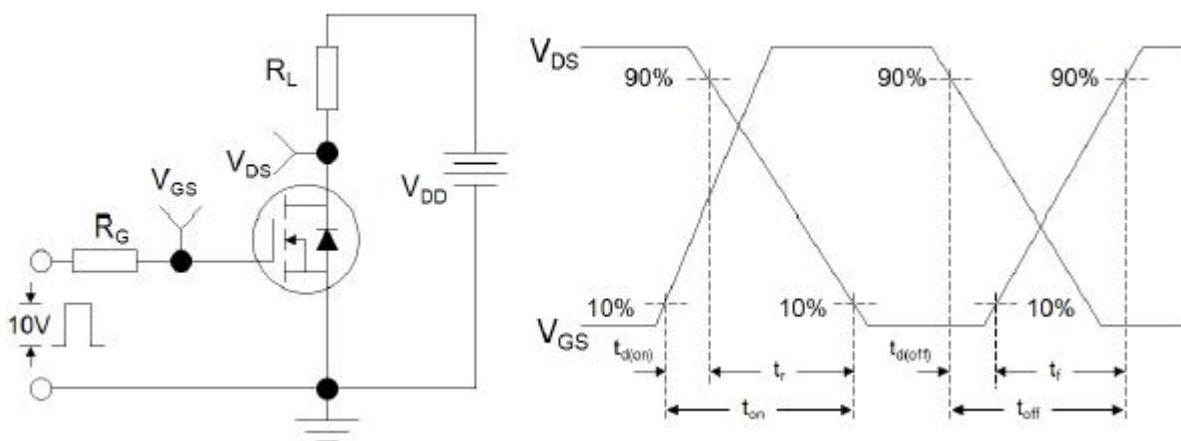
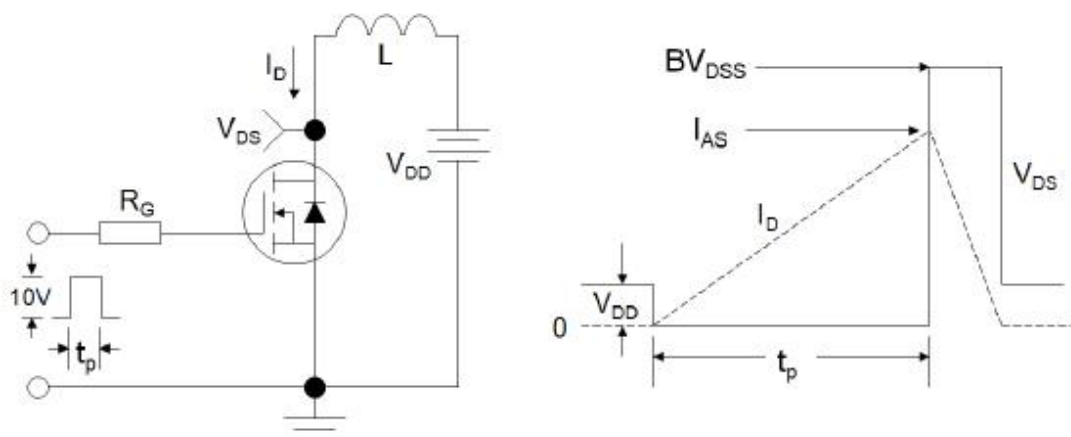
Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

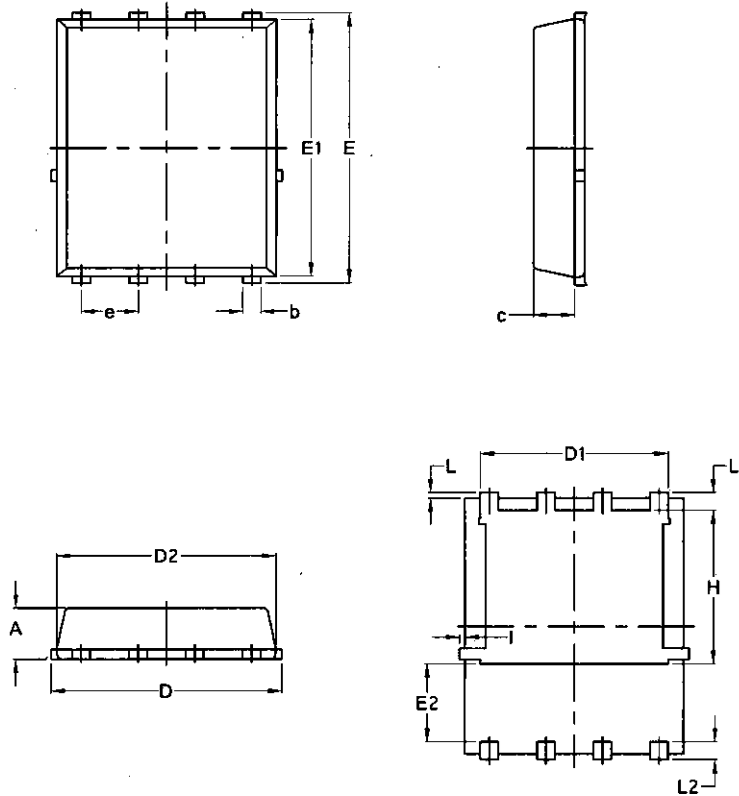
2. EAS condition:  $T_J=25^\circ\text{C}, V_{DD}=50V, V_G=10V, R_G=25\Omega, L=0.5mH, I_{AS}=19A$

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

**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**


**N-Ch 100V Fast Switching MOSFETs**
**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-PDFN5\*6-8L- Single**


Symbol	Common			
	mm		Inch	
	Min	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