

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
-20V	1.8m Ω @-4.5V	-95A
	2.2m Ω @-2.5V	
	3.2m Ω @-1.8V	

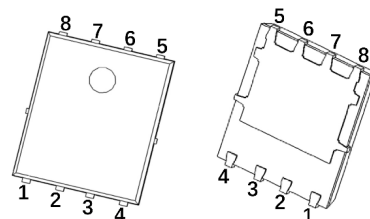
Feature

- Trench Technology Power MOSFET
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested

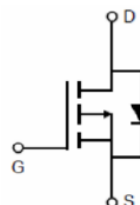
Application

- Power Switching Application
- DC/DC Converter

PDFN5X6-8L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPM018P02UNC	PDFN5X6-8L	M018P02U	Reel & Tape	330mm	12mm	5000pcs

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	-20	V
Gate - Source Voltage		V_{GS}	± 12	V
Continuous Drain Current ¹	$T_C = 25^{\circ}\text{C}$	I_D	-95	A
	$T_C = 100^{\circ}\text{C}$	I_D	-62	A
Pulsed Drain Current ²		I_{DM}	-380	A
Single Pulsed Avalanche Current ³		I_{AS}	-45	A
Single Pulsed Avalanche Energy ³		E_{AS}	415	mJ
Power Dissipation ⁵		P_D	125	W
$T_C = 25^{\circ}\text{C}$				
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	43	$^{\circ}\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.0	$^{\circ}\text{C/W}$
Junction Temperature		T_J	150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^{\circ}\text{C}$

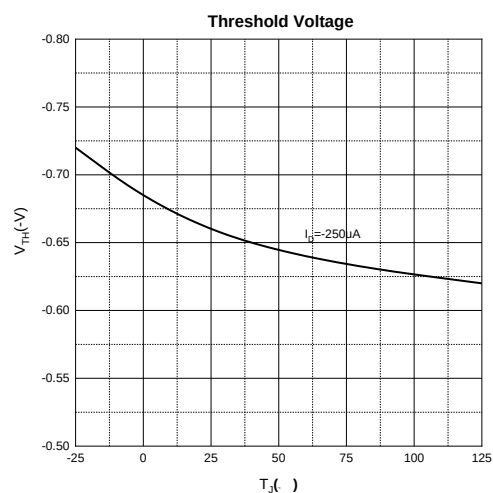
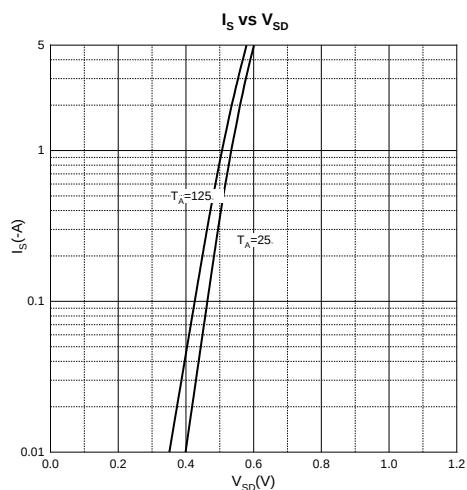
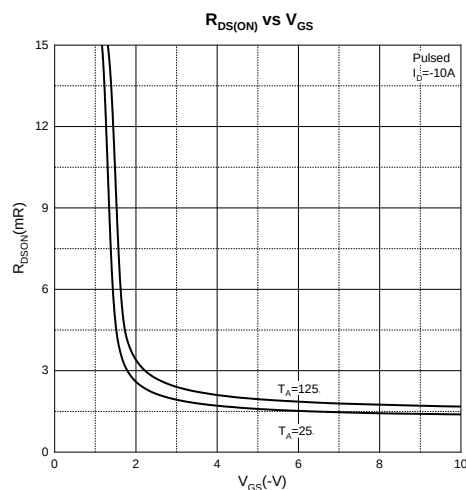
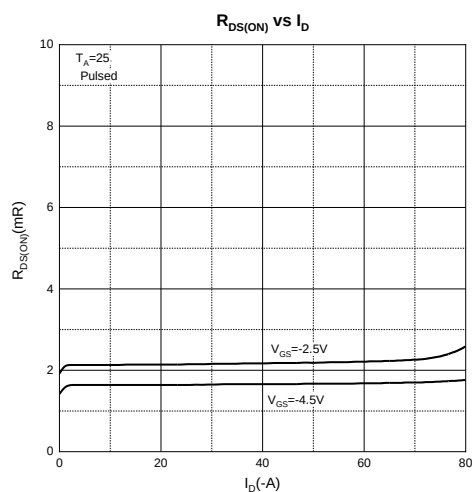
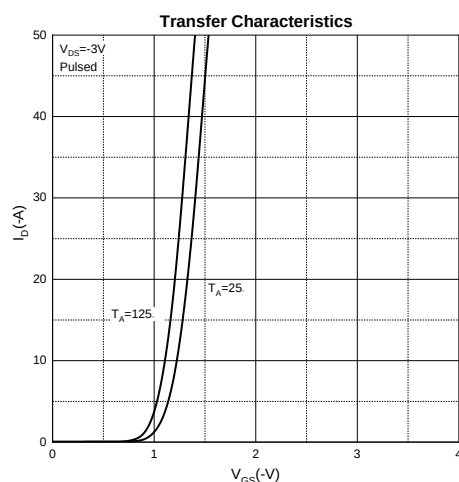
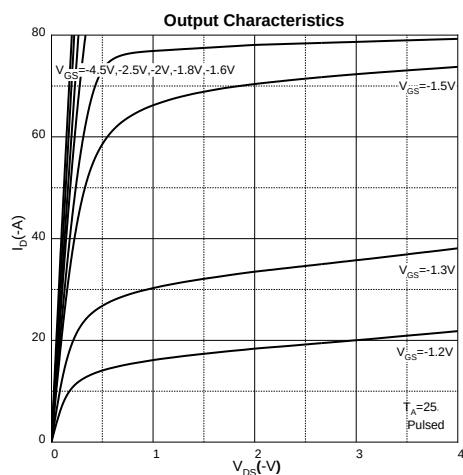
MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

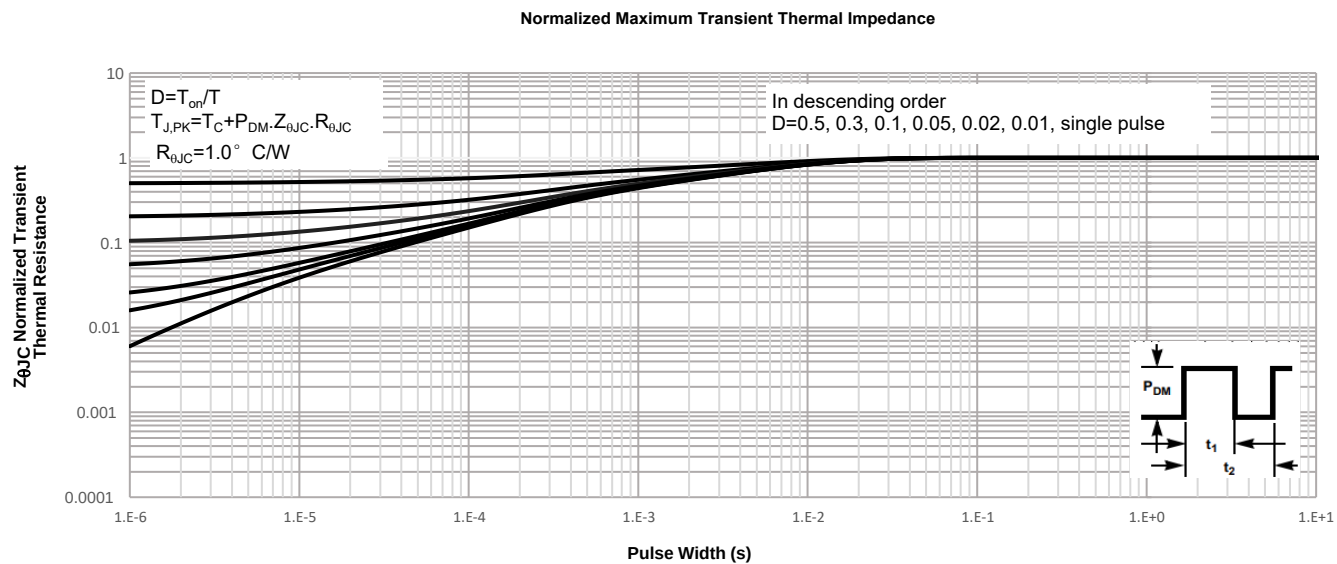
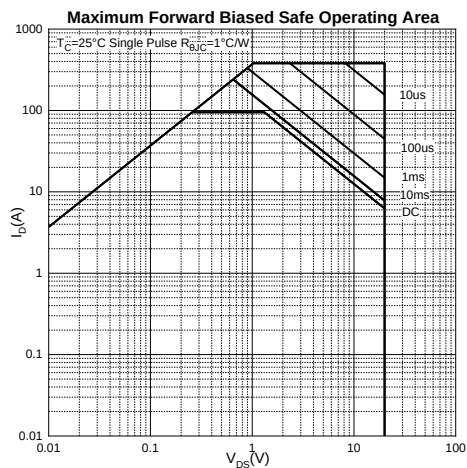
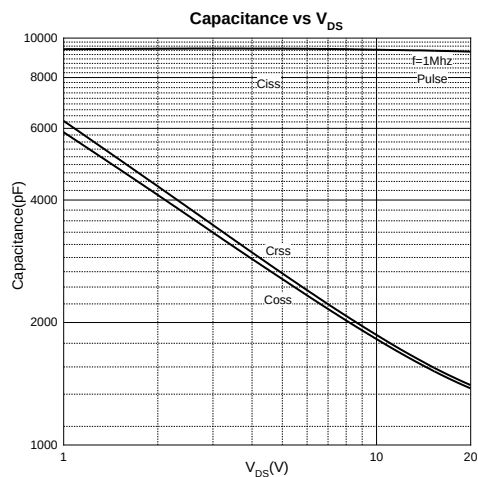
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 100	nA
On Characteristics ⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.7	-1.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -20A$		1.8	2.6	m Ω
		$V_{GS} = -2.5V, I_D = -20A$		2.2	3.6	
		$V_{GS} = -1.8V, I_D = -20A$		3.2	5.6	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$		9357		pF
Output Capacitance	C_{oss}			1816		
Reverse Transfer Capacitance	C_{rss}			1852		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		4.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = -20V, V_{GS} = -10V, I_D = -20A$		134		nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			66.2		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10V, V_{GS} = -10V, I_D = -30A,$ $R_G = 3\Omega$		15		ns
Turn-On Rise Time	t_r			50		
Turn-Off Delay Time	$t_{d(off)}$			250		
Turn-Off Fall Time	t_f			130		
Source - Drain Diode Characteristics						
Diode Forward Voltage ⁴	V_{SD}	$V_{GS} = 0V, I_S = -5A$			-1.2	V

Notes :

- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = -15V, V_{GS} = -10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- 4.Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- 5.The power dissipation P_D is limited by $T_{J(MAX)} = 150^\circ\text{C}$.And device mounted on a large heatsink
- 6.Device mounted on $1in^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics





Test Circuit

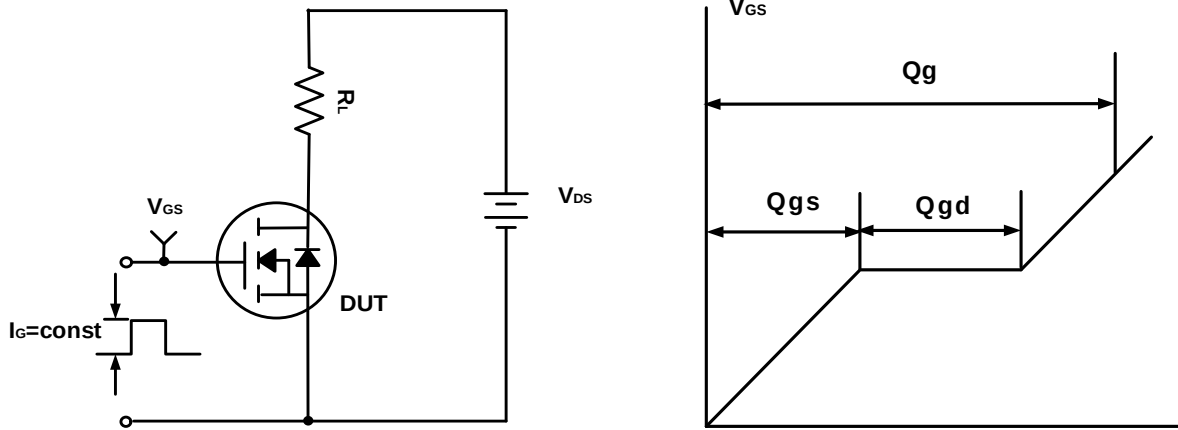


Figure A. Gate Charge Test Circuit & Waveforms

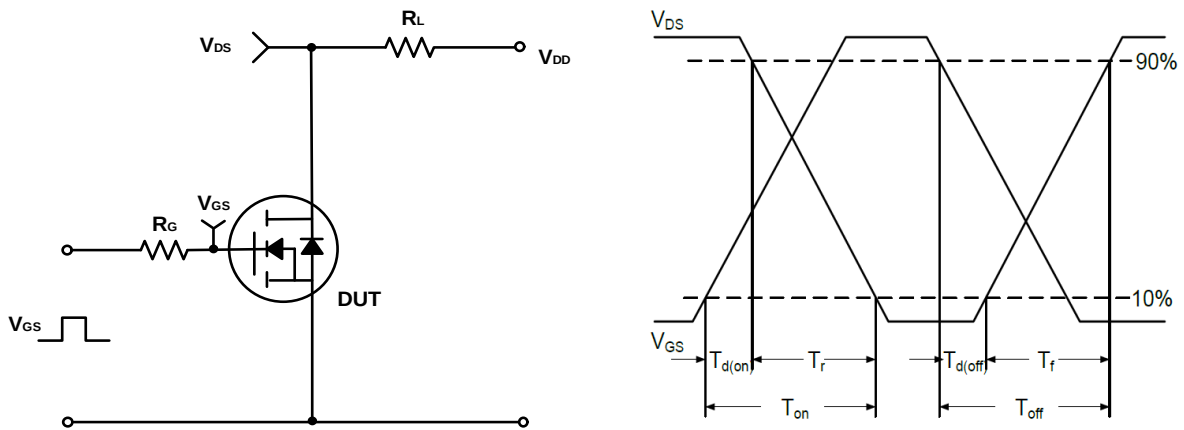


Figure B. Switching Test Circuit & Waveforms

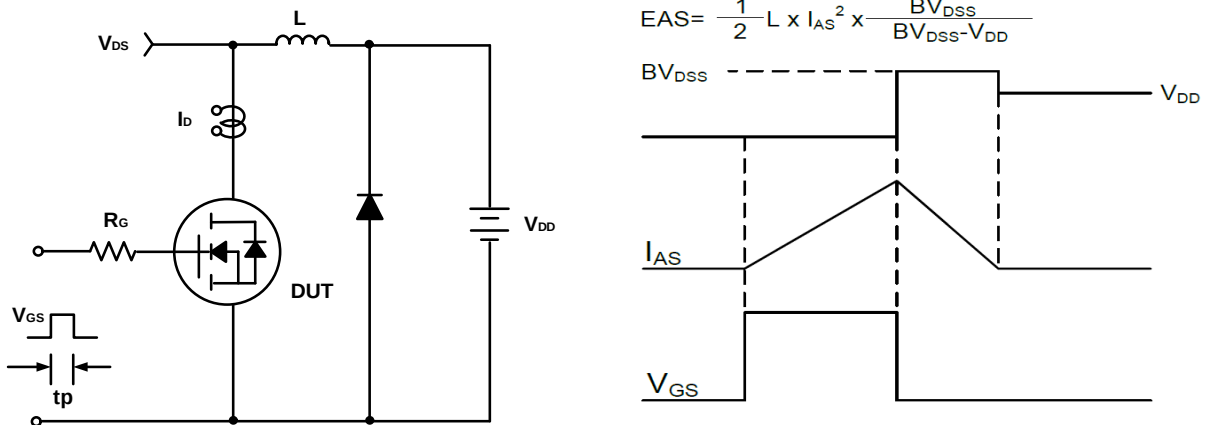
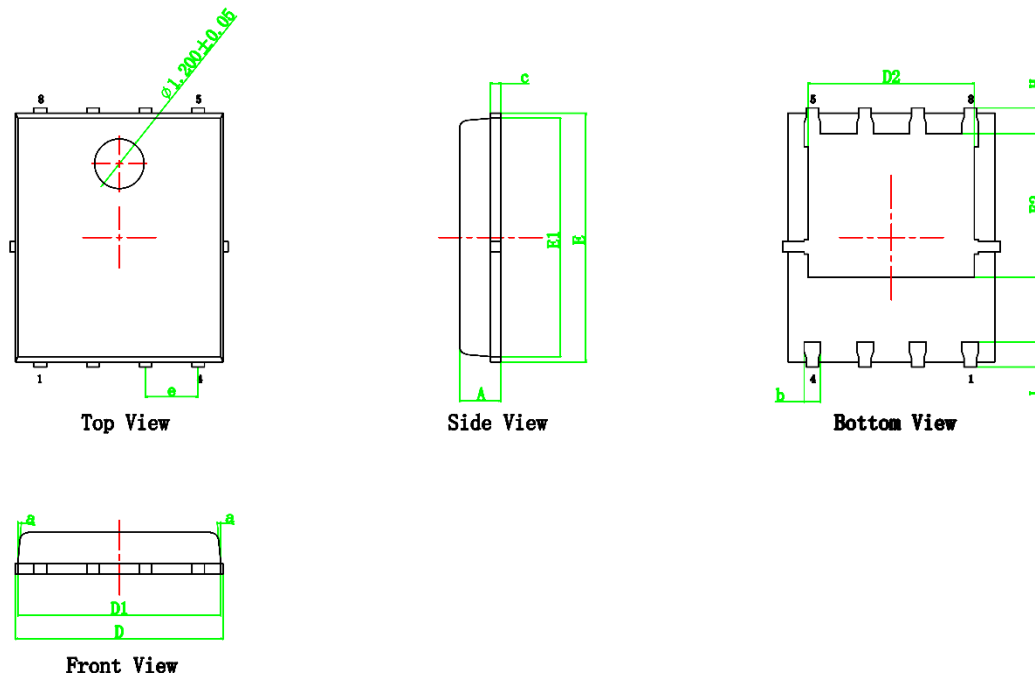


Figure C. Unclamped Inductive Switching Circuit & Waveforms

PDFN5X6-8L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
b	0.330	0.510	0.013	0.020
c	0.200	0.300	0.008	0.012
D	4.820	5.220	0.190	0.206
D2	3.910	4.110	0.154	0.162
E	5.900	6.100	0.232	0.240
E1	5.700	5.800	0.224	0.228
E2	3.370	3.570	0.133	0.141
e	1.270REF		0.050REF	
H	0.520	0.720	0.020	0.028
D1	4.800	5.000	0.189	0.197
L	0.510	0.710	0.020	0.028
a	0°	10°	0°	10°

Attention:

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
- Any and all semiconductor products have certain probability to fail or malfunction, which may result in personal injury, death or property damage. Customer are solely responsible for providing adequate safe measures when design their systems.
- GreenPower Electronics products belong to consumer electronics or other civilian electronic products.