

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
20V	3.2mΩ@4.5V	80A
	4.6mΩ@2.5V	

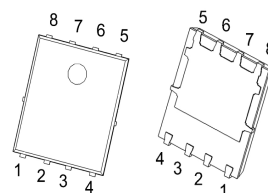
Feature

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

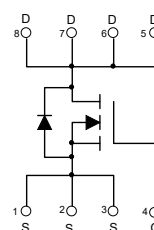
Application

- Power Management
- Load Switching

PDFN5X6-8L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPM032N02UNC	PDFN5X6-8L	M032N02U	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	80	A
	$T_C = 100^\circ\text{C}$		51	
Pulsed Drain Current ²		I_{DM}	320	A
Single Pulsed Avalanche Current ³		I_{AS}	27	A
Single Pulsed Avalanche Energy ³		E_{AS}	144	mJ
Power Dissipation ⁵		P_D	47	W
$T_C = 25^\circ\text{C}$				
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	2.65	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	$^\circ\text{C}$

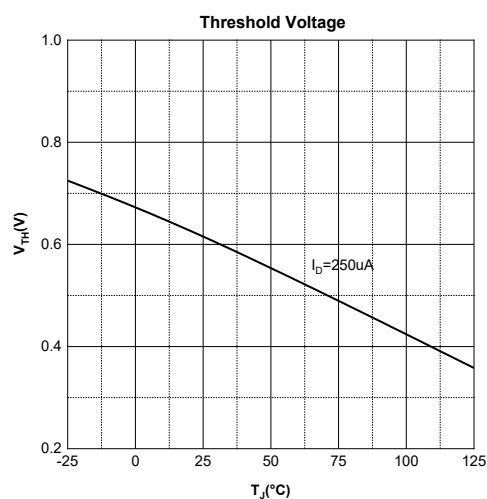
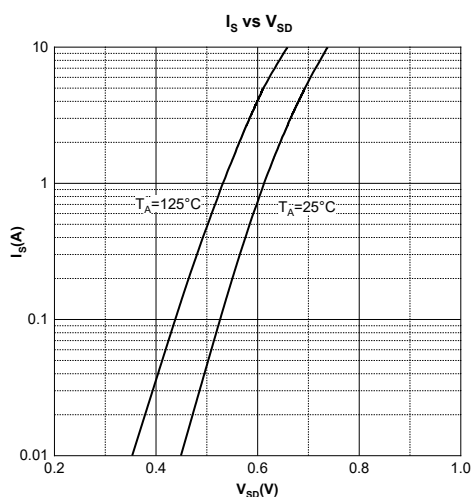
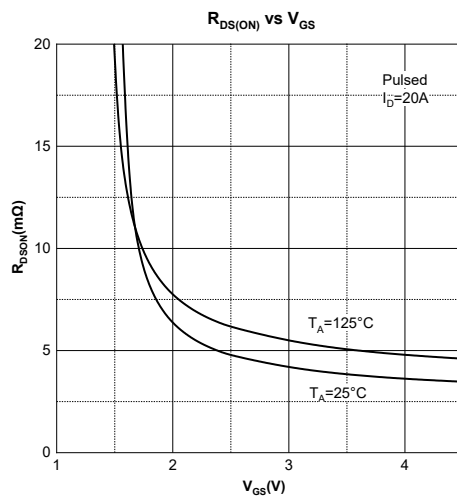
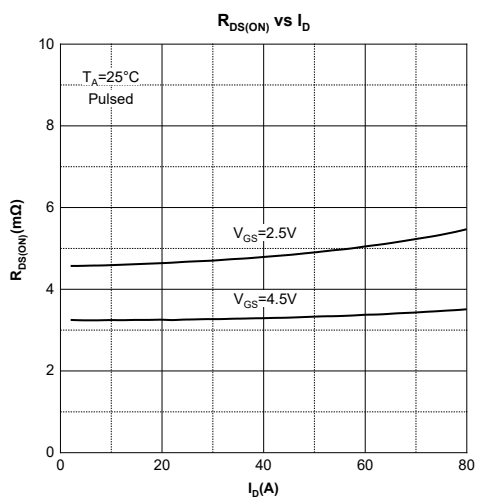
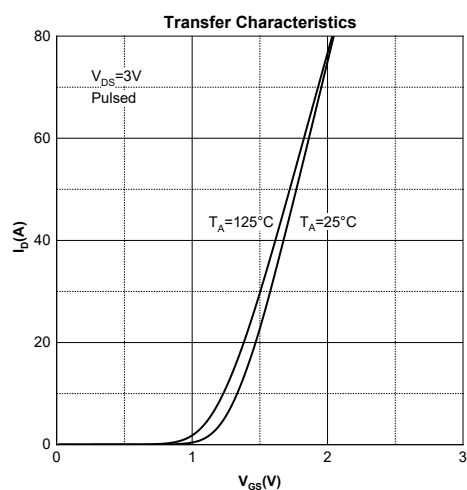
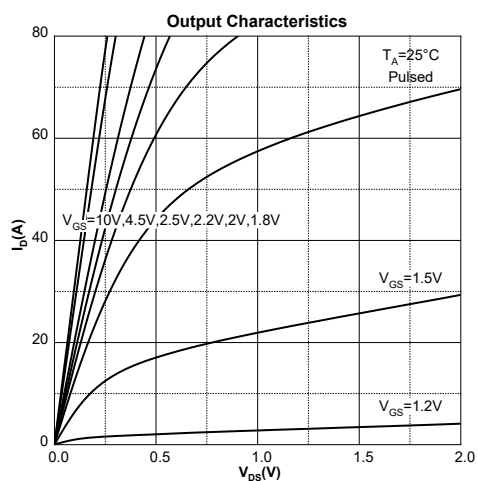
MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

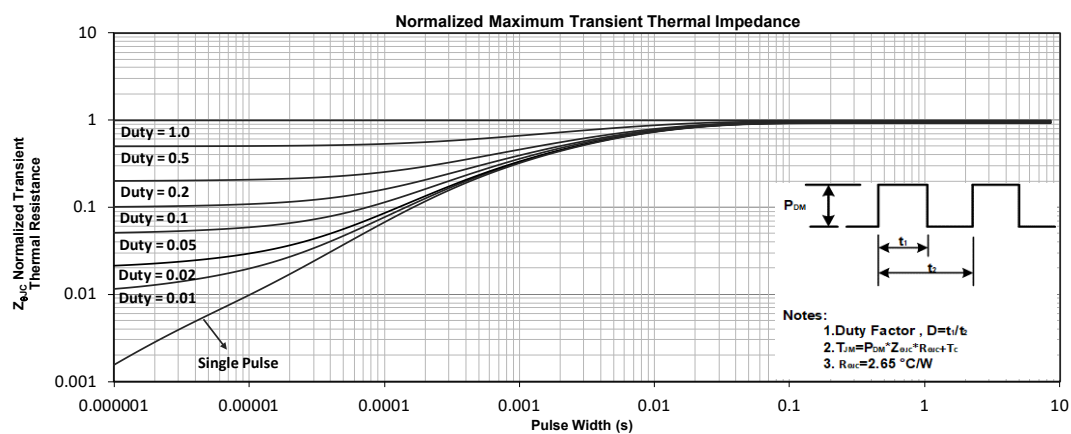
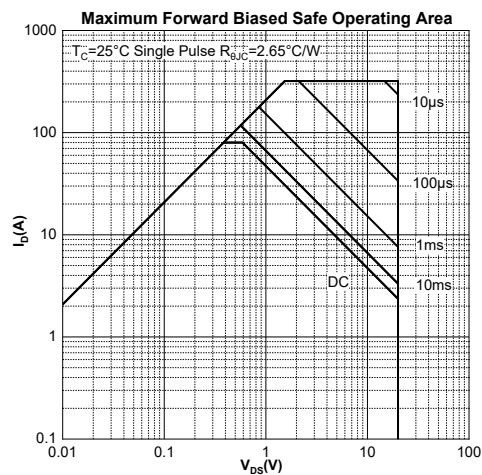
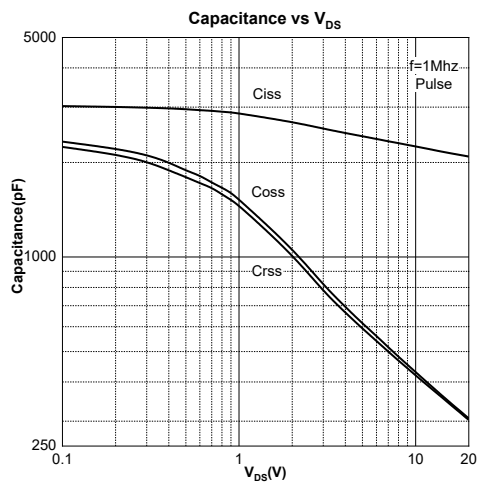
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20V, V _{GS} = 0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.4	0.7	1.1	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D = 20A		3.2	4.5	mΩ
		V _{GS} = 2.5V, I _D = 15A		4.6	7	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 10V, V _{GS} = 0V, f = 1MHz		2224		pF
Output Capacitance	C _{oss}			432		
Reverse Transfer Capacitance	C _{rss}			419		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		2.2		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 25A		40		nC
Gate-Source Charge	Q _{gs}			2.1		
Gate-Drain Charge	Q _{gd}			20		
Gate Plateau Voltage	V _{plateau}			1.5		V
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 4.5V, R _G = 3Ω, R _L = 0.75Ω		15		ns
Turn-On Rise Time	t _r			44		
Turn-Off Delay Time	t _{d(off)}			70		
Turn-Off Fall Time	t _f			22		
Source-Drain Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 10A			1.2	V
Diode Reverse Recovery Time	t _{rr}	I _F = 20A, dI/dt = 100A/μs		23		ns
Diode Reverse Recovery Charge	Q _{rr}			10		nC

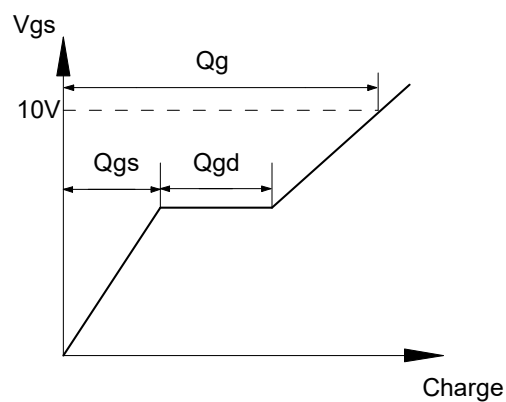
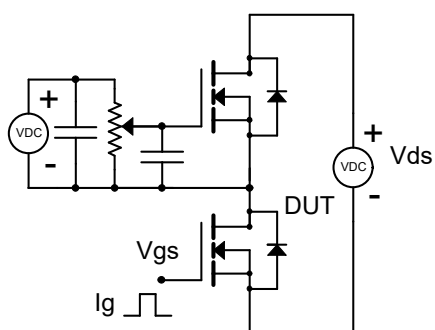
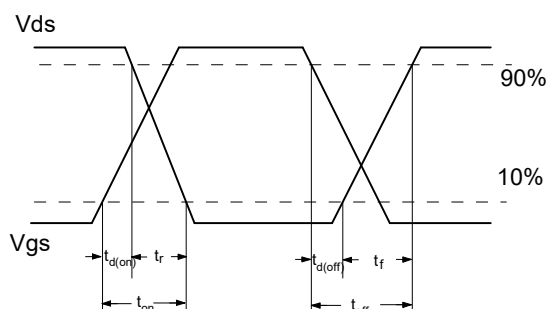
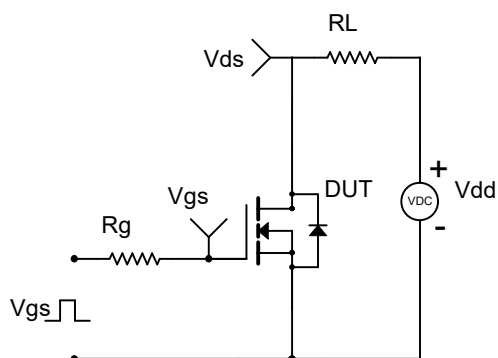
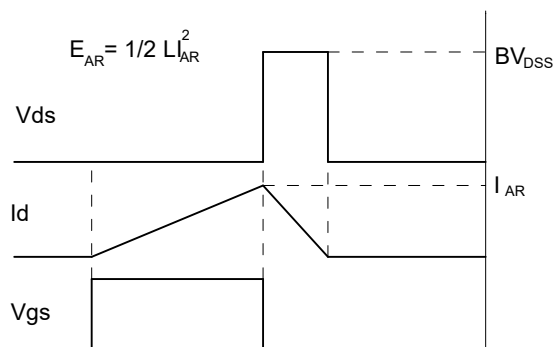
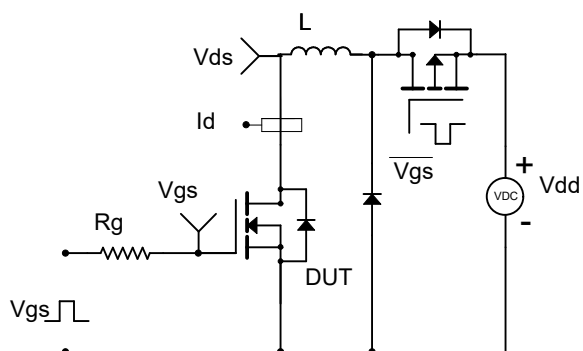
Notes:

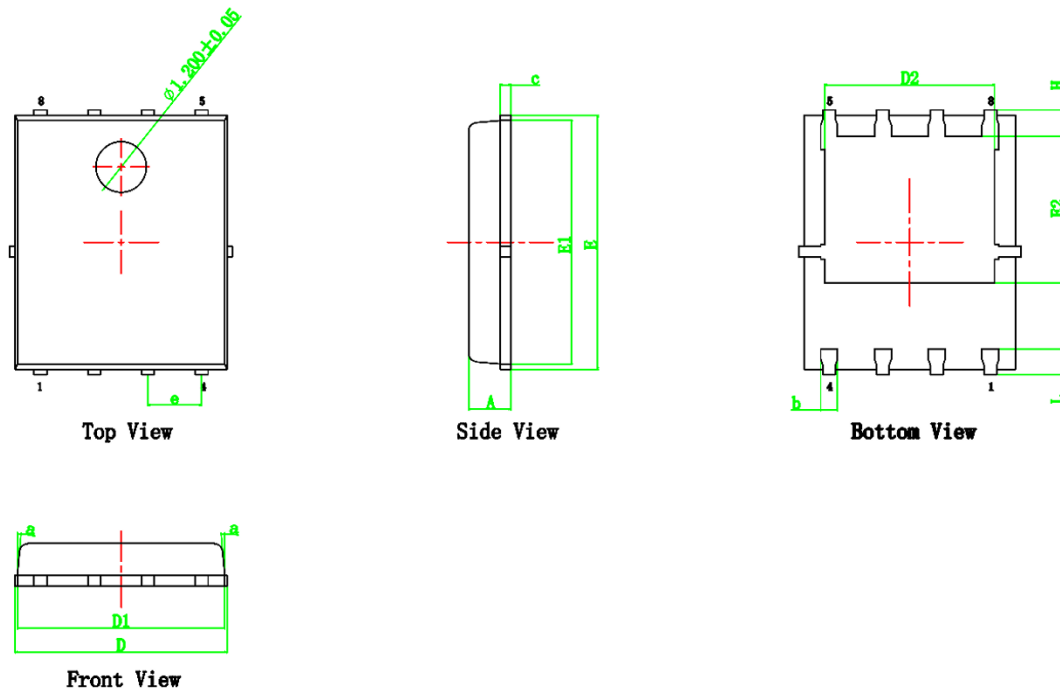
- 1.The maximum current rating is limited by package. And device mounted on a large heatsink.
- 2.Pulse Test: Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.EAS condition: V_{DD} = 20V, V_{GS} = 4.5V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.
- 4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P_D is limited by T_{J(MAX)} = 150°C. And device mounted on a large heatsink.
- 6.Device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics





Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveform

Unclamped Inductive Switching (UIS) Test Circuit & Waveforms


PDFN5X6-8L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.200	0.035	0.047
b	0.330	0.510	0.013	0.020
c	0.190	0.300	0.007	0.012
D	4.800	5.220	0.189	0.210
D2	3.900	4.300	0.154	0.170
E	5.900	6.100	0.232	0.240
E1	5.700	5.800	0.224	0.228
E2	3.350	3.750	0.132	0.148
e	1.270REF		0.050REF	
H	0.350	0.720	0.014	0.028
D1	4.800	5.000	0.189	0.197
L	0.350	0.750	0.014	0.030
a	0°	12°	0°	12°

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.