

Product Summary

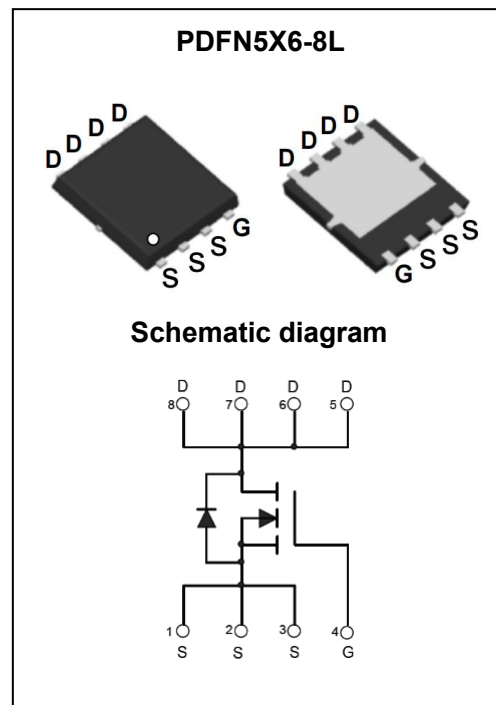
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	0.95mΩ@10V	243A

Feature

- Excellent gate charge x $R_{DS(ON)}$ product(FOM)
- Split Gate Trench Technology
- High Current Capability
- 100% EAS Guaranteed

Application

- DC/DC Converter
- Power Management Switches
- BLDC Motor drive systems
- Battery Management


Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT010N03LNC	PDFN5X6-8L	T010N03L	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}	30	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_C = 25^{\circ}\text{C}$	I_D	243	A
	$T_C = 100^{\circ}\text{C}$		154	
Pulsed Drain Current ¹		I_{DM}	972	A
Single Pulsed Avalanche Energy ²		EAS	484	mJ
Power Dissipation	$T_C = 25^{\circ}\text{C}$	P_D	113.6	W
Thermal Resistance from Junction to Ambient ³		$R_{\theta JA}$	50	$^{\circ}\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.1	$^{\circ}\text{C/W}$
Operating Junction And Storage Temperature		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		30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V,	T _J = 25°C			1	μA
		V _{GS} = 0V	T _J = 125°C			100	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V				±100	nA
On Characteristics							
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA		1.2	1.7	2.2	V
Drain-Source On-Resistance ⁴	R _{DS(on)}	V _{GS} = 10V, I _D = 20A			0.95	1.3	mΩ
		V _{GS} = 4.5V, I _D = 10A			1.35	1.85	
Forward Transconductance ⁴	g _{fs}	V _{GS} = 10V, I _D = 20A			126		S
Dynamic Characteristics ⁵							
Input Capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz			3370		pF
Output Capacitance	C _{oss}				1340		
Reverse Transfer Capacitance	C _{rss}				135		
Gate Resistance	R _G	f=1MHz			1		Ω
Switching Characteristics ⁵							
Total Gate Charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 20A			53		nC
Gate-Source Charge	Q _{gs}				7.8		
Gate-Drain Charge	Q _{gd}				8.8		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V, I _D = 20A R _G = 3Ω			10		ns
Turn-On Rise Time	t _r				6.5		
Turn-Off Delay Time	t _{d(off)}				36.5		
Turn-Off Fall Time	t _f				11.3		
Source - Drain Diode Characteristics							
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _S = 20A				1.2	V
Continuous Source Current	I _S	T _C = 25°C				243	A
Reverse Recovery Time	t _{rr}	I _F = 20A,dI/dt=100A/us			58		ns
Reverse Recovery Charge	Q _{rr}				29		nC

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C.
2. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=44A
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

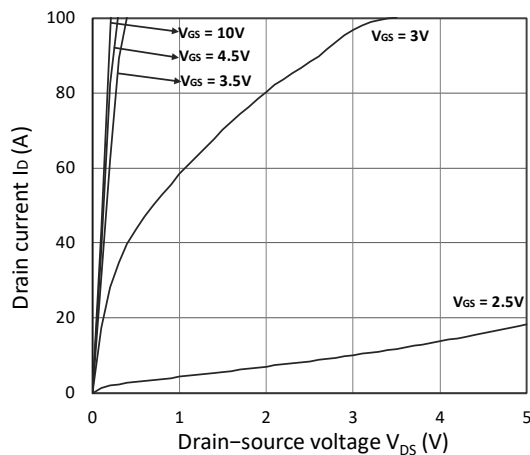
Typical Characteristics


Figure 1. Output Characteristics

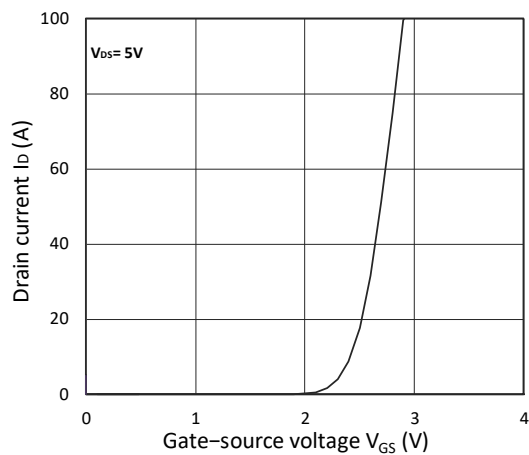


Figure 2. Transfer Characteristics

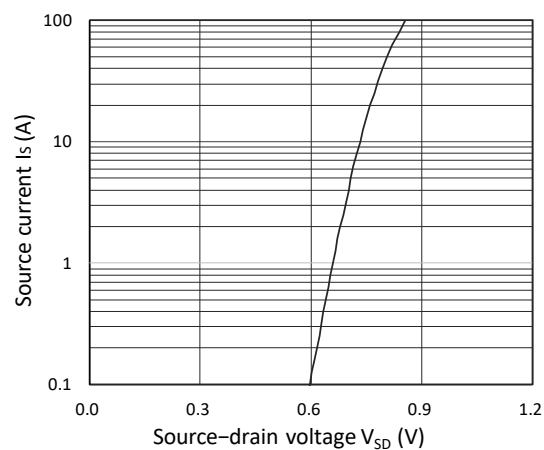
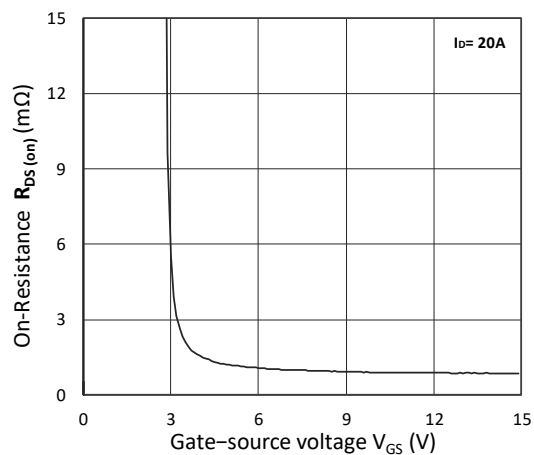
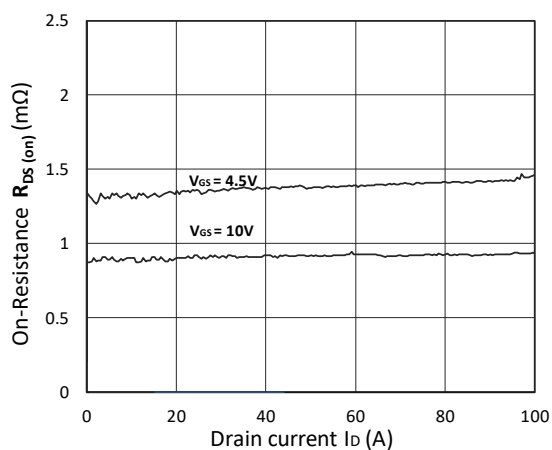
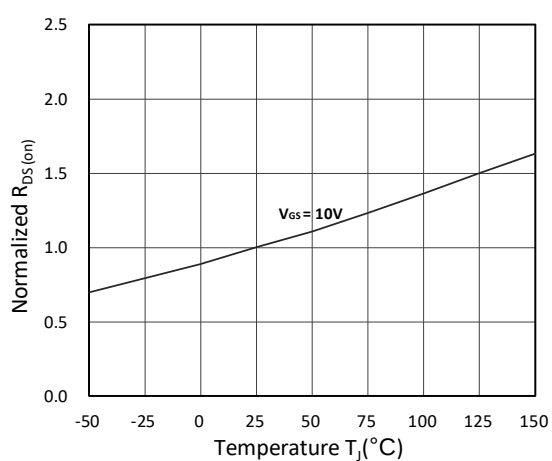


Figure 3. Forward Characteristics of Reverse


 Figure 4. $R_{DS(ON)}$ vs. V_{GS}

 Figure 5. $R_{DS(ON)}$ vs. I_D

 Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

Typical Characteristics

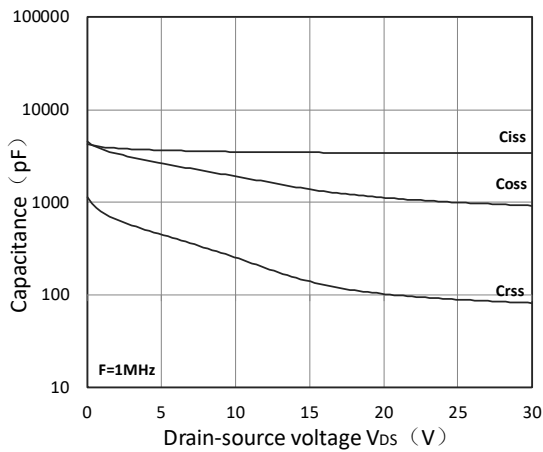


Figure 7. Capacitance Characteristics

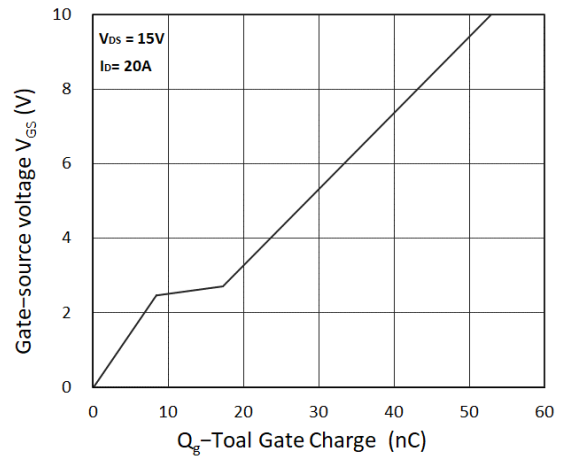


Figure 8. Gate Charge Characteristics

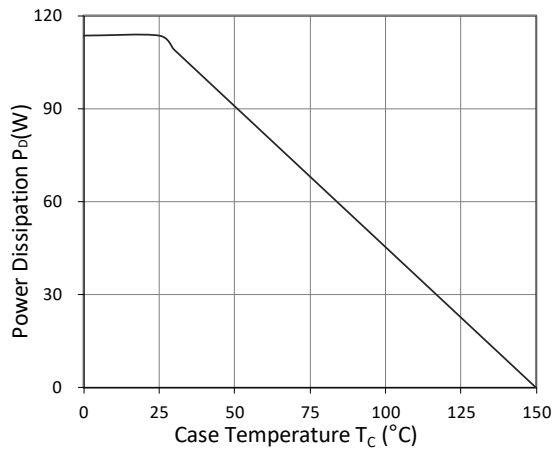


Figure 9. Power Dissipation

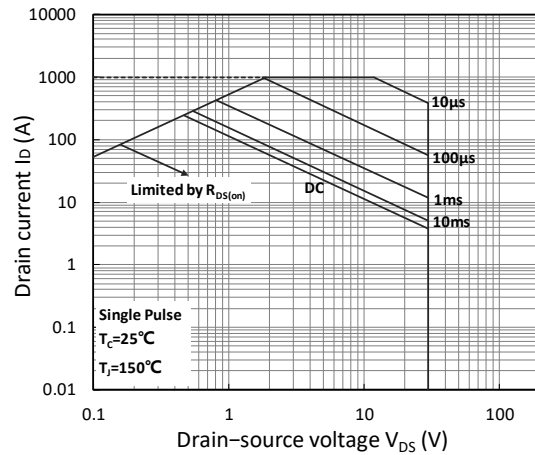


Figure 10. Safe Operating Area

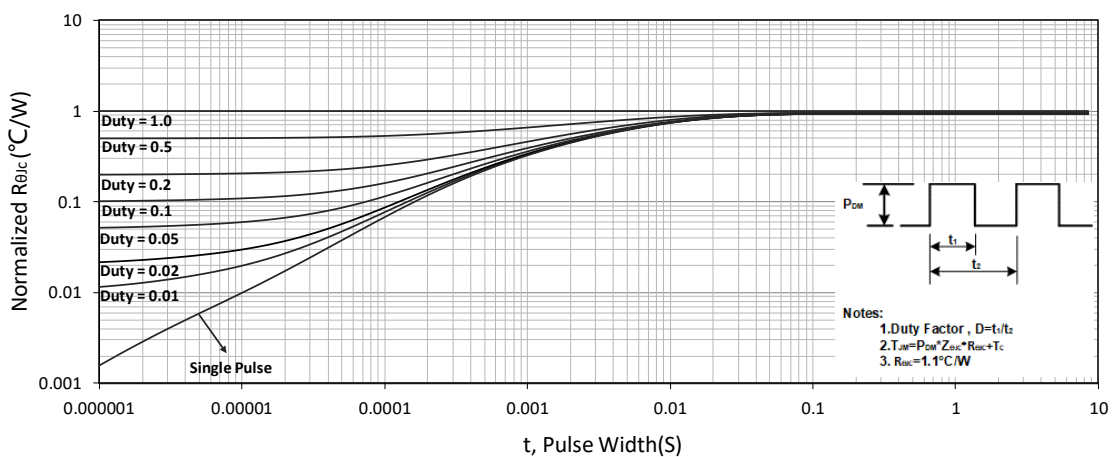
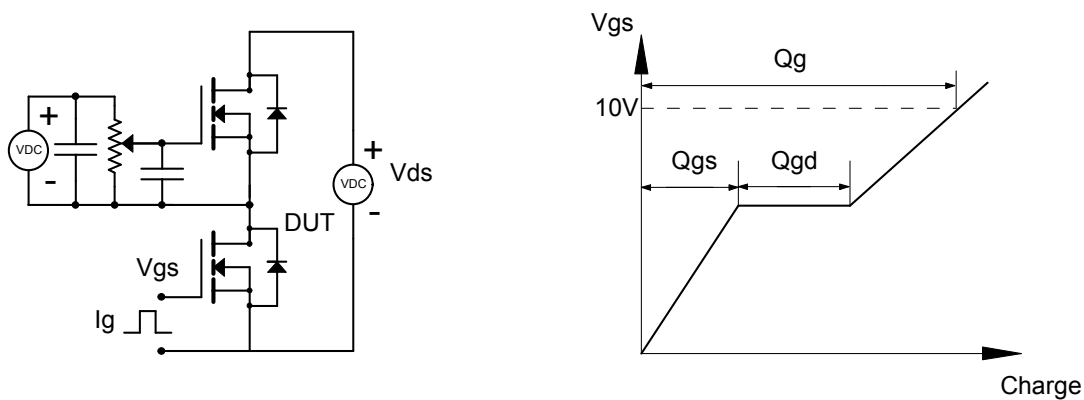
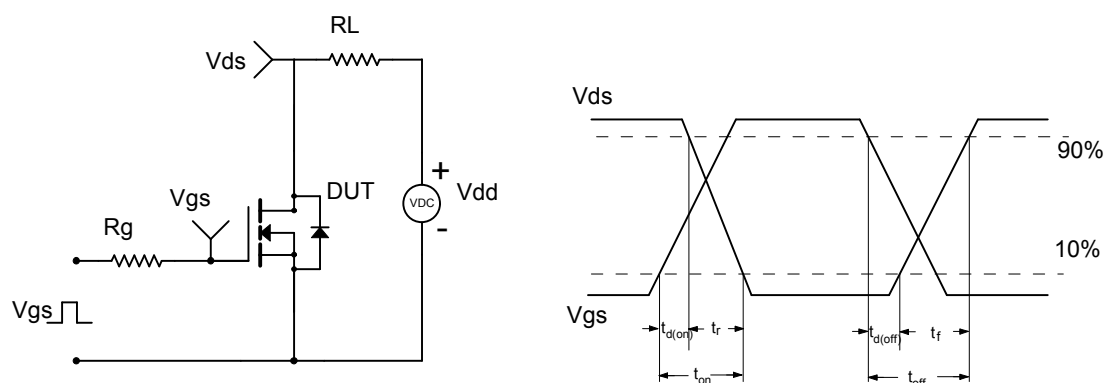


Figure 11. Normalized Maximum Transient Thermal Impedance

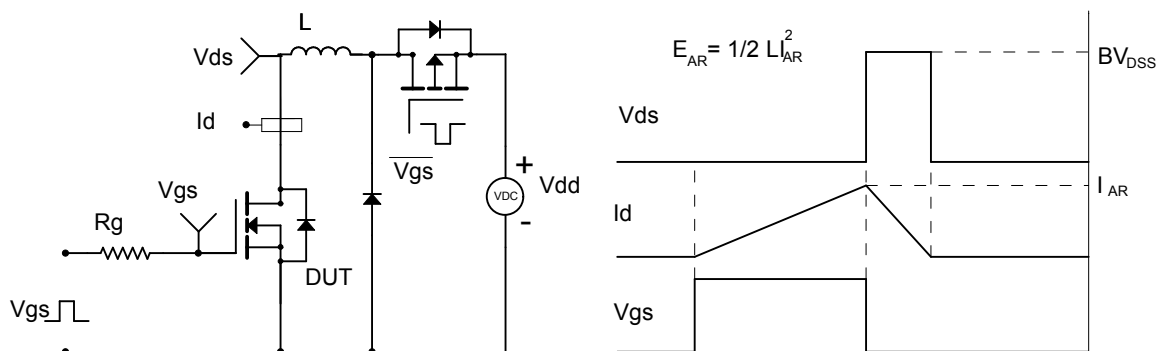
Gate Charge Test Circuit & Waveform

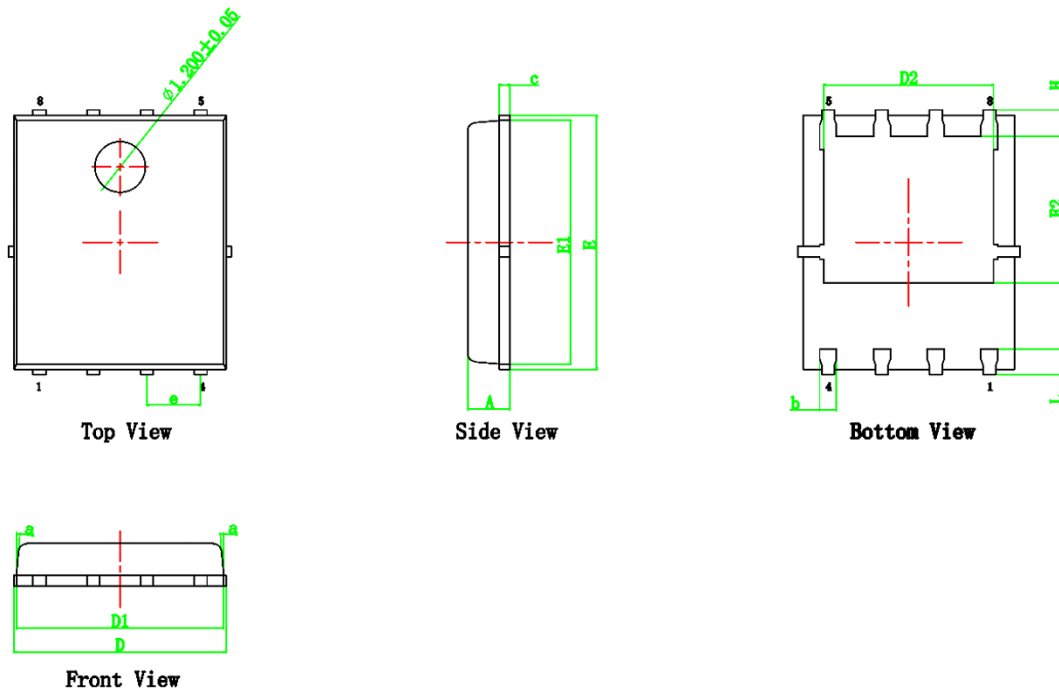


Resistive Switching Test Circuit & Waveform



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.