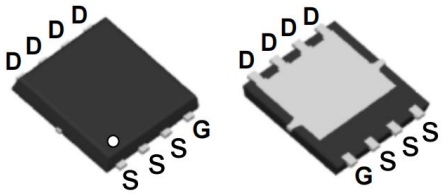
GPT010N03LNCU

30V N-Channel MOSFET

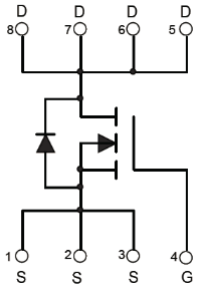
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
30V	0.95mΩ@10V	240A

PDFN5X6-8L



Schematic diagram



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
GPT010N03LNCU	PDFN5X6-8L	T010N03L	Reel & Tape	330mm	12mm	5000pcs

ABSOLUTE MAXIMUM RATINGS (T_A=25℃ 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℃	I_D	240	A
	T_C = 100℃		152	
Pulsed Drain Current[1]		I_{DM}	960	A
Single Pulsed Avalanche Energy[2]		E_{AS}	400	mJ
Power Dissipation	T_C = 25℃	P_D	113.6	W
Thermal Resistance from Junction to Ambient[3]		$R_{\theta JA}$	50	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.1	℃/W
Operating Junction And Storage Temperature		T_J,T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A=25℃ 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℃			1	μA
		V_{GS} = 0V	T_J= 125℃			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	1.6	2.2	V
Drain-Source On-Resistance[4]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A			0.95	1.2	mΩ
		V_{GS} = 4.5V, I_D = 10A			1.4	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			3700		pF
Output Capacitance	C_{oss}				2100		
Reverse Transfer Capacitance	C_{rss}				200		
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			54		nC
Gate-Source Charge	Q_{gs}				9.6		
Gate-Drain Charge	Q_{gd}				8.0		
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℃				240	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}=40A
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

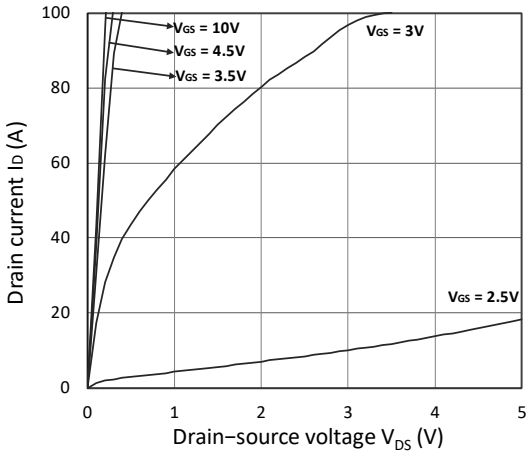


Figure 1. Output Characteristics

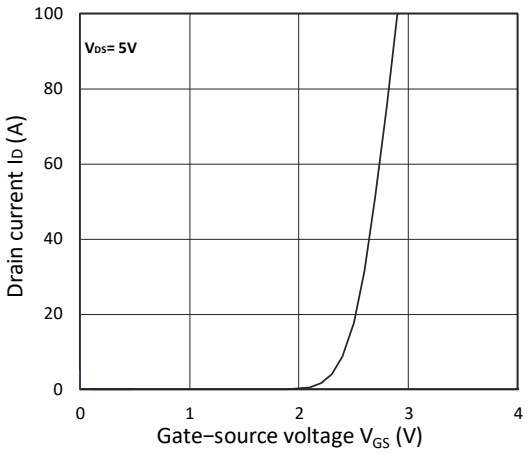


Figure 2. Transfer Characteristics

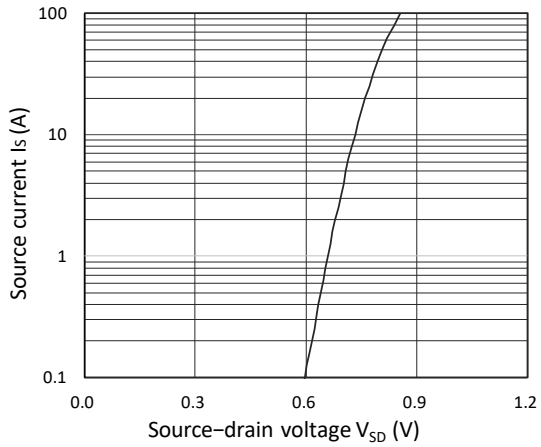


Figure 3. Forward Characteristics of Reverse

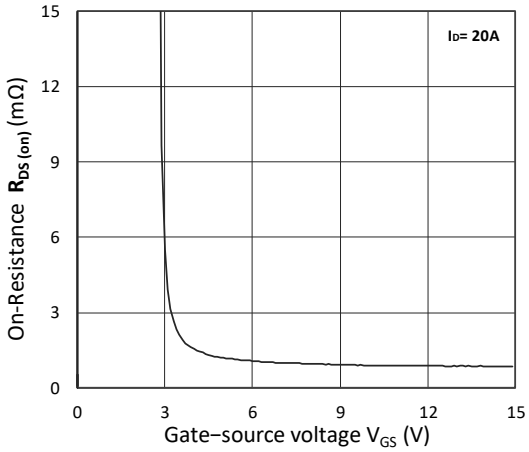


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

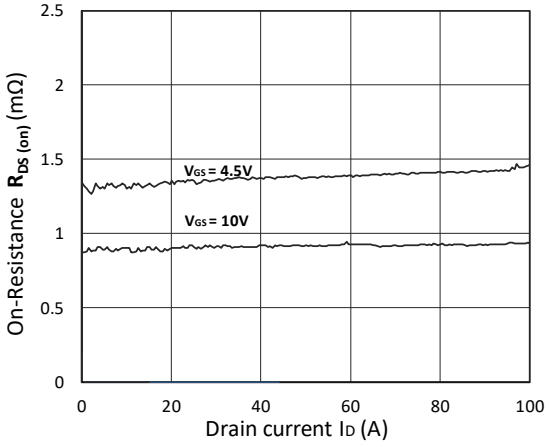


Figure 5. $R_{DS(ON)}$ vs. I_D

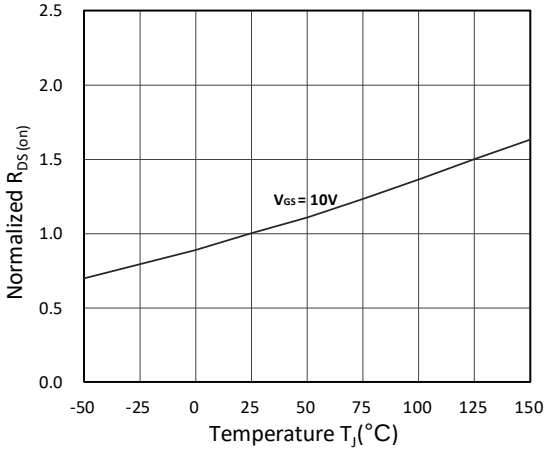


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

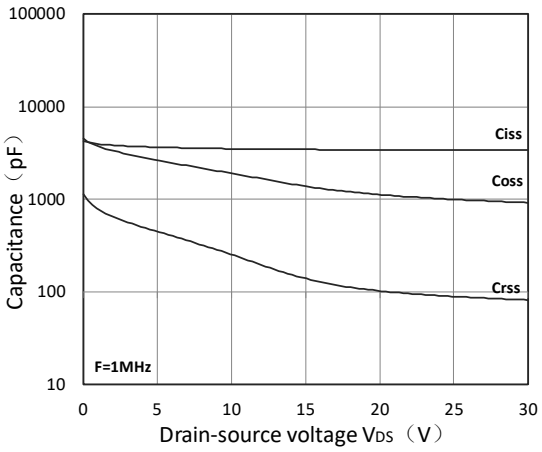


Figure 7. Capacitance Characteristics

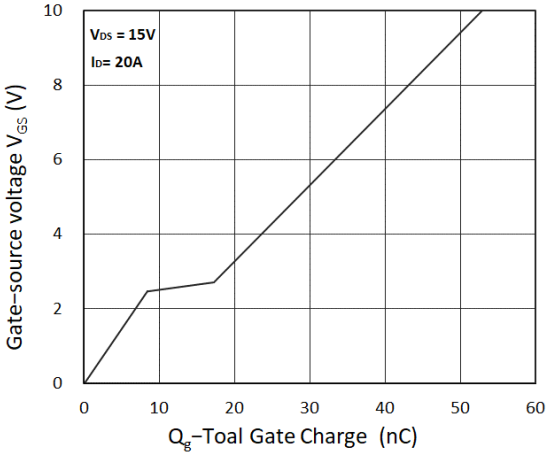


Figure 8. Gate Charge Characteristics

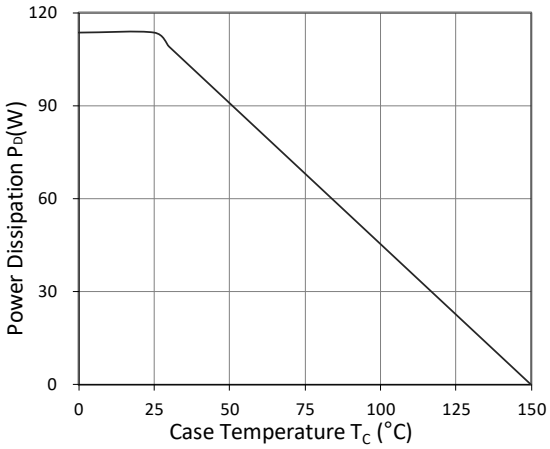


Figure 9. Power Dissipation

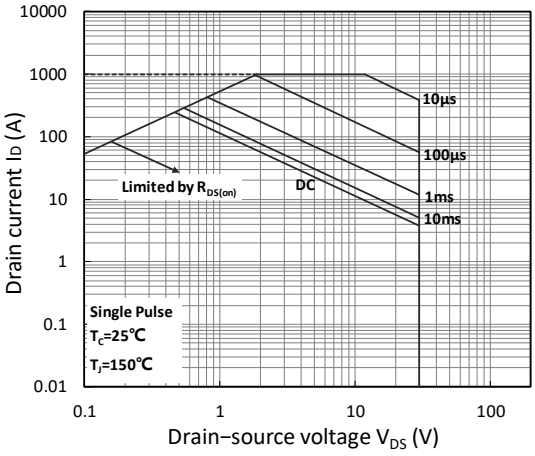


Figure10. Safe Operating Area

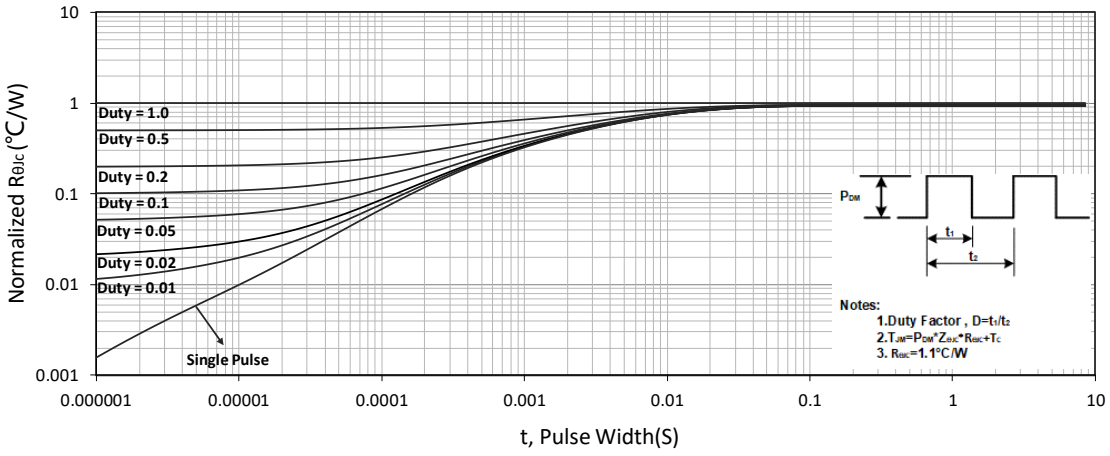
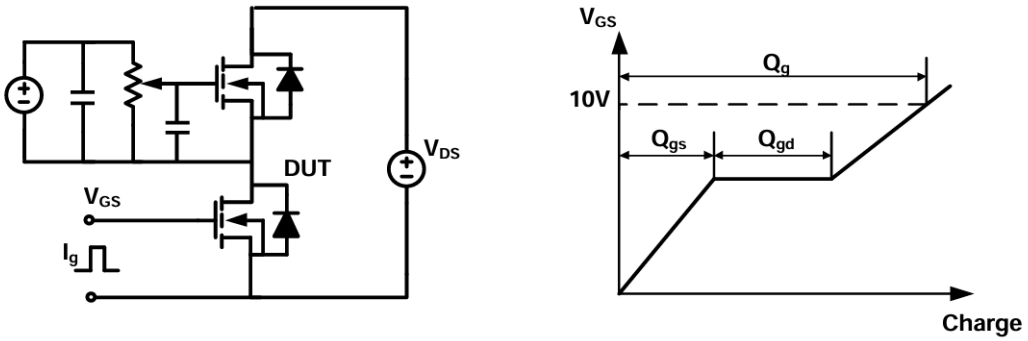


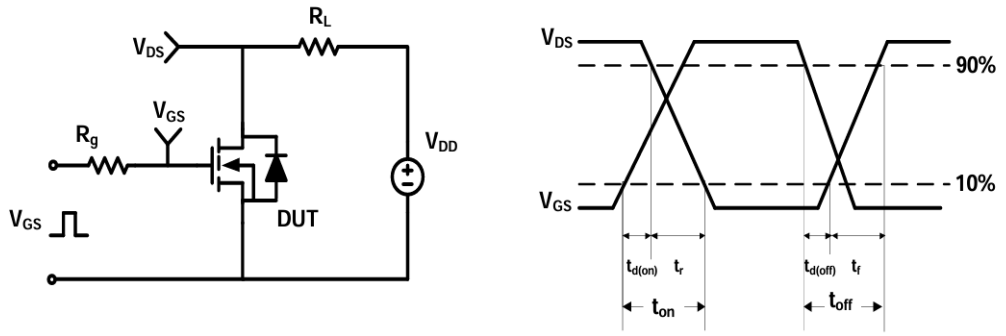
Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit

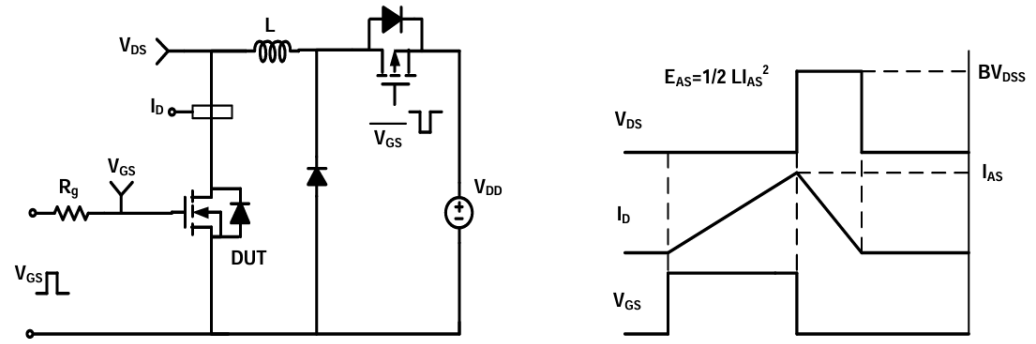
Gate Charge Test Circuit & Waveform



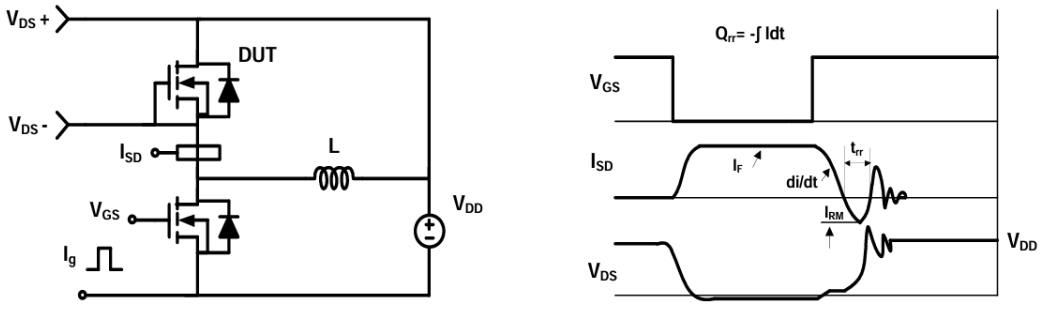
Resistive Switching Test Circuit & Waveform



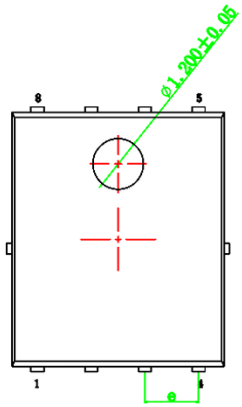
Unclamped Inductive Switching (UIS) Test Circuit & Waveform



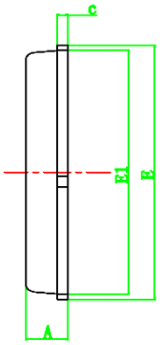
Diode Recovery Test Circuit & Waveform



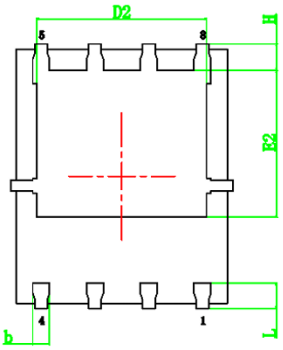
PDFN5X6-8L Package Information



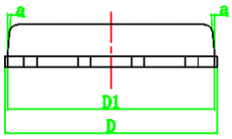
Top View



Side View



Bottom View



Front View

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°

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- 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.