GPT130N06LNA

60V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	11.5mΩ@10V	30A
	14mΩ@4.5V	

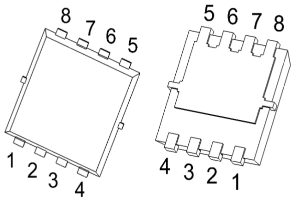
Feature

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

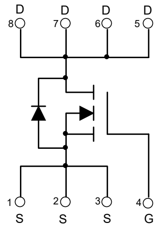
Application

- Power Management
- Load Switching

PDFN3.3X3.3-8L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT130N06LNA	PDFN3.3X3.3-8L	T130N06L	Reel & Tape	330mm	12mm	5000pcs

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25°C	I_D	30	A
	T_C = 100°C		19	
Pulsed Drain Current[2]		I_{DM}	120	A
Single Pulsed Avalanche Current[3]		I_{AS}	13	A
Single Pulsed Avalanche Energy[3]		E_{AS}	42	mJ
Power Dissipation[5]	T_C = 25°C	P_D	31	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	45	°C/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	4.1	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	°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	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60V, V_{GS} = 0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1	1.3	1.8	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		11.5	15	mΩ
		V_{GS} = 4.5V, I_D = 10A		14	21	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 30V, V_{GS} = 0V, f = 1MHz		575		pF
Output Capacitance	C_{oss}			193		
Reverse Transfer Capacitance	C_{rss}			5		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.6		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 300V, V_{GS} = 10V, I_D = 20A		12		nC
Gate-Source Charge	Q_{gs}			1.1		
Gate-Drain Charge	Q_{gd}			2.9		
Gate Plateau Voltage	$V_{plateau}$			2.7		V
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 30V, V_{GS} = 10V, R_G = 6Ω, R_L = 2Ω		3.7		ns
Turn-On Rise Time	t_r			4.3		
Turn-Off Delay Time	$t_{d(off)}$			16		
Turn-Off Fall Time	t_f			6.5		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 20A			1.2	V
Diode Continuous Forward Current[1]	I_S	T_C = 25°C			40	A
Diode Pulse Forward Current[2]	I_{SM}				160	A
Diode Reverse Recovery Time	t_{rr}	I_F = 15A, dI/dt = 100A/μs		24		ns
Diode Reverse Recovery Charge	Q_{rr}			9.3		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.E_{AS} condition: V_{DD} = 60V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

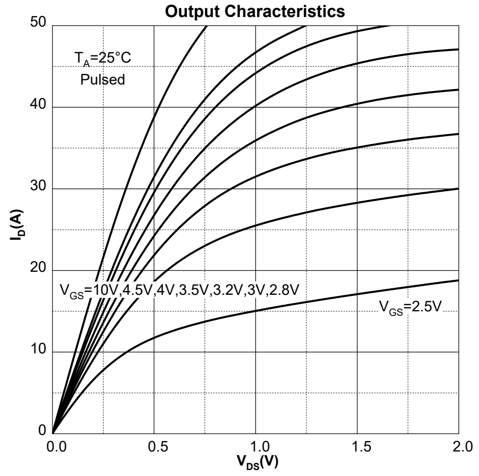
4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.

5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C. And device mounted on a large heatsink.

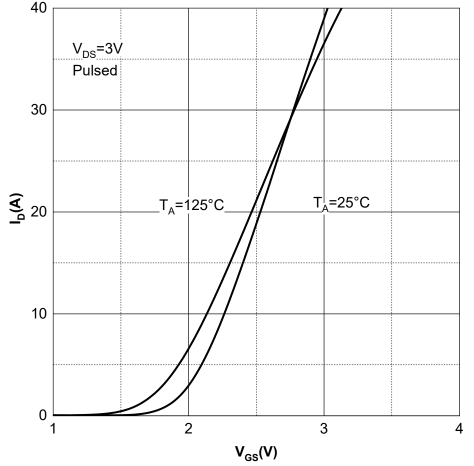
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics

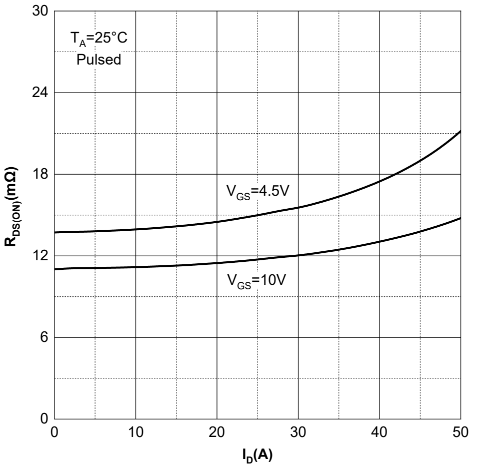
Output Characteristics



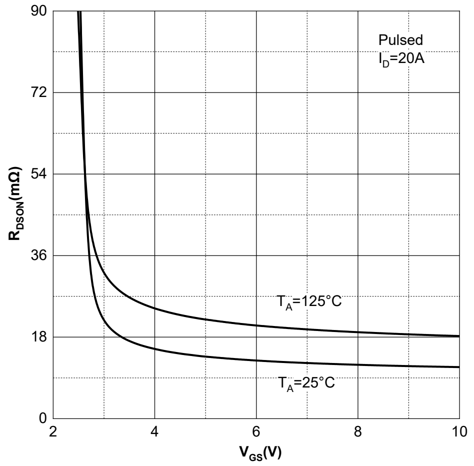
Transfer Characteristics



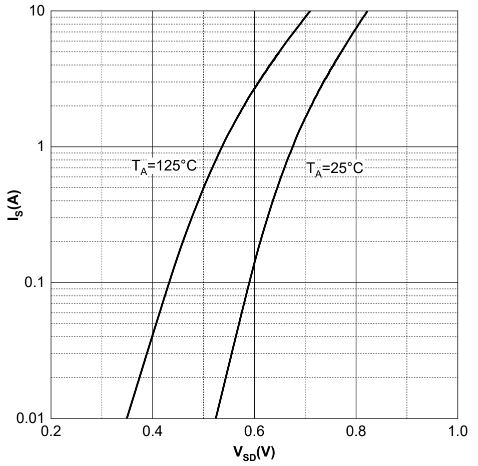
$R_{DS(ON)}$ vs I_D



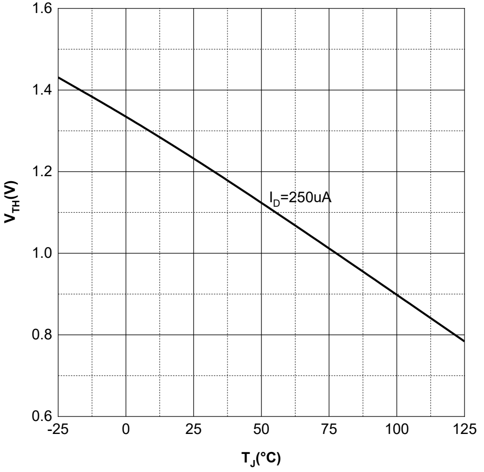
$R_{DS(ON)}$ vs V_{GS}

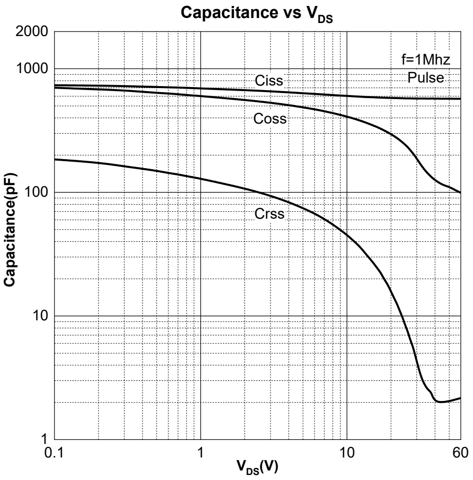


I_S vs V_{SD}

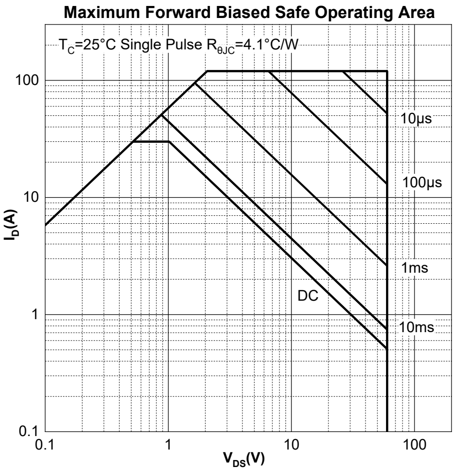


Threshold Voltage

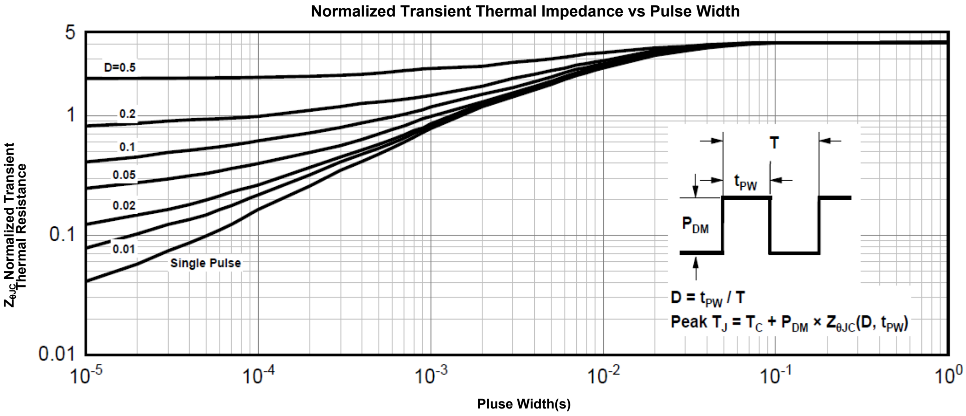




Capacitance vs V_{DS}



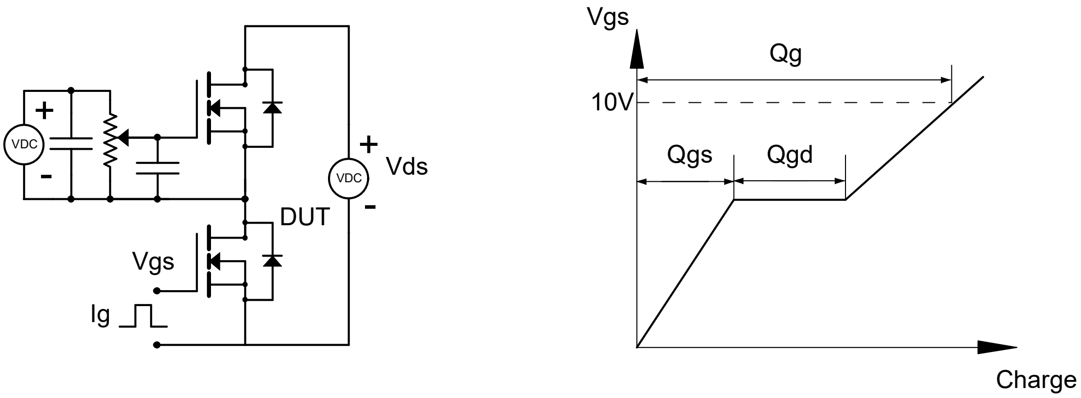
Maximum Forward Biased Safe Operating Area



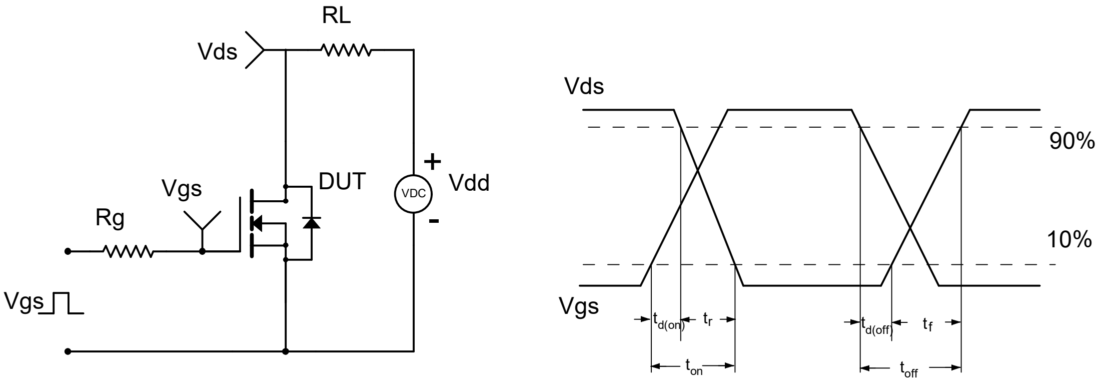
Normalized Transient Thermal Impedance vs Pulse Width

Test Circuit

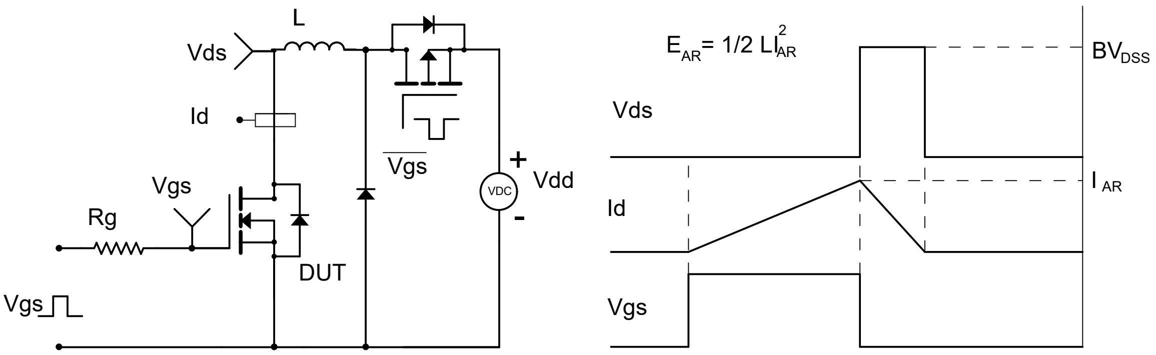
Gate Charge Test Circuit & Waveform



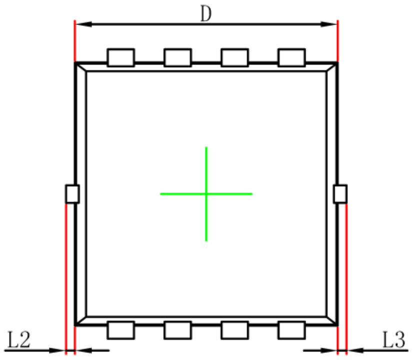
Resistive Switching Test Circuit & Waveform



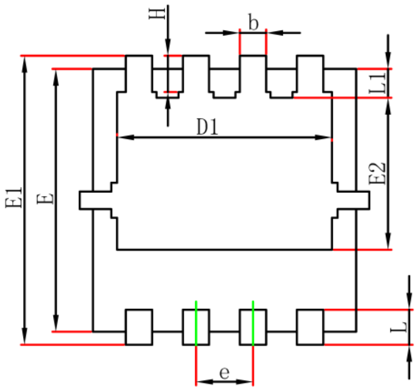
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



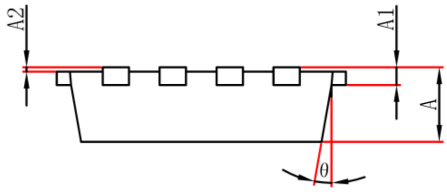
PDFN3.3X3.3-8L Package Information



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.10	0.25	0.004	0.010
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	2.300	2.600	0.091	0.102
E	2.900	3.200	0.114	0.126
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	0°	12°	0°	12°

Attention：

- GreenPower Electronics reserves the right to improve product design function and reliability without notice.
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