

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	6.1m Ω @10V	58A
	9.0m Ω @4.5V	

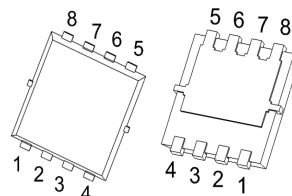
Feature

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

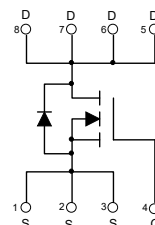
Application

- Power Switching Application
- DC/DC Converter

PDFN3.3X3.3-8L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT061N04LNA	PDFN3.3X3.3-8L	T061N04L	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}	40	V
Gate - Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	58	A
	$T_C = 100^\circ\text{C}$	I_D	37	A
Pulsed Drain Current ²		I_{DM}	174	A
Single Pulsed Avalanche Current ³		I_{AS}	15	A
Single Pulsed Avalanche Energy ³		E_{AS}	56	mJ
Power Dissipation ⁵		P_D	40	W
		$T_C = 25^\circ\text{C}$		
Thermal Resistance from Junction to Case		$R_{\theta JC}$	3.1	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	40	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

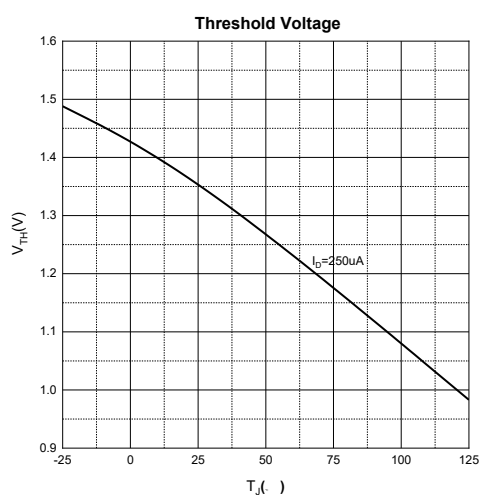
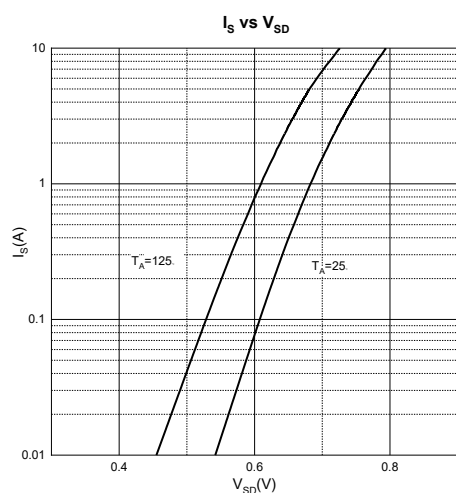
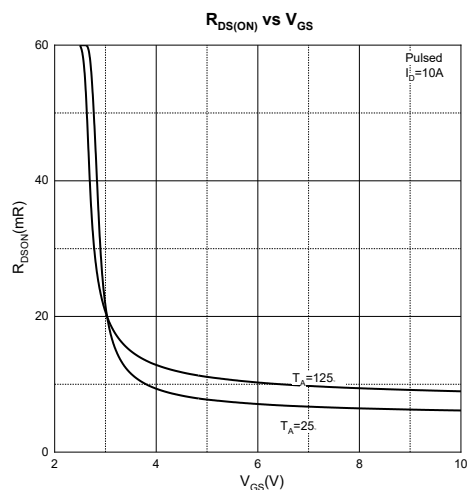
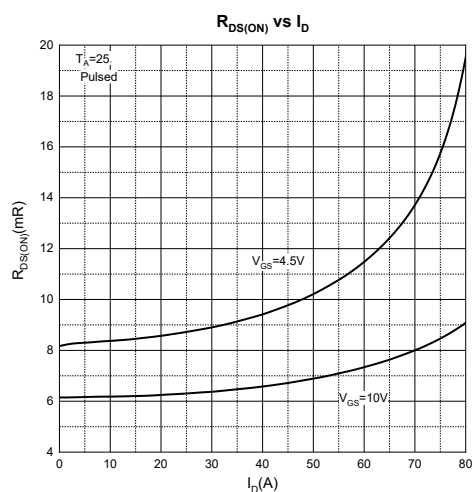
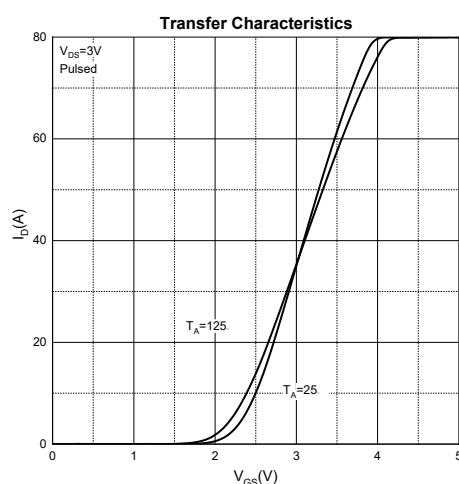
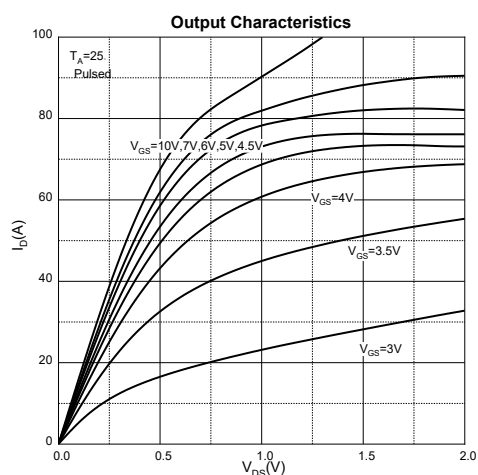
MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

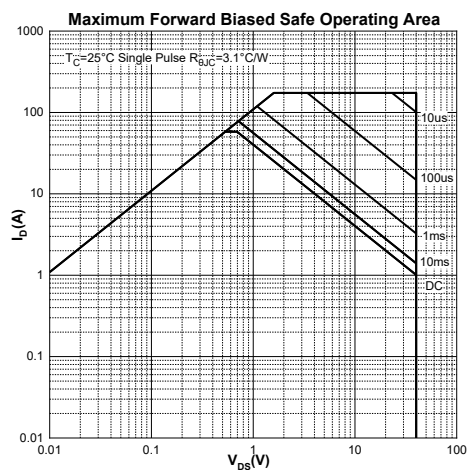
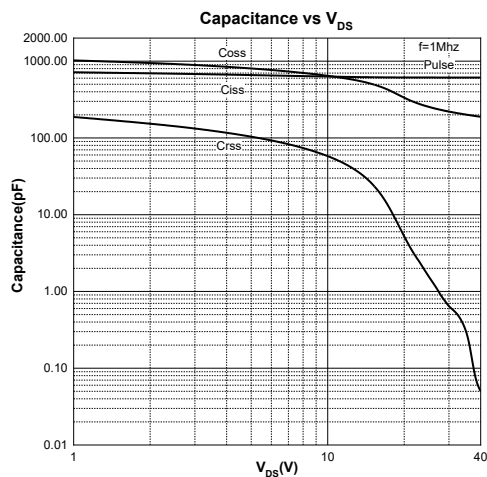
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain - Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40V, V _{GS} = 0V			1	μA
Gate - Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.0	1.5	2.2	V
Drain-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A		6.1	7.8	mΩ
		V _{GS} = 4.5V, I _D = 8A		9.0	12.5	
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} = 20V, V _{GS} = 0V, f = 1MHz		660		pF
Output Capacitance	C _{oss}			340		
Reverse Transfer Capacitance	C _{rss}			25		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		2.5		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 20V, V _{GS} = 10V, I _D = 50A		13		nC
Gate-source Charge	Q _{gs}			1.8		
Gate-drain Charge	Q _{gd}			2.3		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 20V, V _{GS} = 10V, I _D = 50A, R _G =3Ω		5		ns
Turn-On Rise Time	t _r			3		
Turn-Off Delay Time	t _{d(off)}			20		
Turn-Off Fall Time	t _f			2		
Source - Drain Diode Characteristics						
Maximum Body-Diode Continuous Current	I _s				32	A
Diode Forward Voltage ⁴	V _{SD}	V _{GS} = 0V, I _s = 20A			1.2	V
Reverse Recovery Time	trr	IF=50A, dI/dt=100A/μs		20		ns
Reverse Recovery Charge	Qrr	IF=50A, dI/dt=100A/μs		12		nC

Notes :

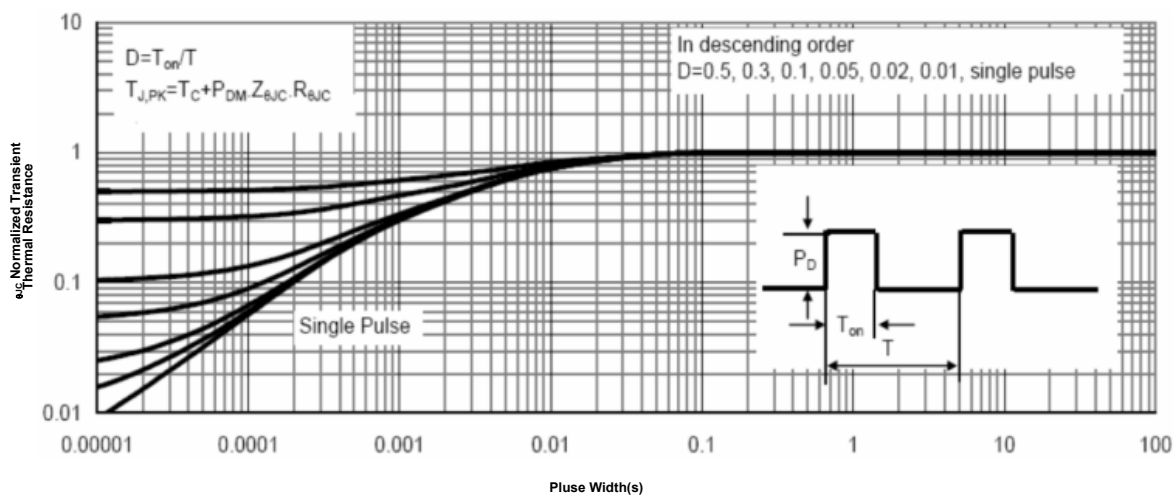
1. The maximum current rating is limited by package. And device mounted on a large heatsink
2. Pulse Test : Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
3. EAS condition: $V_{DD} = 20V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
4. Pulse Test : Pulse Width $\leq 300\mu s$, 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 $T_A = 25^\circ\text{C}$.

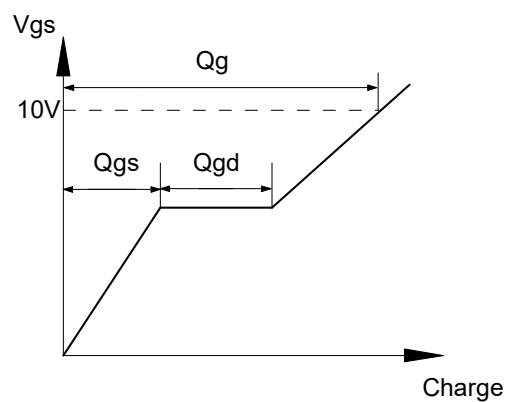
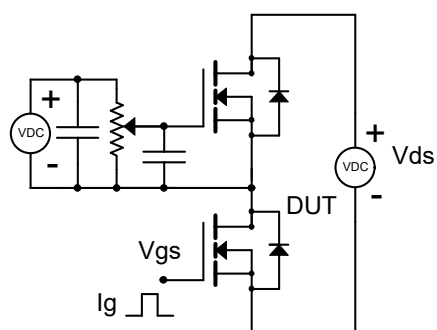
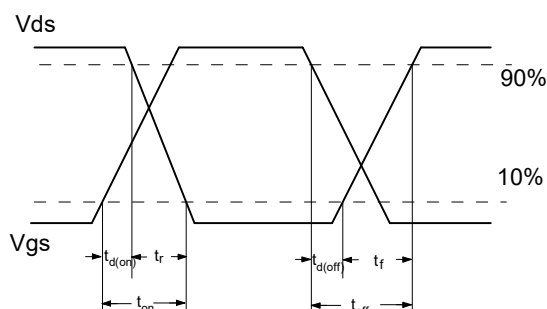
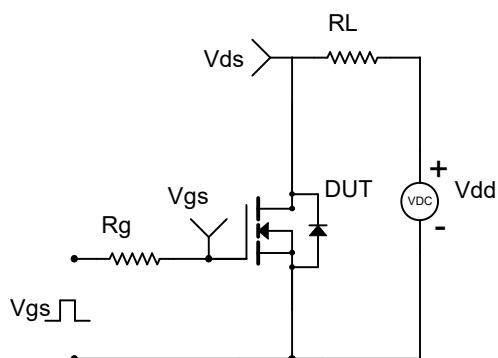
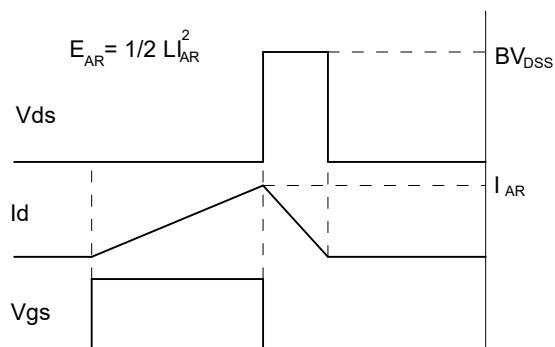
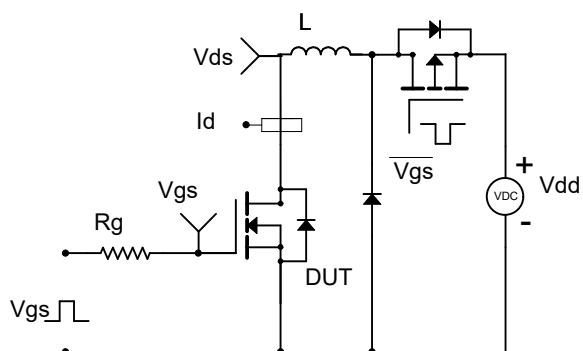
Typical Characteristics

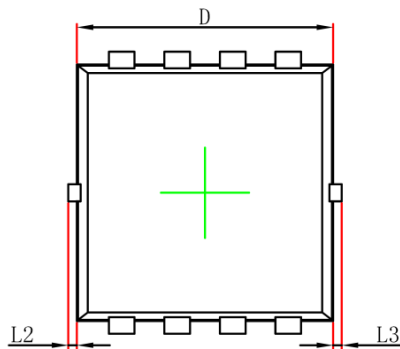




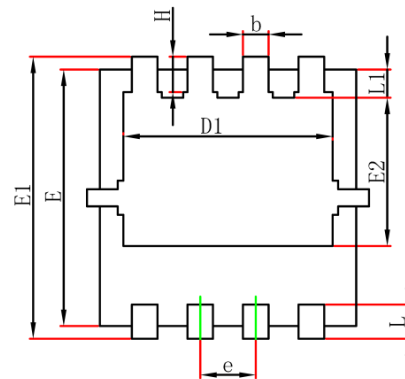
Normalized Transient Thermal Impedance vs Pulse Width



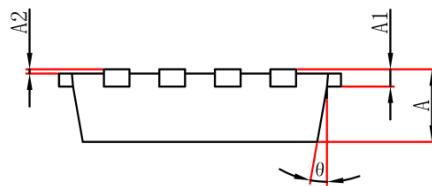
Gate Charge Test Circuit & Waveform

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	0.152REF		0.006REF	
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.
- 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.