

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
80V	4.7mΩ@10V	110A

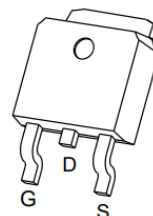
Feature

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

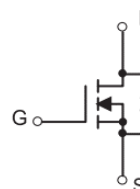
Application

- Power Management
- Motor Driver
- DC/DC Converter

TO-252-2L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT045N08NTF	TO-252-2L	T045N08N	Reel & Tape	330mm	16mm	2500pcs

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	80	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	110	A
	$T_C = 100^\circ\text{C}$		70	
Pulsed Drain Current ²		I_{DM}	440	A
Single Pulsed Avalanche Current ³		I_{AS}	44	A
Single Pulsed Avalanche Energy ³		E_{AS}	484	mJ
Power Dissipation ⁵	$T_C = 25^\circ\text{C}$	P_D	114	W
Thermal Resistance from Junction to Ambient ⁶		$R_{\theta JA}$	52	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.1	$^\circ\text{C/W}$
Junction Temperature		T_J	150	$^\circ\text{C}$
Storage Temperature		T_{STG}	-55~ +150	$^\circ\text{C}$

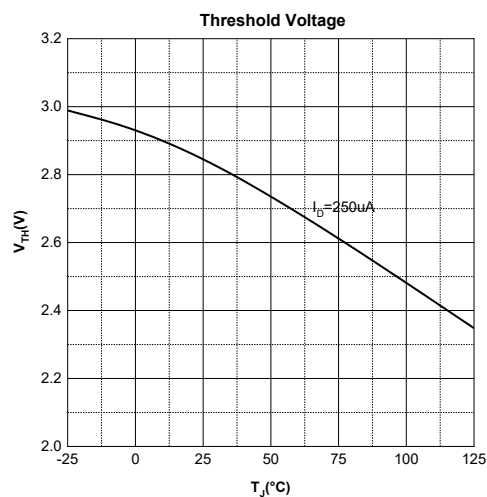
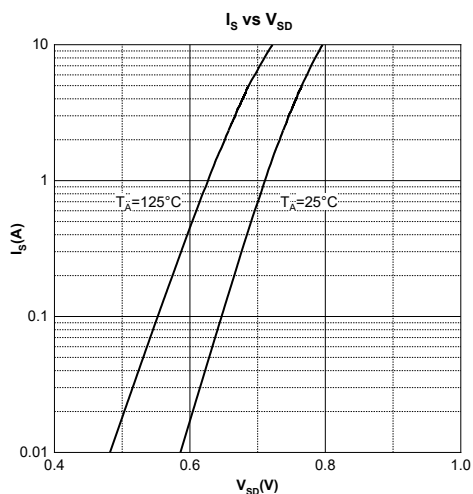
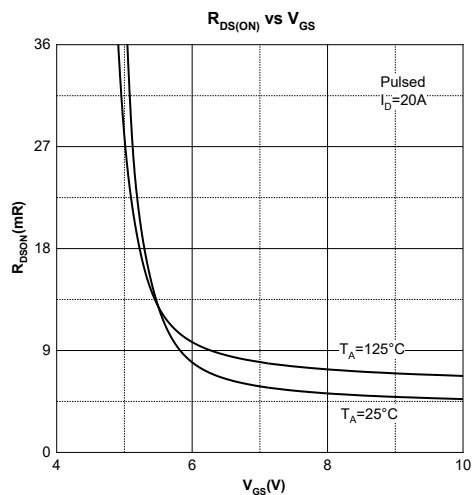
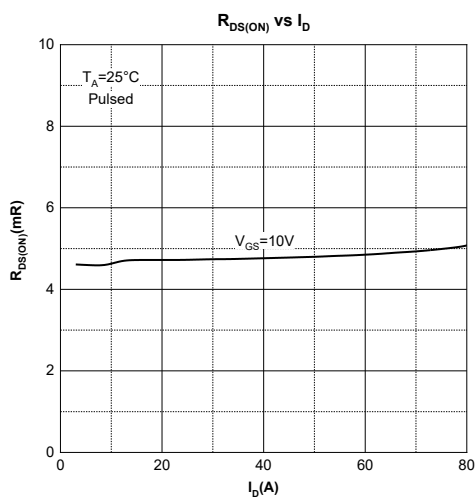
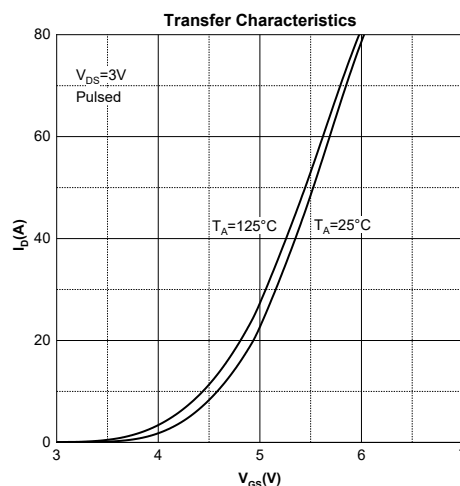
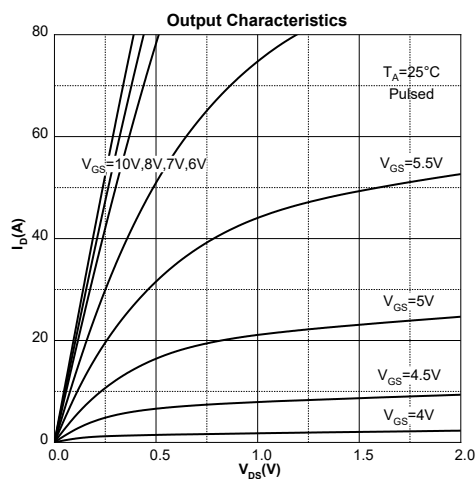
MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

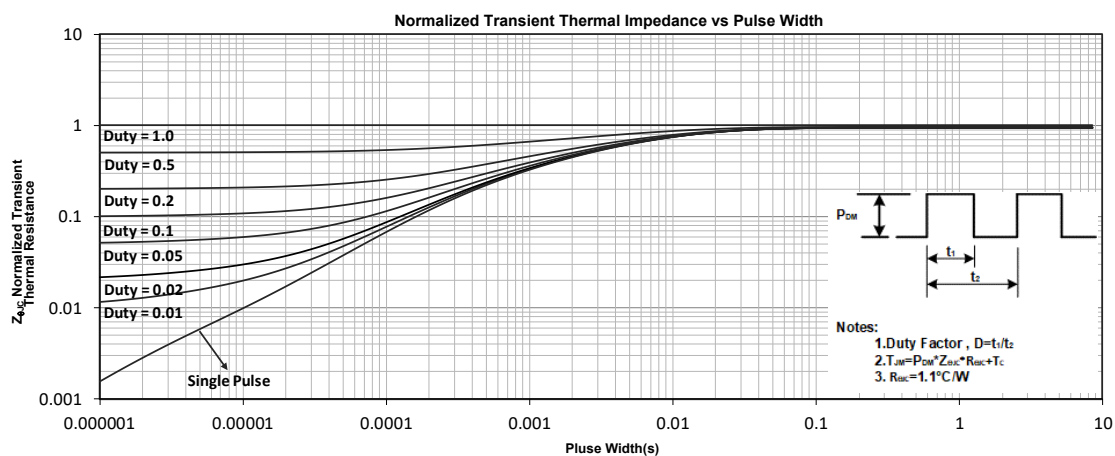
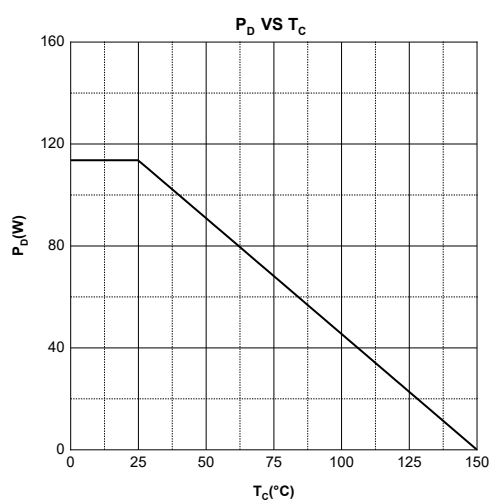
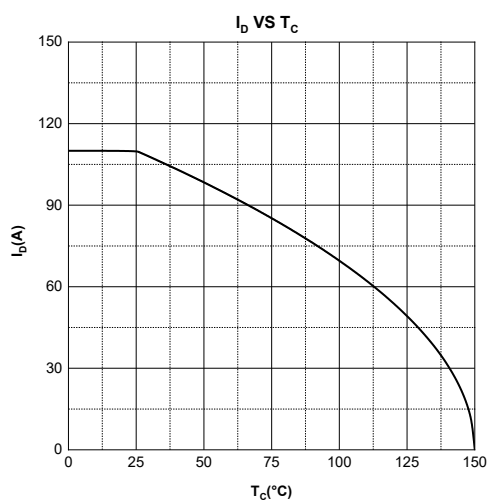
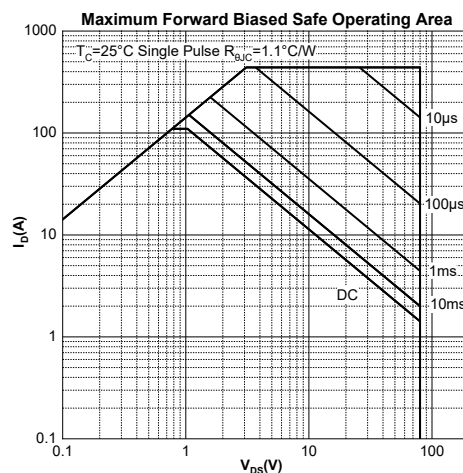
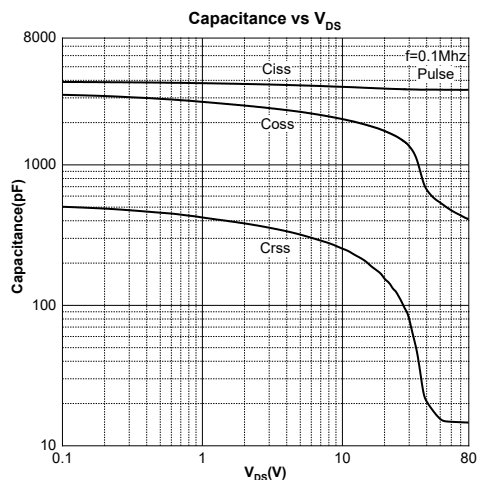
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	80			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 80V, V _{GS} = 0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V			±100	nA
On Characteristics ⁴						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A		4.7	6.0	mΩ
Dynamic Characteristics						
Input Capacitance	C _{iSS}	V _{DS} = 40V, V _{GS} = 0V, f = 0.1MHz		3440		pF
Output Capacitance	C _{oSS}			658		
Reverse Transfer Capacitance	C _{rSS}			22		
Gate Resistance	R _g	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz		2.5		Ω
Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} = 40V, V _{GS} = 10V, I _D = 20A		50		nC
Gate-Source Charge	Q _{gs}			16		
Gate-Drain Charge	Q _{gd}			11		
Turn-On Delay Time	t _{d(on)}	V _{DD} = 40V, V _{GS} = 10V, R _G = 3Ω, I _D = 20A		16		ns
Turn-On Rise Time	t _r			13		
Turn-Off Delay Time	t _{d(off)}			32		
Turn-Off Fall Time	t _f			14		
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			110	A
Diode Pulse Forward ²	I _{SM}	T _C = 25°C			440	A
Diode Reverse Recovery Time	t _{rr}	I _F = 15A, dI/dt = 100A/μs		56		ns
Diode Reverse Recovery Charge	Q _{rr}			88		nC

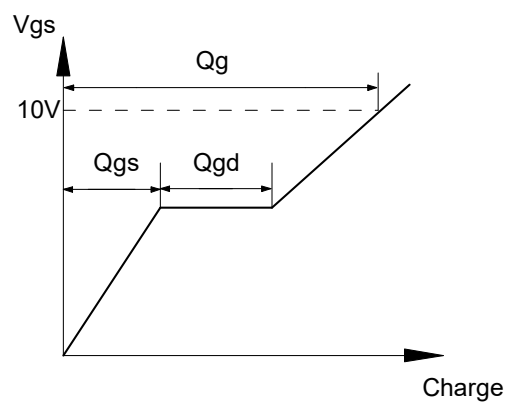
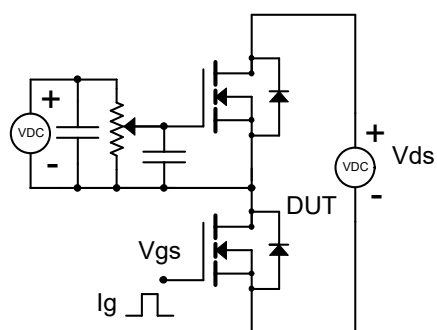
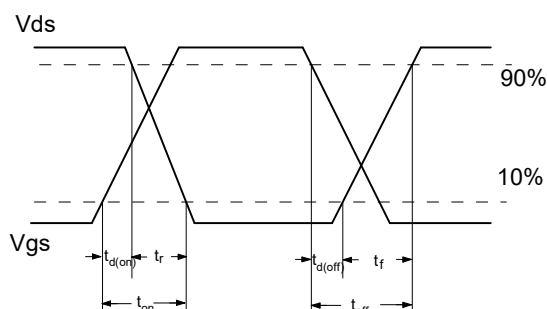
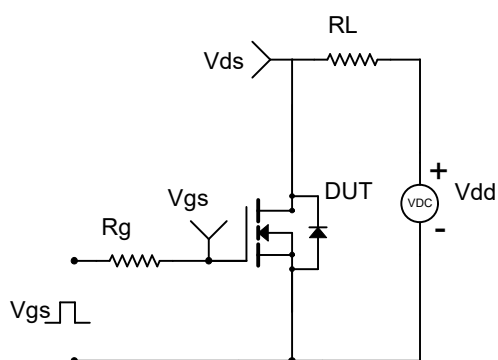
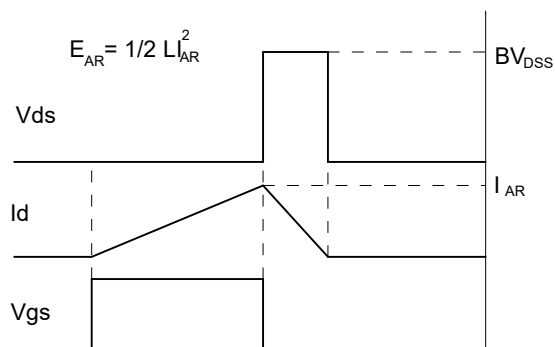
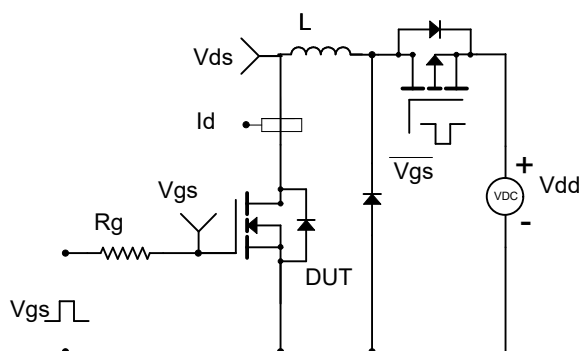
Notes:

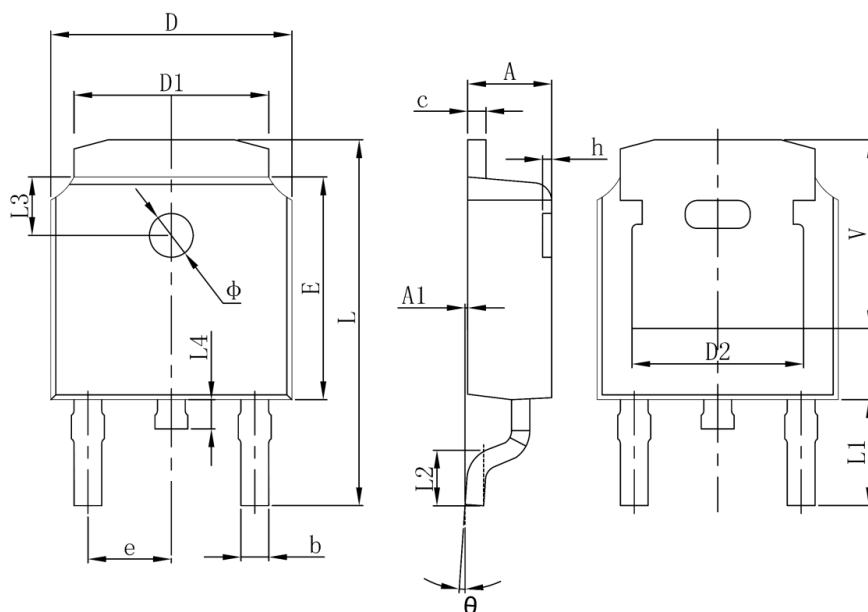
- 1.The maximum current rating is limited by package. And device mounted on a large heatsink.
- 2.Pulse Test: Pulse Width ≤ 10μs, duty cycle ≤ 1%.
- 3.EAS condition: V_{DD} = 40V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.
- 4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.
- 5.The power dissipation P_D is limited by T_{J(MAX)} = 150°C. And device mounted on a large heatsink.
- 6.Device mounted on 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


TO-252-2L Package Information


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.860	0.025	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830REF		0.190REF	
E	6.000	6.300	0.236	0.248
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900REF		0.114REF	
L2	1.400	1.700	0.055	0.067
L3	1.600REF		0.063REF	
L4	0.600	1.000	0.024	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250REF		0.207REF	

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.