GP ELECTRONICS

GPT080N10LTF

100V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
100V	7.6mΩ@10V	70A
	9.3mΩ@4.5V	

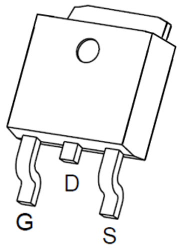
Feature

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

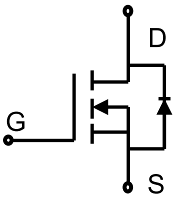
Application

- Power Switching Application
- Motor Driving
- Power Management

TO-252-2L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT080N10LTF	TO-252-2L	T080N10L	Reel & Tape	330mm	16mm	2500pcs

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25°C	I_D	70	A
	T_C = 100°C	I_D	44	A
Pulsed Drain Current[2]		I_{DM}	280	A
Single Pulsed Avalanche Current[3]		I_{AS}	24	A
Single Pulsed Avalanche Energy[3]		E_{AS}	144	mJ
Power Dissipation[5]	T_C = 25°C	P_D	83	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	50	°C /W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.5	°C /W
Junction Temperature		T_J	150	°C
Storage Temperature		T_{STG}	-55~ +100	°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	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, 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	1.6	3	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		7.6	9.5	mΩ
		V_{GS} = 4.5V, I_D = 15A		9.3	12.0	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 50V, V_{GS} = 0V, f = 0.1MHz		1317		pF
Output Capacitance	C_{oss}			558		
Reverse Transfer Capacitance	C_{rss}			20		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		1.7		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 50V, V_{GS} = 10V, I_D = 10A		23		nC
Gate-Source Charge	Q_{gs}			1.4		
Gate-Drain Charge	Q_{gd}			5.8		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 50V, V_{GS} = 10V, R_L = 2.5Ω, R_G = 6Ω		11		ns
Turn-On Rise Time	t_r			52		
Turn-Off Delay Time	$t_{d(off)}$			31		
Turn-Off Fall Time	t_f			104		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 20A			1.2	V

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%.

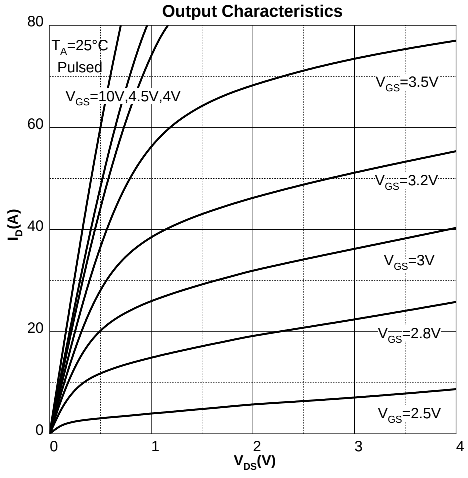
3.E_{AS} condition: V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

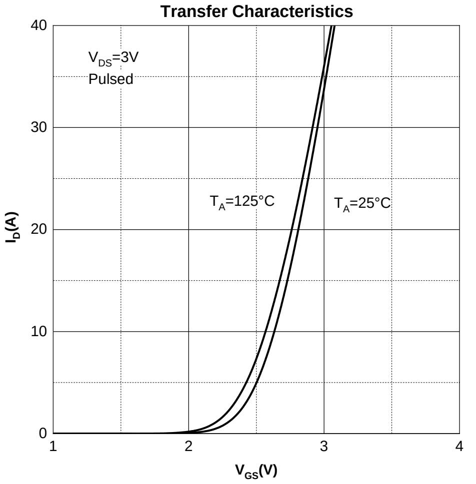
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

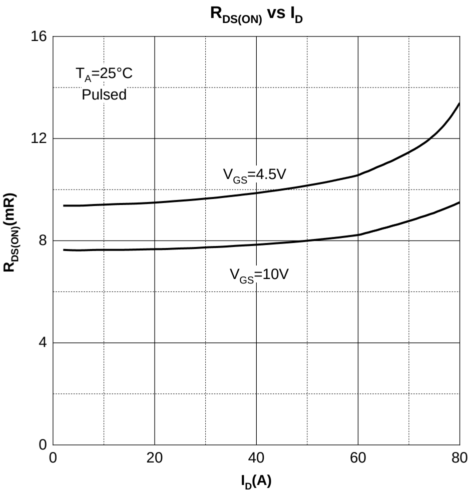
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

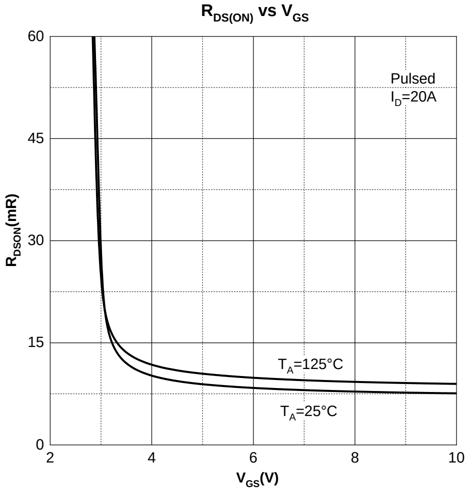
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

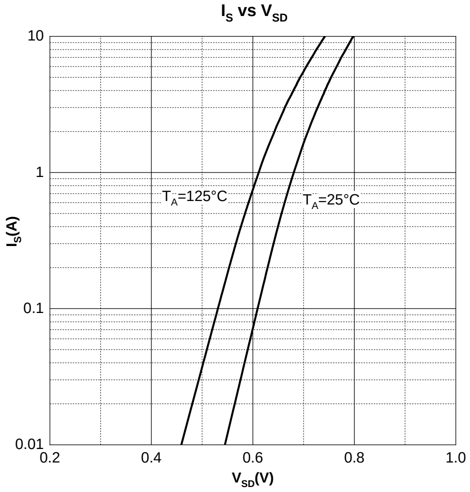
Typical Characteristics

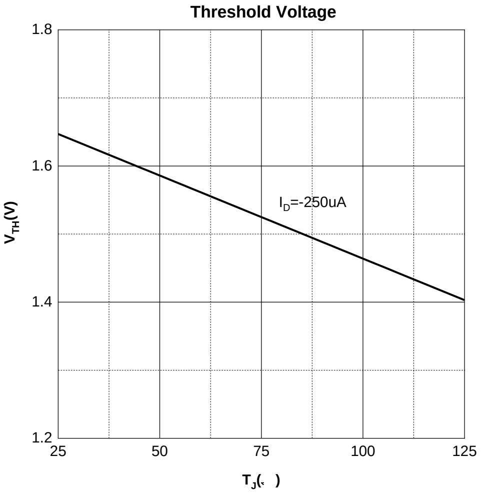

Output Characteristics

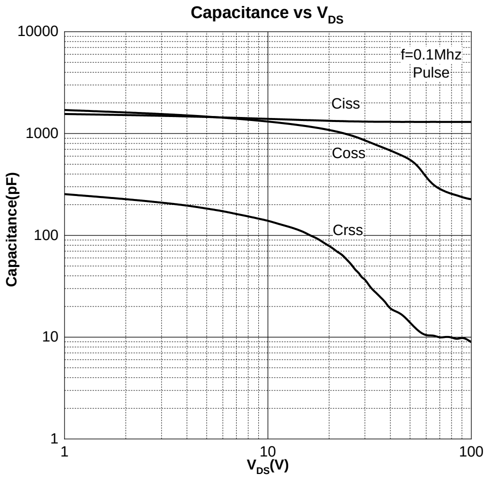

Transfer Characteristics


$R_{DS(ON)}$ vs I_D

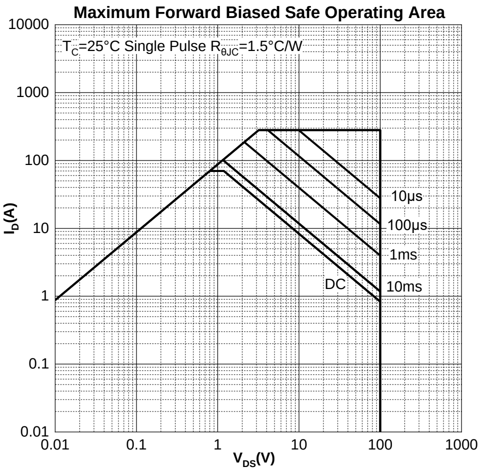

$R_{DS(ON)}$ vs V_{GS}


I_S vs V_{SD}

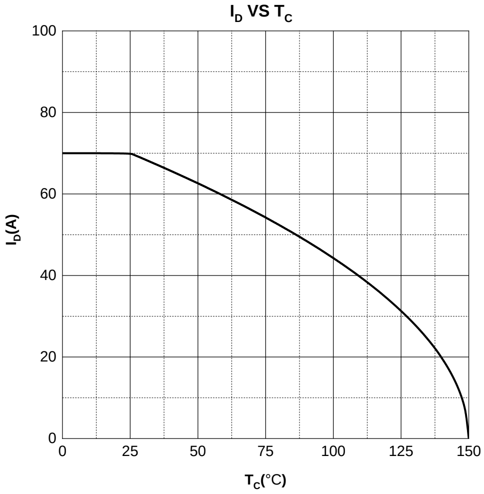

Threshold Voltage



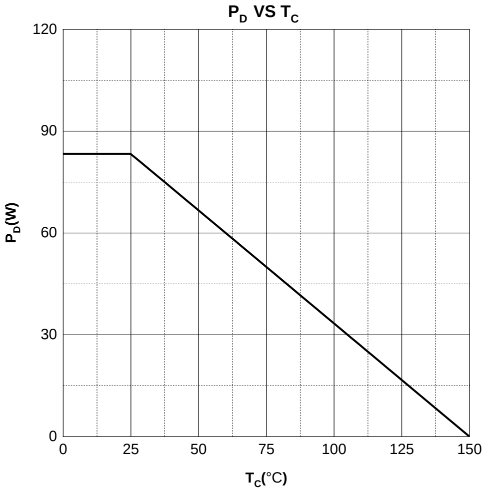
Capacitance vs V_{DS}



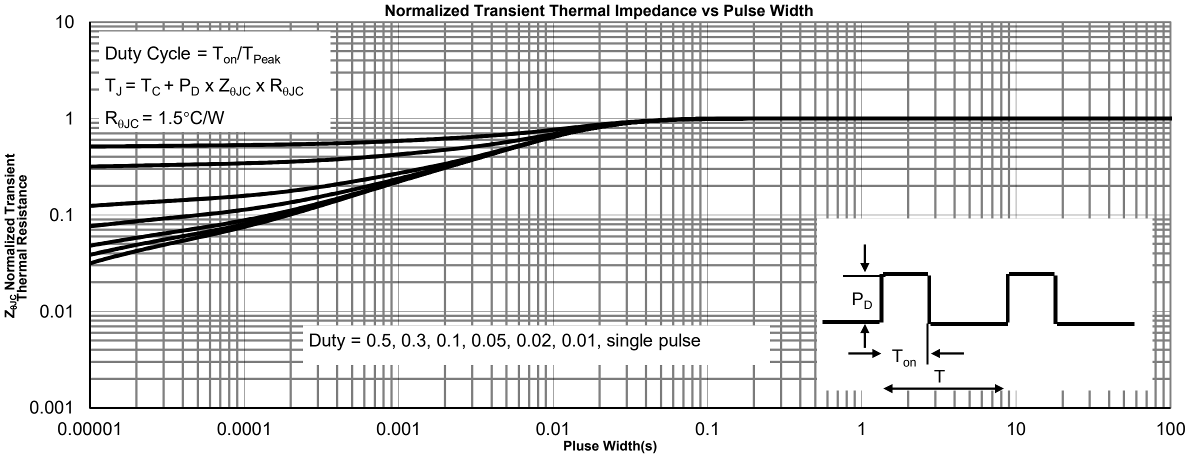
Maximum Forward Biased Safe Operating Area



I_D VS T_C



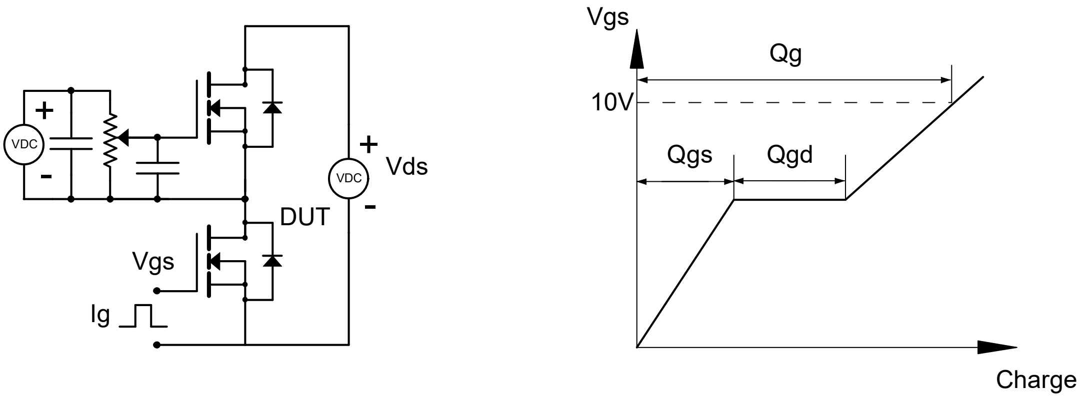
P_D VS T_C



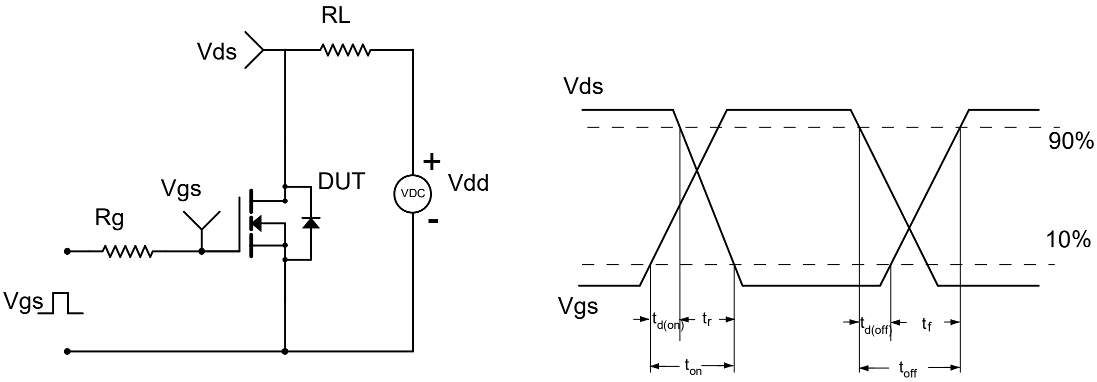
Normalized Transient Thermal Impedance vs Pulse Width

Test Circuit

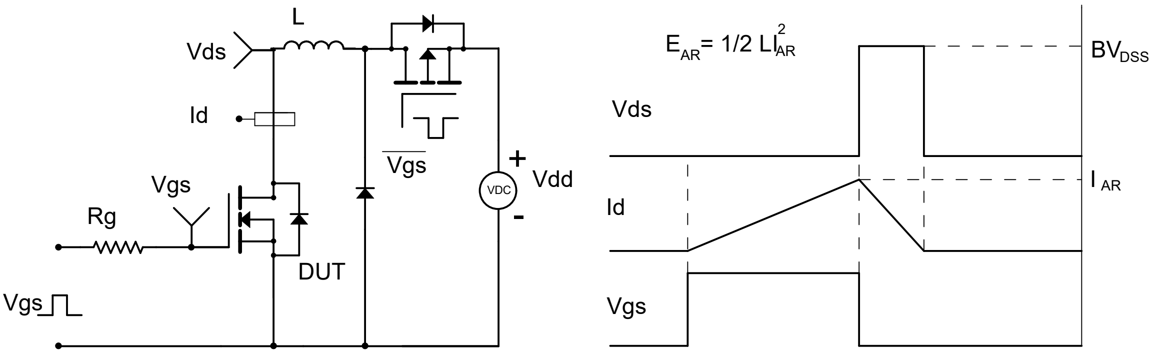
Gate Charge Test Circuit & Waveform



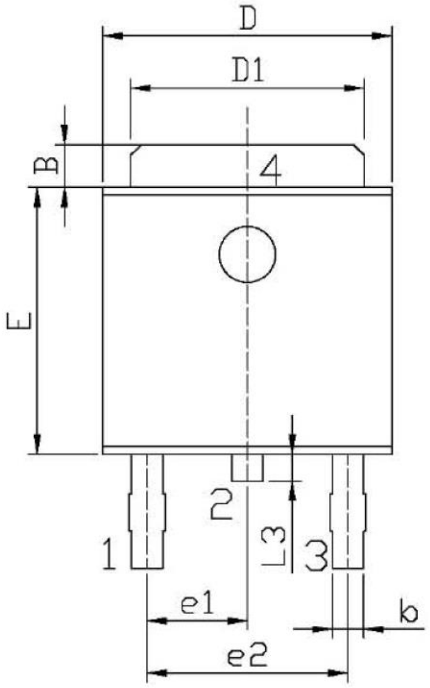
Resistive Switching Test Circuit & Waveform

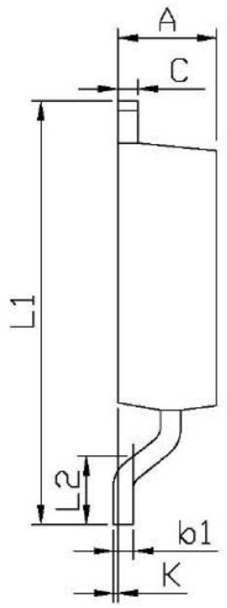


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



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
B	0.950	1.250	0.037	0.049
b	0.500	0.700	0.020	0.028
b1	0.450	0.550	0.018	0.022
C	0.450	0.550	0.018	0.022
D	6.450	6.750	0.254	0.266
D1	5.100	5.500	0.201	0.217
E	5.950	6.250	0.234	0.246
e1	2.240	2.340	0.088	0.092
e2	4.430	4.730	0.174	0.186
L1	9.450	9.950	0.372	0.392
L2	1.250	1.750	0.049	0.069
L3	0.600	0.900	0.024	0.035
K	0.000	0.100	0.000	0.004

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.