



#### Product Summary

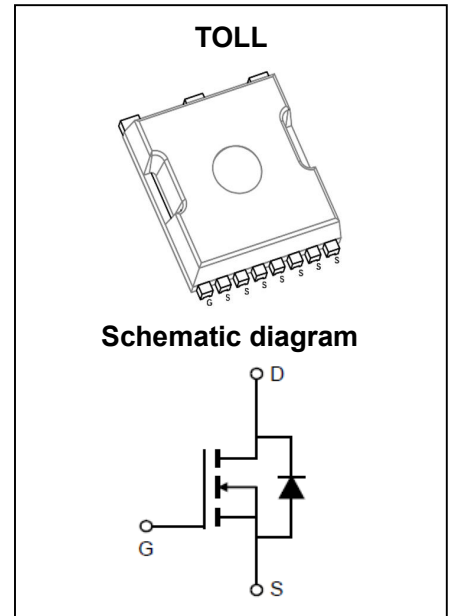
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
100V	1.2m $\Omega$ @10V	415A

#### Feature

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

#### Application

- Power Switching Application
- Motor Driving



#### Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT012N10NTP	TOLL	T012N10N	Reel & Tape	330mm	24mm	2000pcs

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

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	$V_{DS}$	100	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Continuous Drain Current <sup>1</sup>	$T_C = 25^\circ\text{C}$	$I_D$	415	A
	$T_C = 100^\circ\text{C}$	$I_D$	257	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	1660	A	
Single Pulsed Avalanche Current <sup>3</sup>	$I_{AS}$	99	A	
Single Pulsed Avalanche Energy <sup>3</sup>	$E_{AS}$	2450	mJ	
Power Dissipation <sup>5</sup>	$T_C = 25^\circ\text{C}$	$P_D$	500	W
Thermal Resistance from Junction to Ambient <sup>6</sup>	$R_{\theta JA}$	35	$^\circ\text{C}/\text{W}$	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.2	$^\circ\text{C}/\text{W}$	
Junction Temperature	$T_J$	150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-55~ +150	$^\circ\text{C}$	

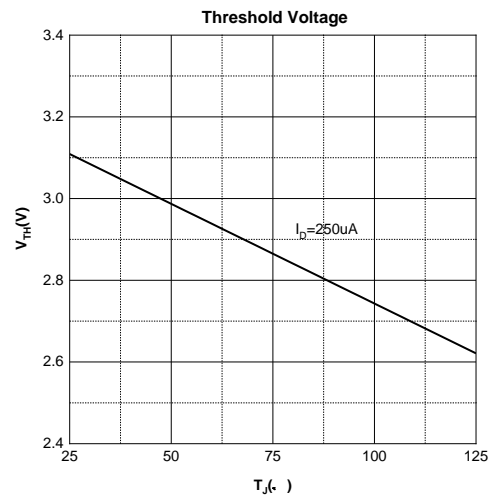
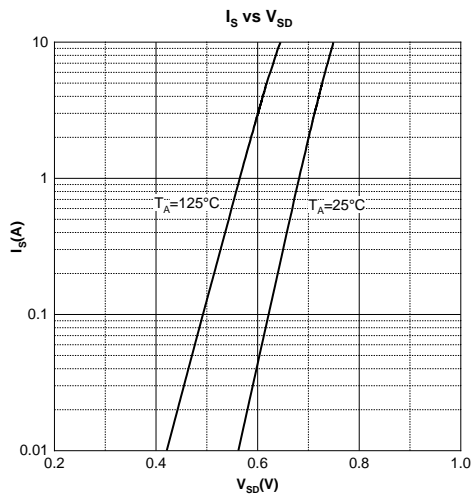
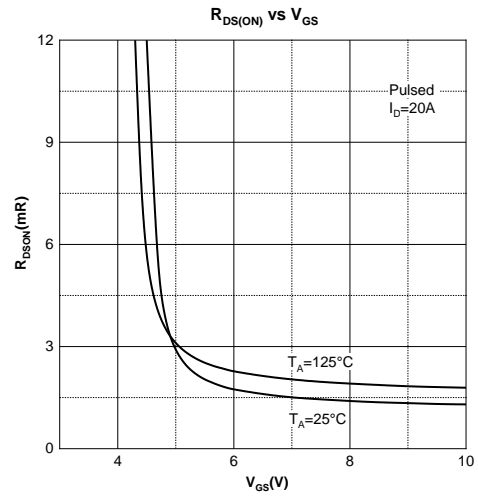
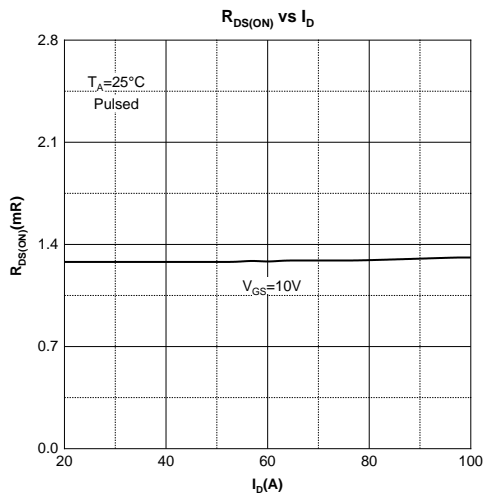
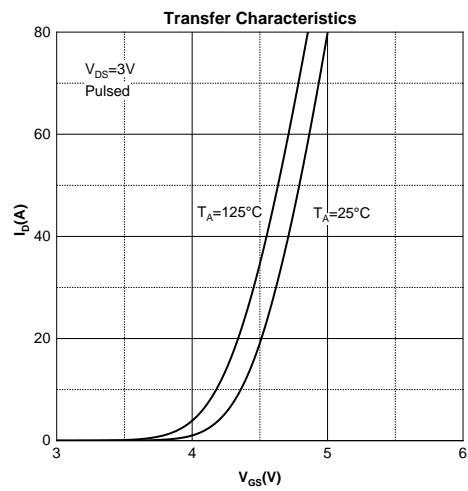
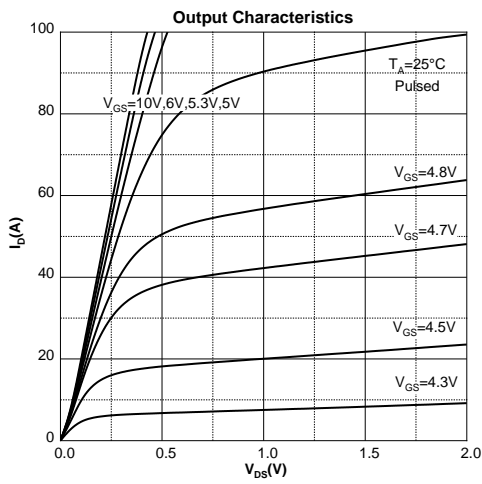
## MOSFET ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

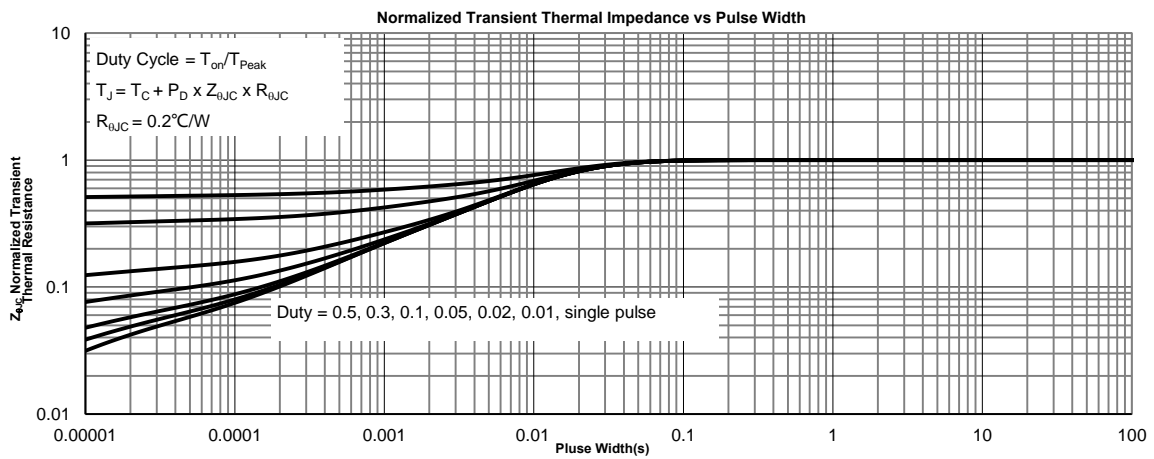
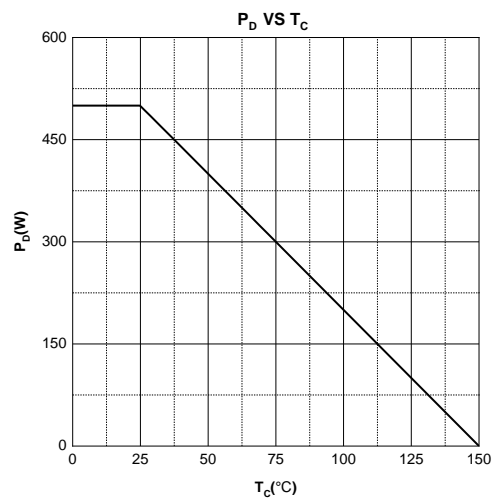
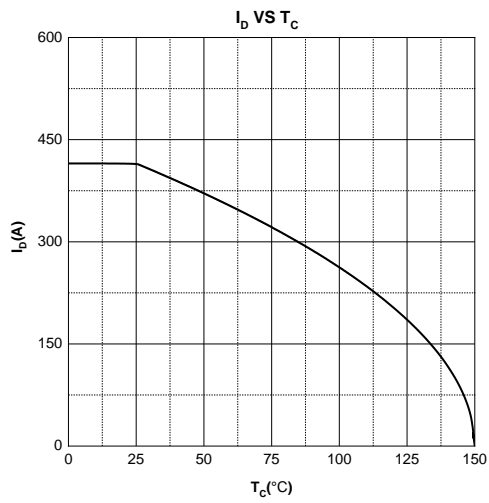
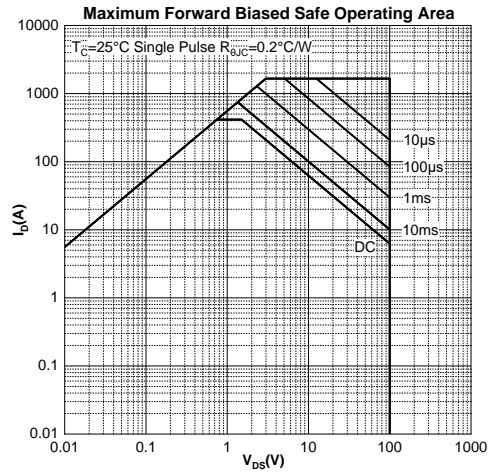
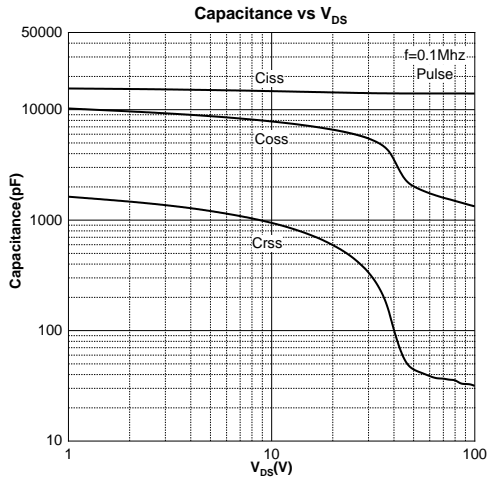
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 100V, V_{GS} = 0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>4</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3.1	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		1.2	1.6	m $\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 50V, V_{GS} = 0V, f = 0.1MHz$		13862		pF
Output Capacitance	$C_{oss}$			2046		
Reverse Transfer Capacitance	$C_{rss}$			45		
Gate Resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		2.8		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 50V, V_{GS} = 10V, I_D = 20A$		200		nC
Gate-Source Charge	$Q_{gs}$			58		
Gate-Drain Charge	$Q_{gd}$			42		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 20V, V_{GS} = 10V, R_L = 1\Omega,$ $R_G = 3\Omega$		39		ns
Turn-On Rise Time	$t_r$			65		
Turn-Off Delay Time	$t_{d(off)}$			129		
Turn-Off Fall Time	$t_f$			90		
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 20A$			1.2	V

### Notes :

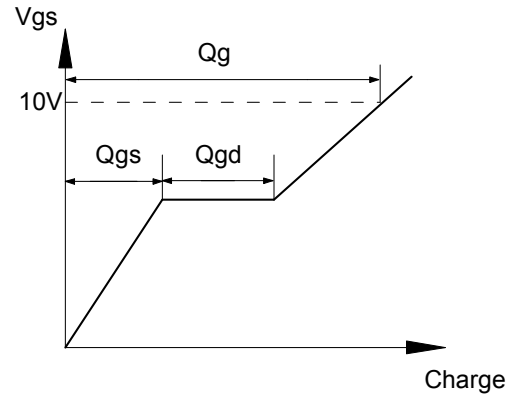
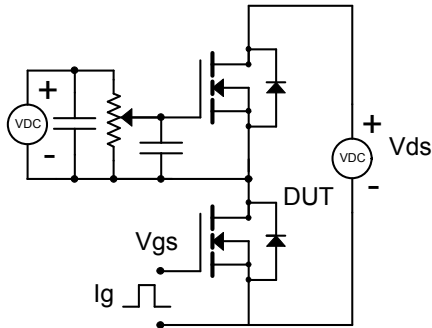
- 1.The maximum current rating is limited by package.And device mounted on a large heatsink
- 2.Pulse Test : Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
- 3.EAS condition:  $V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ\text{C}$ .
- 4.Pulse Test : Pulse 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<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ\text{C}$ .

## Typical Characteristics

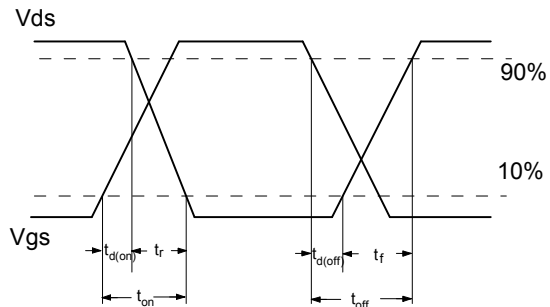
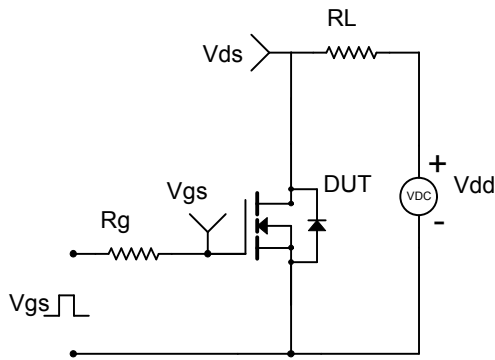




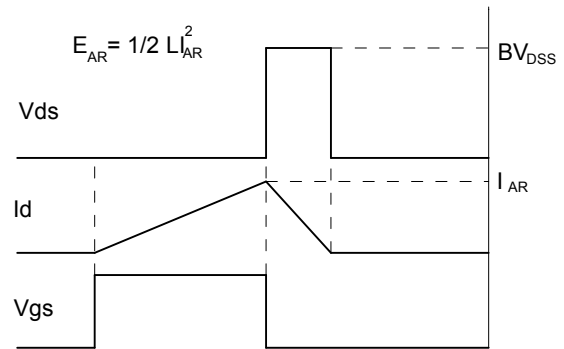
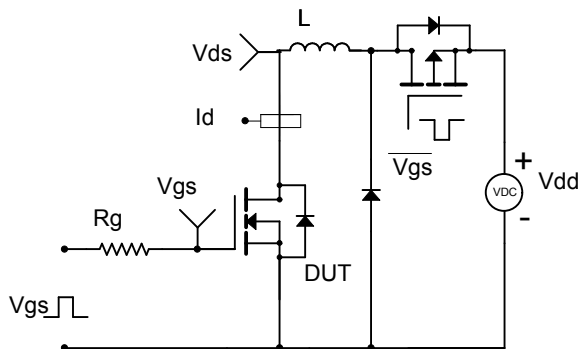
**Gate Charge Test Circuit & Waveform**



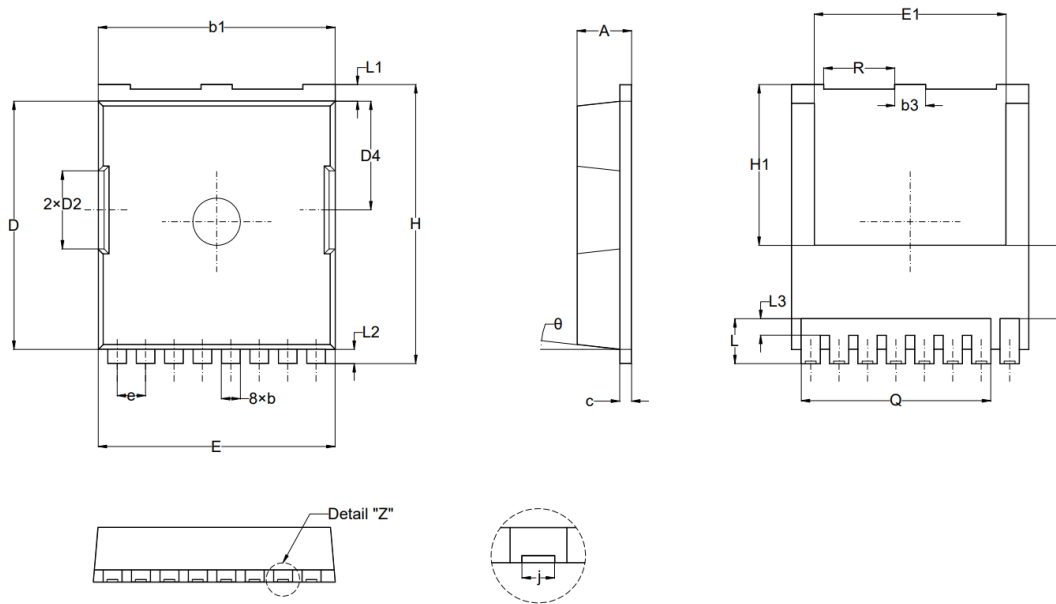
**Resistive Switching Test Circuit & Waveform**



**Unclamped Inductive Switching (UIS) Test Circuit & Waveforms**



## TOLL Package Information



SYMBOL	MILLIMETER		Dimensions In Inches	
	MIN.	MAX.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.650	0.900	0.026	0.035
b1	9.700	9.900	0.382	0.390
b3	1.150	1.350	0.045	0.053
c	0.400	0.600	0.016	0.024
D	10.280	10.480	0.405	0.413
D2	3.200	3.400	0.126	0.134
D4	4.450	4.650	0.175	0.183
E	9.800	10.000	0.386	0.394
E1	7.900	8.300	0.311	0.327
e	1.200BSC		0.047BSC	
H	11.480	11.880	0.452	0.468
H1	6.950REF		0.274REF	
j	0.350REF		0.014REF	
K	3.00REF		0.118REF	
L	1.600	2.000	0.063	0.079
L1	0.550	0.850	0.022	0.033
L2	0.500	0.700	0.020	0.028
L3	0.500	0.800	0.020	0.031
N	8REF		0.315REF	
Q	8REF		0.315REF	
R	2.800	3.200	0.110	0.126
θ	10°REF			

**Attention:**

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