

Product Summary

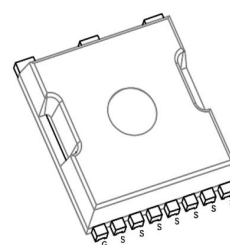
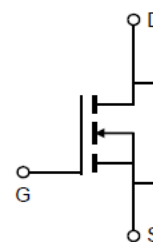
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	0.8mΩ@10V	395A

Feature

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

Application

- Motor control and drive
- Battery management
- DC/DC

TOLL

Schematic diagram

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT008N04NTP	TOLL	T008N04N	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}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current ¹	$T_C = 25^\circ\text{C}$	I_D	395	A
	$T_C = 100^\circ\text{C}$		250	
Pulsed Drain Current ²		I_{DM}	1580	A
Single Pulsed Avalanche Current ³		I_{AS}	61	A
Single Pulsed Avalanche Energy		E_{AS}	930	mJ
Power Dissipation ⁴	$T_C = 25^\circ\text{C}$	P_D	272	W
Thermal Resistance from Junction to Case ⁵		$R_{\theta JC}$	0.46	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ +150	°C

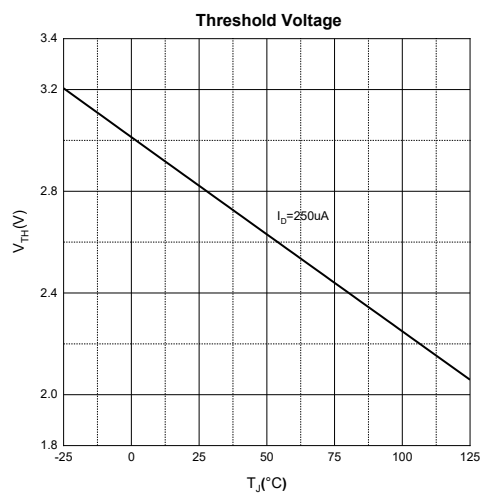
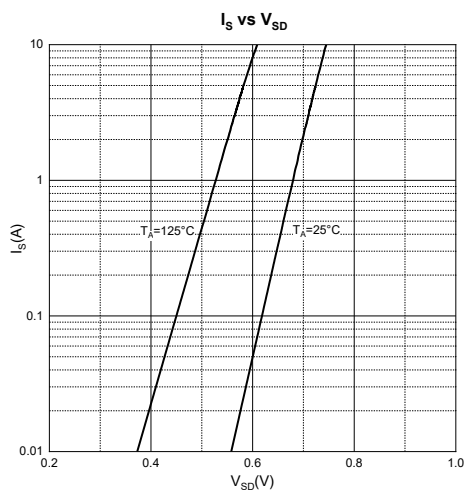
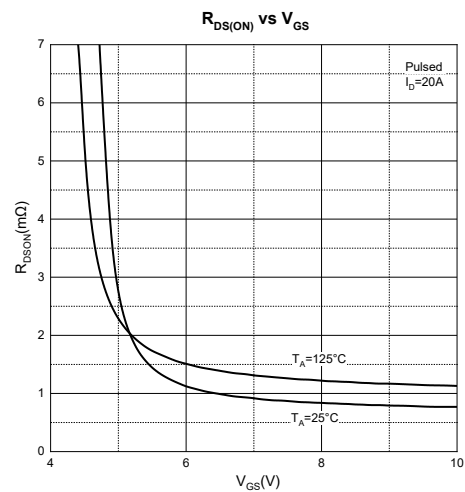
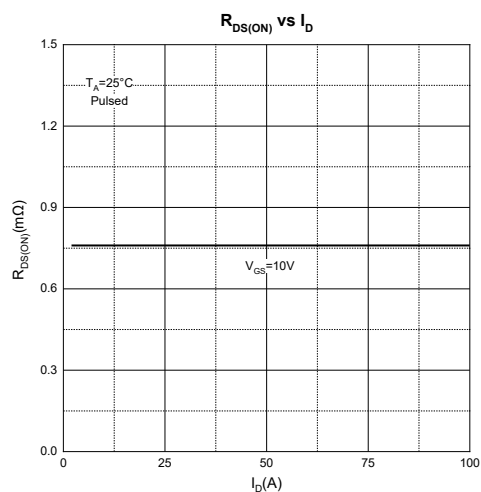
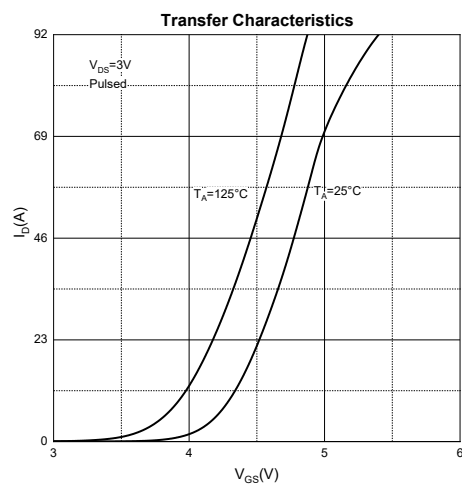
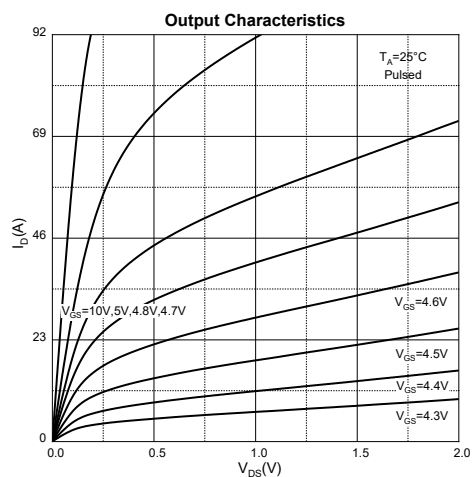
MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

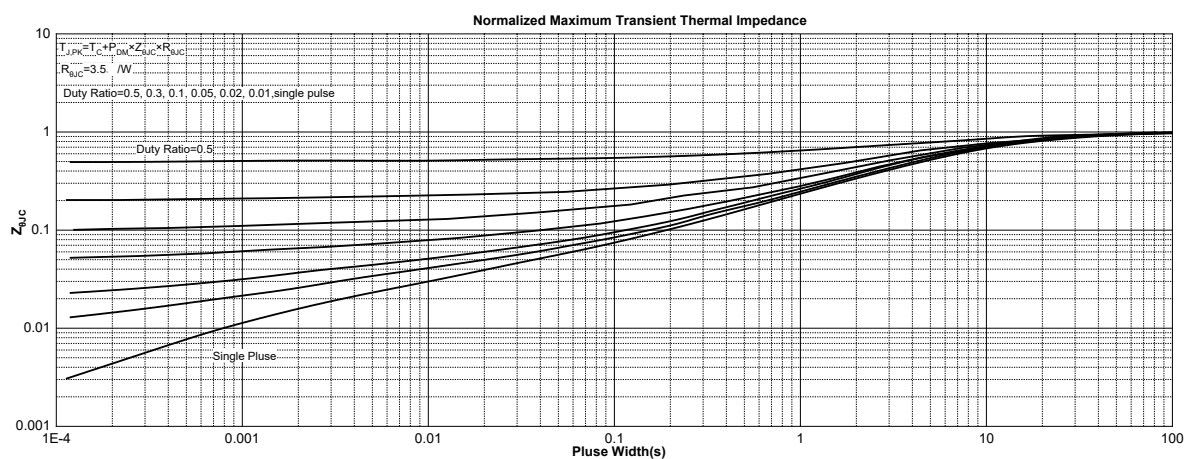
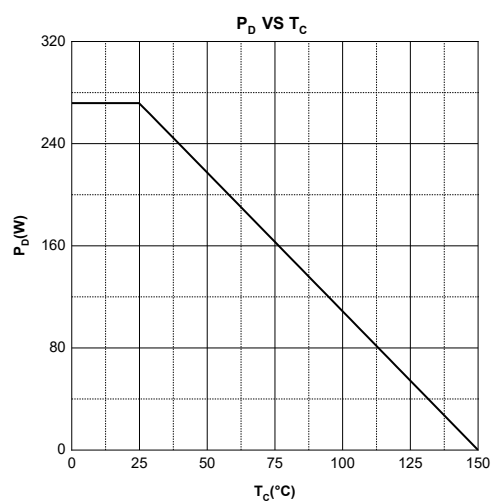
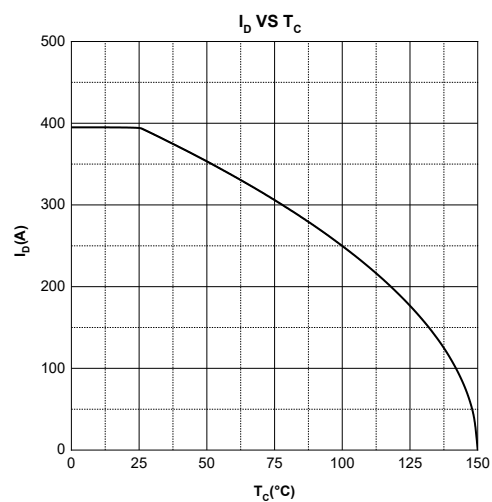
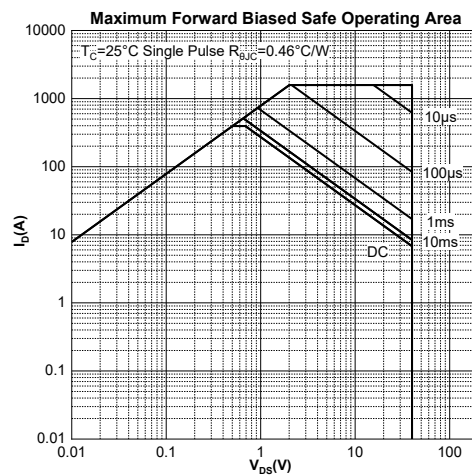
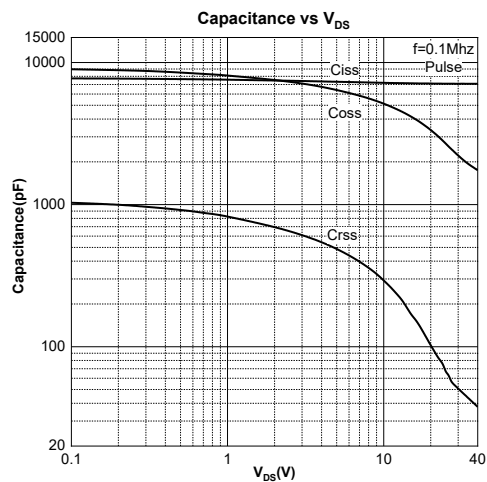
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics ³						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$		0.8	1.0	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 20V, V_{GS} = 0V, f = 0.1MHz$		7155		pF
Output Capacitance	C_{oss}			3277		
Reverse Transfer Capacitance	C_{rss}			100		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		2.7		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 20V, V_{GS} = 10V, I_D = 30A$		94		nC
Gate-Source Charge	Q_{gs}			31		
Gate-Drain Charge	Q_{gd}			14		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 20V, V_{GS} = 10V, R_G = 1.6\Omega,$		32		ns
Turn-On Rise Time	t_r			65		
Turn-Off Delay Time	$t_{d(off)}$			75		
Turn-Off Fall Time	t_f			40		
Source-Drain Diode Characteristics						
Diode Forward Voltage ⁵	V_{SD}	$V_{GS} = 0V, I_S = 20A$			1.2	V
Diode Reverse Recovery Time	t_{rr}	$I_F = 20A, dI/dt = 100A/\mu s$		68		ns
Diode Reverse Recovery Charge	Q_{rr}			120		nC

Notes:

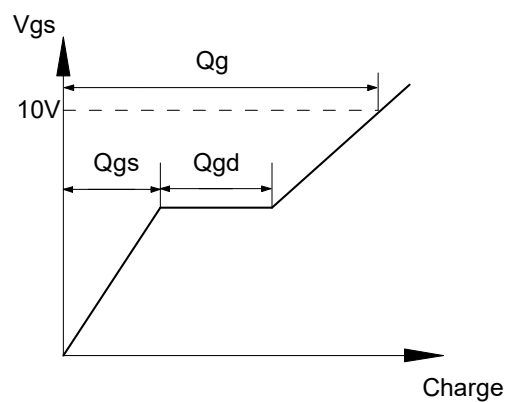
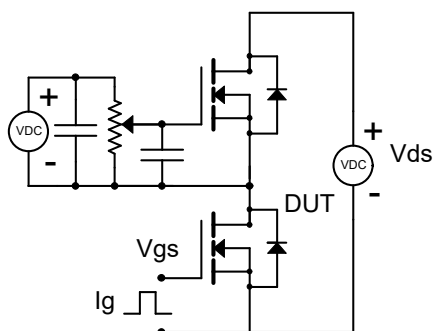
- 1.The maximum current rating is limited by package. And device mounted on a large heatsink.
- 2.Pulse Test: Pulse Width $\leq 10\mu s$, duty cycle $\leq 1\%$.
- 3.EAS condition: $V_{DD} = 40V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ Starting $T_J = 25^\circ\text{C}$.
- 4.Pulse Test: Pulse Width $\leq 300\mu s$, 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 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.

Typical Characteristics

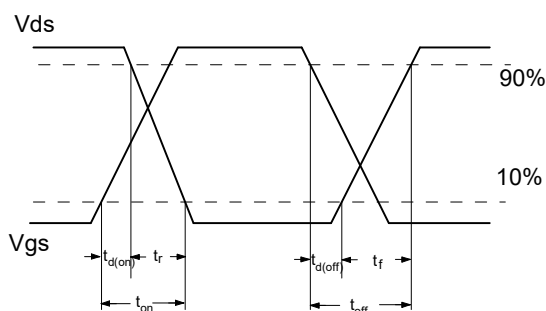
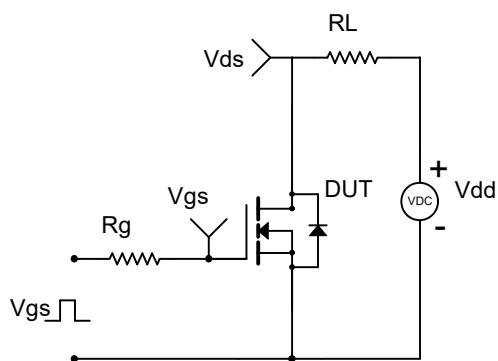




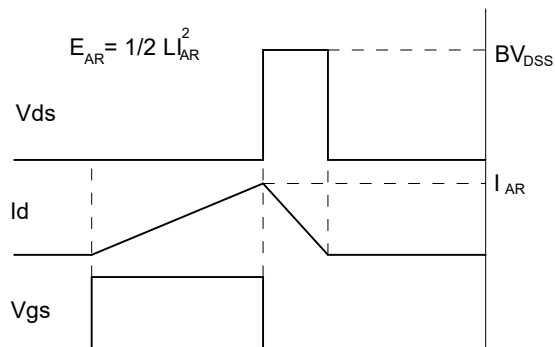
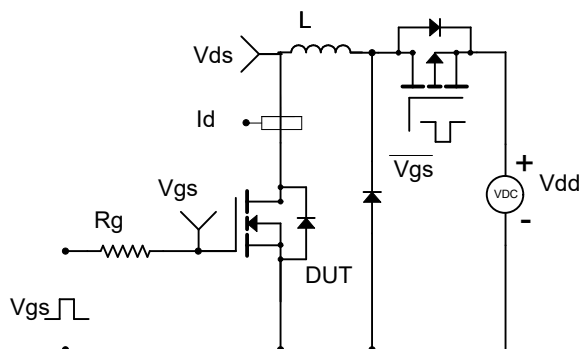
Gate Charge Test Circuit & Waveform

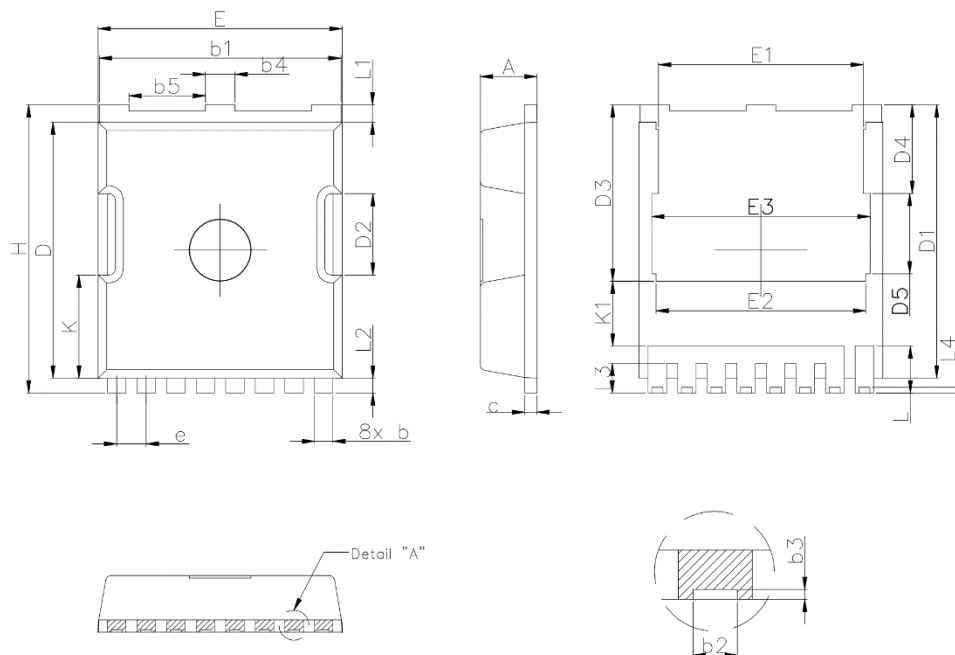


Resistive Switching Test Circuit & Waveform



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	0.700	0.900	0.028	0.035
b1	9.700	9.900	0.382	0.390
b2	0.360	0.550	0.014	0.022
b3	0.050	0.350	0.002	0.014
b4	1.100	1.300	0.043	0.051
b5	3.000	3.200	0.118	0.126
c	0.400	0.600	0.016	0.024
D	10.280	10.550	0.405	0.415
D1	10.980	11.180	0.432	0.440
D2	3.200	3.400	0.126	0.134
D3	7.000	7.300	0.276	0.287
D4	3.440	3.740	0.135	0.147
D5	3.110	3.410	0.122	0.134
e	1.100	1.300	0.043	0.051
E	9.800	10.000	0.386	0.394
E1	8.200	8.400	0.323	0.331
E2	8.350	8.650	0.329	0.341
E3	8.710	9.010	0.343	0.355
H	11.500	11.850	0.453	0.467
K	4.080	4.280	0.161	0.169
K1	2.450		0.0965TYB	
L	1.600	2.100	0.063	0.083
L1	0.500	0.900	0.020	0.035
L2	0.500	0.700	0.020	0.028
L3	1.000	1.300	0.039	0.051

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.