



Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	2.4m Ω @10V	210A
	3.2m Ω @4.5V	

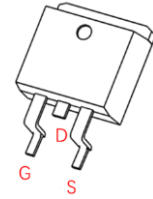
Feature

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

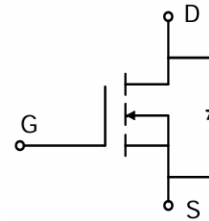
Application

- Power Management
- Load Switching
- Motor Driving
- High frequency switching, synchronous rectification

TO-263-2L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT028N06LTH	TO-263-2L	T028N06L	Reel & Tape	330mm	24mm	800pcs

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	$T_C = 25^\circ\text{C}$	210
		$T_C = 100^\circ\text{C}$	148
Pulsed Drain Current ²	I_{DM}	840	A
Single Pulsed Avalanche Current ³	I_{AS}	42	A
Single Pulsed Avalanche Energy ³	E_{AS}	441	mJ
Power Dissipation ⁵	P_D	250	W
Thermal Resistance from Junction to Ambient ⁶	$R_{\theta JA}$	35	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.60	$^\circ\text{C/W}$
Junction Temperature	T_J	175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +175	$^\circ\text{C}$

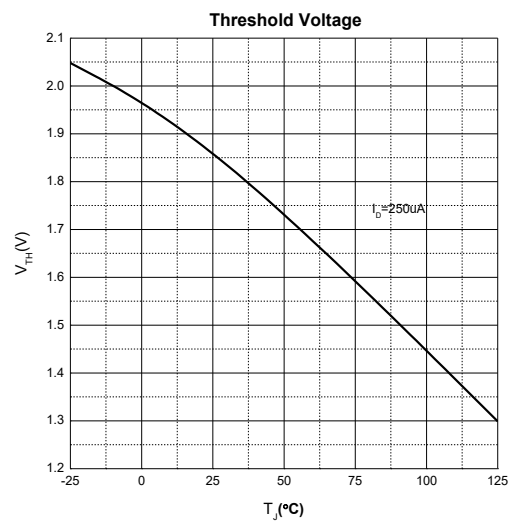
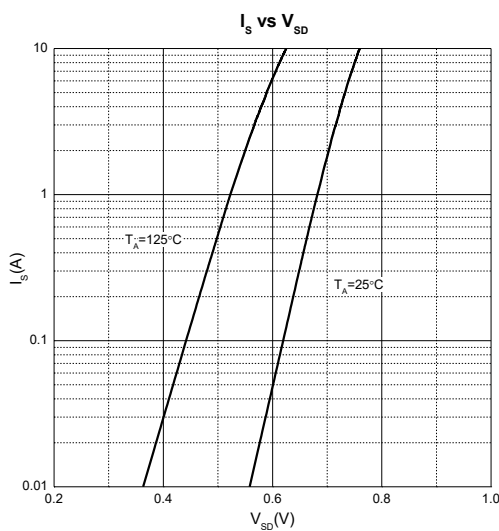
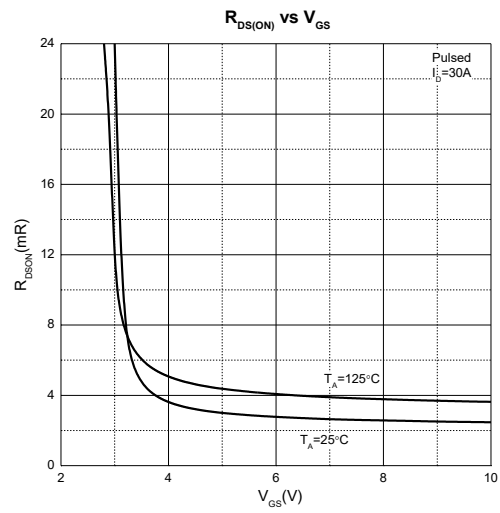
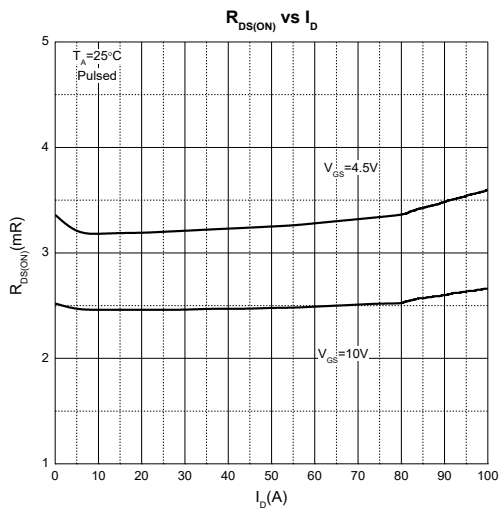
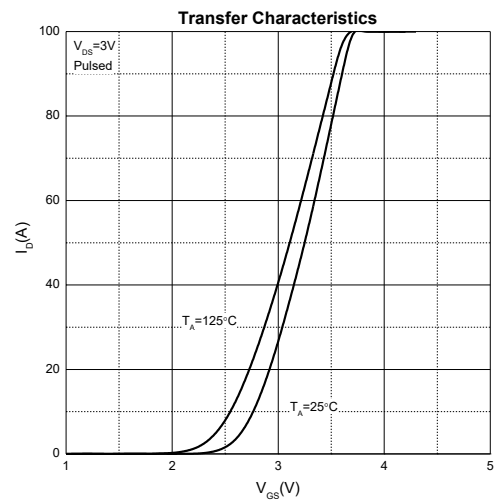
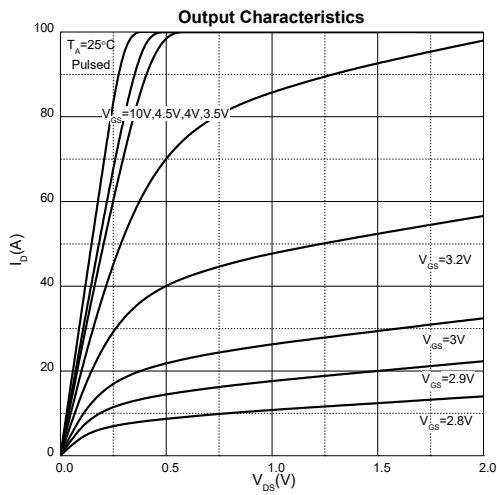
MOSFET ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

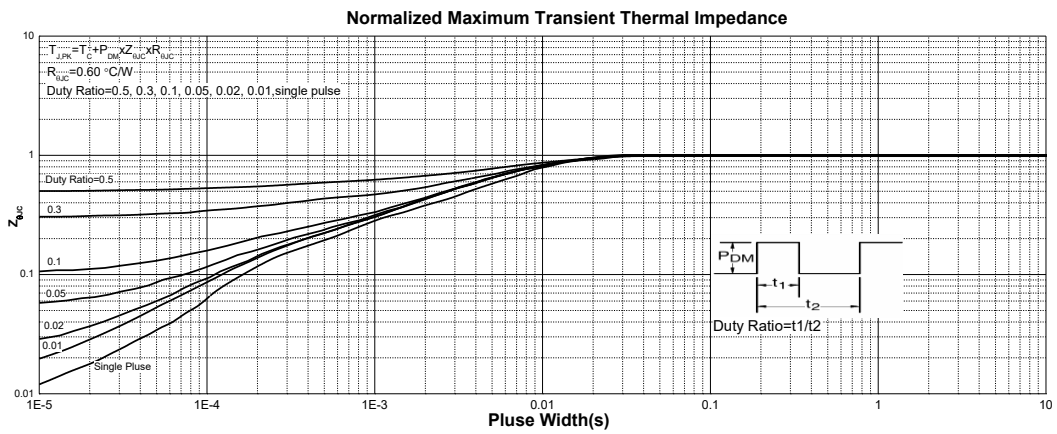
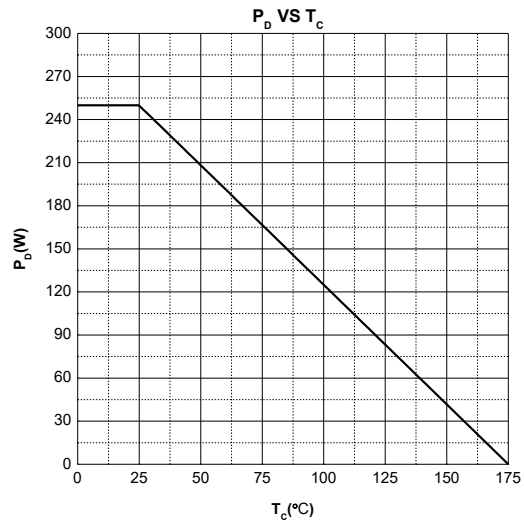
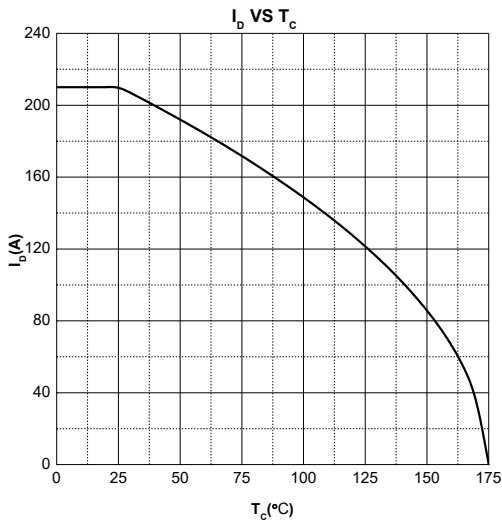
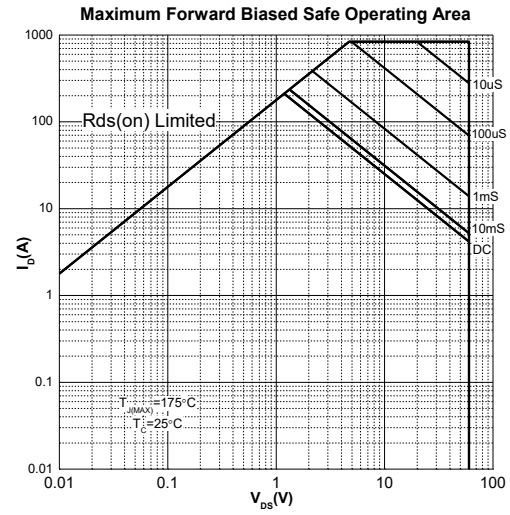
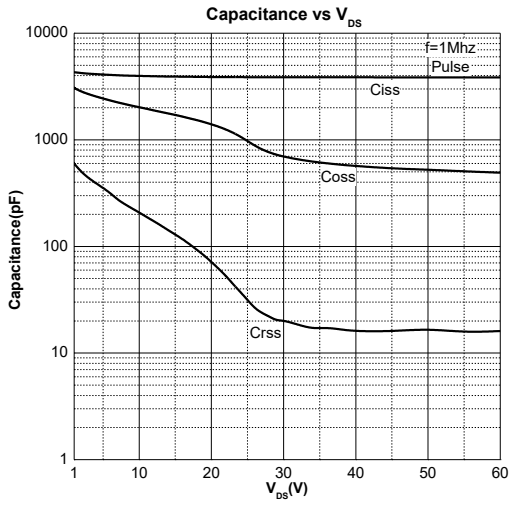
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
On Characteristics⁴						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.2	1.8	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		2.4	2.8	m Ω
		$V_{GS} = 4.5V, I_D = 15A$		3.2	4.5	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 5V, I_D = 20A$	50			S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		3842		pF
Output Capacitance	C_{oss}			688		
Reverse Transfer Capacitance	C_{rss}			19.6		
Gate Resistance	R_g	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 30A$		59		nC
Gate-Source Charge	Q_{gs}			11		
Gate-Drain Charge	Q_{gd}			10.7		
Gate Plateau Voltage	$V_{plateau}$			3.0		V
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, I_D = 20A,$ $R_G = 3\Omega$		4		ns
Turn-On Rise Time	t_r			5		
Turn-Off Delay Time	$t_{d(off)}$			32		
Turn-Off Fall Time	t_f			15		
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	$T_C = 25^\circ\text{C}$			210	A
Diode Pulse Forward Current ²	I_{SM}	$T_C = 25^\circ\text{C}$			840	A
Diode Reverse Recovery Time	t_{rr}	$I_F = 20A, dI/dt = 100A/\mu s$		40		ns
Diode Reverse Recovery Charge	Q_{rr}	$I_F = 20A, dI/dt = 100A/\mu s$		36		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: $V_{DD} = 30V, V_{GS} = 10V, L = 0.5mH, R_G = 25\Omega$ 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 $T_A = 25^\circ\text{C}$.

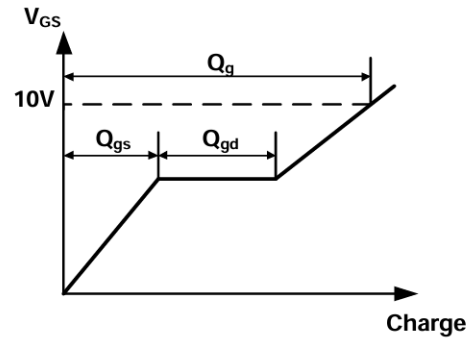
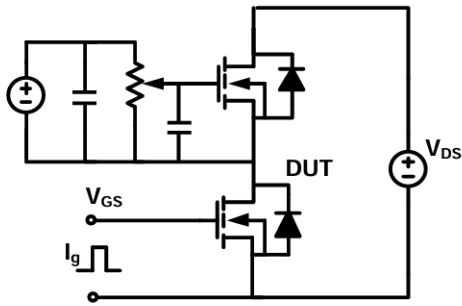
Typical Characteristics



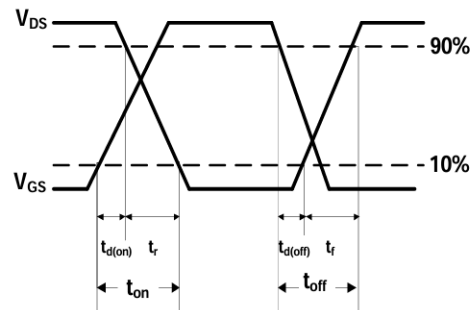
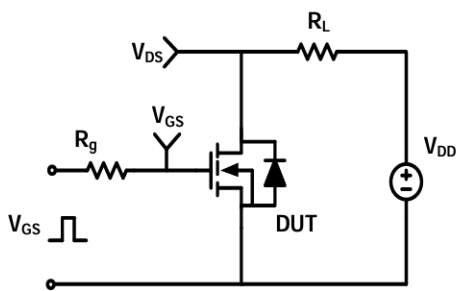


Test Circuit

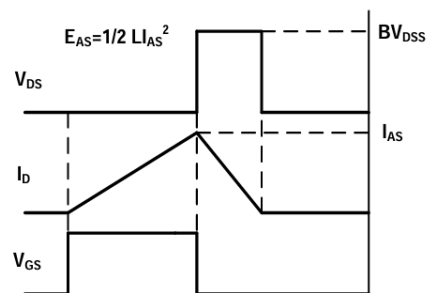
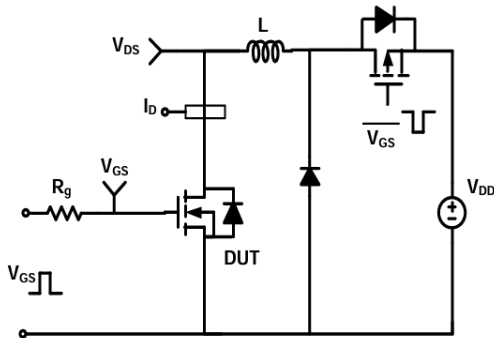
Gate Charge Test Circuit & Waveform



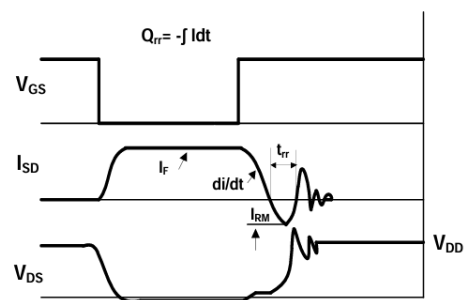
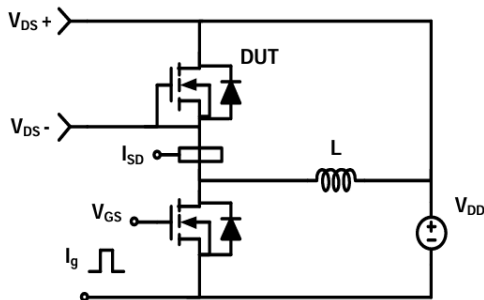
Resistive Switching Test Circuit & Waveform



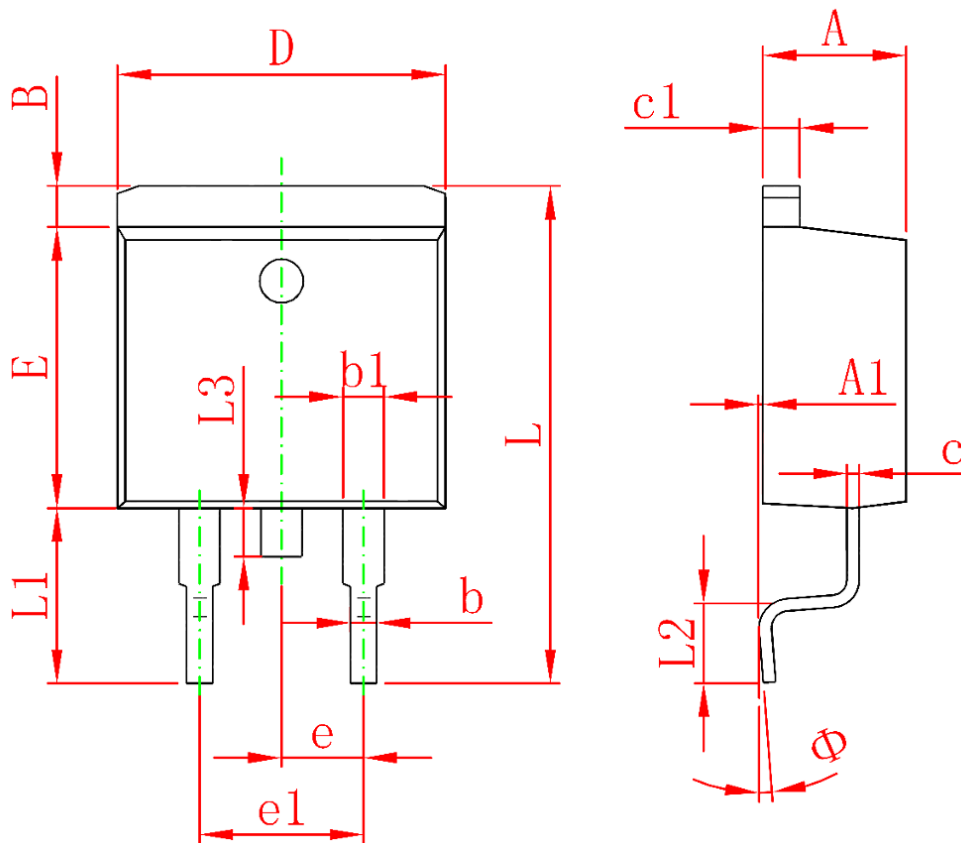
Unclamped Inductive Switching (UIS) Test Circuit & Waveform



Diode Recovery Test Circuit & Waveform



TO-263-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.370	4.770	0.172	0.188
A1	0.000	0.250	0.000	0.010
B	1.070	1.470	0.042	0.058
b	0.700	0.960	0.028	0.038
b1	1.170	1.470	0.046	0.058
c	0.310	0.530	0.012	0.021
c1	1.170	1.420	0.046	0.056
D	9.860	10.360	0.388	0.408
E	8.500	8.900	0.335	0.350
e	2.540TYP		0.100TYP	
e1	4.980	5.180	0.196	0.204
L	14.700	15.500	0.579	0.610
L1	4.950	5.450	0.195	0.215
L2	2.000	2.740	0.079	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°

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