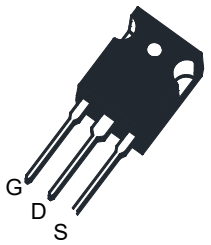
GP36N20TD

200V N-Channel MOSFET

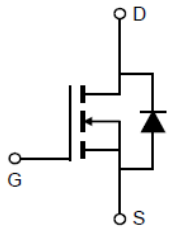
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
200V	64mΩ@10V	40A

TO-247-3L



Schematic diagram



Feature

- Low $R_{DS(ON)}$
- Low FOM
- High Current Capability
- 100% △Vds Tested
- 100% EAS Guaranteed

Application

- Load Switch
- PWM Application
- Power Management

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GP36N20TD	TO-247-3L	GP36N20TD	Tube	NA	NA	30pcs

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	200	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25°C	I_D	40	A
	T_C = 100°C		25	
Pulsed Drain Current[2]		I_{DM}	140	A
Single Pulsed Avalanche Current[3]		I_{AS}	53	A
Single Pulsed Avalanche Energy[3]		E_{AS}	702	mJ
Power Dissipation[5]	T_C = 25°C	P_D	50	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	100	°C /W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	2.5	°C /W
Junction Temperature		T_J	150	°C
Storage Temperature		T_{STG}	-55~ +150	°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	200			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 200V, 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		64	82	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 100V, V_{GS} = 0V, f = 1MHz		2037		pF
Output Capacitance	C_{oss}			153		
Reverse Transfer Capacitance	C_{rss}			19		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		2		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 100V, V_{GS} = 10V, I_D = 20A		50		nC
Gate-Source Charge	Q_{gs}			12		
Gate-Drain Charge	Q_{gd}			20		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 100V, V_{GS} = 10V, I_D = 40A, R_G = 25Ω		25		ns
Turn-On Rise Time	t_r			73		
Turn-Off Delay Time	$t_{d(off)}$			115		
Turn-Off Fall Time	t_f			70		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 20A			1.2	V
Reverse Recovery Time	t_{rr}	I_F = 40A, dI_F/dt = 100A/μs		170		ns
Reverse Recovery Charge	Q_{rr}			1315		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%.

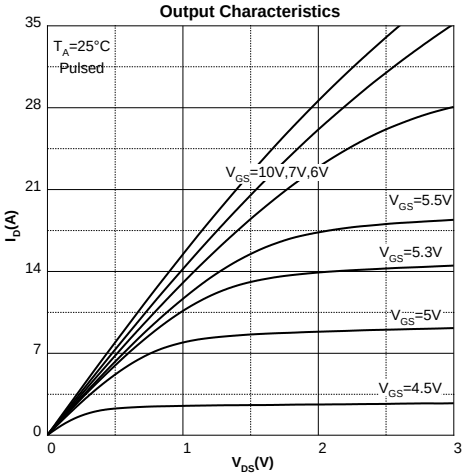
3.E_{AS} condition: V_{DD} = 50V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°C.

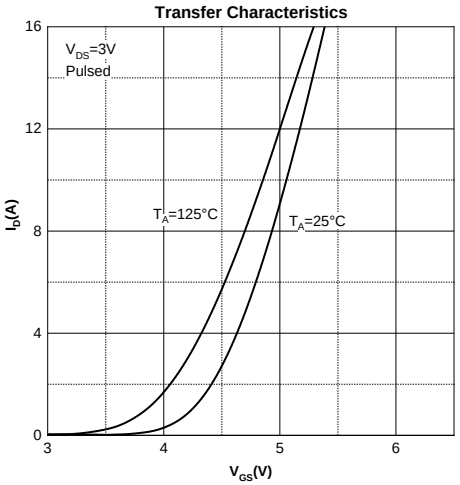
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

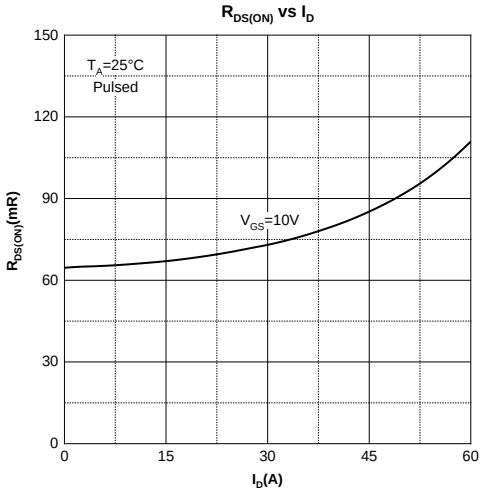
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

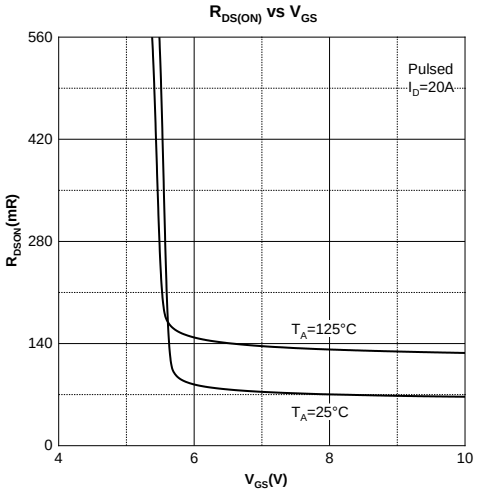
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

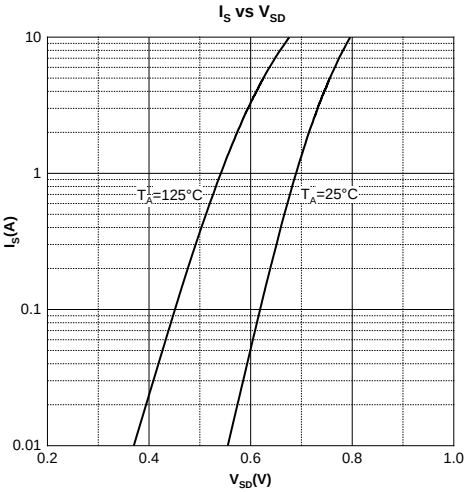
Typical Characteristics

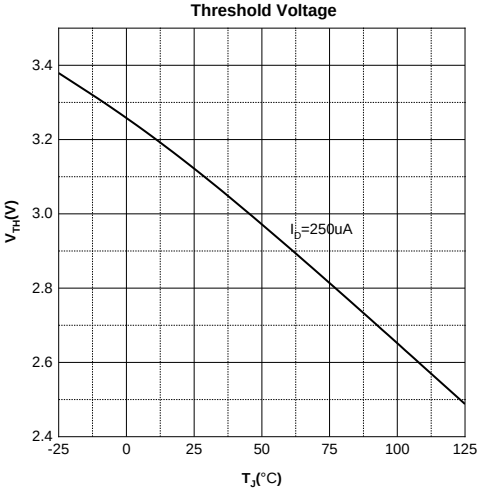






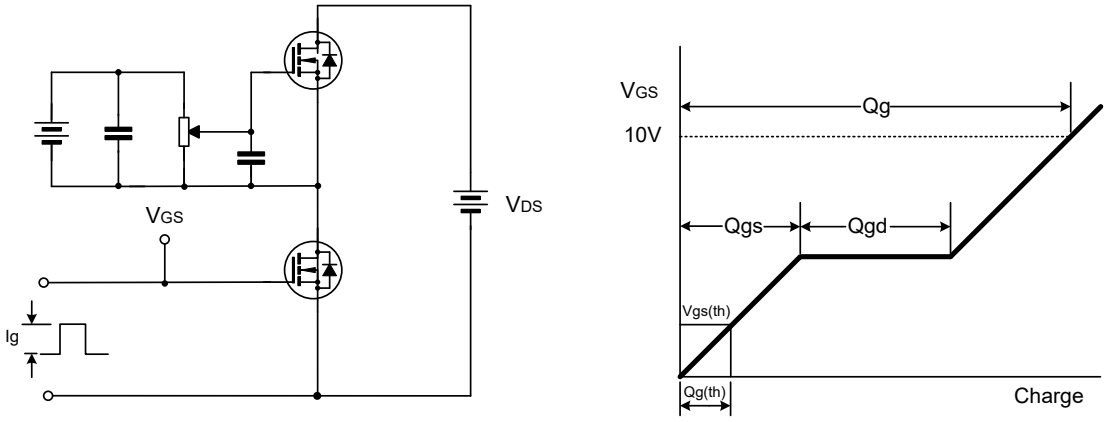




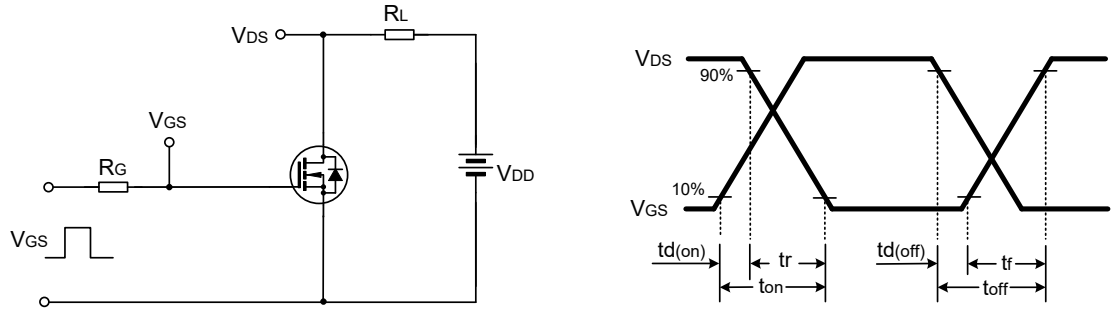


Test Circuit

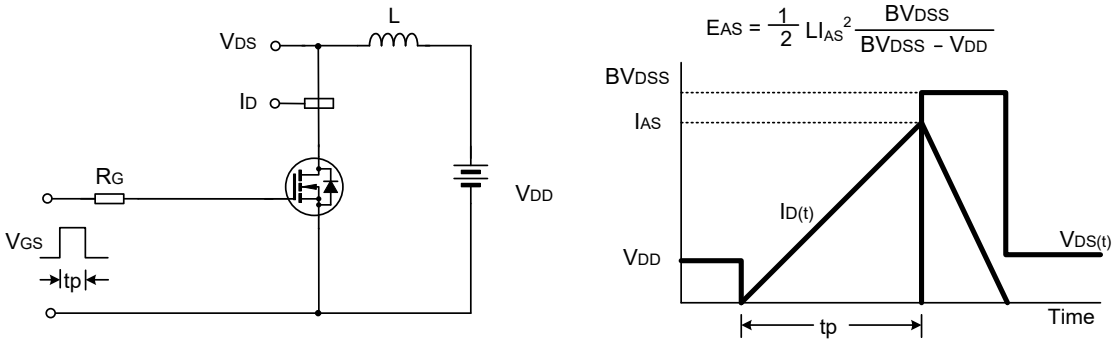
Gate Charge Test Circuit & Waveform



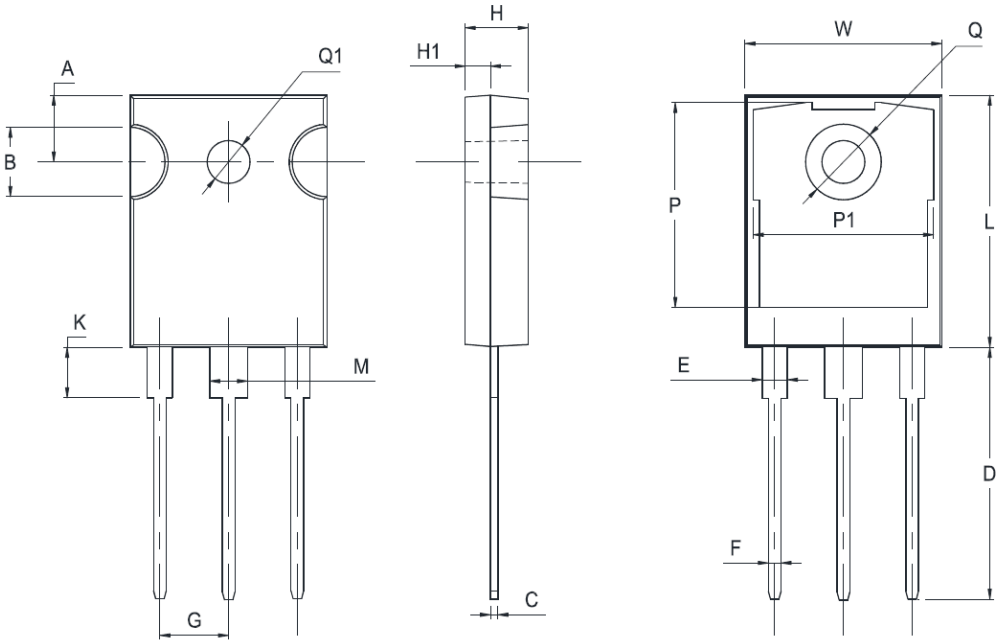
Resistive Switching Test Circuit & Waveform



E_{AS} Test Circuit & Waveform



TO-247-3L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	5.900	6.500	0.232	0.256
B	4.600	5.200	0.181	0.205
C	0.500	0.700	0.020	0.028
D	19.700	20.300	0.776	0.799
E	1.800	2.200	0.071	0.087
F	1.100	1.300	0.043	0.051
G	5.100	5.700	0.201	0.224
W	15.800	16.200	0.622	0.638
H	4.700	5.300	0.185	0.209
H1	2.100	2.500	0.083	0.098
K	4.050	4.450	0.159	0.175
L	20.700	21.300	0.815	0.839
M	2.800	3.200	0.110	0.126
P	16.200	16.600	0.638	0.654
P1	13.800	14.200	0.543	0.559
Q	7.050	7.350	0.278	0.289
Q1	3.600	4.200	0.142	0.165

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.