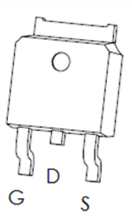
GPT105N15NTF

150V N-Channel MOSFET

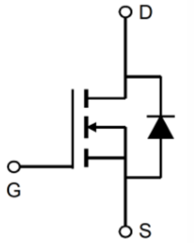
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
150V	10.5mΩ@10V	63A

TO252-2L



Schematic diagram



Feature

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

Application

- Power Switching Application
- Hard Switched and High Frequency Circuits
- DC/DC Converter

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPT105N15NTF	TO252-2L	T105N15N	Reel & Tape	330mm	16mm	2500pcs

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain - Source Voltage		V_{DS}	150	V
Gate - Source Voltage		V_{GS}	±20	V
Continuous Drain Current[1]	T_C = 25℃	I_D	63	A
	T_C = 100℃	I_D	40	A
Pulsed Drain Current[2]		I_{DM}	252	A
Single Pulsed Avalanche Current[3]		I_{AS}	40	A
Single Pulsed Avalanche Energy[3]		E_{AS}	400	mJ
Power Dissipation[5]	T_C = 25℃	P_D	83	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	40	℃/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.5	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS (T_A = 25℃ 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	150			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 150V, V_{GS} = 0V			1	μA
Gate - Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±150	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2	3.1	4	V
Drain-source On-resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		10.5	14.0	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 75V, V_{GS} = 0V, f = 1MHz		2240		pF
Output Capacitance	C_{oss}			256		
Reverse Transfer Capacitance	C_{rss}			3.2		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		2.8		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 75V, V_{GS} = 10V, I_D = 20A		31		nC
Gate-source Charge	Q_{gs}			7.3		
Gate-drain Charge	Q_{gd}			7.2		
Gate Plateau Voltage	$V_{plateau}$			4.9		V
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 75V, V_{GS} = 10V, I_D = 35A, R_G = 3Ω		13		ns
Turn-on Rise Time	t_r			4		
Turn-off Delay Time	$t_{d(off)}$			16		
Turn-off Fall Time	t_f			3		
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℃			83	A
Diode Pulse Forward Current[2]	I_{SM}	T_C = 25℃			332	A
Diode Reverse Recovery Time	t_{rr}	I_F = 20A, dI/dt = 100A/μs		90		ns
Diode Reverse Recovery Charge	Q_{rr}	I_F = 20A, dI/dt = 100A/μs		300		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%.

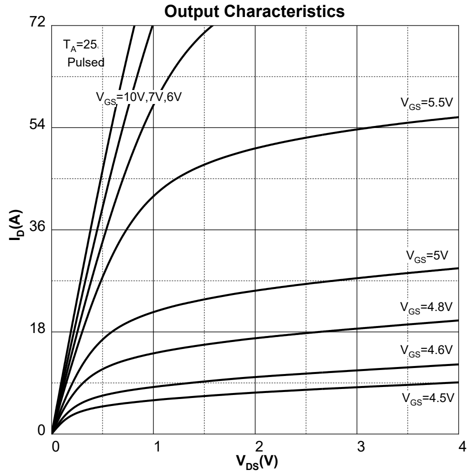
3.E_{AS} condition: V_{DD} = 100V, V_{GS} = 10V, L = 0.5mH, R_G = 25Ω Starting T_J = 25°℃.

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

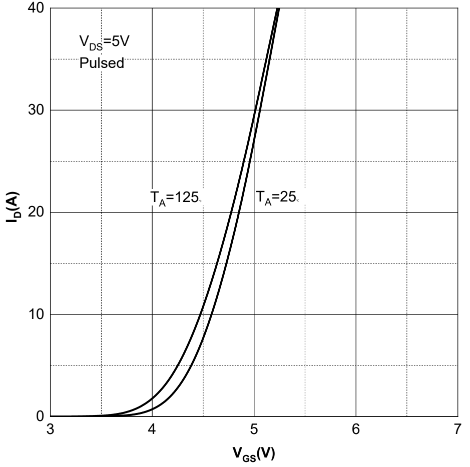
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

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

Typical Characteristics

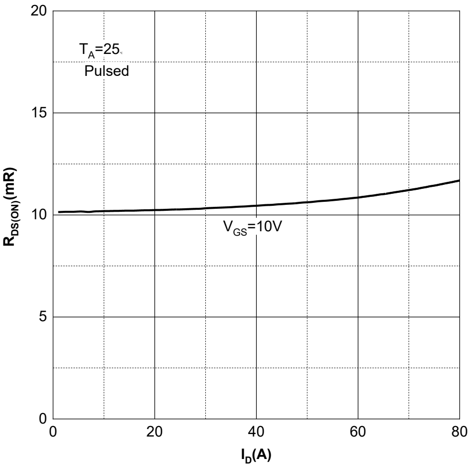


Output Characteristics

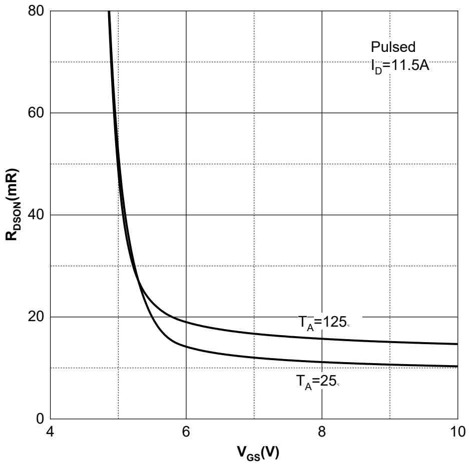


Transfer Characteristics

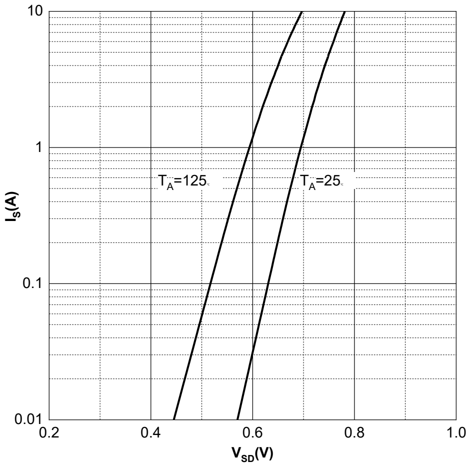
$R_{DS(ON)}$ vs I_D



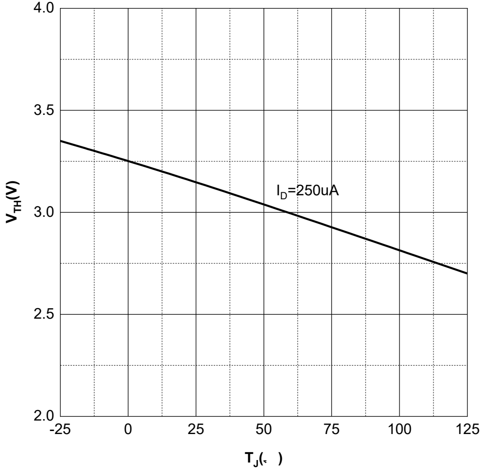
$R_{DS(ON)}$ vs V_{GS}

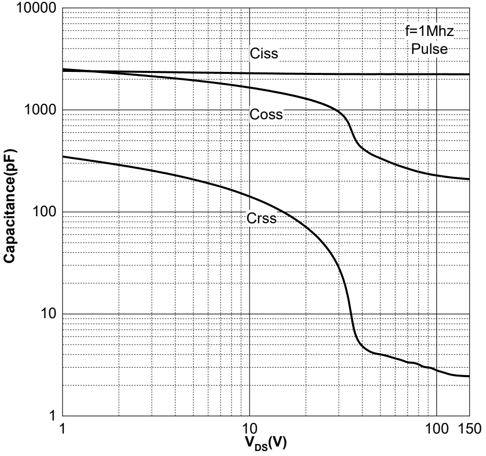


I_S vs V_{SD}

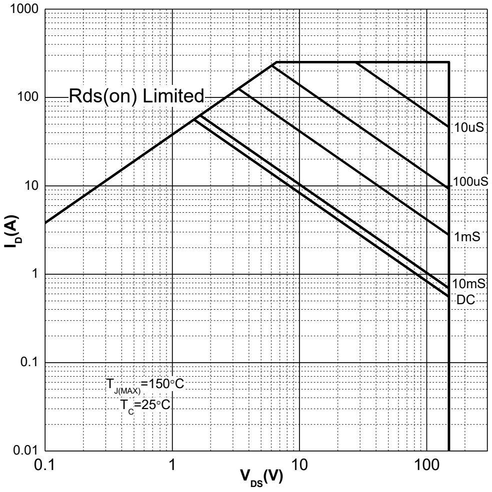


Threshold Voltage

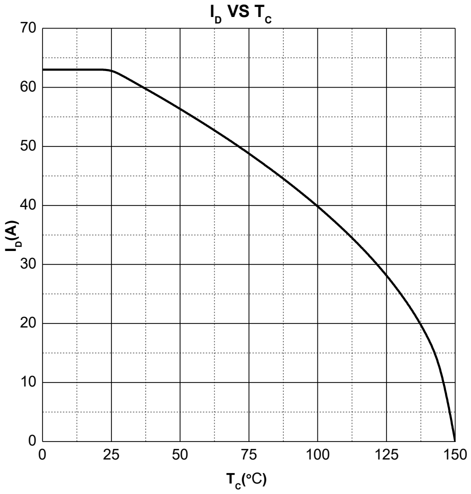




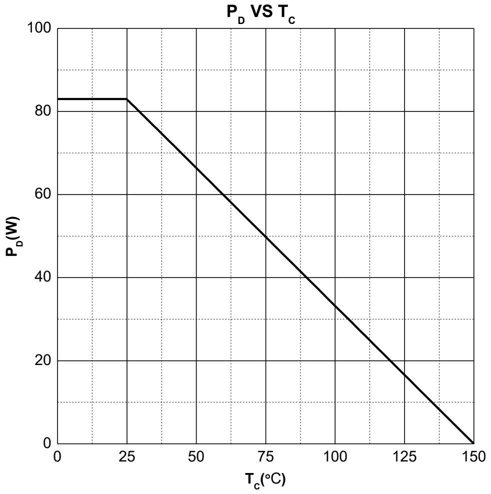
Capacitance vs V_{DS}



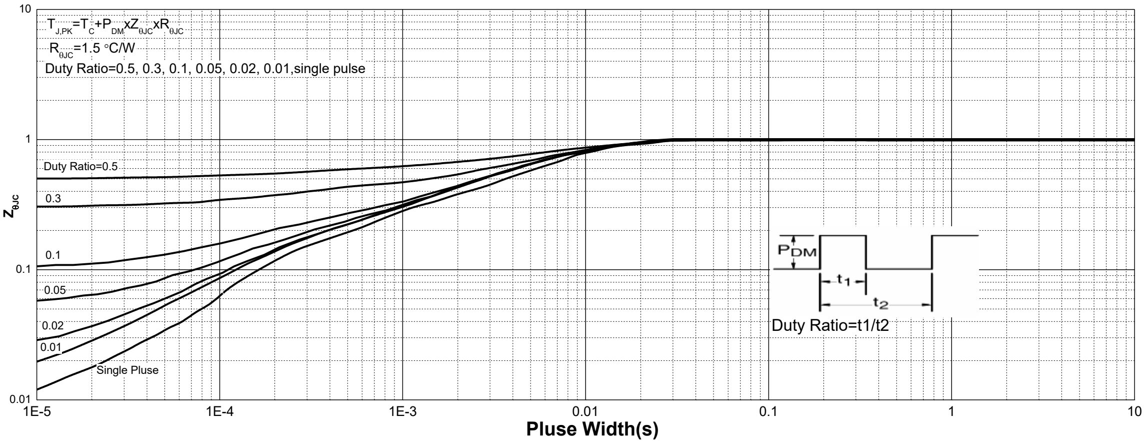
Maximum Forward Biased Safe Operating Area



I_D VS T_C



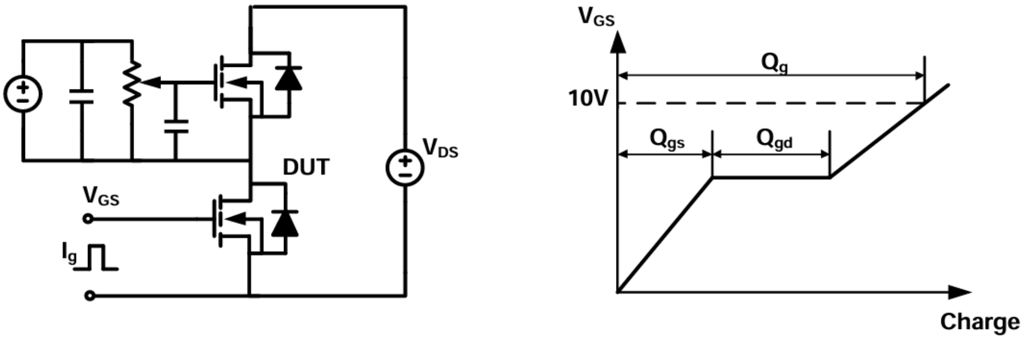
P_D VS T_C



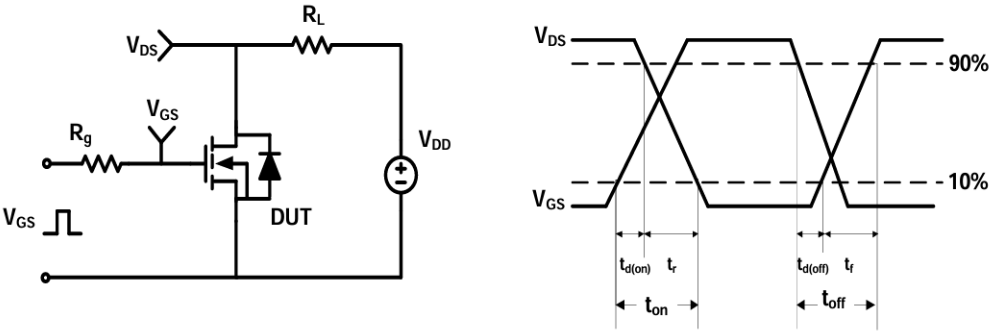
Normalized Maximum Transient Thermal Impedance

Test Circuit

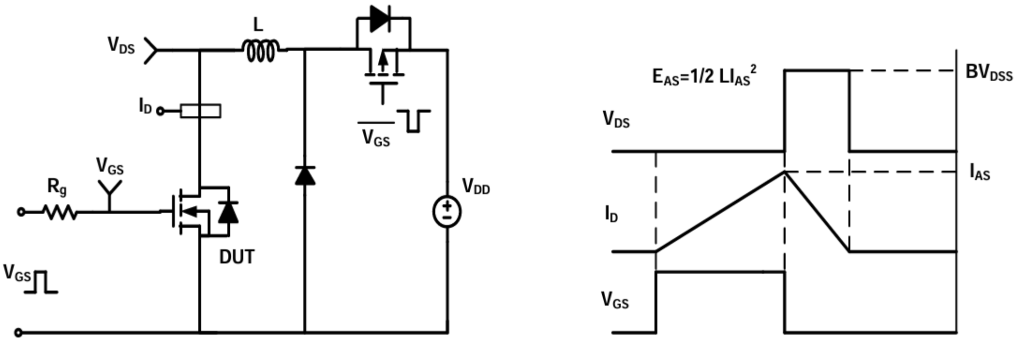
Gate Charge Test Circuit & Waveform



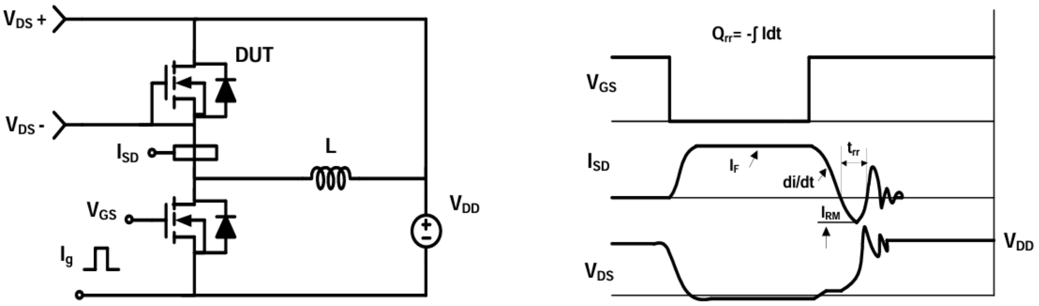
Resistive Switching Test Circuit & Waveform



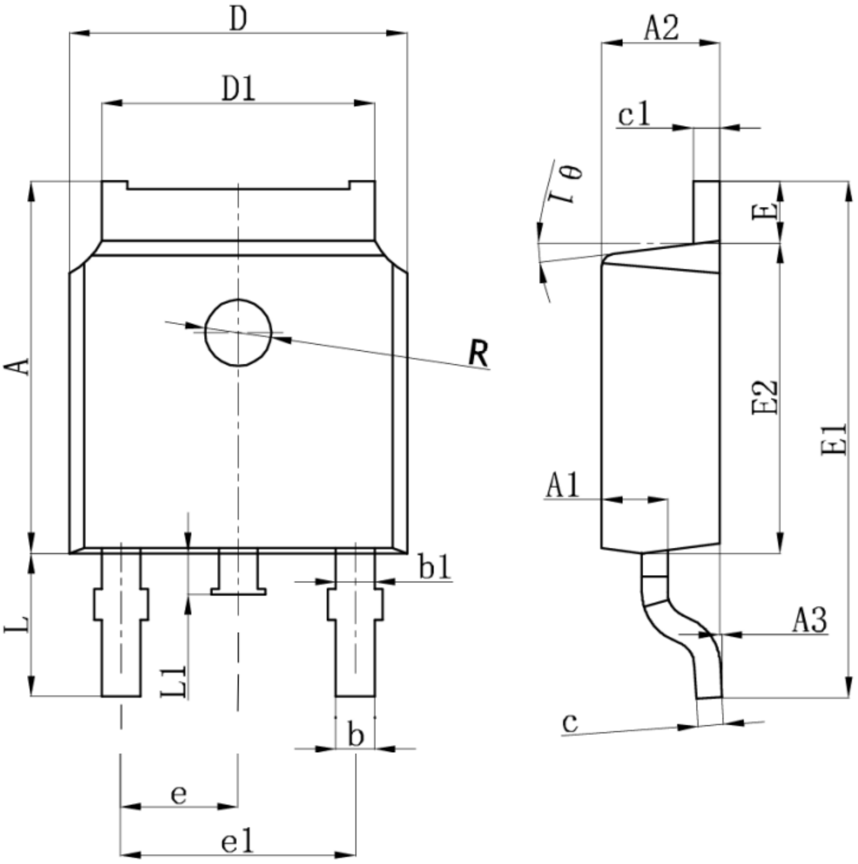
Unclamped Inductive Switching (UIS) Test Circuit & Waveform



Diode Recovery Test Circuit & Waveform



TO-252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.850	7.250	0.269	0.285
A1	0.960	1.060	0.038	0.042
A2	2.200	2.400	0.087	0.094
A3	0.000	0.15	0.000	0.006
b	0.760REF		0.030REF	
b1	1.000REF		0.039REF	
c	0.508REF		0.020REF	
c1	0.508REF		0.020REF	
D	6.250	6.850	0.246	0.270
D1	5.050	5.650	0.199	0.222
E	0.850	1.200	0.033	0.047
E1	9.700	10.400	0.382	0.409
E2	5.800	6.400	0.228	0.252
e	2.286BSC		0.090BSC	
e1	4.572REF		0.180REF	
L	2.650	2.950	0.104	0.116
L1	0.600	1.000	0.024	0.039
θ1	7°REF		7°REF	
R	1.300REF		0.051REF	

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