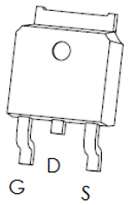
GP11N25TF

250V-11A Enhancement Mode N-Channel Power MOSFET

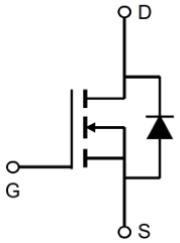
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
250V	280mΩ@10V	11A

TO-252-2L



Schematic diagram



Feature

- Low $R_{DS(ON)}$
- Low FOM
- Extremely low switching loss
- Good stability and uniformity

Application

- Load Switch
- PWM Application
- Power Management

Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GP11N25TF	TO-252-2L	11N25	Reel & Tape	330mm	16mm	2500pcs

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	250	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current[1]	T_C = 25°C	I_D	11	A
	T_C = 100°C		7	
Pulsed Drain Current[2]		I_{DM}	44	A
Single Pulsed Avalanche Current[3]		I_{AS}	8.6	A
Single Pulsed Avalanche Energy[3]		E_{AS}	367	mJ
Power Dissipation[5]	T_C = 25°C	P_D	75	W
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	100	°C/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.67	°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	250			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 250V, V_{GS} = 0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±30V, V_{DS} = 0V			±100	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 = 5.5A		280	340	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 45V, V_{GS} = 0V, f = 1MHz		603		pF
Output Capacitance	C_{oss}			44		
Reverse Transfer Capacitance	C_{rss}			7		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		3.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 100V, V_{GS} = 10V, I_D = 5.5A		10		nC
Gate-Source Charge	Q_{gs}			2.1		
Gate-Drain Charge	Q_{gd}			4.4		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 125V, V_{GS} = 10V, I_D = 8A, R_L = 12Ω		11		ns
Turn-On Rise Time	t_r			4		
Turn-Off Delay Time	$t_{d(off)}$			19		
Turn-Off Fall Time	t_f			5		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 11A			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 ≤ 10μs, duty cycle ≤ 1%.

3.E_{AS} condition: V_{DD} = 100V, V_{GS} = 10V, L = 5mH, R_G = 25Ω Starting T_J = 25°C.

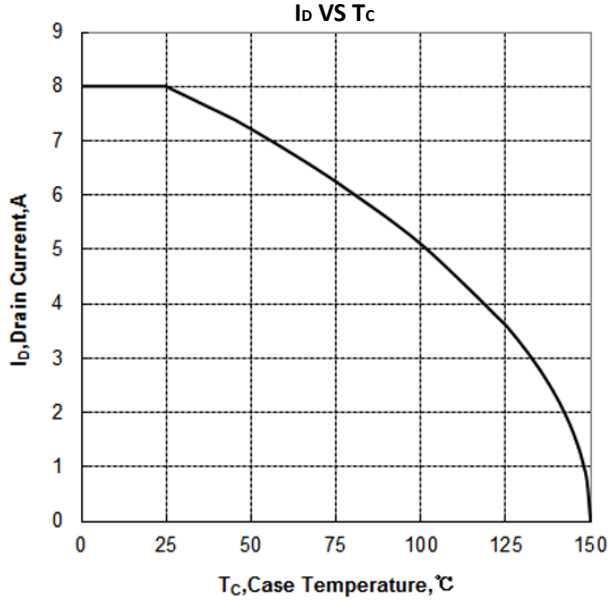
4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.

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

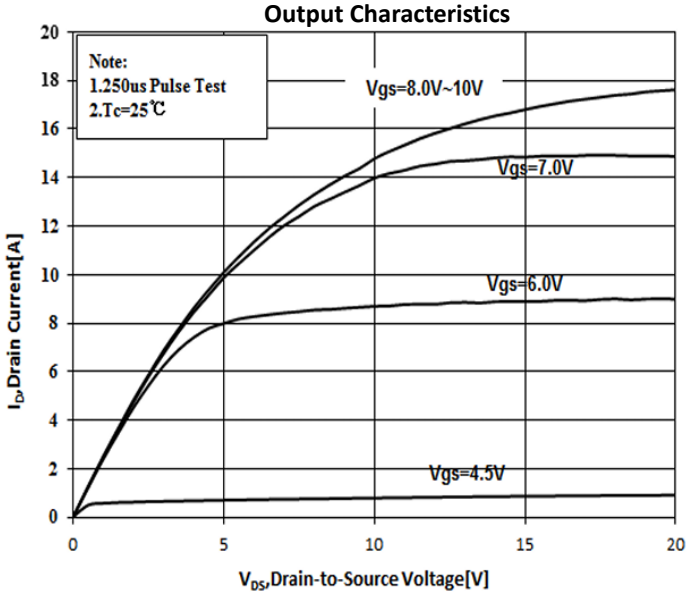
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

Typical Characteristics

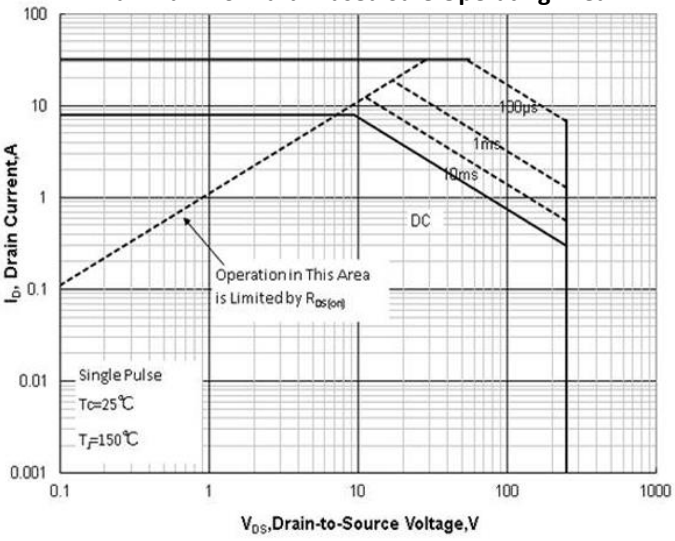
I_D VS T_C



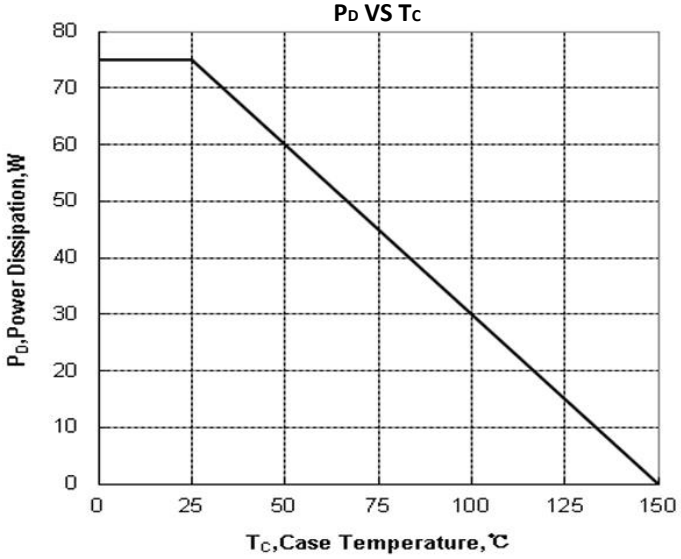
Output Characteristics



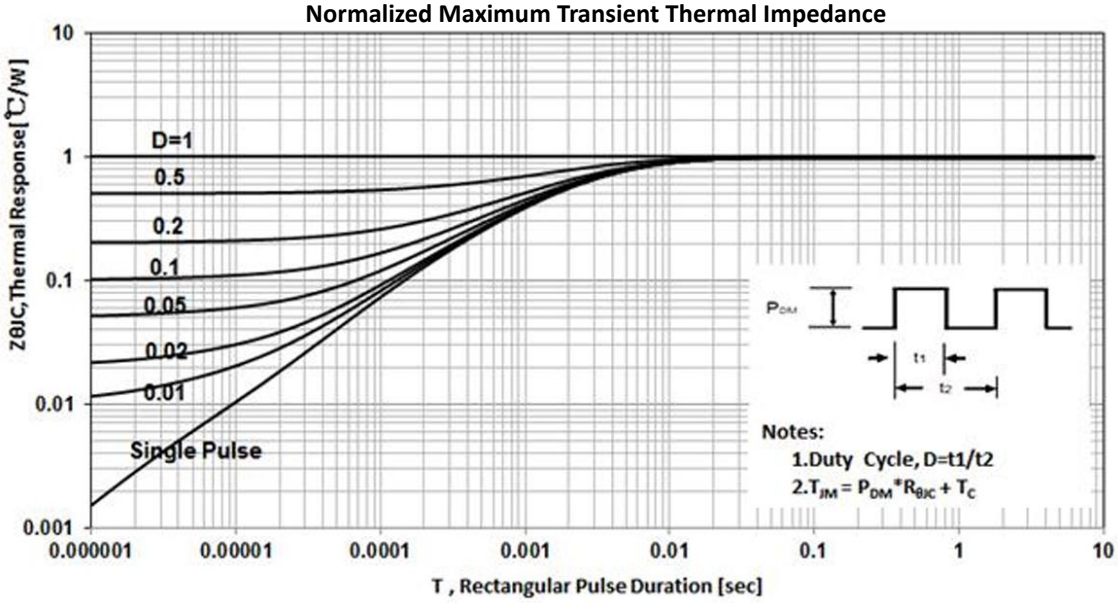
Maximum Forward Biased Safe Operating Area



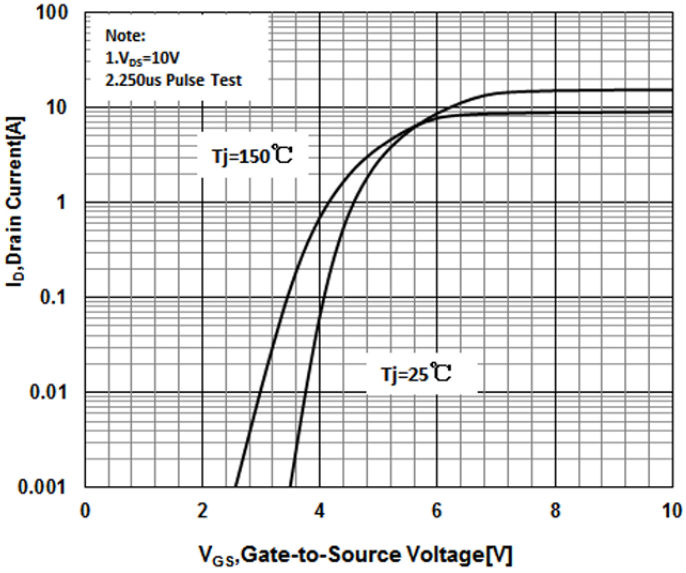
P_D VS T_C



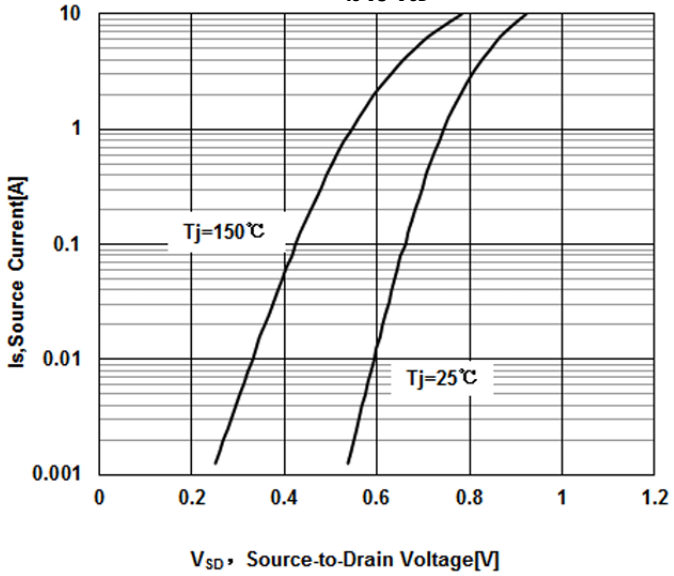
Normalized Maximum Transient Thermal Impedance



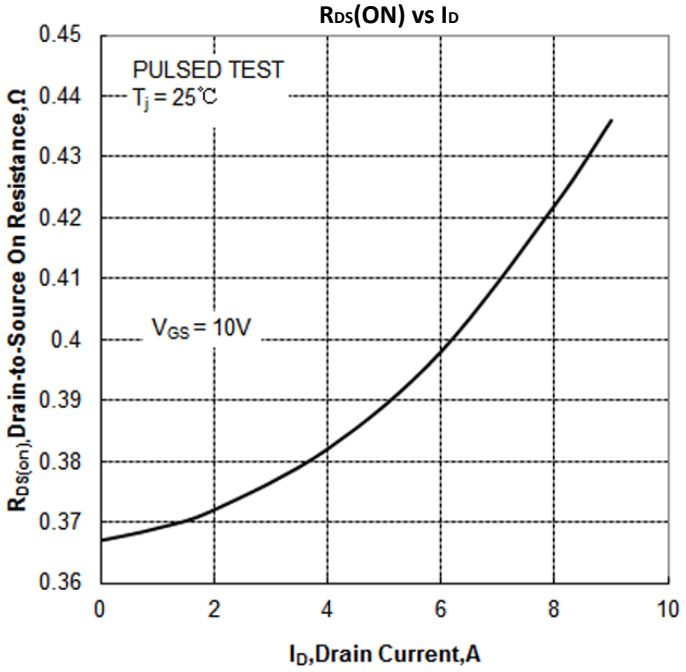
Transfer Characteristics



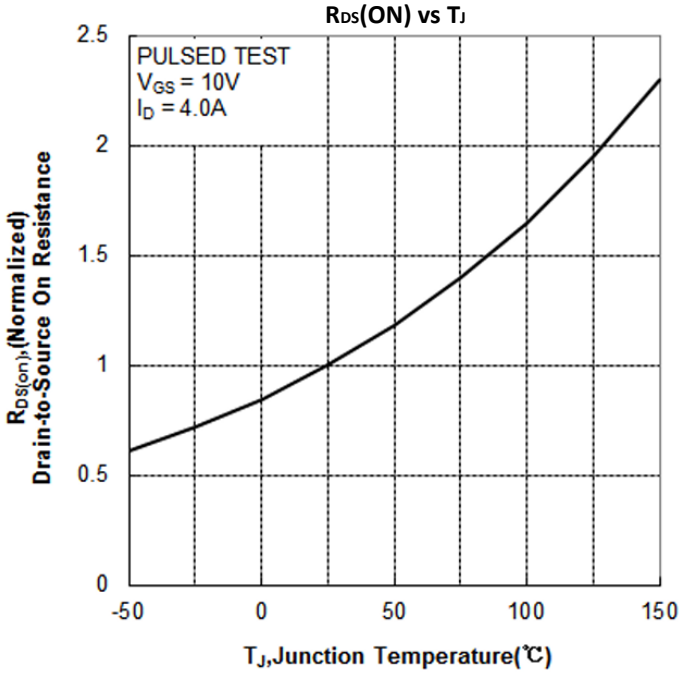
Is vs VSD



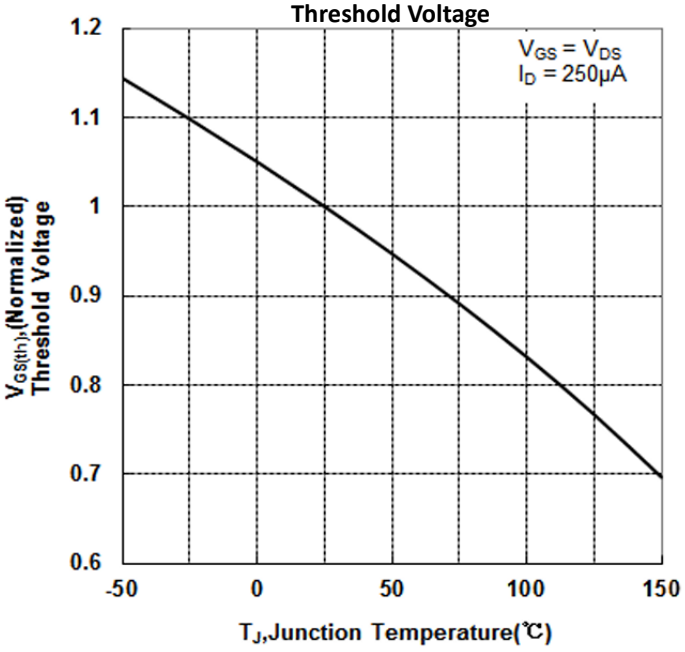
RDS(ON) vs ID



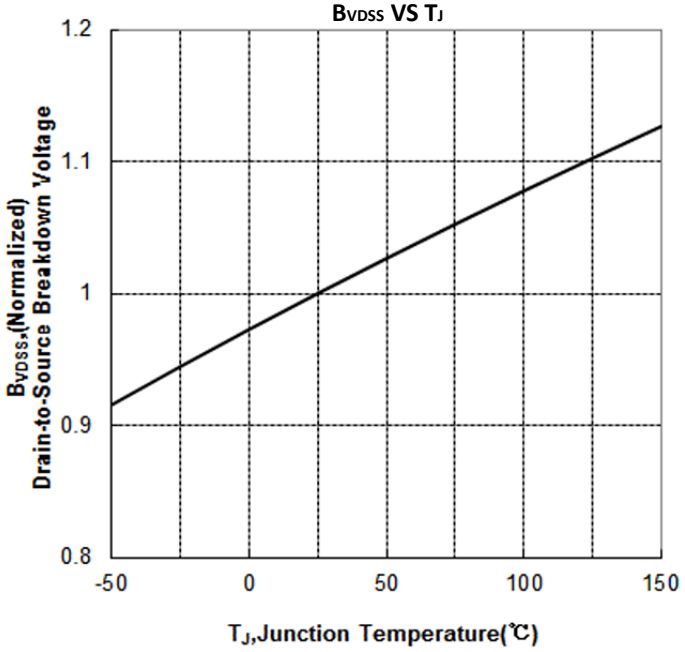
RDS(ON) vs TJ



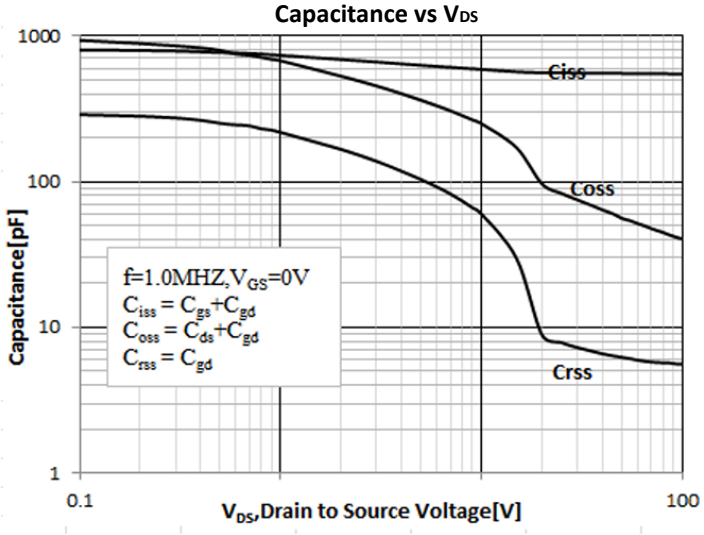
Threshold Voltage



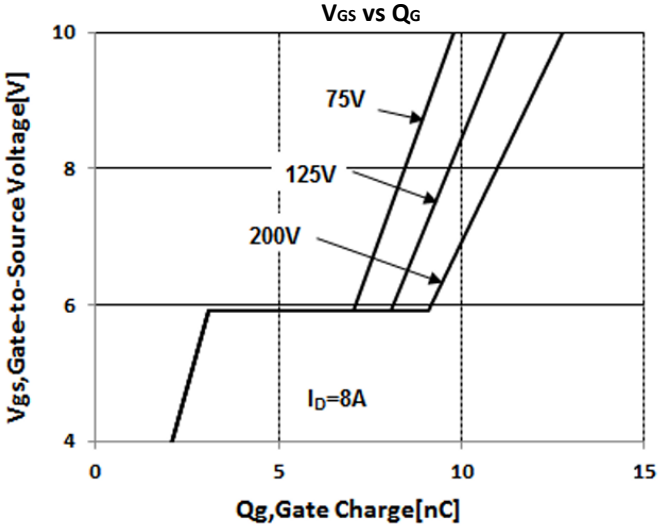
B_{VDSS} VS T_J



Capacitance vs V_{DS}

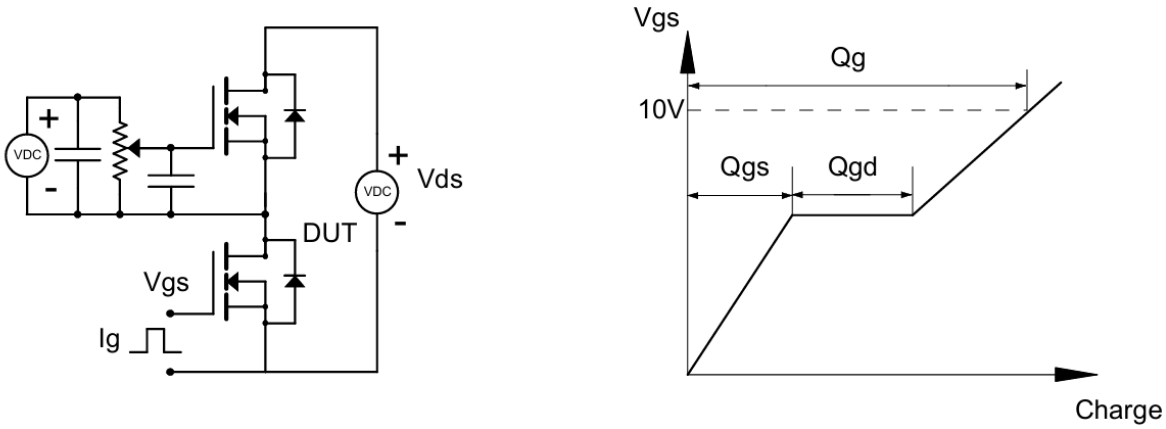


V_{GS} vs Q_G

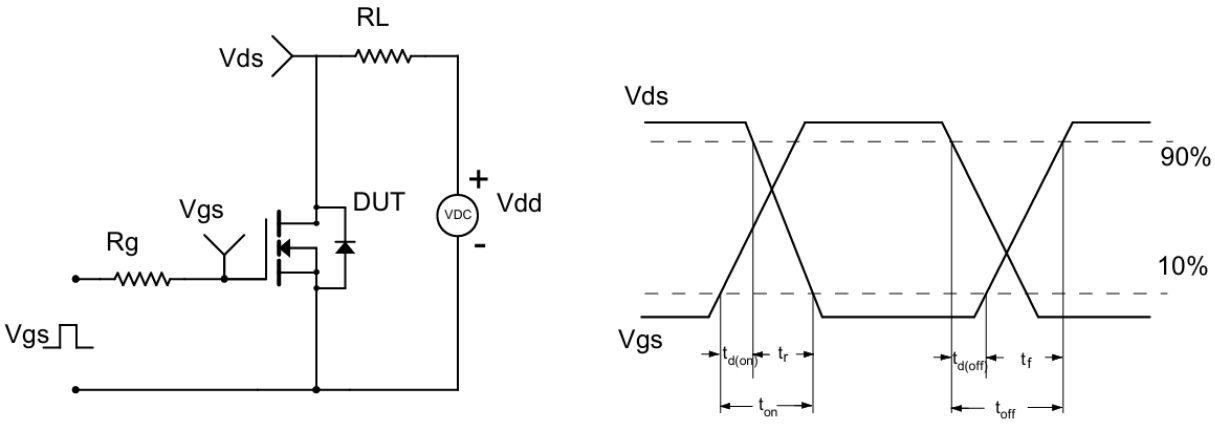


Test Circuit

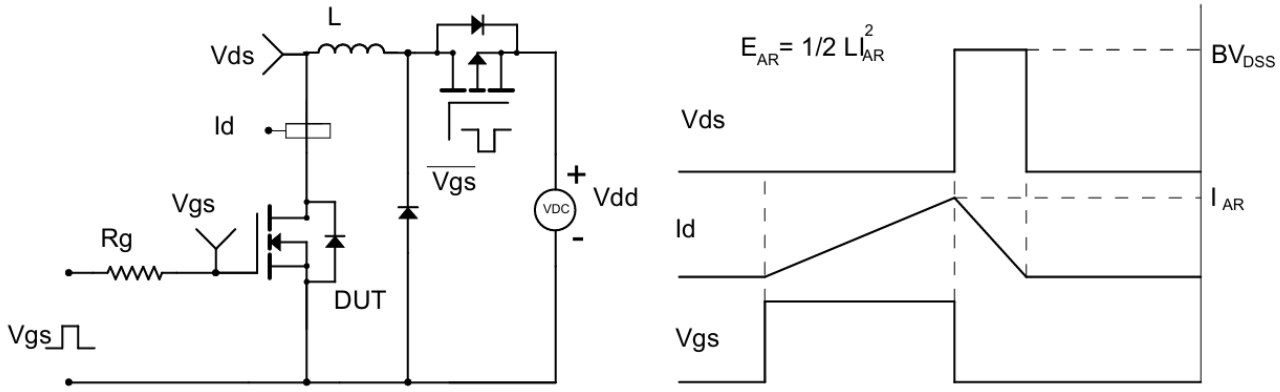
Gate Charge Test Circuit & Waveform



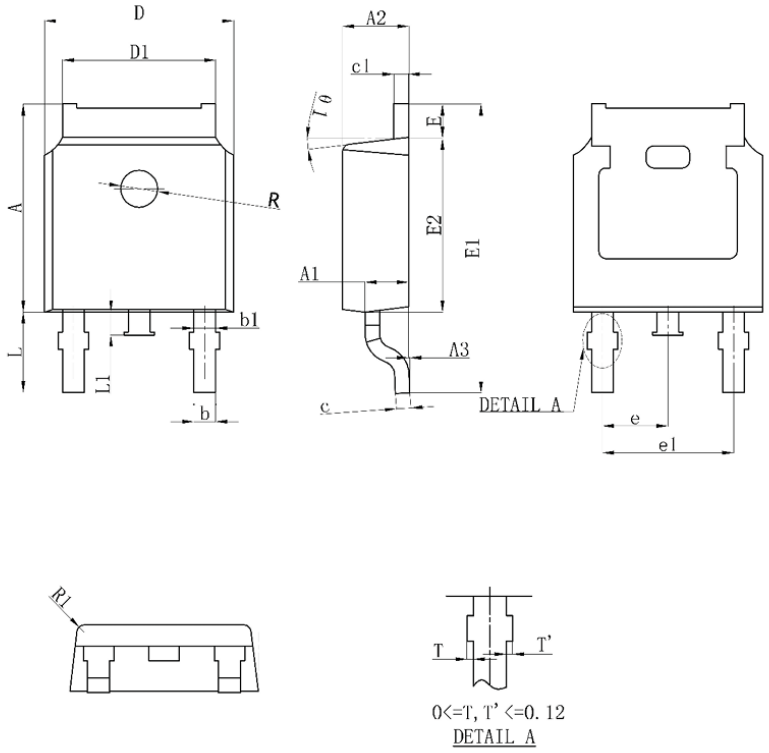
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



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	
R1	0.250REF		0.010REF	

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.