



Product Summary

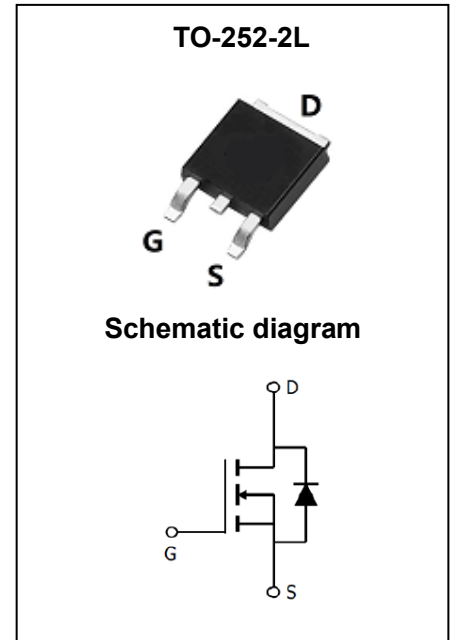
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	200mΩ@10V	15A

Feature

- Super-Junction MOSFET
- Low ON Resistance
- Improved dv/dt Capability
- 100% Avalanche Tested
- RoHS compliant

Application

- High-frequency Switching
- Power factor correction
- Uninterruptible Power Supply



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPJ65R240TF	TO-252-2L	J65R240	Tape&Reel	330mm	16mm	2500pcs

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

Parameter	Symbol	Value	Unit	
Drain - Source Voltage	V_{DS}	650	V	
Gate - Source Voltage	V_{GS}	±30	V	
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	15 ¹	A
	$T_C = 100^\circ\text{C}$	I_D	9 ¹	A
Pulsed Drain Current ²	I_{DM}	45 ²	A	
Single Pulsed Avalanche Energy ³	E_{AS}	245	mJ	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	107	W
MOSFET dv/dt Ruggedness($V_{DS}=0\sim 480\text{V}$)	dv/dt	50	V/ns	
Peak Diode Recovery dv/dt($V_{DS}=0\sim 400\text{V}$, $I_{SD}\leq I_D$)	dv/dt	15	V/ns	
Thermal Resistance, Junction to Case	R_{thjc}	1.16	$^\circ\text{C/W}$	
Thermal Resistance, Junction to Ambient	R_{thja}	56	$^\circ\text{C/W}$	
Maximum Lead Temperature for Soldering Purpose	T_L	260	$^\circ\text{C}$	
Junction Temperature	T_J	-55~ +150	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$	

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	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	650			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 650V, V_{GS} = 0V$			1	μA
Gate - Body Leakage Current	I_{GSS}	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.5	3.5	4.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 7A$		200	240	m Ω
Forward Transconductance	G_{fs}	$V_{DS} = 10V, I_D = 7.5A$		12		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$		957		pF
Output Capacitance	C_{oss}			23.2		
Reverse Transfer Capacitance	C_{rss}			1.57		
Gate Resistance	R_g	$f = 1MHz, \text{open drain}$		15		Ω
Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS} = 325V, V_{GS} = 10V, I_D = 7.5A$		19		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			5.3		
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = 325V, V_{GS} = 10V, I_D = 7.5A, R_G = 2\Omega$		12		ns
Turn-On Rise Time	t_r			22		
Turn-Off Delay Time	$t_{d(off)}$			47		
Turn-Off Fall Time	t_f			71		
Source - Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = 15A$		0.9	1.3	V
Diode Continuous Forward Current	I_S	Integral reverse p-n Junction diode in the MOSFET			15	A
Pulsed Source Current	I_{SM}				45	
Body Diode Reverse Recovery Time	t_{rr}	$I_S = 7.5A, dI/dt = 100 A/\mu s, V_{GS} = 0V, V_{DS} = 325V$		196		ns
Body Diode Reverse Recovery Charge	Q_{rr}			4.9		μC
Peak Reverse Recovery Current	I_{rrm}			24		A

Notes :

1. Drain current is limited by maximum junction temperature.
2. Repetitive rating : pulse width limited by junction temperature.
3. $L = 40mH, I_{AS} = 3.5A, V_{DD} = 50V, R_G = 25\Omega, \text{Starting at } T_J = 25^\circ C$

Typical Characteristics

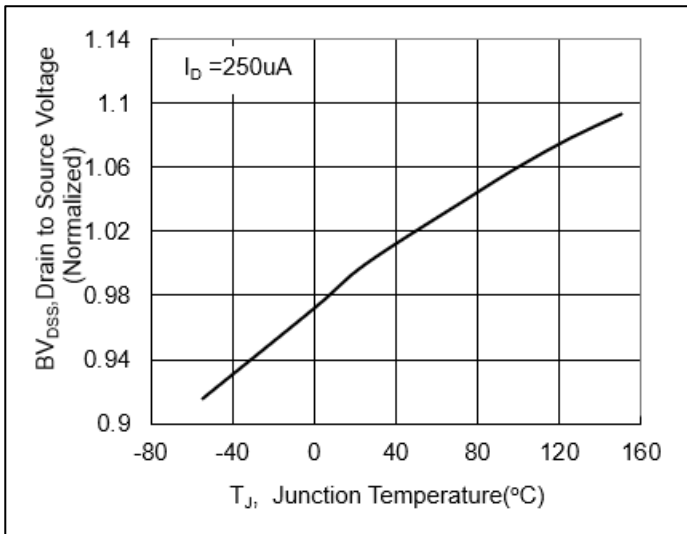


Fig 1. BV_{DSS} vs Junction Temperature

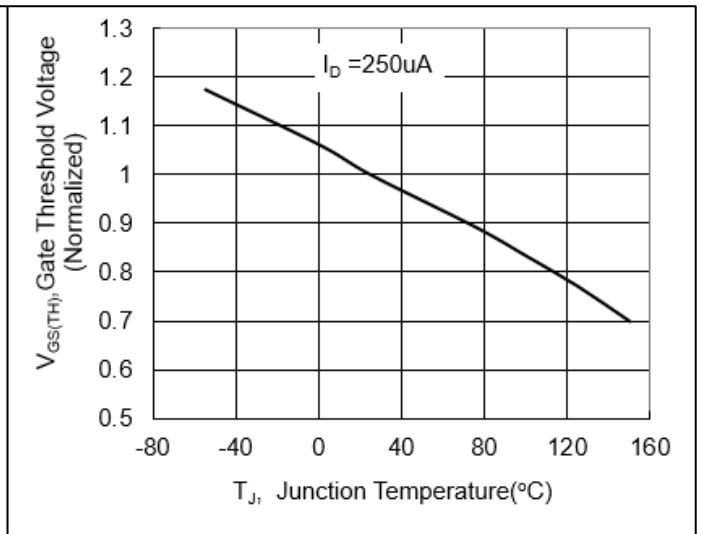


Fig 2. $V_{GS(TH)}$ vs Junction Temperature

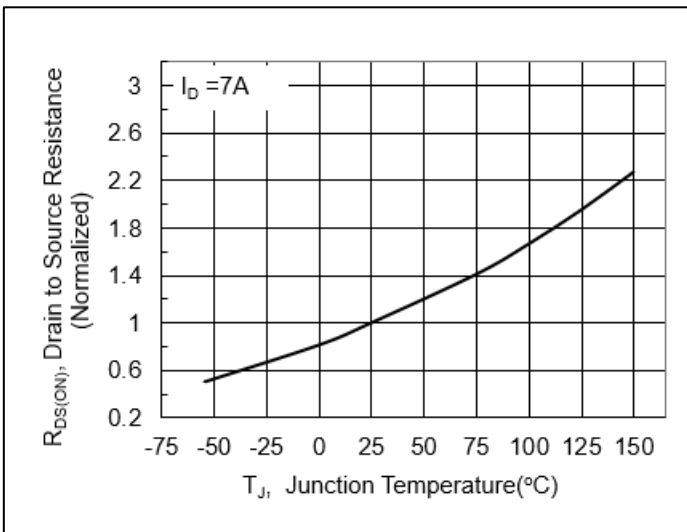


Fig 3. $R_{DS(ON)}$ vs Junction Temperature

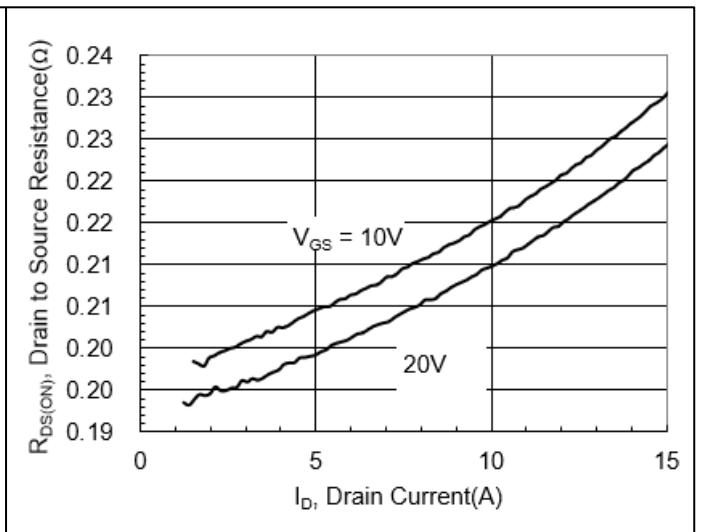


Fig 4. Drain-source on-state resistance

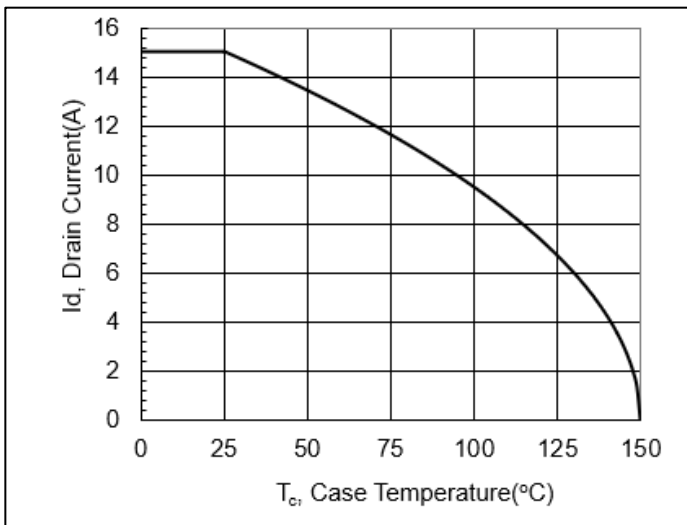


Fig 5. Drain current

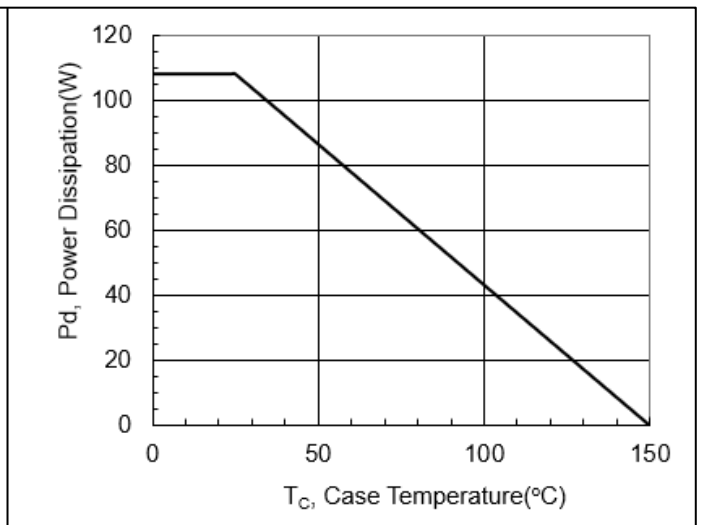


Fig 6. Power dissipation

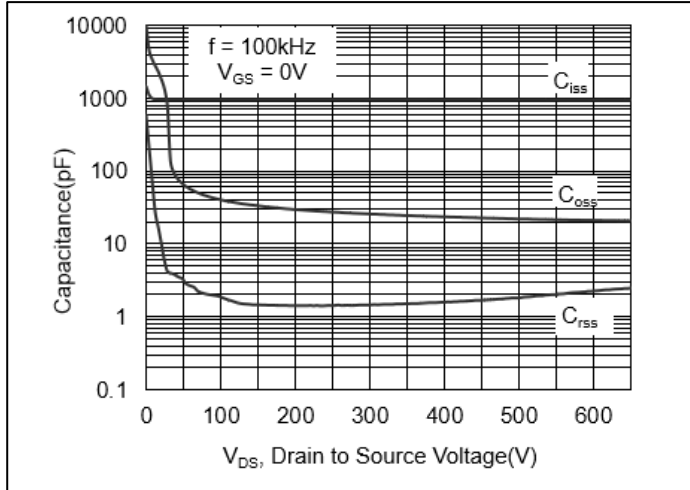


Fig 7. Capacitance Characteristics

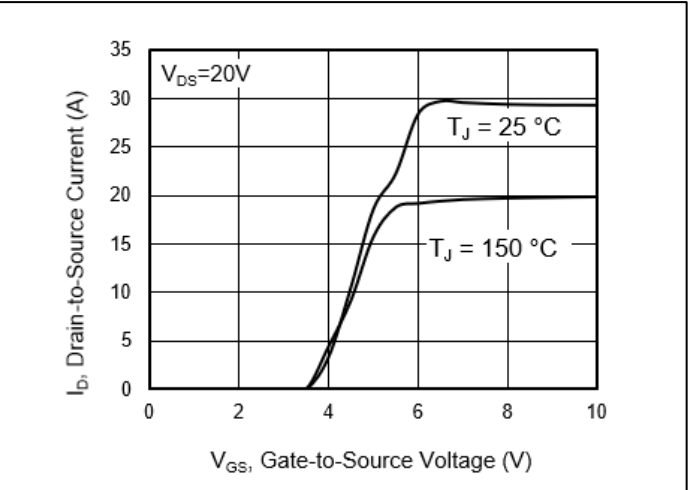


Fig 8. Transfer characteristics

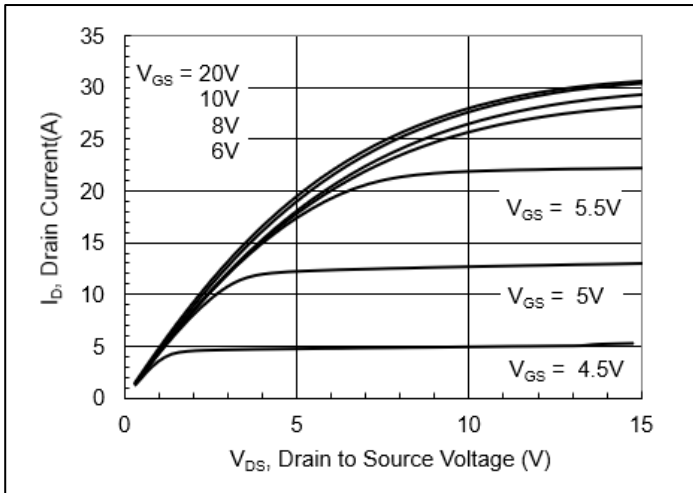


Fig 9. Output characteristics ($T_J = 25^\circ\text{C}$)

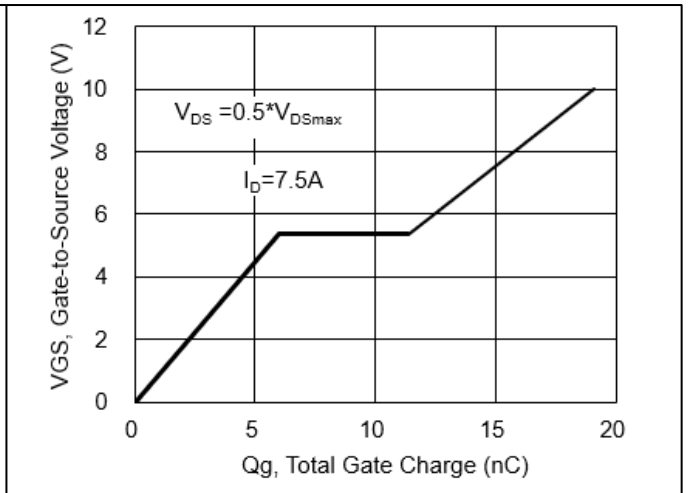


Fig 10. Gate charge characteristics

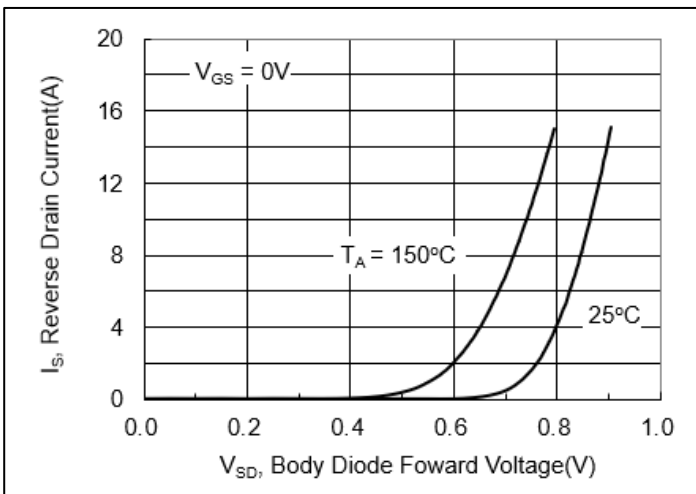


Fig 11. Forward characteristics of reverse diode

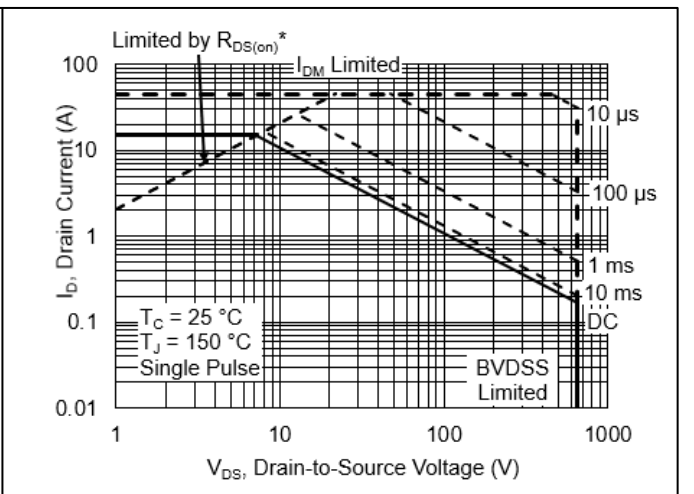


Fig 12. Safe operating area (TO-252)

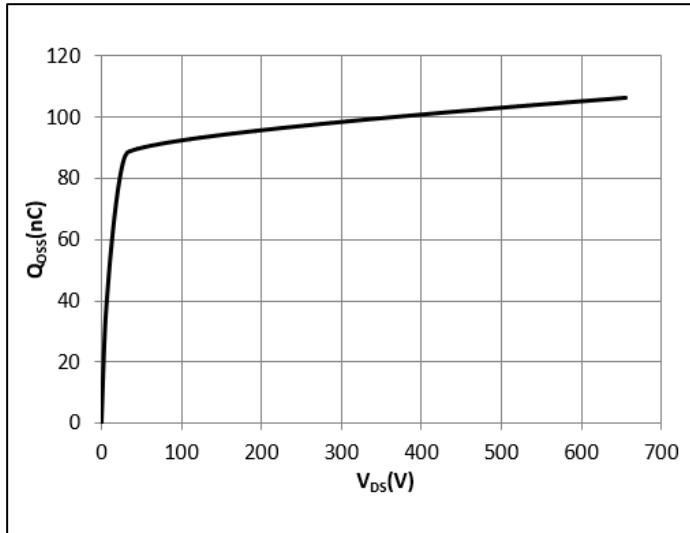


Fig 13. Q_{OSS} vs Drain-source voltage

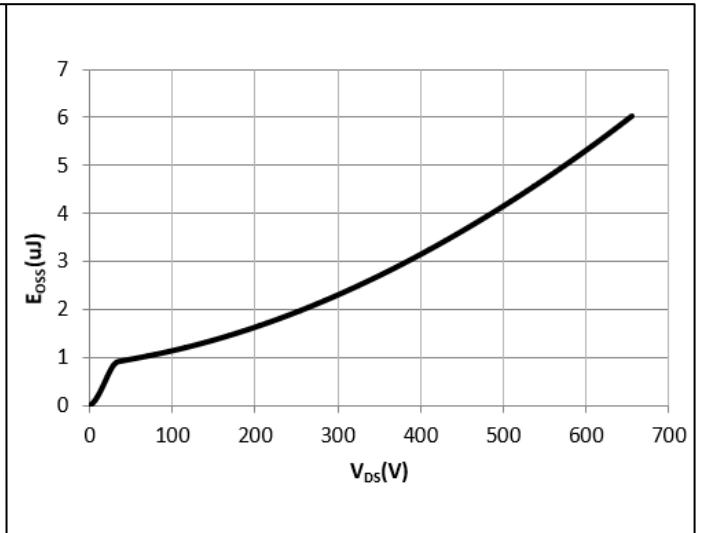


Fig 14. E_{OSS} vs Drain-source voltage

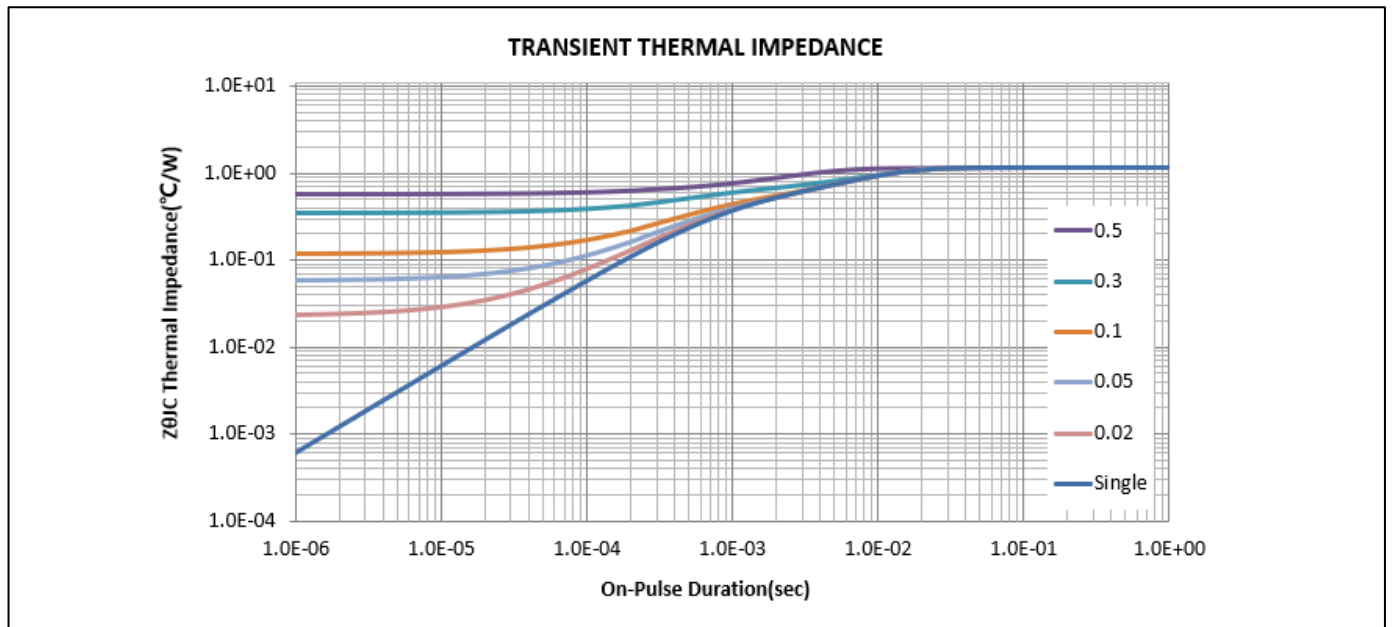
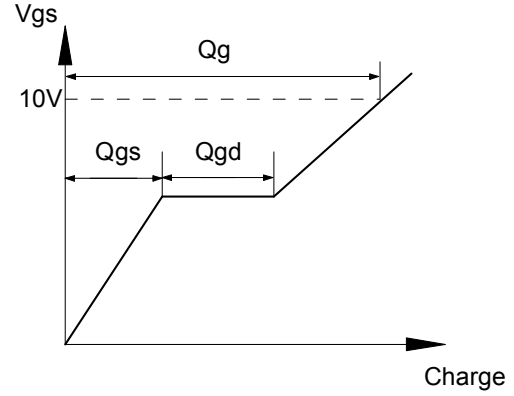
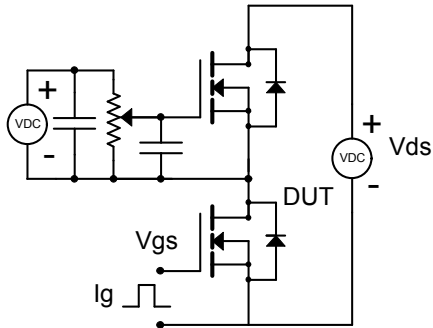


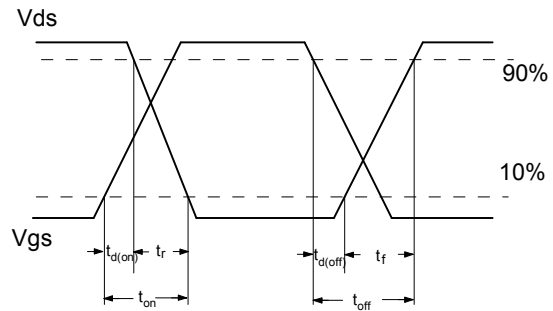
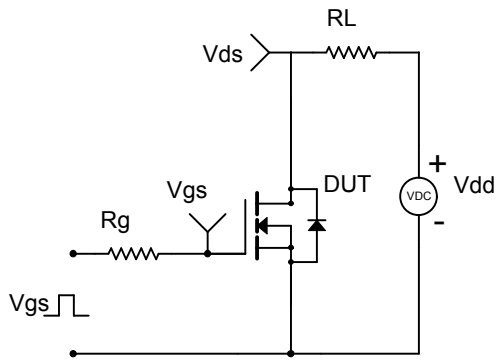
Fig 15. Transient thermal impedance (TO-252)

Test Circuit

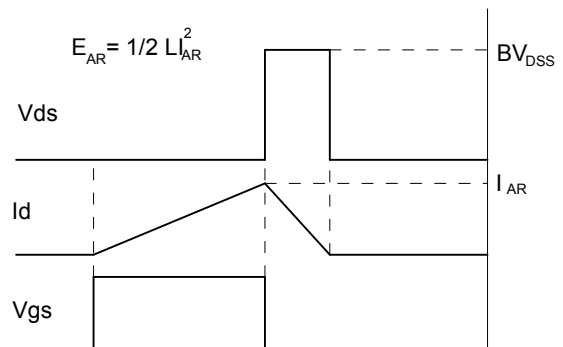
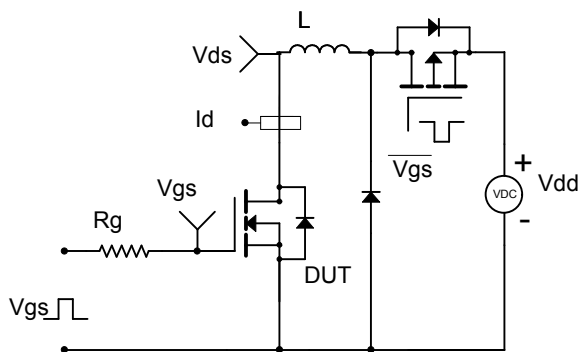
Gate Charge Test Circuit & Waveform

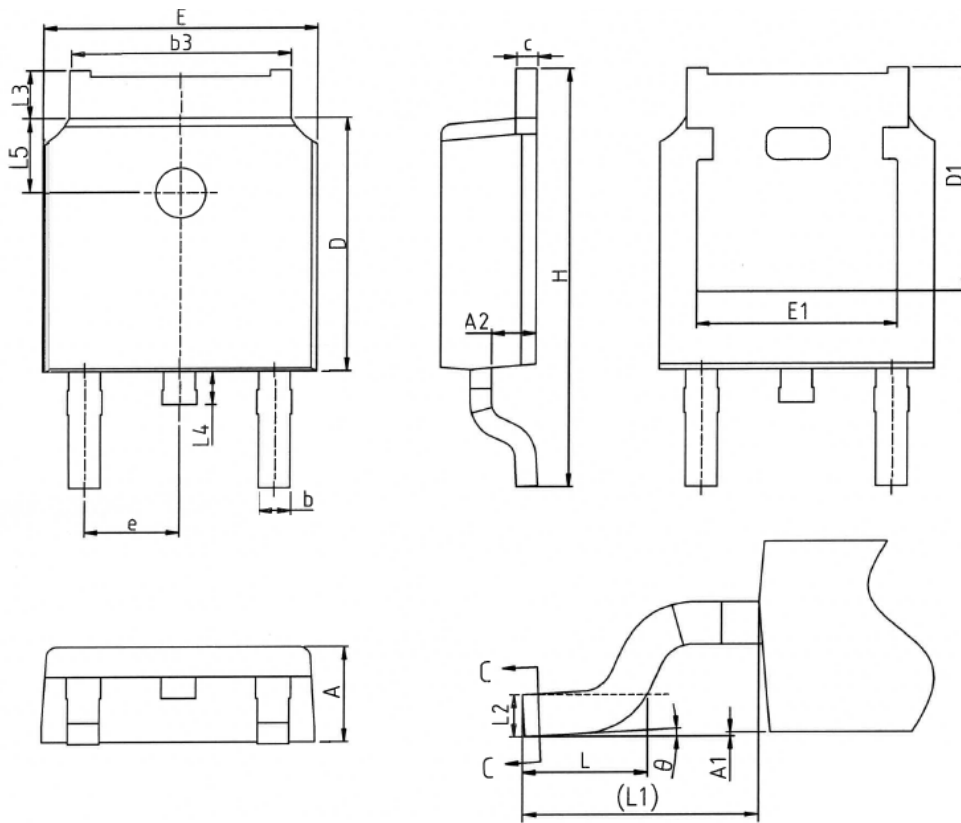


Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



TO-252-2L Package Information


SYMBOL	mm		
	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0.00	-	0.12
A2	0.97	1.07	1.17
b	0.68	0.78	0.90
b3	5.20	5.33	5.46
c	0.43	0.53	0.61
D	5.98	6.10	6.22
D1	5.30REF		
E	6.40	6.60	6.73
E1	4.63	-	-
e	2.286BSC		
H	9.40	10.10	10.50
L	1.38	1.50	1.75
L1	2.90REF		
L2	0.51BSC		
L3	0.88	-	1.28
L4	0.50	-	1.00
L5	1.65	1.80	1.95
θ	0°	-	8°

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.