GPJE65R380TF

650V N-Channel MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
650V	330mΩ@10V	11A

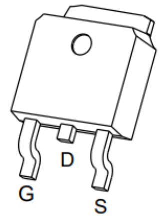
Feature

- Super-Junction MOSFET
- Low $R_{DS(ON)}$
- High Ruggedness
- Improved dv/dt Capability
- 100% Avalanche Tested

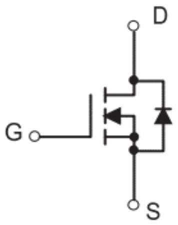
Application

- PFC/LLC
- PC Power
- LED Lighting

TO-252-2L



Schematic diagram



Package Marking and Ordering Information

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPJE65R380TF	TO-252-2L	JE65R380	Reel & Tape	330mm	16mm	2500pcs

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±20	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}	3	A
Single Pulsed Avalanche Energy[3]		E_{AS}	356	mJ
Power Dissipation[5]	T_C = 25°C	P_D	104	W
MOSFET dv/dt Ruggedness(V_{DS}=0~480V)		dv/dt	50	V/ns
Peak Diode Recovery dv/dt(V_{DS}=0~400V, $I_{SD} \leq I_S$)		dv/dt	15	V/ns
Thermal Resistance from Junction to Ambient[6]		$R_{\theta JA}$	62	°C/W
Thermal Resistance from Junction to Case		$R_{\theta JC}$	1.2	°C/W
Operating Junction and Storage Temperature Range		T_J, 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	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} = ±20V, V_{DS} = 0V			±100	nA
On Characteristics[4]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	2.5	3.5	4.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A		330	380	mΩ
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 325V, V_{GS} = 0V, f = 1MHz		683		pF
Output Capacitance	C_{oss}			22		
Reverse Transfer Capacitance	C_{rss}			2.7		
Gate Resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		3.4		Ω
Switching Characteristics						
Total Gate Charge	Q_g	V_{DS} = 50V, V_{GS} = 10V, I_D = 5.5A		18		nC
Gate-Source Charge	Q_{gs}			4.3		
Gate-Drain Charge	Q_{gd}			8.1		
Gate Plateau Voltage	$V_{plateau}$			6		V
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 325V, V_{GS} = 10V, R_G = 24Ω, I_D = 11A		14		ns
Turn-On Rise Time	t_r			36		
Turn-Off Delay Time	$t_{d(off)}$			48		
Turn-Off Fall Time	t_f			28		
Source-Drain Diode Characteristics						
Diode Forward Voltage[4]	V_{SD}	V_{GS} = 0V, I_S = 11A			1.2	V
Diode Reverse Recovery Time	t_{rr}	I_F = 11A, dI/dt = 100A/μs, V_R = 50V, V_{GS} = 0V		86		ns
Diode Reverse Recovery Charge	Q_{rr}			300		nC
Reverse Recovery Of Peak Current	I_{rrm}			24		A

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%.

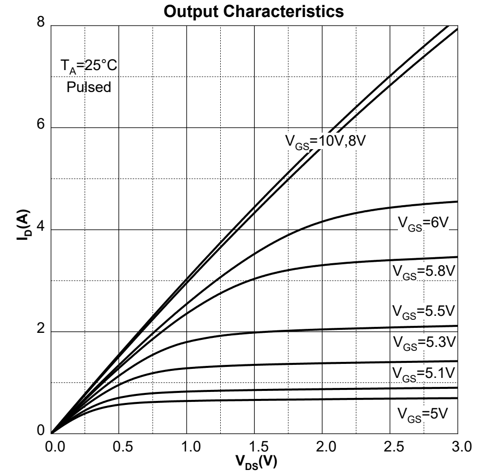
3.E_{AS} condition: V_{DD} = 100V, V_{GS} = 10V, L = 79mH, R_G = 25Ω Starting T_J = 25°C.

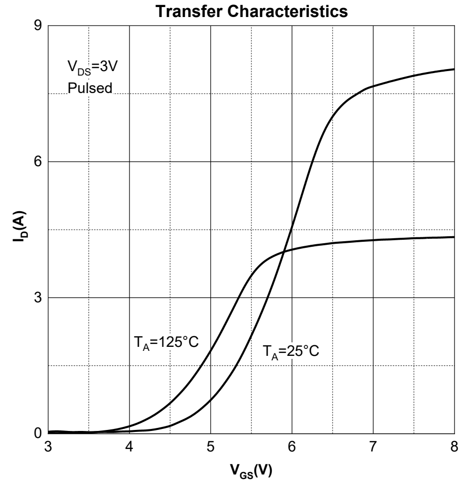
4.Pulse Test: Pulse Width ≤ 300μs, duty cycle ≤ 2%.

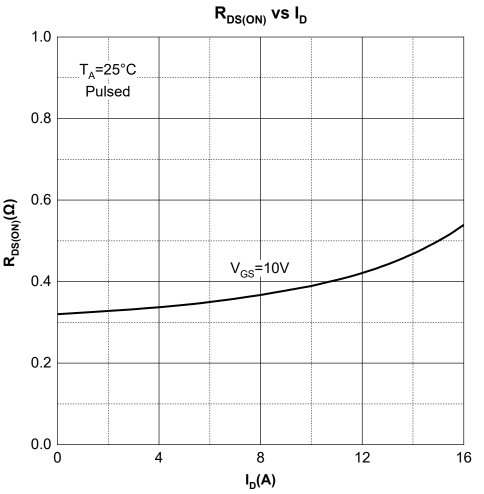
5.The power dissipation P_D is limited by $T_{J(MAX)}$ = 150°C. And device mounted on a large heatsink.

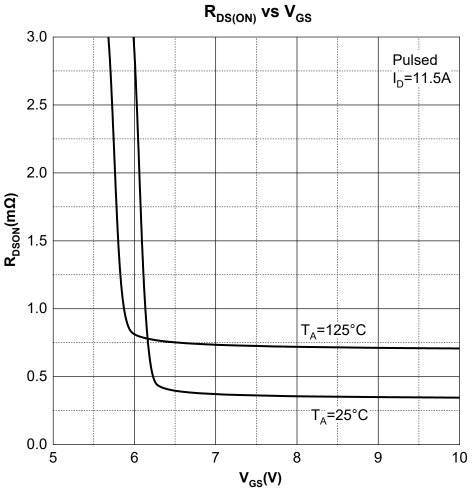
6.Device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A = 25°C.

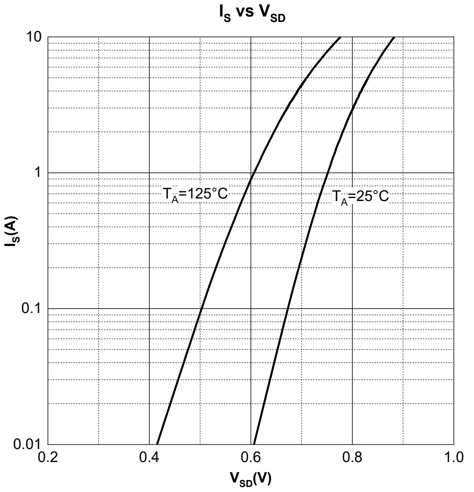
Typical Characteristics

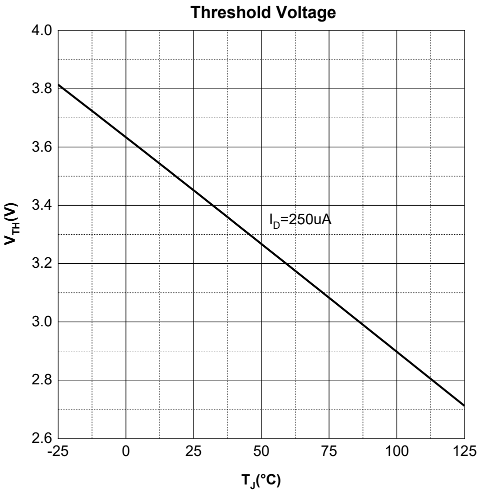

Output Characteristics

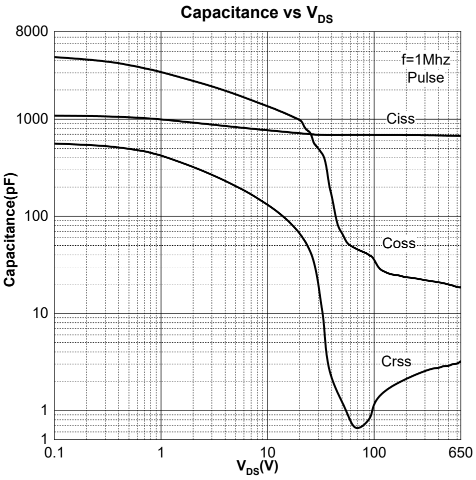

Transfer Characteristics

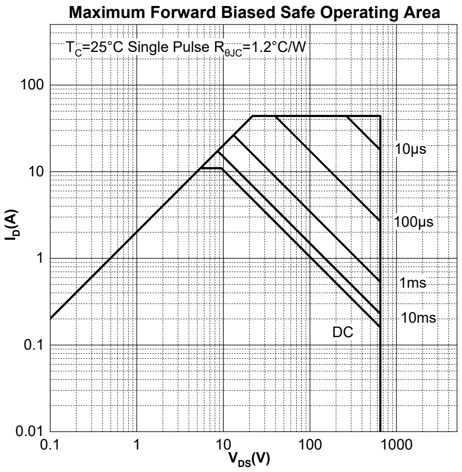

$R_{DS(ON)}$ vs I_D

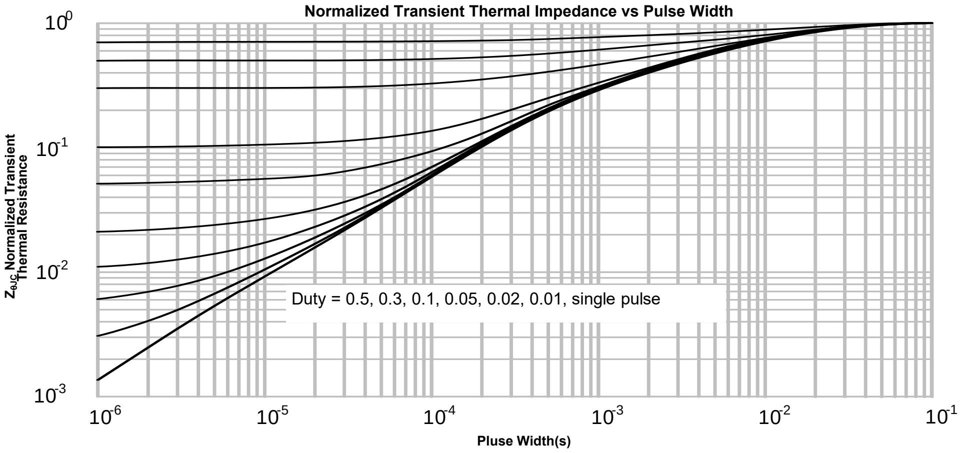

$R_{DS(ON)}$ vs V_{GS}


I_S vs V_{SD}


Threshold Voltage

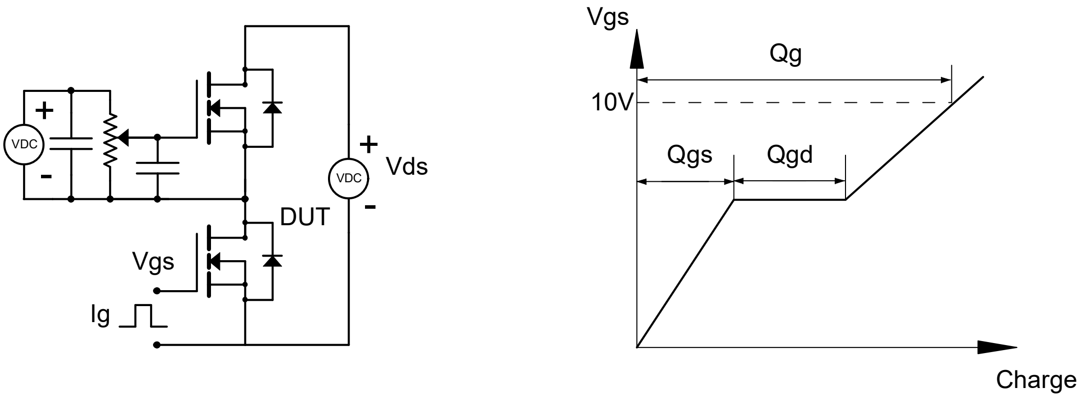

Capacitance vs V_{DS}


Maximum Forward Biased Safe Operating Area

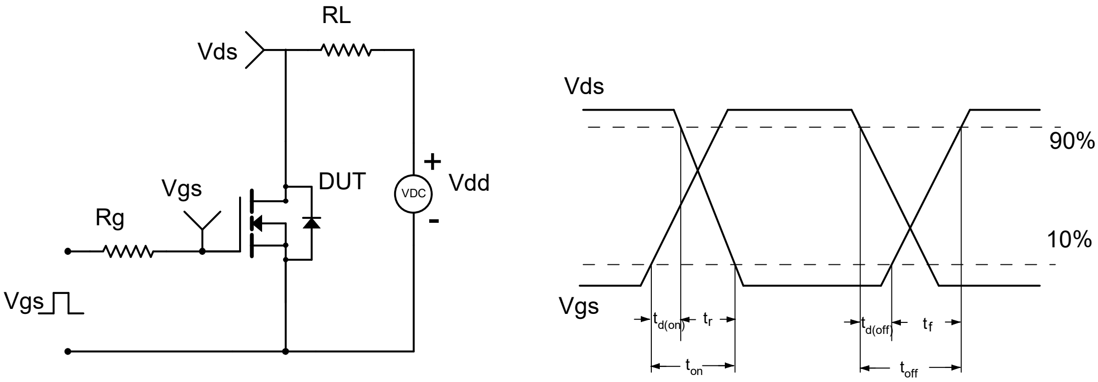

Normalized Transient Thermal Impedance vs Pulse Width

Test Circuit

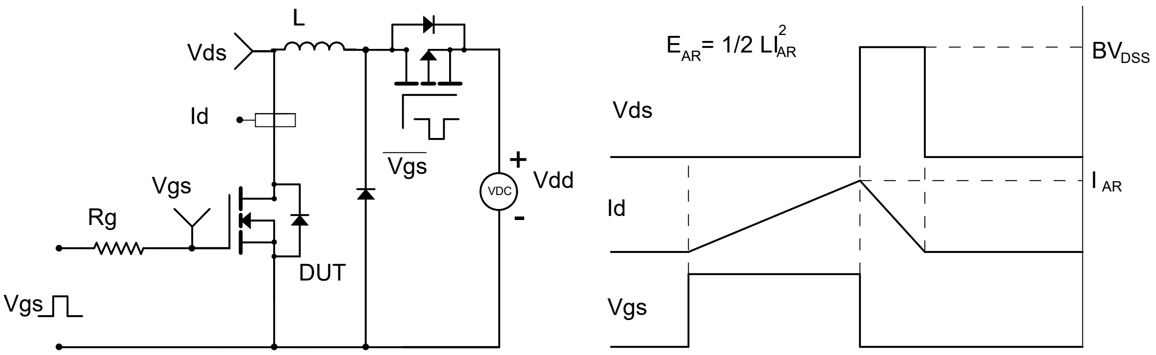
Gate Charge Test Circuit & Waveform



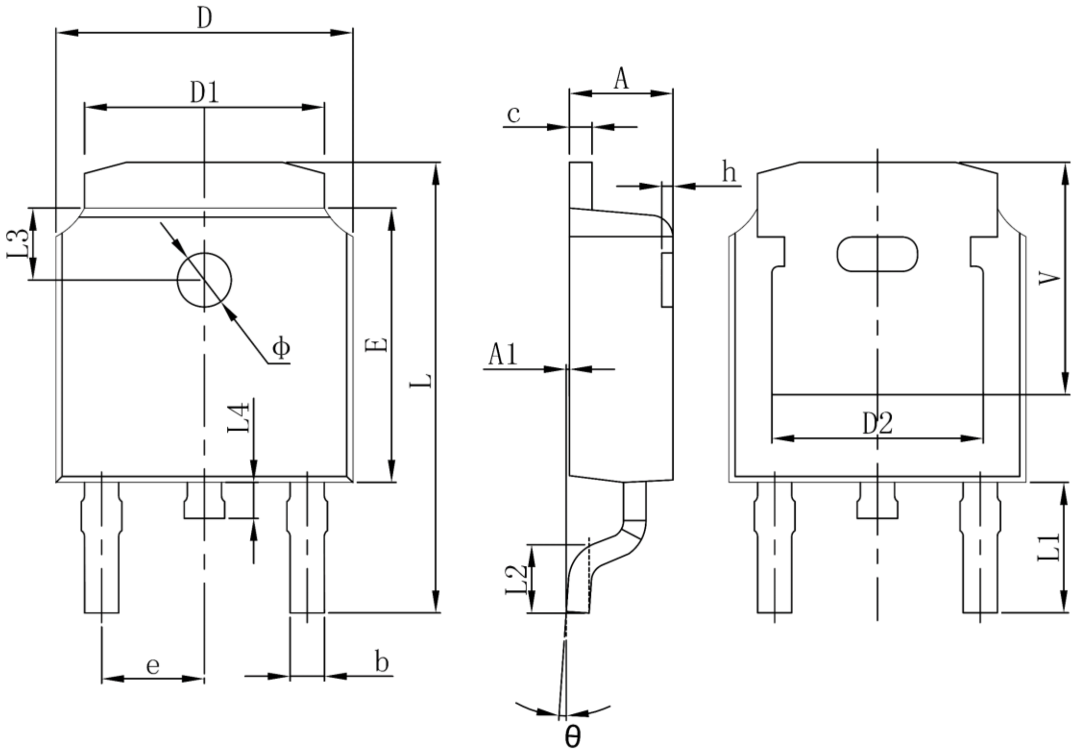
Resistive Switching Test Circuit & Waveform



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



TO-252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.860	0.025	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830REF		0.190REF	
E	6.000	6.300	0.236	0.248
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900REF		0.114REF	
L2	1.400	1.700	0.055	0.067
L3	1.600REF		0.063REF	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250REF		0.207REF	

Attention：

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