

**Product Summary**

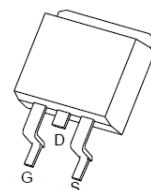
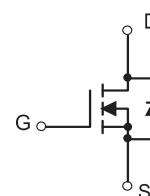
$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
650V	240mΩ@10V	14A

**Feature**

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

**Application**

- Switching Mode Power Supplies
- PWM Motor Controls
- AC-DC Power Management
- Solar Inverter

**TO-263-2L**

**Schematic diagram**

**Package Marking and Ordering Information**

Part Number	Package	Marking	Packing	Reel Size	Tape Width	Qty
GPJE65R280TH	TO-263-2L	JE65R280T	Reel & Tape	330mm	24mm	800pcs

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	650	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current <sup>1</sup>	$I_D$	$T_C = 25^\circ\text{C}$	14
		$T_C = 100^\circ\text{C}$	8.8
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	56	A
Single Pulsed Avalanche Current <sup>3</sup>	$I_{AS}$	3.6	A
Single Pulsed Avalanche Energy <sup>3</sup>	$E_{AS}$	512	mJ
Power Dissipation <sup>5</sup>	$P_D$	133	W
Thermal Resistance from Junction to Ambient <sup>6</sup>	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.94	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~ +150	$^\circ\text{C}$

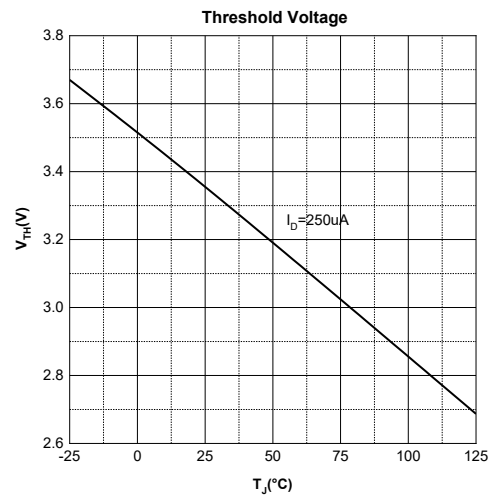
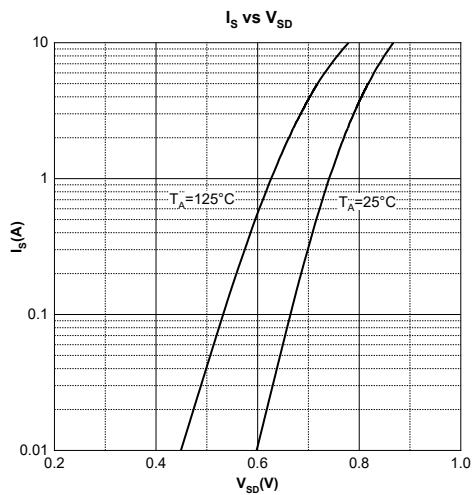
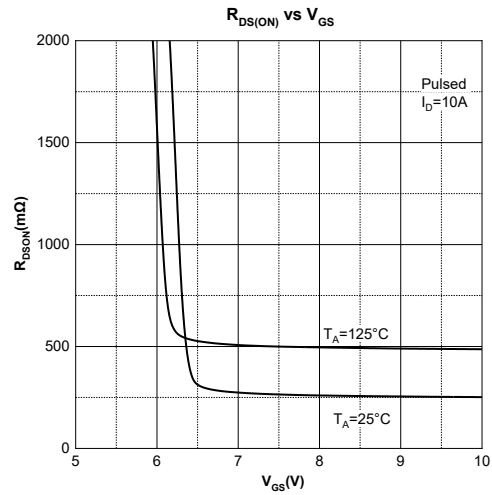
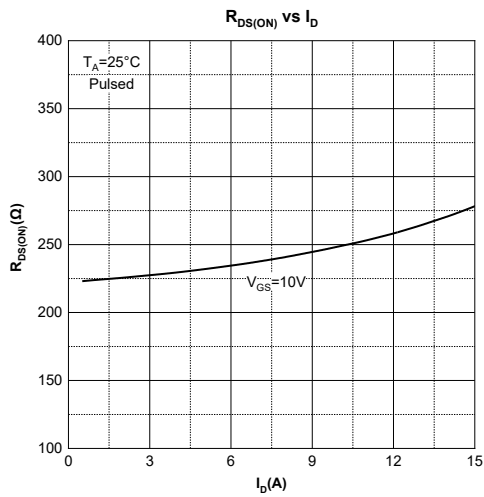
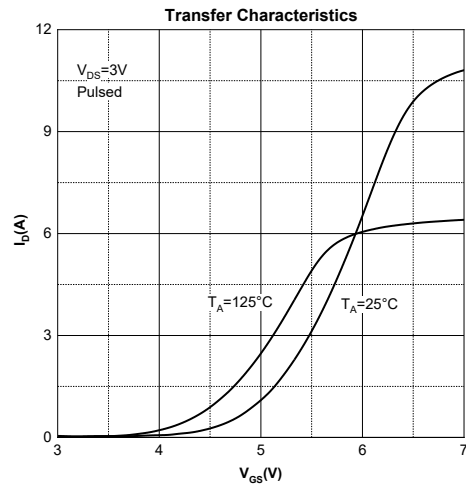
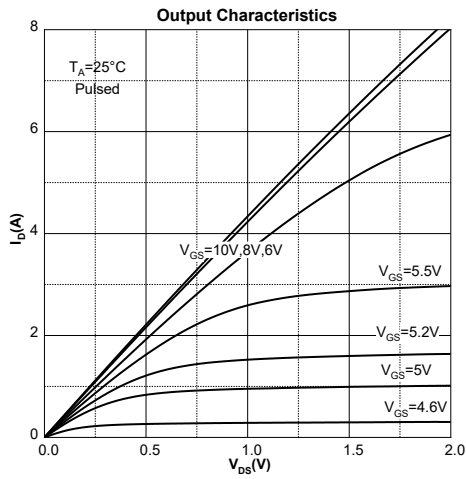
## MOSFET ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

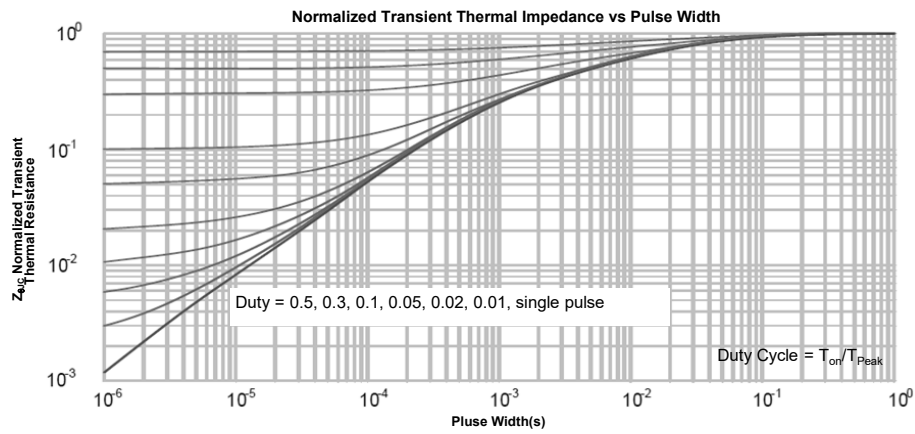
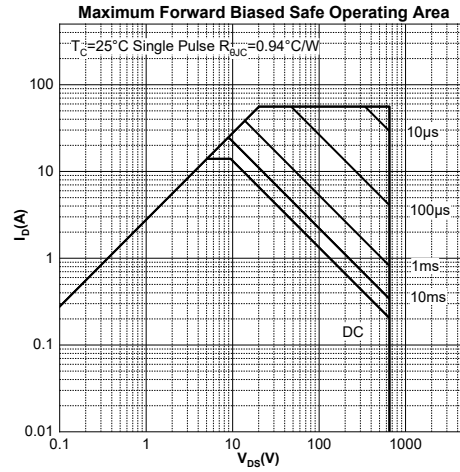
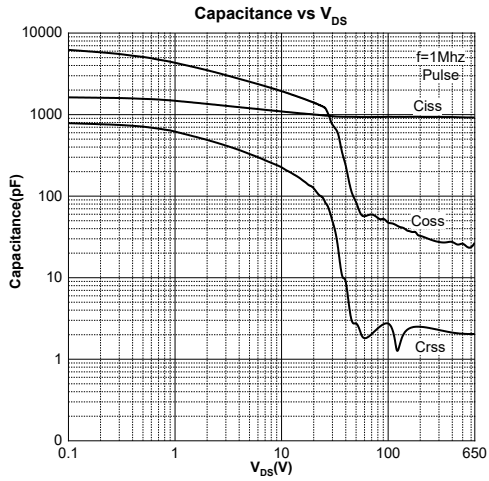
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	650			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 650V, V_{GS} = 0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
<b>On Characteristics<sup>4</sup></b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3.4	4	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 8A$		240	280	m $\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 325V, V_{GS} = 0V, f = 1MHz$		930		pF
Output Capacitance	$C_{oss}$			27		
Reverse Transfer Capacitance	$C_{rss}$			1.9		
Gate Resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		3		$\Omega$
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS} = 20V, V_{GS} = 10V, I_D = 10A$		24		nC
Gate-Source Charge	$Q_{gs}$			6.4		
Gate-Drain Charge	$Q_{gd}$			11		
Gate Plateau Voltage	$V_{plateau}$			6.4		V
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 325V, V_{GS} = 10V, R_G = 24\Omega, I_D = 14A$		19		ns
Turn-On Rise Time	$t_r$			44		
Turn-Off Delay Time	$t_{d(off)}$			68		
Turn-Off Fall Time	$t_f$			36		
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	$V_{SD}$	$V_{GS} = 0V, I_S = 1A$			1.4	V
Diode Reverse Recovery Time	$t_{rr}$	$I_F = 14A, di/dt = 100A/\mu s, V_R = 50V$		266		ns
Diode Reverse Recovery Charge	$Q_{rr}$			3.4		nC
Peak Reverse Recovery Current	$I_{rrm}$			26		A

### Notes:

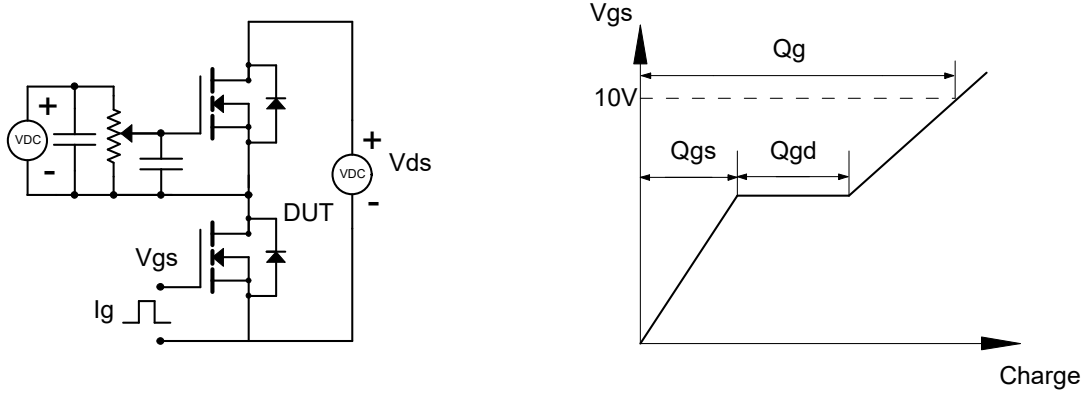
1. The maximum current rating is limited by package. And device mounted on a large heatsink.
2. Pulse Test: Pulse Width  $\leq 10\mu s$ , duty cycle  $\leq 1\%$ .
3. EAS condition:  $V_{DD} = 100V, V_{GS} = 10V, L = 79mH, R_G = 25\Omega$  Starting  $T_J = 25^\circ C$ .
4. Pulse Test: Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
5. The power dissipation  $P_D$  is limited by  $T_{J(MAX)} = 150^\circ C$ . 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  $T_A = 25^\circ C$ .

## Typical Characteristics

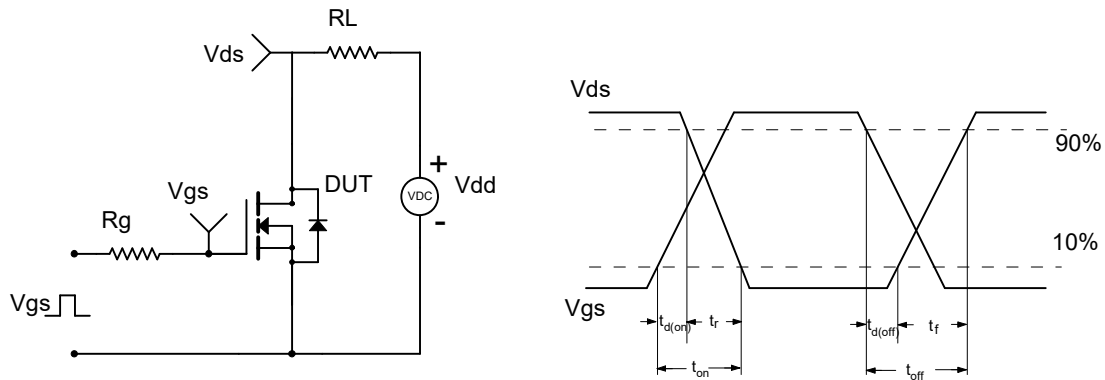




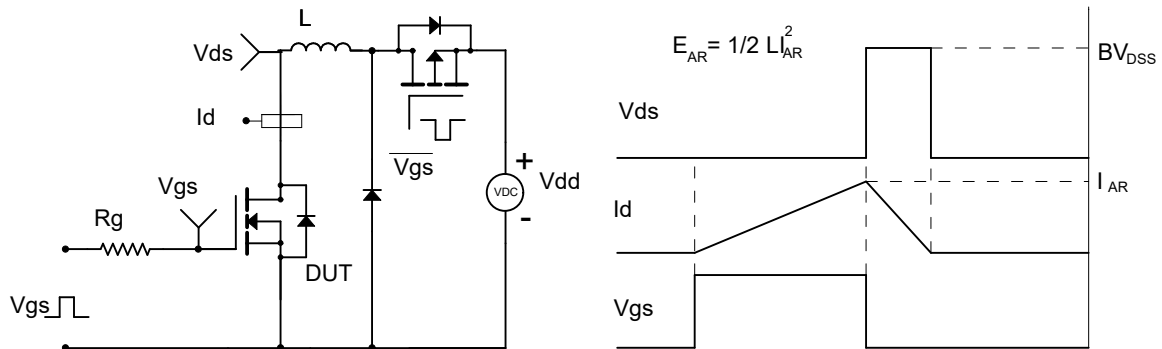
**Gate Charge Test Circuit & Waveform**



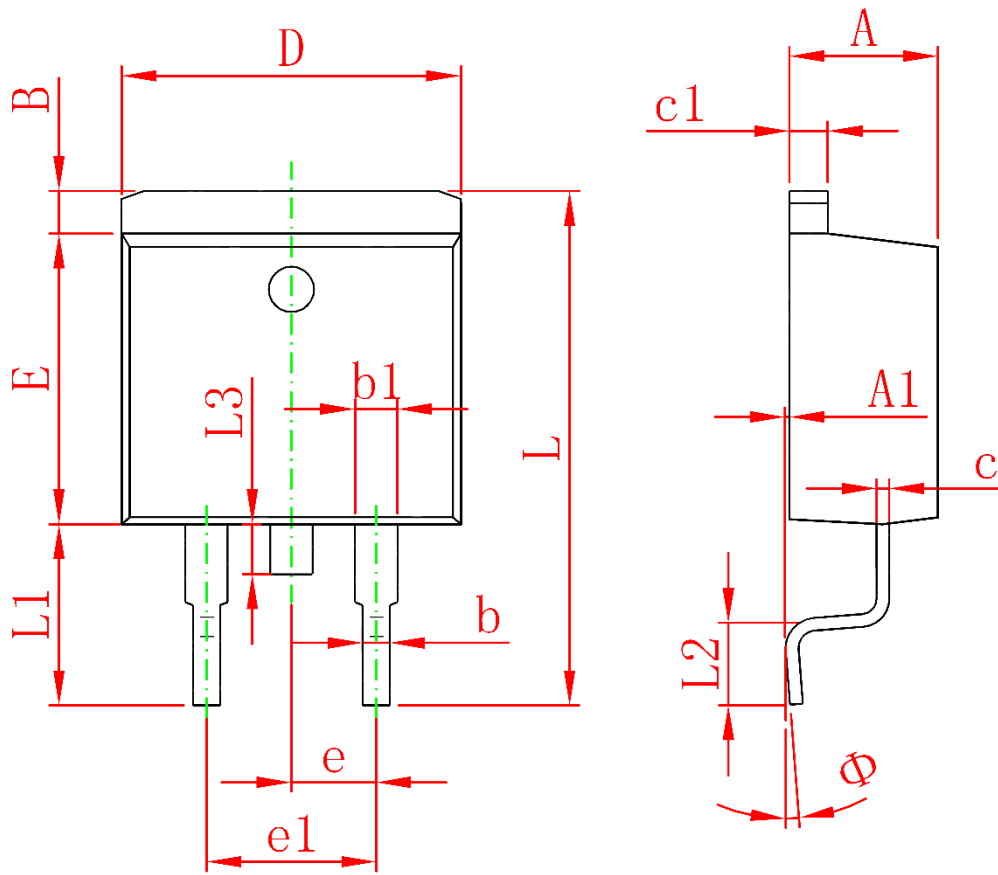
**Resistive Switching Test Circuit & Waveform**



**Unclamped Inductive Switching (UIS) Test Circuit & Waveforms**



## TO-263-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.370	4.770	0.172	0.188
A1	0.000	0.250	0.000	0.010
B	1.070	1.470	0.042	0.058
b	0.700	0.960	0.028	0.038
b1	1.170	1.470	0.046	0.058
c	0.310	0.530	0.012	0.021
c1	1.170	1.420	0.046	0.056
D	9.860	10.360	0.388	0.408
E	8.500	8.900	0.335	0.350
e	2.540TYP		0.100TYP	
e1	4.980	5.180	0.196	0.204
L	14.700	15.500	0.579	0.610
L1	4.950	5.450	0.195	0.215
L2	2.000	2.740	0.079	0.108
L3	1.300	1.700	0.051	0.067
$\Phi$	0°	8°	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.