

# RJP63K2DPP-M0

Silicon N Channel IGBT  
High Speed Power Switching

R07DS0468EJ0200

Rev.2.00

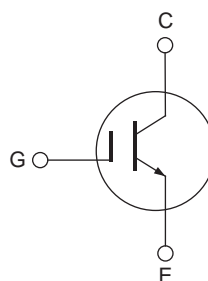
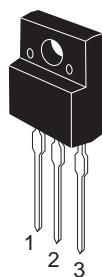
Jun 15, 2011

## Features

- Trench gate and thin wafer technology (G6H-II series)
- Low collector to emitter saturation voltage:  $V_{CE(sat)} = 1.9 \text{ V typ}$
- High speed switching:  $t_r = 60 \text{ ns typ}$ ,  $t_f = 200 \text{ ns typ}$ .
- Low leak current:  $I_{CES} = 1 \mu\text{A max}$
- Isolated package TO-220FL

## Outline

RENESAS Package code: PRSS0003AF-A)  
(Package name: TO-220FL)



1. Gate
2. Collector
3. Emitter

## Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

Item	Symbol	Ratings	Unit
Collector to emitter voltage	$V_{CES}$	630	V
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V
Collector current	$I_C$	35	A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	200	A
Collector dissipation	$P_C$ <sup>Note2</sup>	25	W
Junction to case thermal impedance	$\theta_{j-c}$	5	$^\circ\text{C/W}$
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

Notes: 1.  $PW \leq 10 \mu\text{s}$ , duty cycle  $\leq 1\%$

2.  $T_c = 25^\circ\text{C}$

## Electrical Characteristics

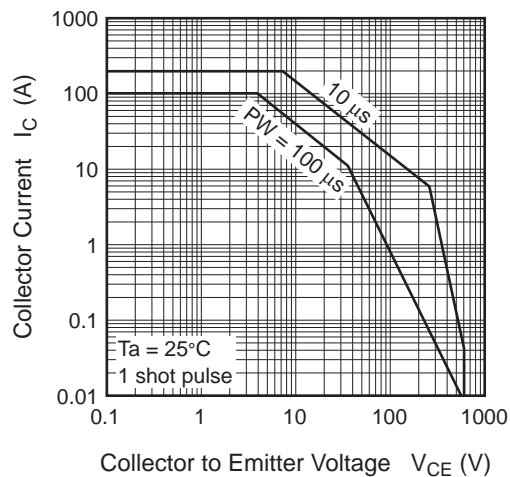
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	1	$\mu A$	$V_{CE} = 630 V, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 100$	nA	$V_{GE} = \pm 30 V, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	2.5	—	5	V	$V_{CE} = 10 V, I_C = 1 mA$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.9	2.4	V	$I_C = 35 A, V_{GE} = 15 V$ <sup>Note3</sup>
Input capacitance	$C_{ies}$	—	620	—	pF	$V_{CE} = 25 V$ $V_{GE} = 0$ $f = 1 MHz$
Output capacitance	$C_{oes}$	—	26	—	pF	
Reveres transfer capacitance	$C_{res}$	—	11	—	pF	
Total gate charge	$Q_g$	—	20	—	nC	$V_{GE} = 15 V$ $V_{CE} = 300 V$ $I_C = 35 A$
Gate to emitter charge	$Q_{ge}$	—	3	—	nC	
Gate to collector charge	$Q_{gc}$	—	7	—	nC	
Switching time	$t_{d(on)}$	—	0.02	—	$\mu s$	$I_C = 35 A$ $R_L = 8.5 \Omega$ $V_{GE} = 15 V$ $R_G = 5 \Omega$
	$t_r$	—	0.06	—	$\mu s$	
	$t_{d(off)}$	—	0.05	—	$\mu s$	
	$t_f$	—	0.2	—	$\mu s$	

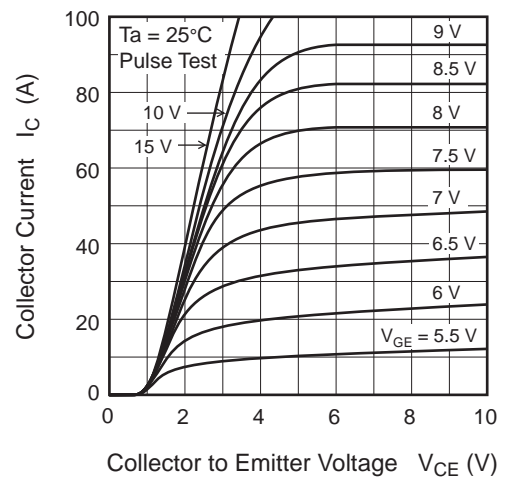
Notes: 3. Pulse test

## Main Characteristics

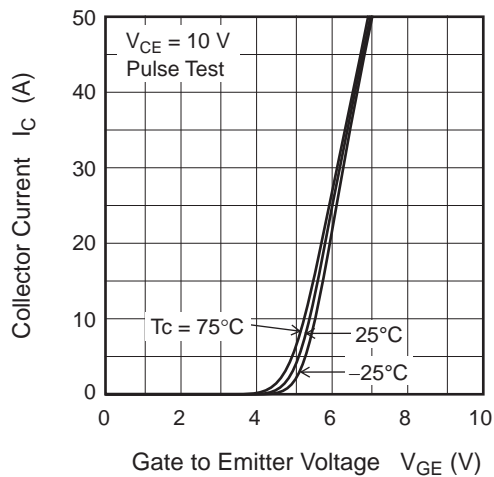
Maximum Safe Operation Area



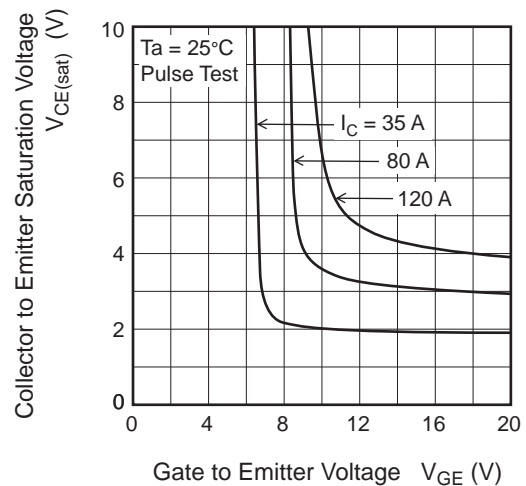
Typical Output Characteristics



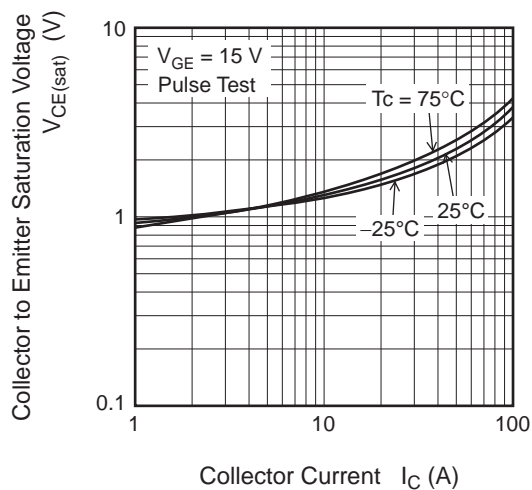
Typical Transfer Characteristics

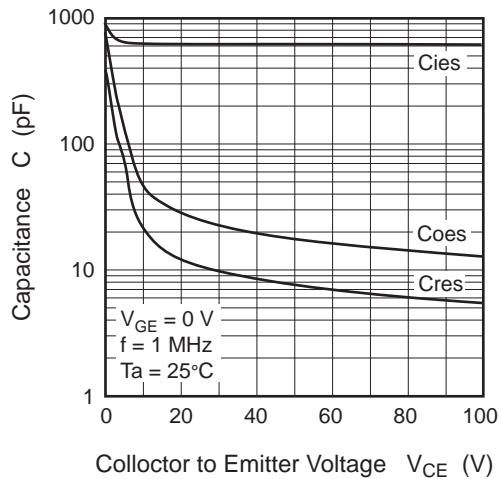


Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)

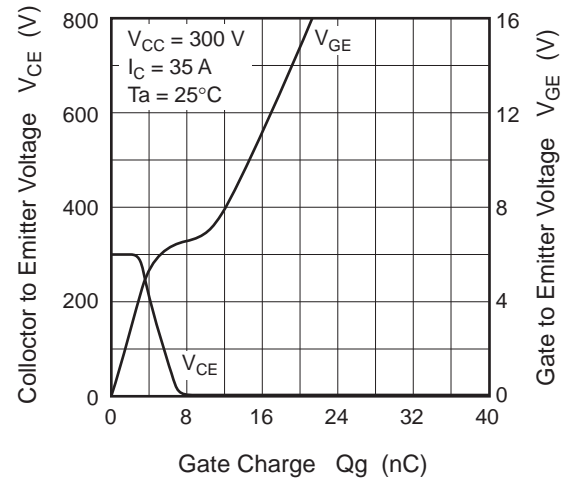


Collector to Emitter Saturation Voltage vs. Collector Current (Typical)

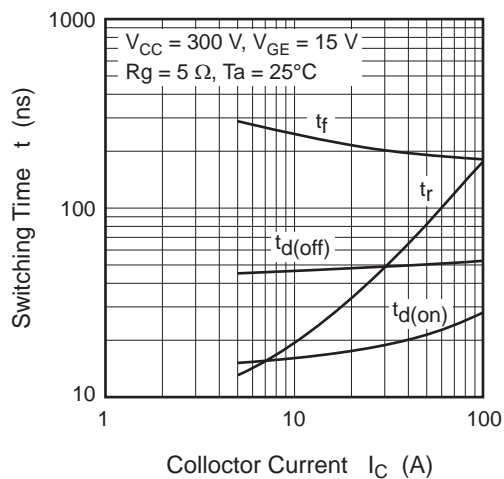


Typical Capacitance vs.  
Collector to Emitter Voltage

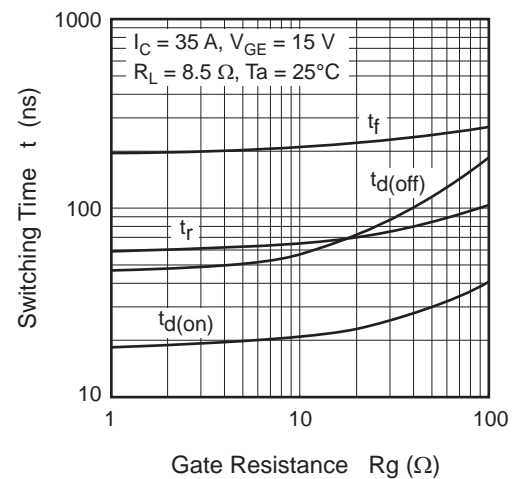
Dynamic Input Characteristics (Typical)



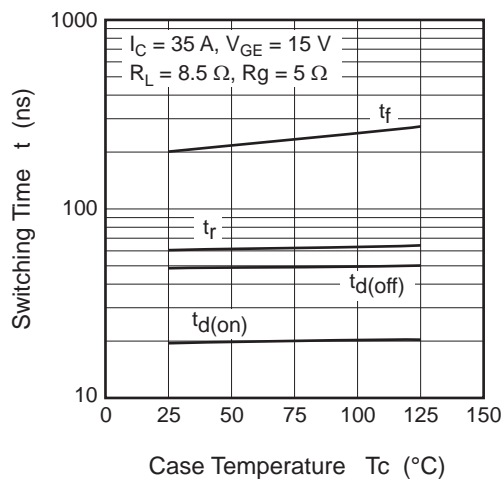
Switching Characteristics (Typical) (1)



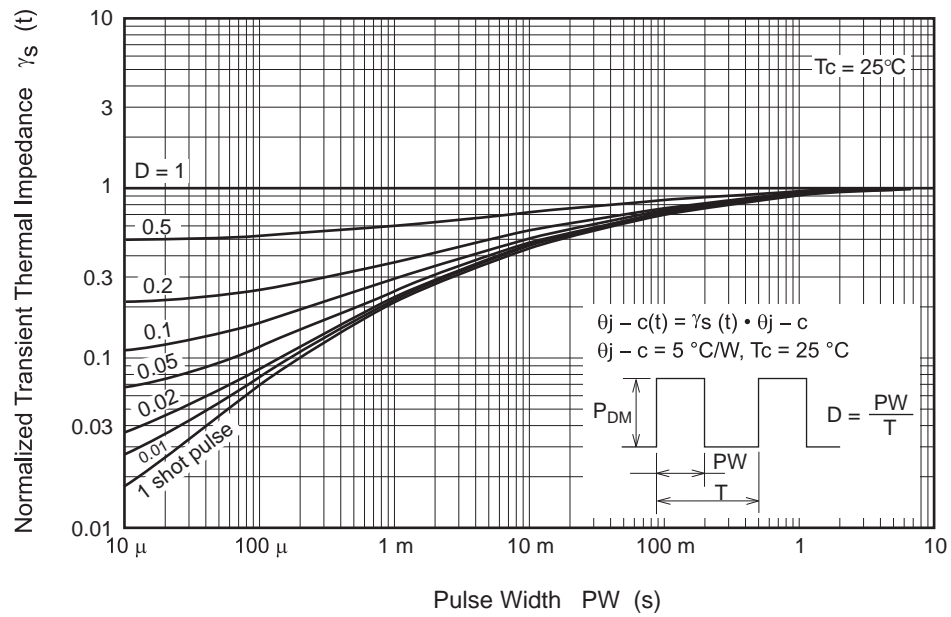
Switching Characteristics (Typical) (2)



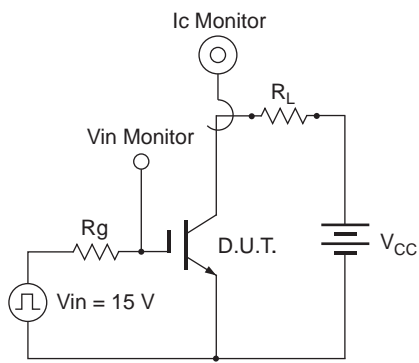
Switching Characteristics (Typical) (3)



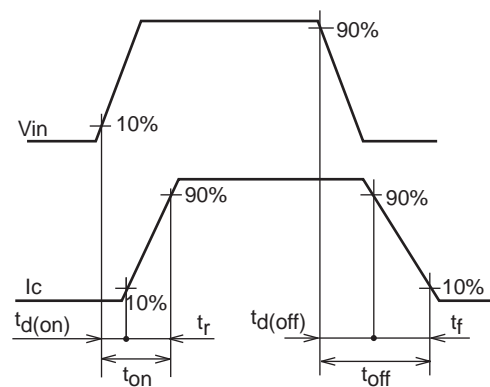
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



Waveform



## Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]	Unit: mm
TO-220FL	—	PRSS0003AF-A	TO-220FL	1.5g	

The drawing illustrates the mechanical specifications of the RJP63K2DPP-M0 TO-220FL package. It includes three views: a top view, a side view, and a detail view of the mounting tab. The top view shows a rectangular body with a central circular feature and four mounting holes. Key dimensions include a width of  $10.0 \pm 0.3$  mm, a body height of  $15.0 \pm 0.3$  mm, and a central hole diameter of  $3.0 \pm 0.3$  mm. The side view shows a total height of  $12.5 \pm 0.5$  mm and a mounting tab height of  $2.8 \pm 0.2$  mm. The detail view shows a mounting tab with a width of  $2.6 \pm 0.2$  mm and a height of  $4.5 \pm 0.2$  mm. Other dimensions include a mounting hole diameter of  $3.2 \pm 0.2$  mm, a mounting hole pitch of  $6.5 \pm 0.3$  mm, and a mounting hole offset of  $3.6 \pm 0.3$  mm. The mounting hole diameter is also specified as  $1.15 \pm 0.2$  mm and  $0.75 \pm 0.15$  mm. The mounting hole pitch is also specified as  $2.54 \pm 0.25$  mm and  $0.40 \pm 0.15$  mm.

## Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP63K2DPP-M0-T2	600 pcs	Box (Tube)

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