

# RJP30K3DPP-M0

Silicon N Channel IGBT  
High Speed Power Switching

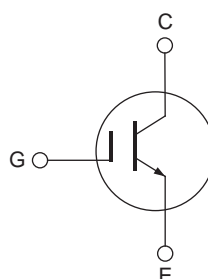
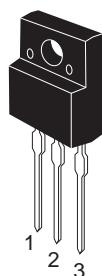
R07DS0501EJ0100  
Rev.1.00  
Jul 05, 2011

## Features

- Trench gate and thin wafer technology (G6H-II series)
- Low collector to emitter saturation voltage  $V_{CE(sat)} = 1.1V$  typ
- High speed switching  $t_r = 90$  ns typ,  $t_f = 250$  ns typ
- Low leak current  $I_{CES} = 1 \mu A$  max
- Isolated package TO-220FL

## Outline

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



1. Gate
2. Collector
3. Emitter

## Absolute Maximum Ratings

( $T_a = 25^\circ C$ )

Item	Symbol	Ratings	Unit
Collector to emitter voltage	$V_{CES}$	360	V
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V
Collector current	$I_C$	40	A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	300	A
Collector dissipation	$P_C$ <sup>Note2</sup>	30	W
Junction to case thermal impedance	$\theta_{j-c}$	4.17	$^\circ C/W$
Junction temperature	$T_j$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$

- Notes: 1.  $PW \leq 10 \mu s$ , duty cycle  $\leq 1\%$   
2. Value at  $T_c = 25^\circ C$

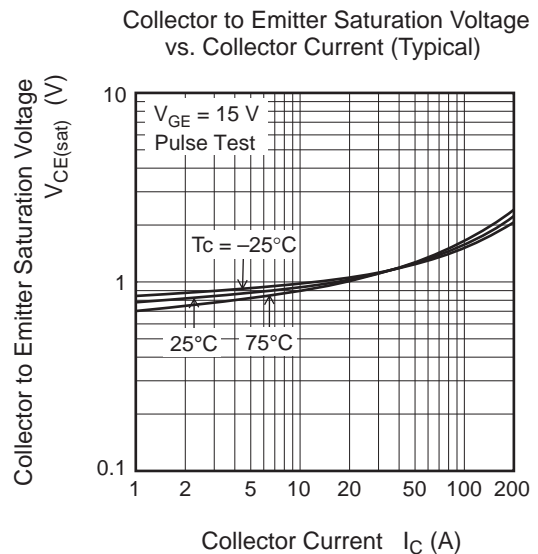
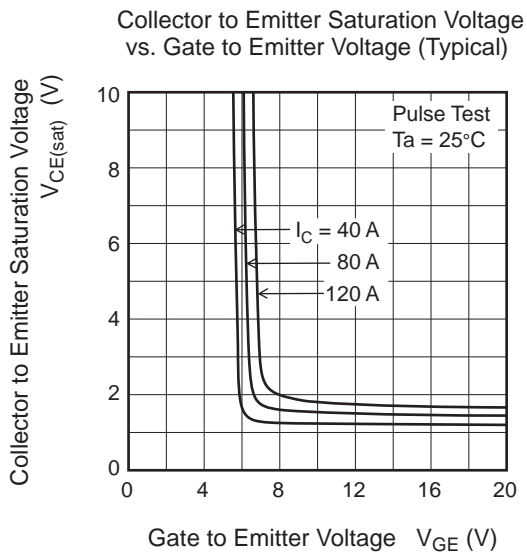
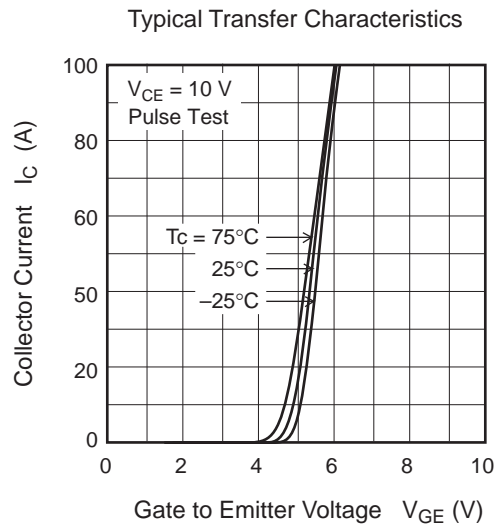
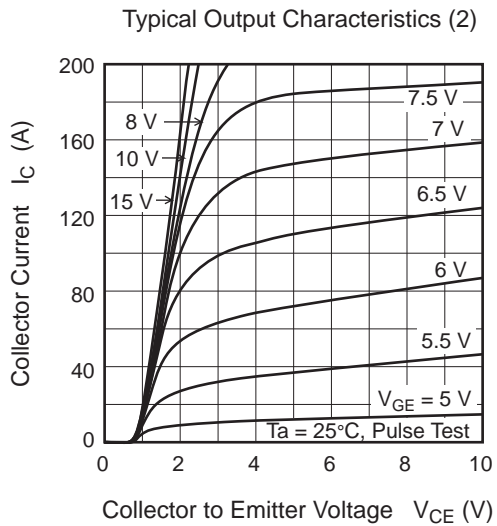
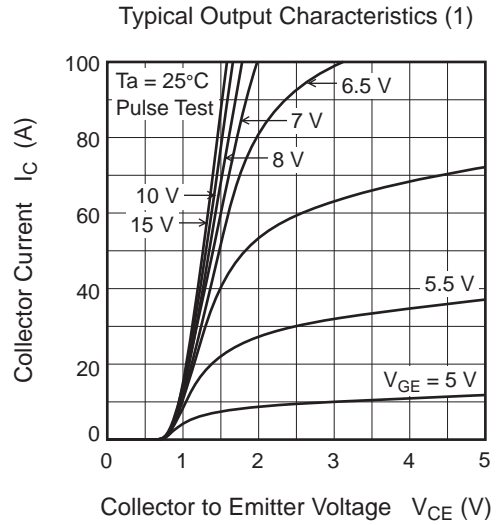
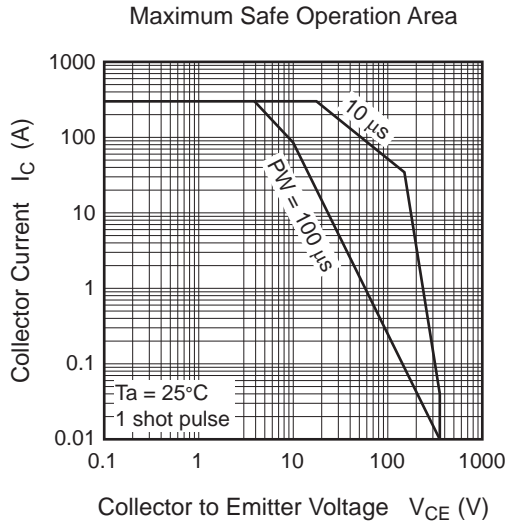
## Electrical Characteristics

(Ta = 25°C)

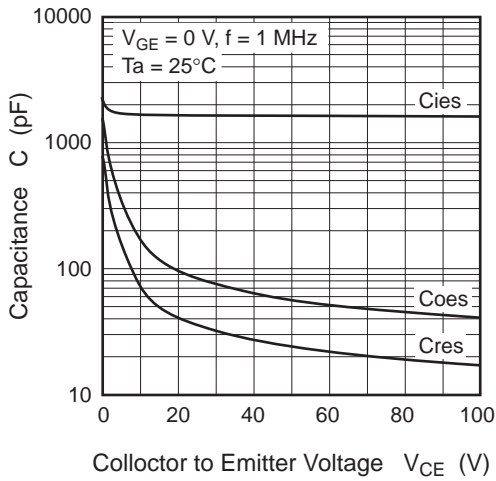
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	1	$\mu\text{A}$	$V_{CE} = 360 \text{ V}, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 100$	nA	$V_{GE} = \pm 30 \text{ V}, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	2.5	—	5	V	$V_{CE} = 10 \text{ V}, I_C = 1 \text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.1	1.6	V	$I_C = 40 \text{ A}, V_{GE} = 15 \text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{ies}$	—	1700	—	pF	$V_{CE} = 25 \text{ V}$
Output capacitance	$C_{oes}$	—	84	—	pF	$V_{GE} = 0$
Reveres transfer capacitance	$C_{res}$	—	36	—	pF	$f = 1 \text{ MHz}$
Total gate charge	$Q_g$	—	49	—	nC	$V_{GE} = 15 \text{ V}$
Gate to emitter charge	$Q_{ge}$	—	9	—	nC	$V_{CE} = 150 \text{ V}$
Gate to collector charge	$Q_{gc}$	—	13	—	nC	$I_C = 40 \text{ A}$
Switching time	$t_{d(on)}$	—	0.03	—	$\mu\text{s}$	$I_C = 40 \text{ A}$
	$t_r$	—	0.09	—	$\mu\text{s}$	$R_L = 4 \Omega$
	$t_{d(off)}$	—	0.08	—	$\mu\text{s}$	$V_{GE} = 15 \text{ V}$
	$t_f$	—	0.25	—	$\mu\text{s}$	$R_G = 5 \Omega$

Notes: 3. Pulse test.

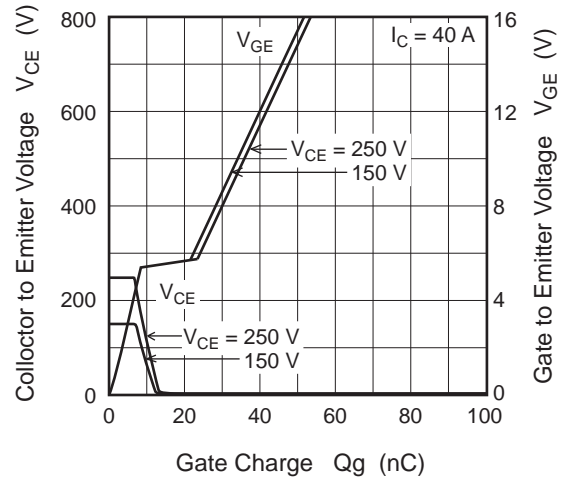
Main Characteristics



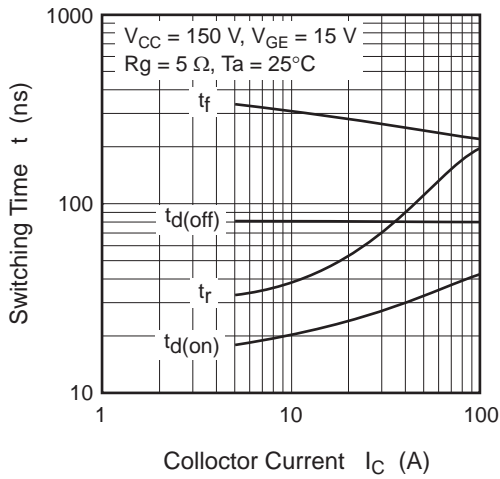
Typical Capacitance vs. Collector to Emitter Voltage



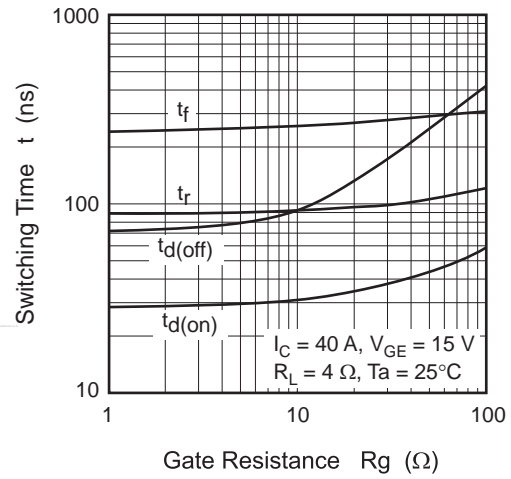
Dynamic Input Characteristics (Typical)



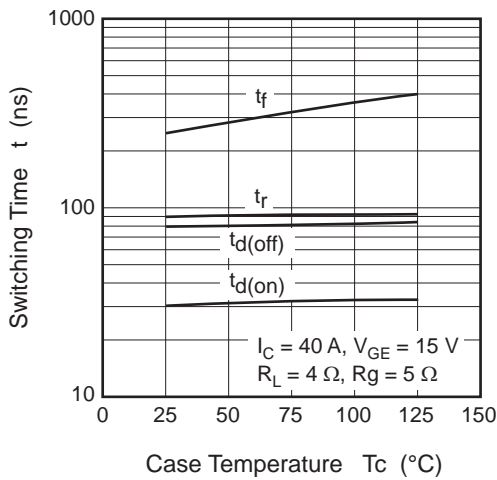
Switching Characteristics (Typical) (1)

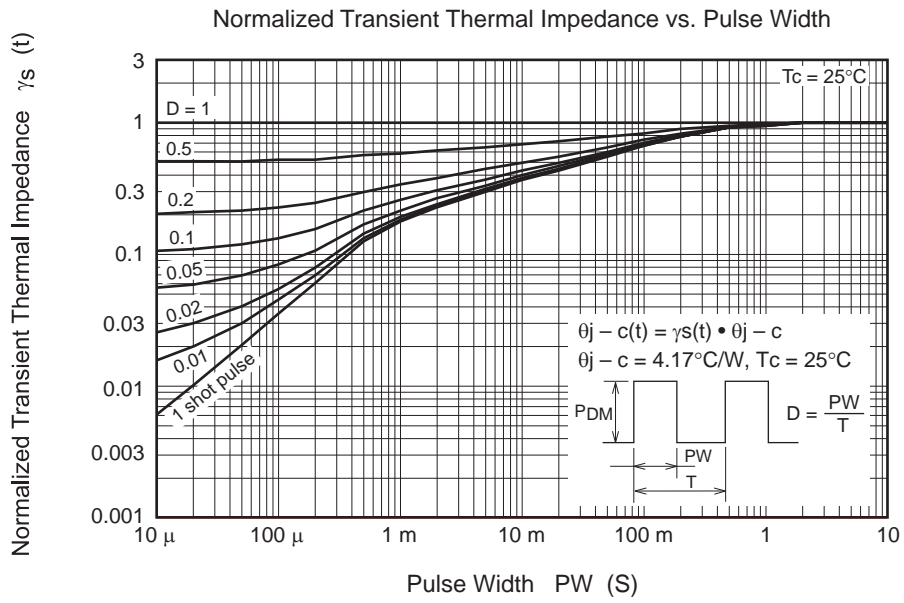


Switching Characteristics (Typical) (2)

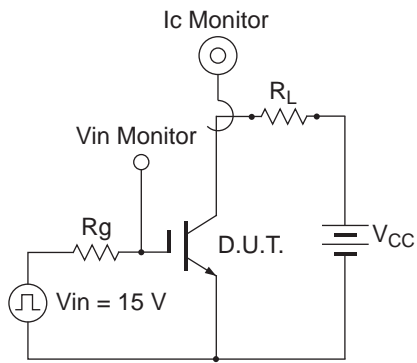


Switching Characteristics (Typical) (3)

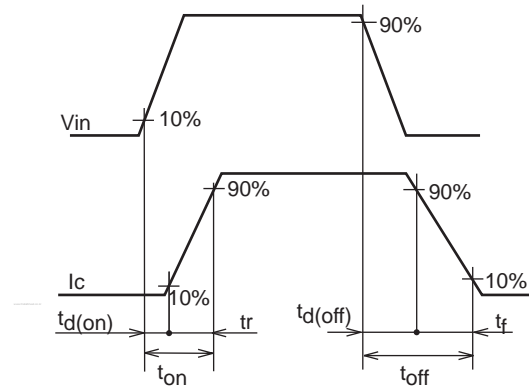




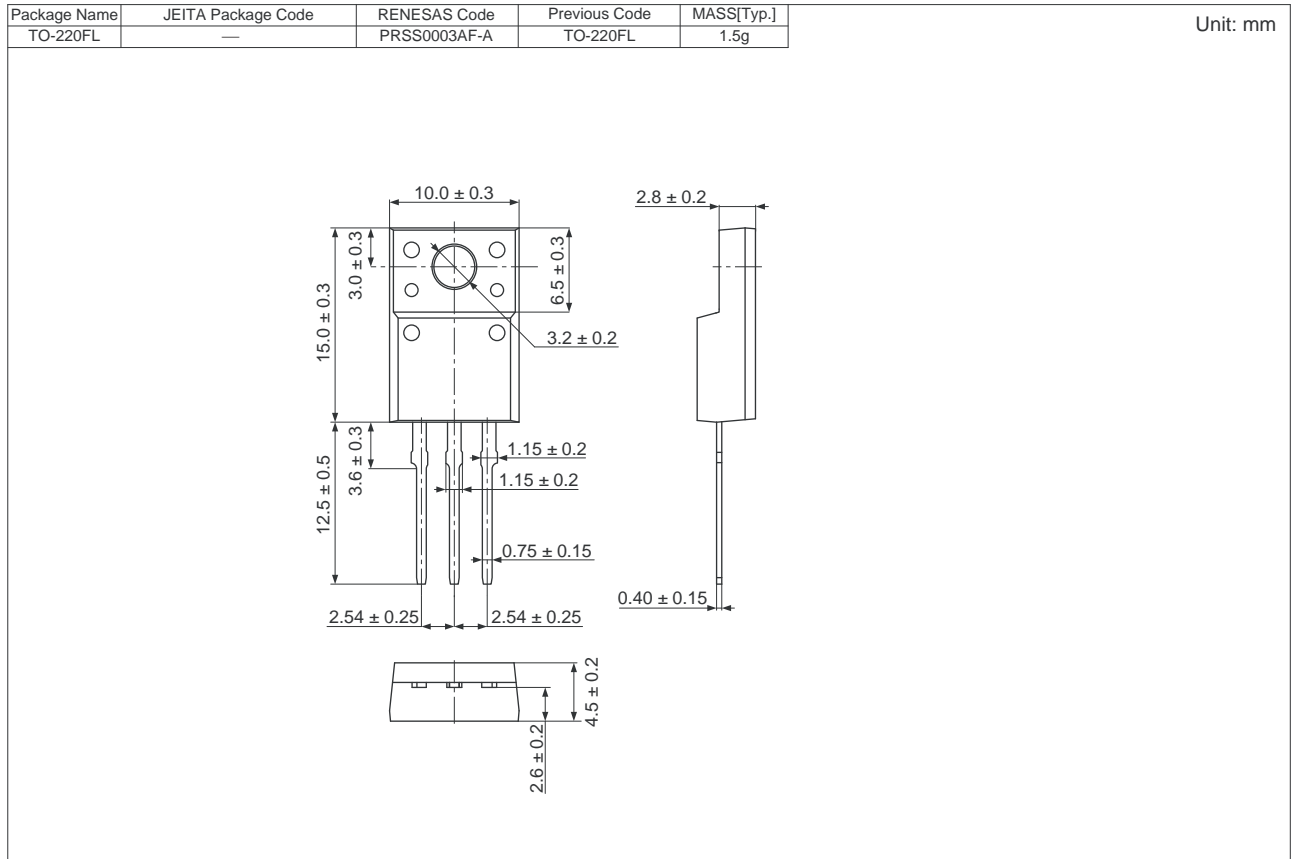
Switching Time Test Circuit



Waveform



### Package Dimension



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP30K3DPP-M0-T2	600 pcs	Box(Tube)

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