

# RJP30E3DPP-M0

Silicon N Channel IGBT  
High Speed Power Switching

R07DS0353EJ0200

Rev.2.00

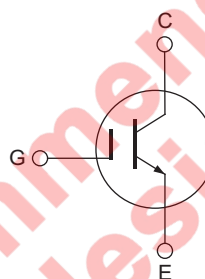
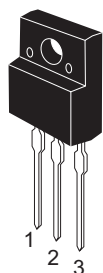
Apr 15, 2011

## Features

- Trench gate technology (G5H series)
- Low collector to emitter saturation voltage  $V_{CE(sat)} = 1.6 \text{ V typ}$
- High speed switching  $t_f = 150 \text{ ns typ}$
- 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	$V_{CES}$	360	V
Gate to Emitter voltage	$V_{GES}$	$\pm 30$	V
Collector current	$I_c$	40	A
Collector peak current	$i_c(\text{peak})$ <sup>Note1</sup>	250	A
Collector dissipation	$P_C$ <sup>Note2</sup>	30	W
Junction to case thermal impedance	$\theta_{j-c}$	4.17	$^\circ\text{C}/\text{W}$
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

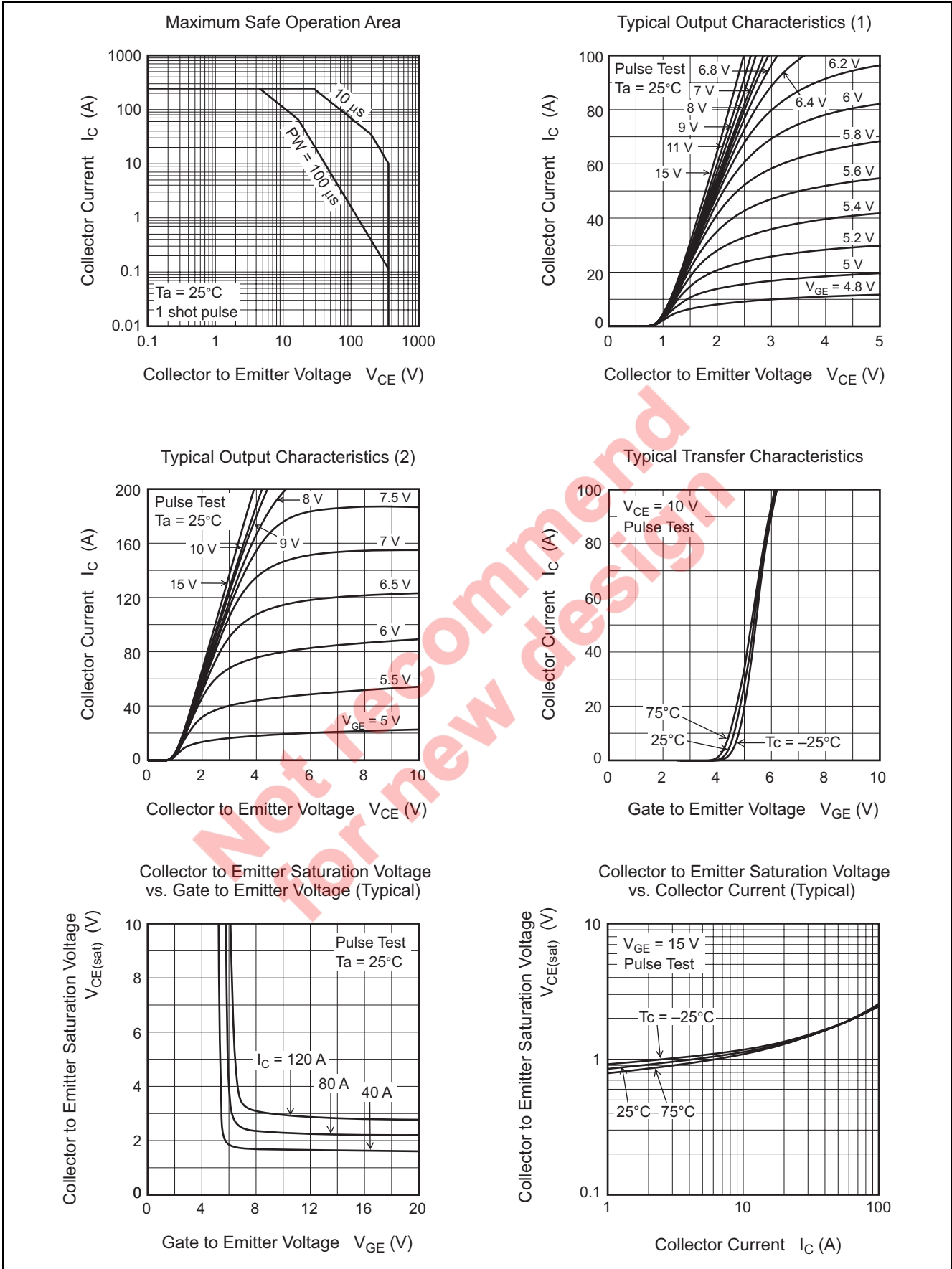
(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	$I_{CES}$	—	—	1	$\mu\text{A}$	$V_{CE} = 360\text{ V}, V_{GE} = 0$
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	$V_{CE(sat)}$	—	1.6	2.1	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	$C_{oes}$	—	85	—	pF	$V_{GE} = 0$
Reveres transfer capacitance	$C_{res}$	—	40	—	pF	$f = 1\text{ MHz}$
Total gate charge	$Q_g$	—	52	—	nC	$V_{GE} = 15\text{ V}$
Gate to emitter charge	$Q_{ge}$	—	9	—	nC	$V_{CE} = 150\text{ V}$
Gate to collector charge	$Q_{gc}$	—	15	—	nC	$I_C = 40\text{ A}$
Switching time	$t_{d(on)}$	—	0.04	—	$\mu\text{s}$	$I_C = 40\text{ A}$
	$t_r$	—	0.12	—	$\mu\text{s}$	$R_L = 4\ \Omega$
	$t_{d(off)}$	—	0.09	—	$\mu\text{s}$	$V_{GE} = 15\text{ V}$
	$t_f$	—	0.15	—	$\mu\text{s}$	$R_G = 5\ \Omega$

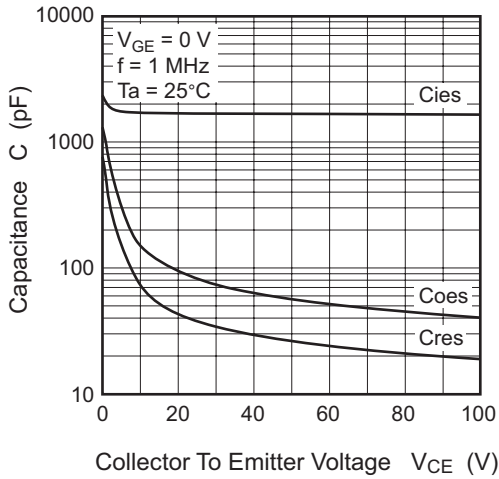
Notes: 3. Pulse test.

Not recommended  
for new design

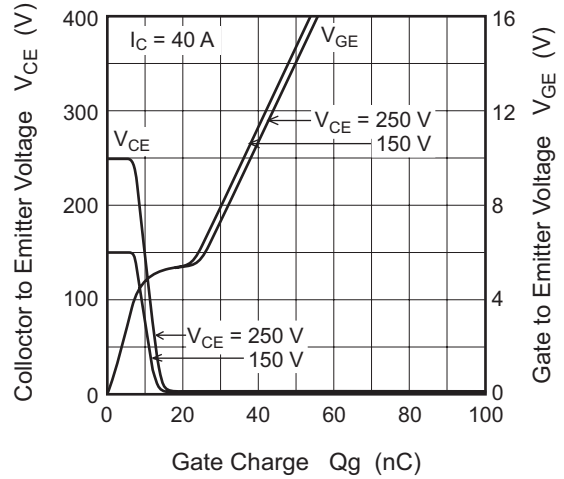
Main Characteristics



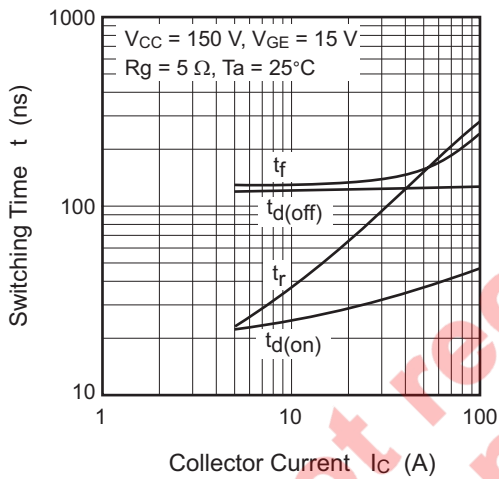
Typical Capacitance vs. Collector To Emitter Voltage



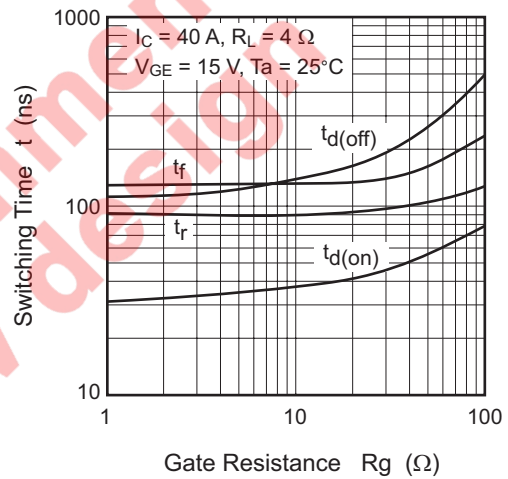
Dynamic Input Characteristics (Typical)



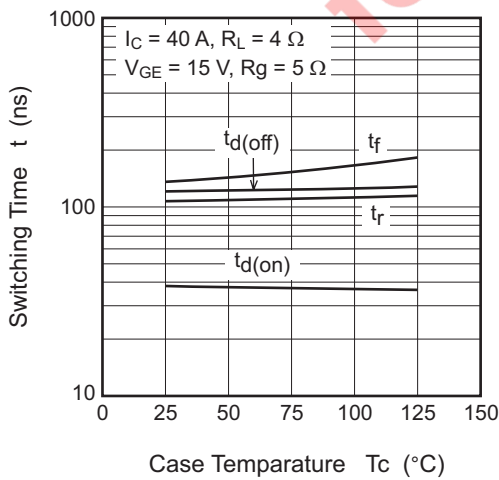
Switching Characteristics (Typical) (1)



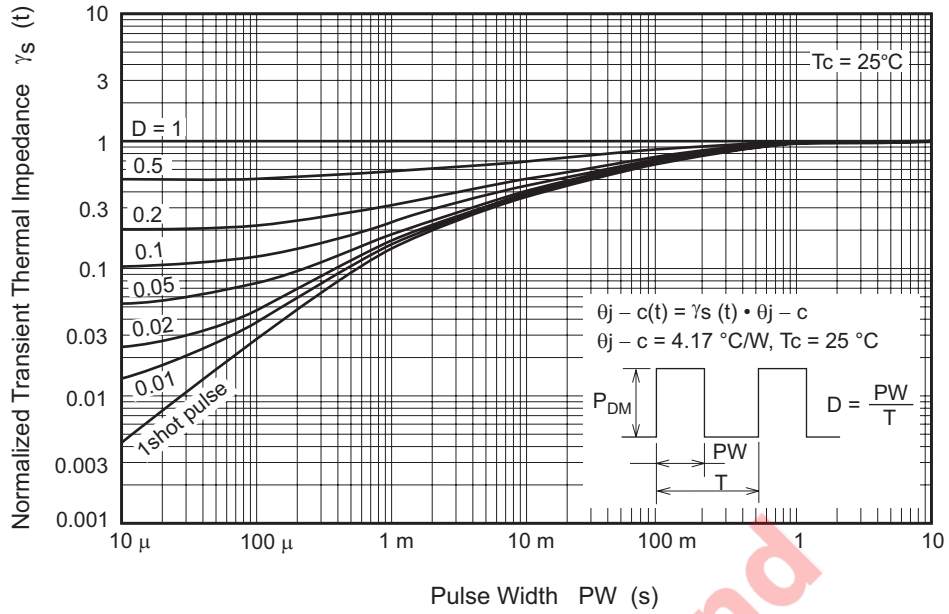
Switching Characteristics (Typical) (2)



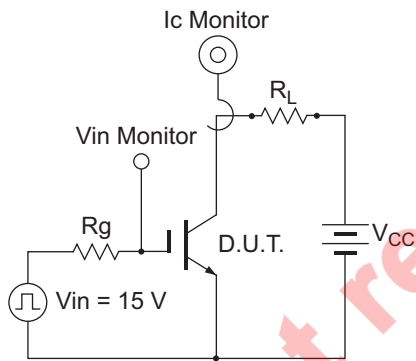
Switching Characteristics (Typical) (3)



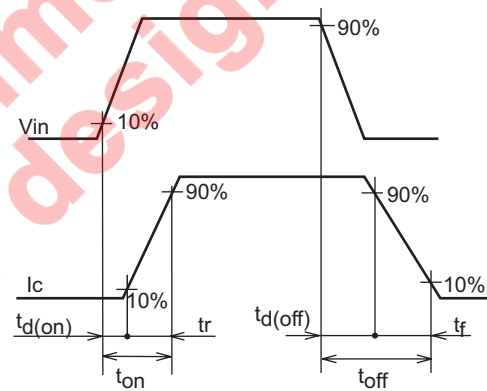
Normalized Transient Thermal Impedance vs. Pulse Width



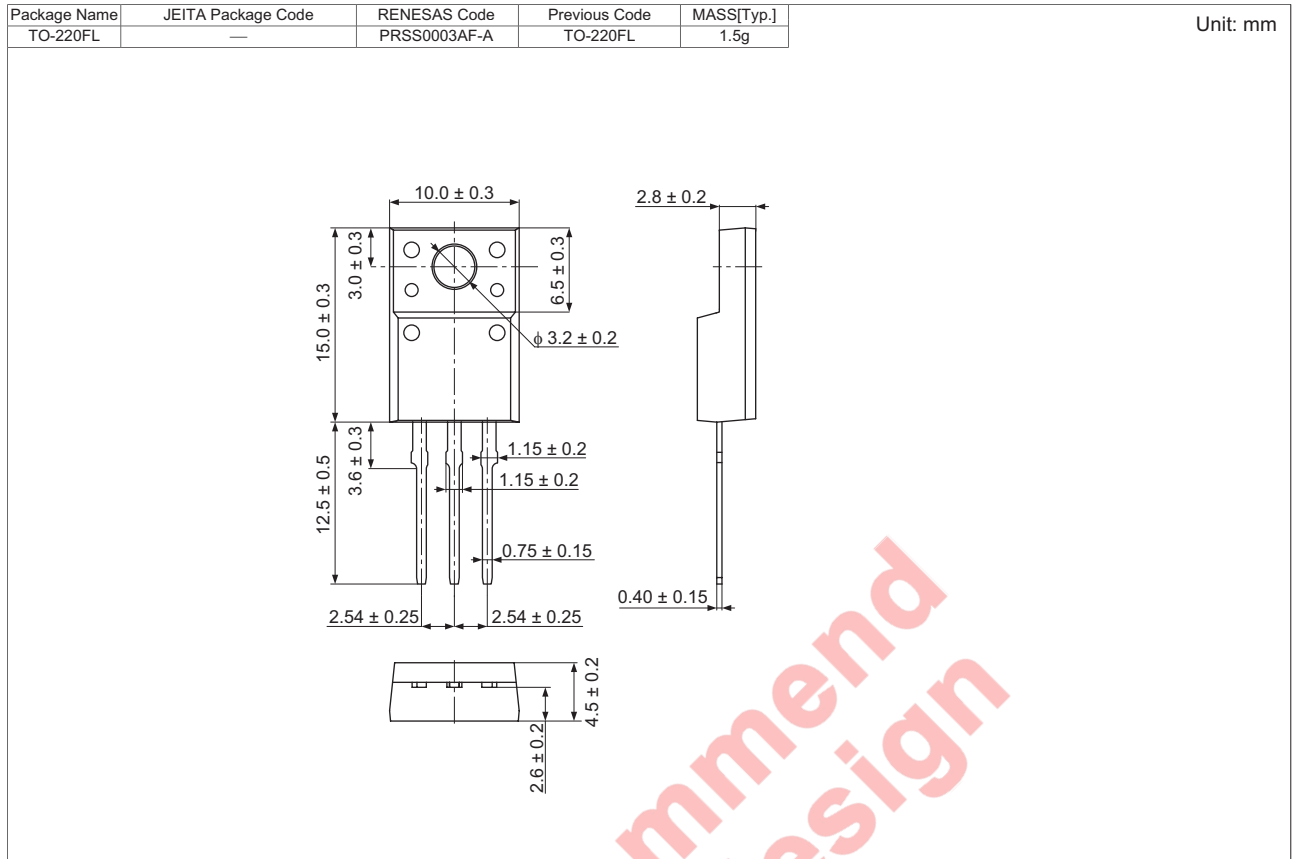
Switching Time Test Circuit



Waveform



Package Dimension



Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP30E3DPP-M0-T2	600 pcs	Box (Tube)

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