

# RJP60F5DPM

600 V - 40 A - IGBT  
High Speed Power Switching

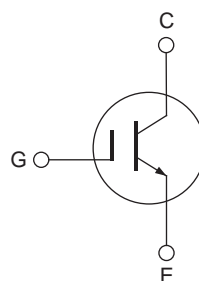
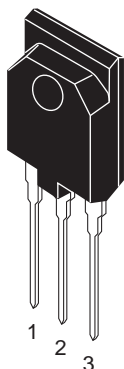
R07DS0587EJ0100  
Rev.1.00  
Nov 25, 2011

## Features

- Low collector to emitter saturation voltage  
 $V_{CE(sat)} = 1.37 \text{ V typ. (} I_C = 40 \text{ A, } V_{GE} = 15 \text{ V, } T_a = 25^\circ\text{C)}$
- Trench gate and thin wafer technology
- High speed switching

## Outline

RENESAS Package code: PRSS0003ZA-A  
(Package name: TO-3PFM)



1. Gate
2. Collector
3. Emitter

## Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit	
Collector to emitter voltage	$V_{CES}$	600	V	
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V	
Collector current	$T_c = 25^\circ\text{C}$	$I_C$	80	A
	$T_c = 100^\circ\text{C}$	$I_C$	40	A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	160	A	
Collector dissipation	$P_C$	45	W	
Junction to case thermal impedance	$\theta_{j-c}$	2.78	$^\circ\text{C/W}$	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

- Notes: 1. Pulse width limited by safe operating area.  
2.  $PW \leq 5 \mu\text{s}$ , duty cycle  $\leq 1\%$

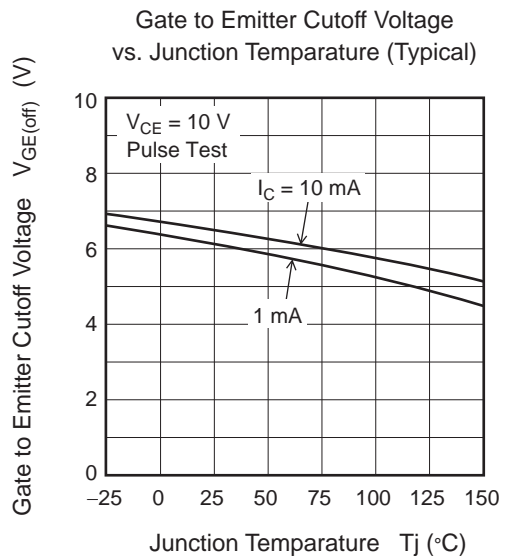
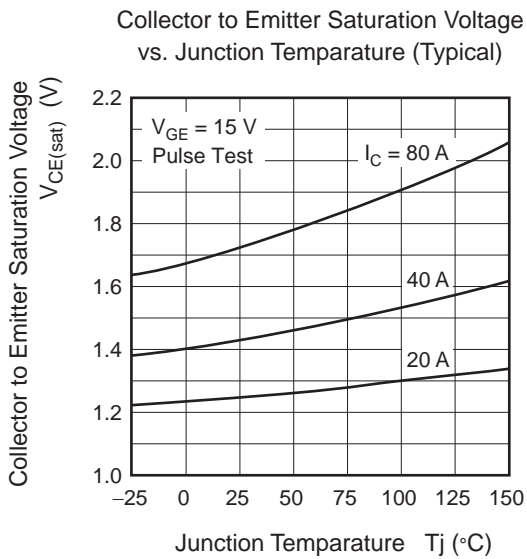
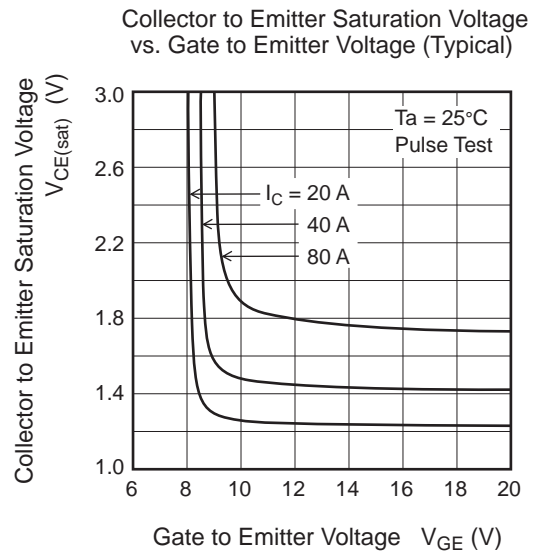
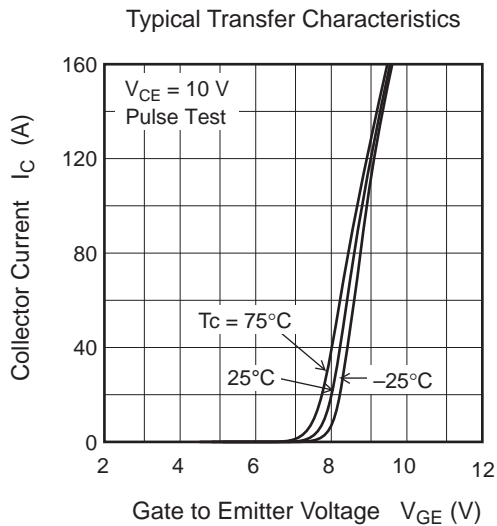
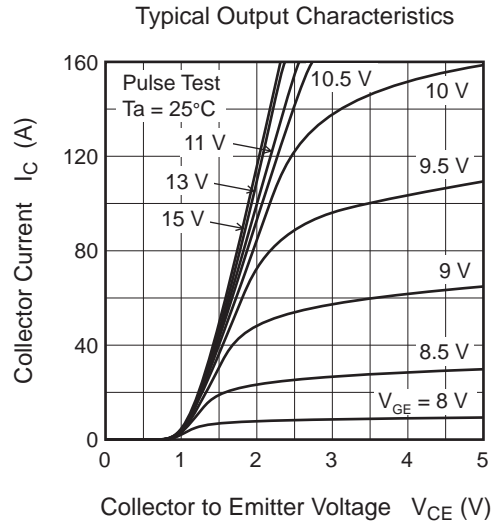
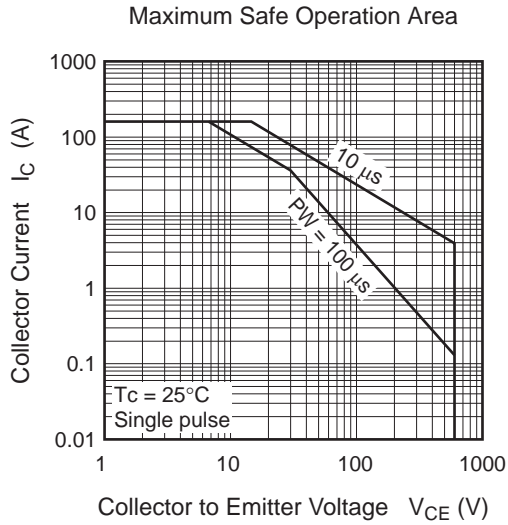
## Electrical Characteristics

(T<sub>j</sub> = 25°C)

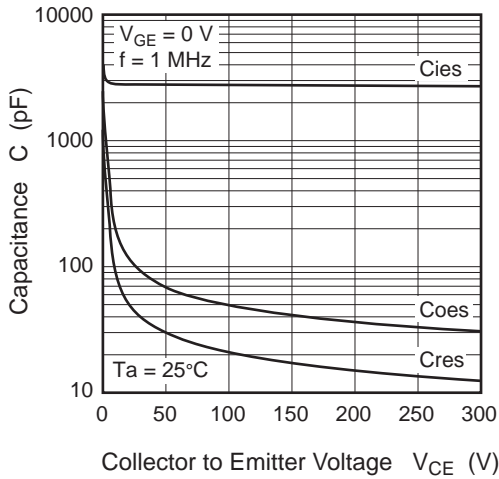
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I <sub>CEs</sub>	—	—	100	μA	V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0
Gate to emitter leak current	I <sub>GES</sub>	—	—	±1	μA	V <sub>GE</sub> = ±30 V, V <sub>CE</sub> = 0
Gate to emitter cutoff voltage	V <sub>GE(off)</sub>	4	—	8	V	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 1 mA
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	—	1.37	1.8	V	I <sub>C</sub> = 40 A, V <sub>GE</sub> = 15 V <sup>Note2</sup>
	V <sub>CE(sat)</sub>	—	1.7	—	V	I <sub>C</sub> = 80 A, V <sub>GE</sub> = 15 V <sup>Note2</sup>
Input capacitance	C <sub>ies</sub>	—	2780	—	pF	V <sub>CE</sub> = 25 V V <sub>GE</sub> = 0 V f = 1 MHz
Output capacitance	C <sub>oes</sub>	—	122	—	pF	
Reverse transfer capacitance	C <sub>res</sub>	—	43	—	pF	
Switching time	t <sub>d(on)</sub>	—	53	—	ns	I <sub>C</sub> = 30 A V <sub>CE</sub> = 400 V, V <sub>GE</sub> = 15 V R <sub>g</sub> = 5 Ω <sup>Note2</sup> Inductive load
	t <sub>r</sub>	—	145	—	ns	
	t <sub>d(off)</sub>	—	105	—	ns	
	t <sub>f</sub>	—	85	—	ns	

Notes: 2. Pulse test

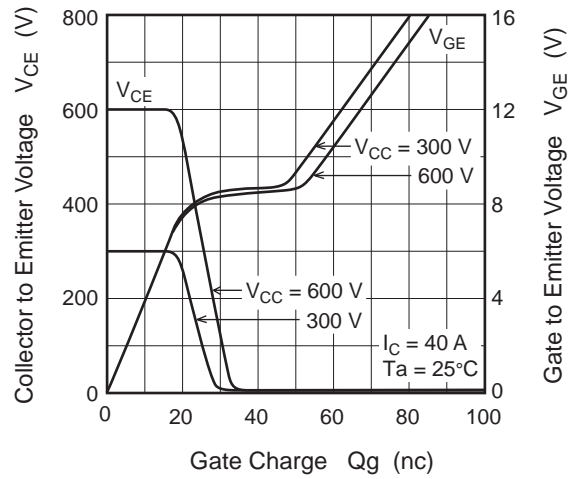
Main Characteristics



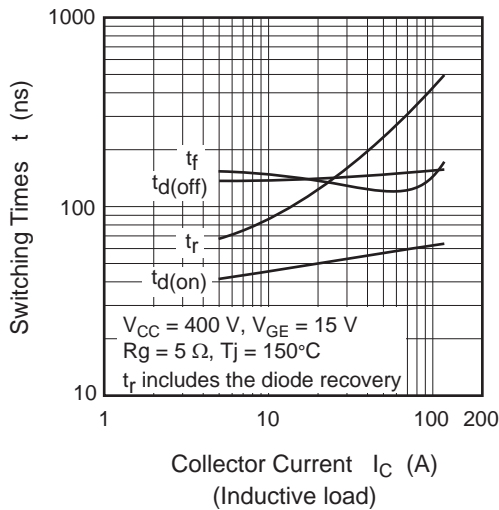
Typical Capacitance vs. Collector to Emitter Voltage



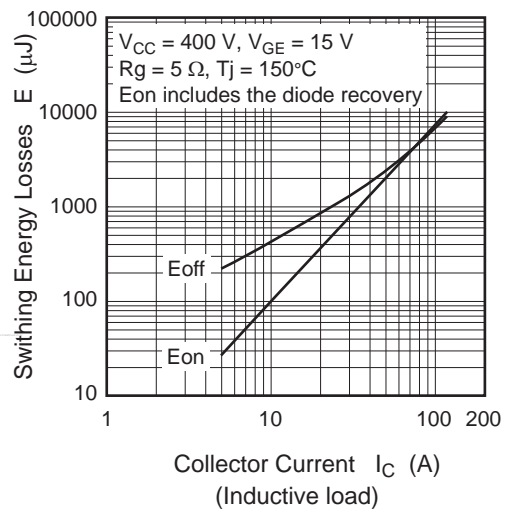
Dynamic Input Characteristics (Typical)



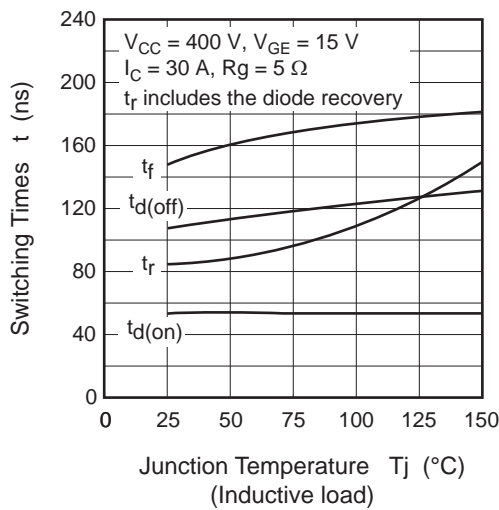
Switching Characteristics (Typical) (1)



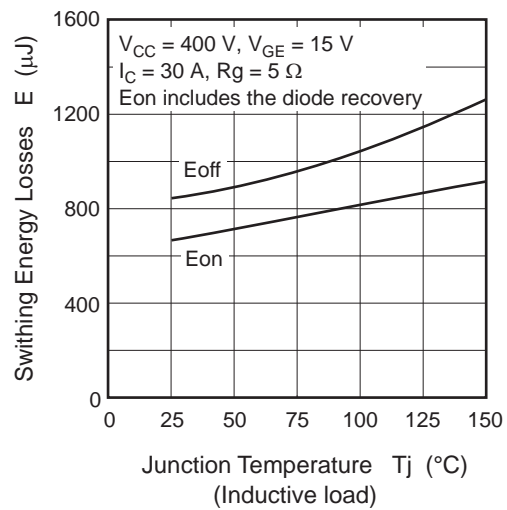
Switching Characteristics (Typical) (2)

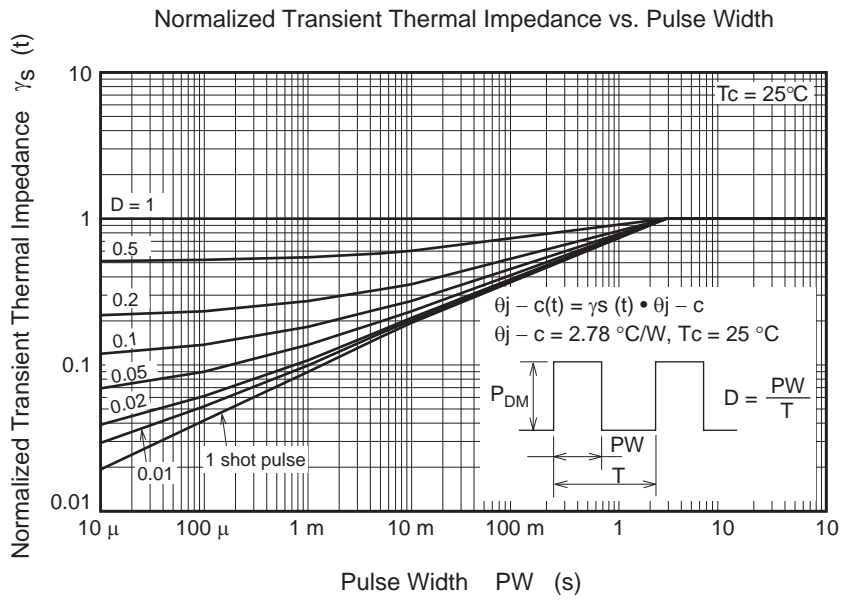


Switching Characteristics (Typical) (3)

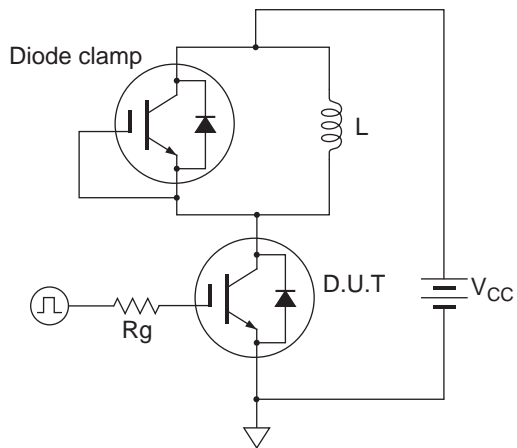


Switching Characteristics (Typical) (4)

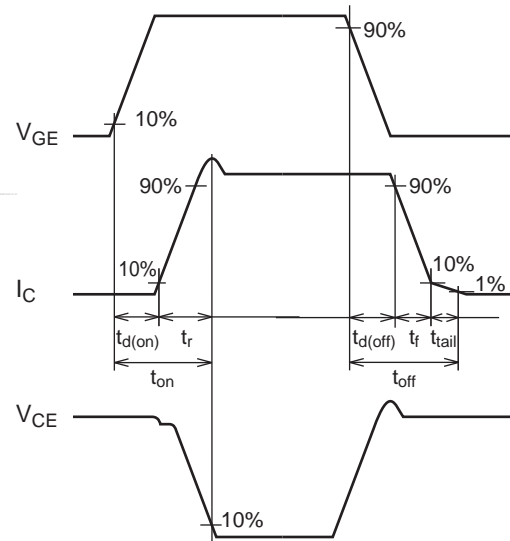




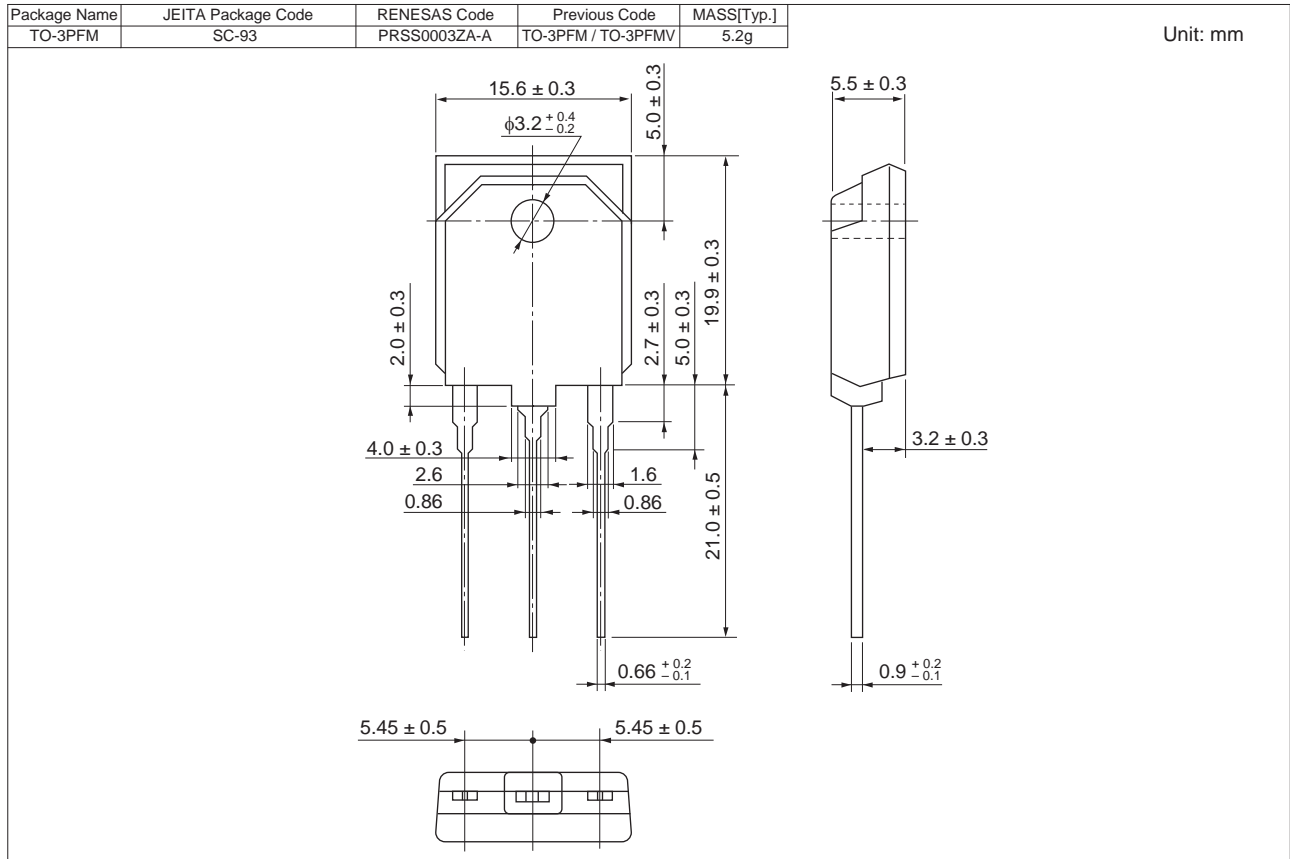
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP60F5DPM-00#T1	360 pcs	Box (Tube)

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