

# RJP60F0DPE

600 V - 25 A - IGBT  
High Speed Power Switching

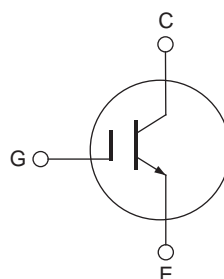
R07DS0540EJ0100  
Rev.1.00  
Sep 09, 2011

## Features

- Low collector to emitter saturation voltage  
 $V_{CE(sat)} = 1.4 \text{ V typ. (at } I_C = 25 \text{ A, } V_{GE} = 15\text{V, } T_a = 25^\circ\text{C)}$
- Trench gate and thin wafer technology
- High speed switching  
 $t_f = 90 \text{ ns typ. (at } I_C = 30 \text{ A, } V_{CE} = 400 \text{ V, } V_{GE} = 15 \text{ V, } R_g = 5 \Omega, T_a = 25^\circ\text{C, inductive load)}$

## Outline

RENESAS Package code: PRSS0004AE-B  
(Package name: LDPAK (S)-(1) )



1. Gate
2. Collector
3. Emitter
4. Collector

## 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	$T_c = 25^\circ\text{C}$	$I_C$ <sup>Note1</sup>	50 A
	$T_c = 100^\circ\text{C}$	$I_C$ <sup>Note1</sup>	25 A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	100	A
Collector dissipation	$P_C$	122	W
Junction to case thermal impedance	$\theta_{j-c}$	1.02	$^\circ\text{C/W}$
Channel 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.

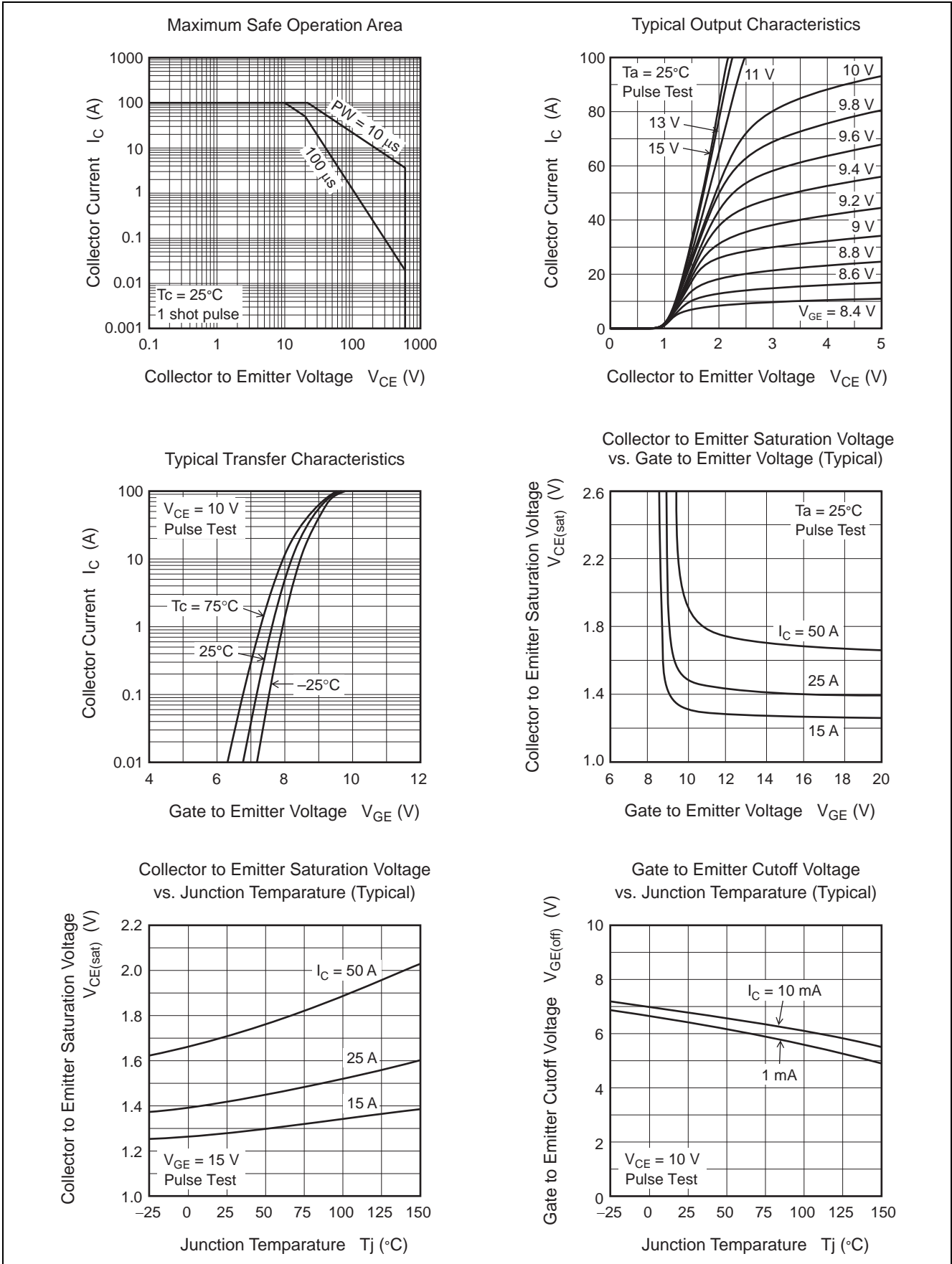
## Electrical Characteristics

(T<sub>j</sub> = 25°C)

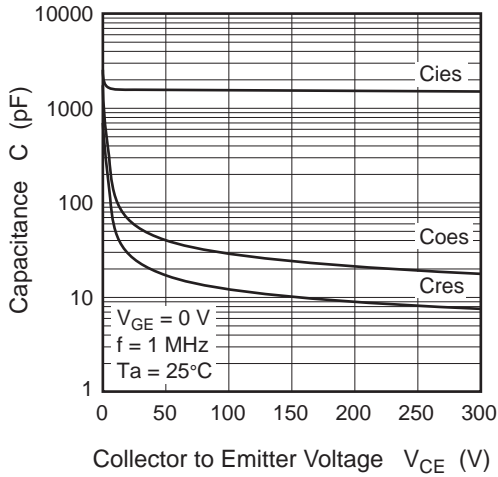
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I <sub>CES</sub>	—	—	100	μA	V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0
Gate to emitter leak current	I <sub>GES</sub>	—	—	±1	μA	V <sub>GE</sub> = ±30 V, V <sub>CE</sub> = 0
Gate to emitter cutoff voltage	V <sub>GE(off)</sub>	4	—	8	V	V <sub>CE</sub> = 10V, I <sub>C</sub> = 1 mA
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	—	1.4	1.82	V	I <sub>C</sub> = 25 A, V <sub>GE</sub> = 15V <sup>Note2</sup>
		—	1.7	—	V	I <sub>C</sub> = 50 A, V <sub>GE</sub> = 15V <sup>Note2</sup>
Input capacitance	C <sub>ies</sub>	—	1550	—	pF	V <sub>CE</sub> = 25 V
Output capacitance	C <sub>oes</sub>	—	82	—	pF	V <sub>GE</sub> = 0 V
Reverse transfer capacitance	C <sub>res</sub>	—	26	—	pF	f = 1 MHz
Switching time	t <sub>d(on)</sub>	—	46	—	ns	I <sub>C</sub> = 30 A, V <sub>CE</sub> = 400 V
	t <sub>r</sub>	—	92	—	ns	V <sub>GE</sub> = 15 V, R <sub>g</sub> = 5 Ω <sup>Note2</sup>
	t <sub>d(off)</sub>	—	70	—	ns	Inductive load
	t <sub>f</sub>	—	90	—	ns	Diode clamp: RJH60F0DPK

Notes: 2. Pulse test

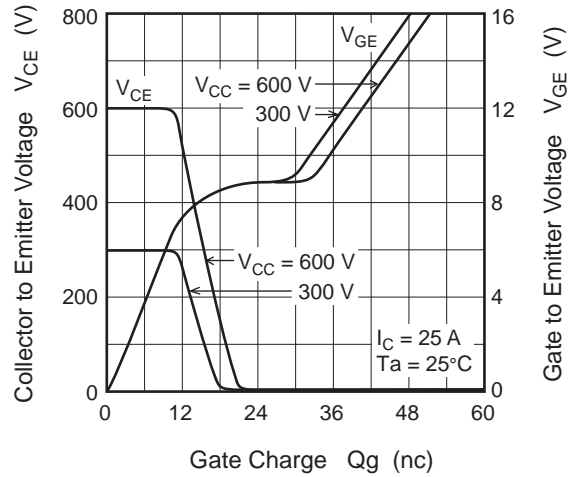
### Main Characteristics



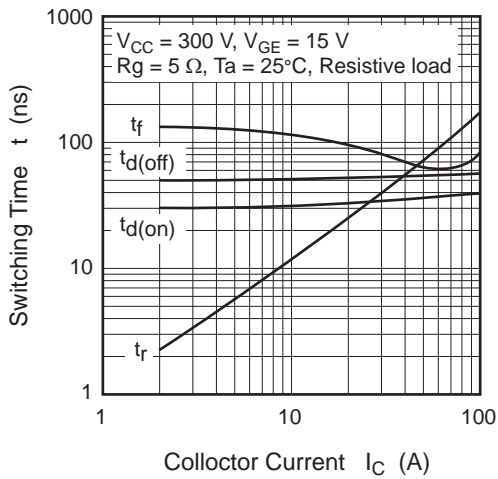
Typical Capacitance vs. Collector to Emitter Voltage



Dynamic Input Characteristics (Typical)



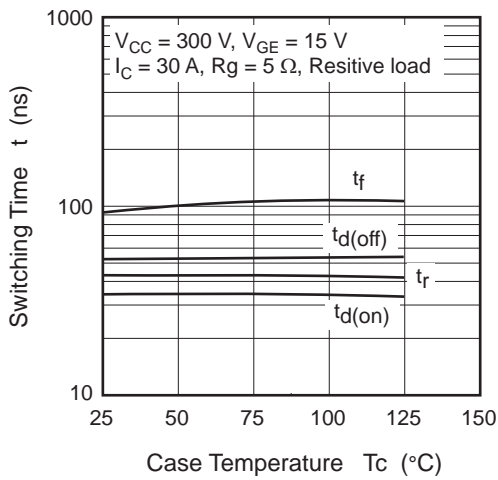
Switching Characteristics (Typical) (1)

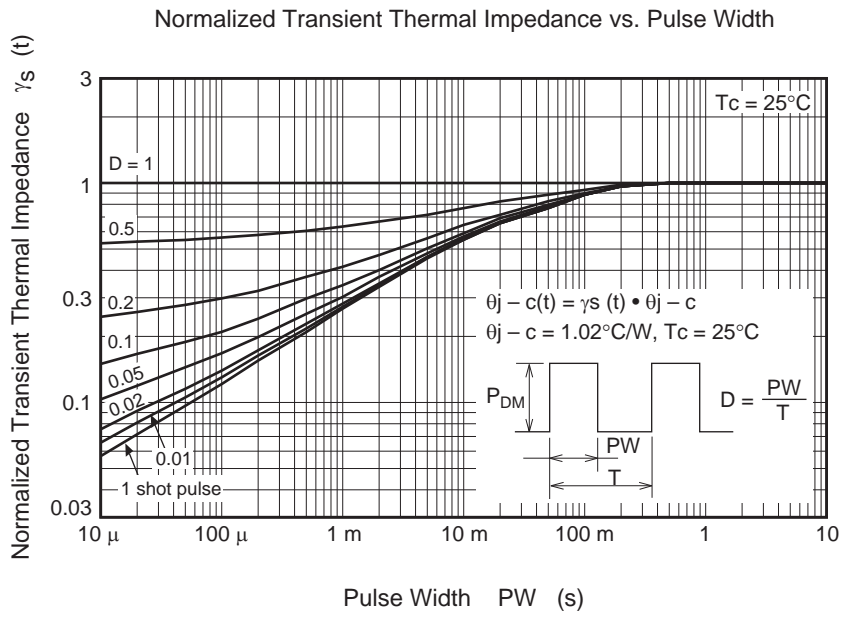


Switching Characteristics (Typical) (2)

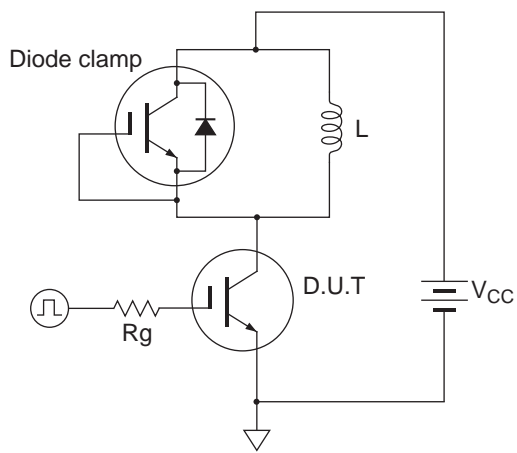


Switching Characteristics (Typical) (3)

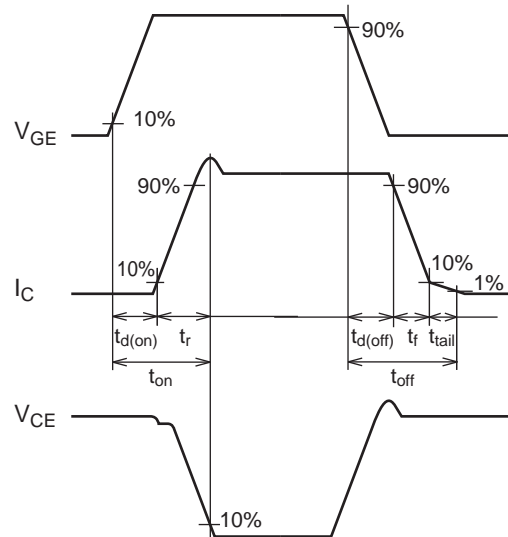




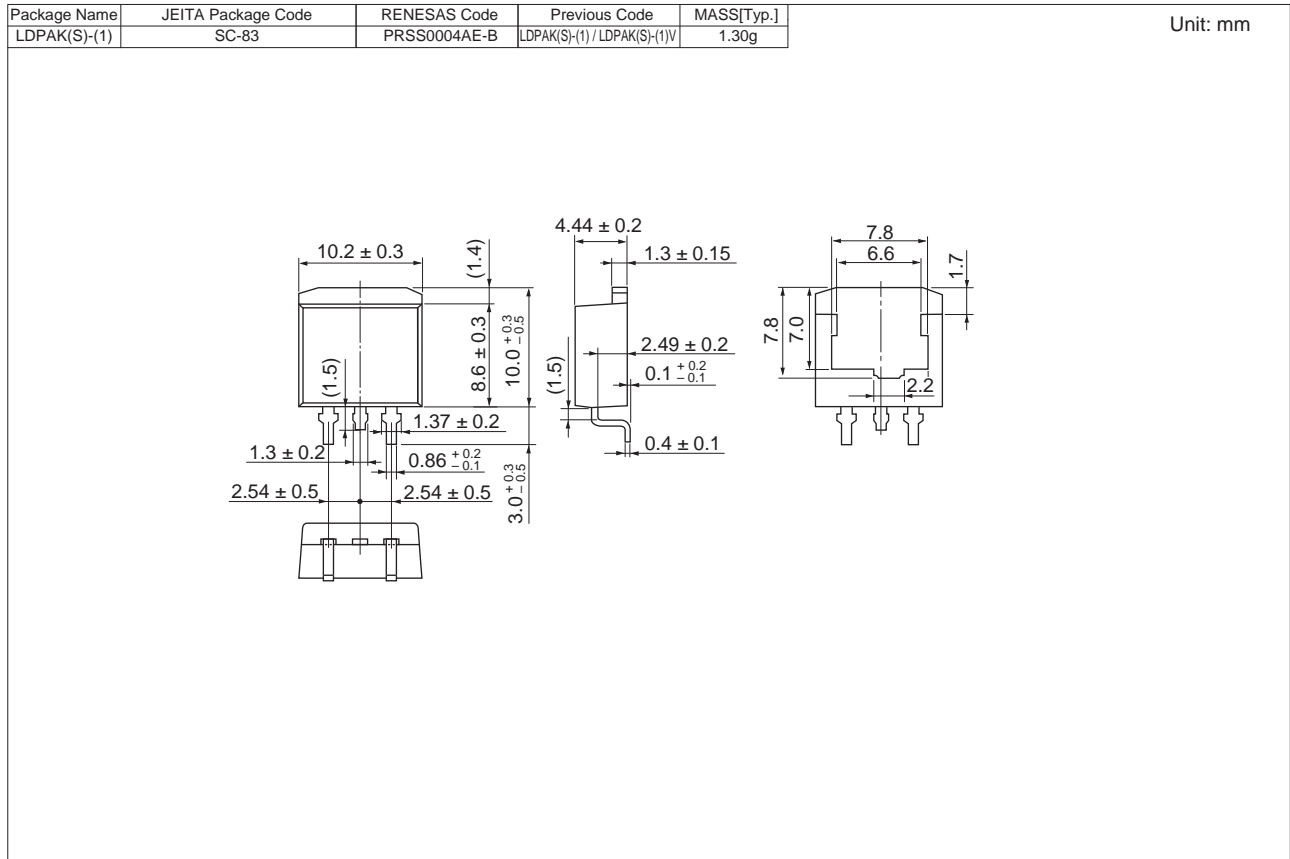
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJP60F0DPE-00-J3	1000 pcs	Taping

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