

# RJH1DF7RDPQ-80

Silicon N Channel IGBT  
High Speed Power Switching

R07DS0413EJ0100

Rev.1.00

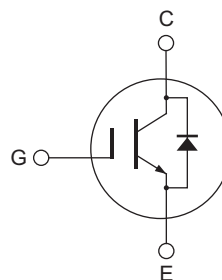
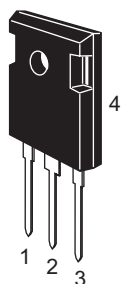
May 18, 2011

## Features

- Voltage resonance circuit use
- Reverse conducting IGBT with monolithic body diode
- High efficiency device for induction heating
- Low collector to emitter saturation voltage  
 $V_{CE(sat)} = 1.95 \text{ V typ. (at } I_C = 35 \text{ A, } V_{GE} = 15 \text{ V, } T_j = 25^\circ\text{C)}$
- Gate to emitter voltage rating  $\pm 30 \text{ V}$
- Pb-free lead plating

## Outline

RENESAS Package code: PRSS0003ZE-A  
(Package name: TO-247)



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	$V_{CES}$	1350	V	
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V	
Collector current	$T_c = 25^\circ\text{C}$	$I_C$	60	A
	$T_c = 100^\circ\text{C}$	$I_C$	35	A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	100	A	
Collector to emitter diode forward current	$i_{DF}$	25	A	
Collector dissipation	$P_C$	250	W	
Junction to case thermal impedance	$\theta_{j-c}$	0.5	$^\circ\text{C/W}$	
Junction temperature	$T_j$	150	$^\circ\text{C}$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$	

Notes: 1. Pulse width limited by safe operating area.

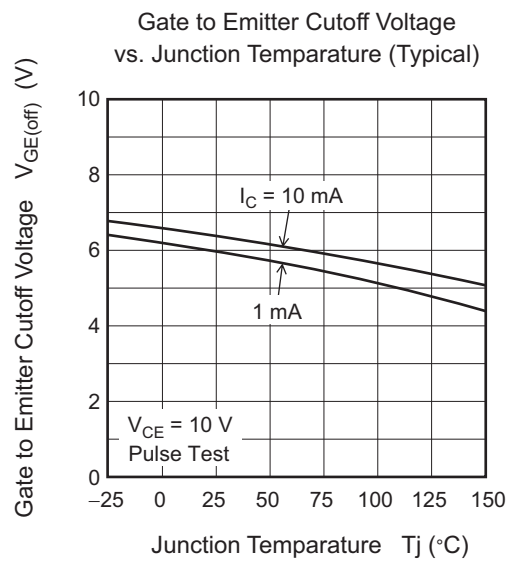
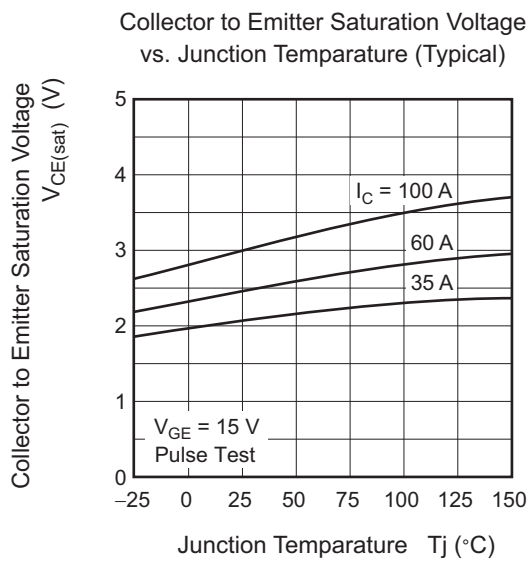
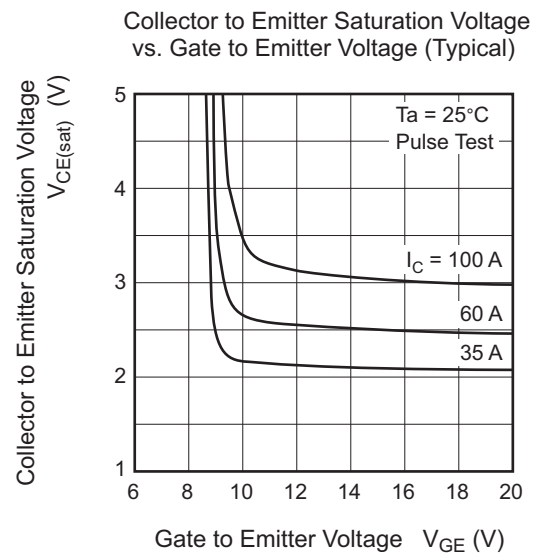
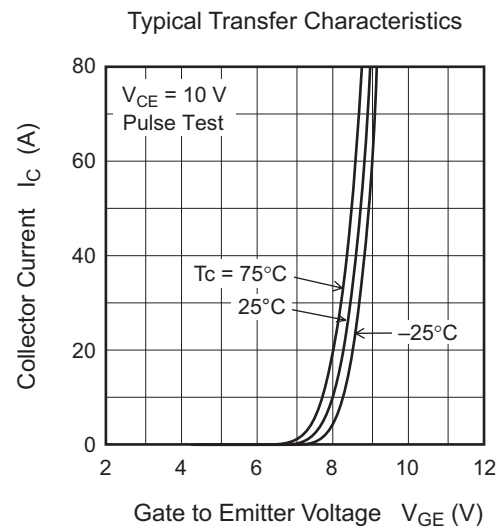
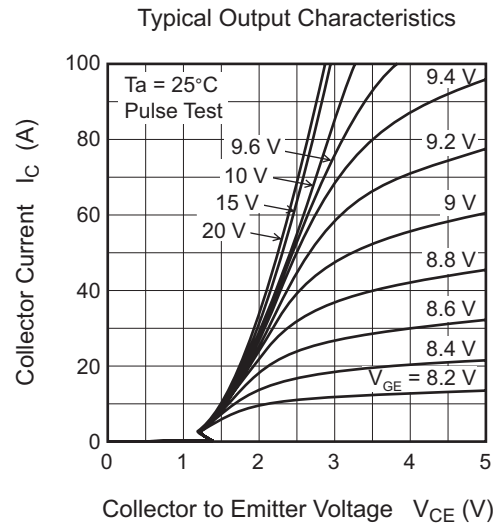
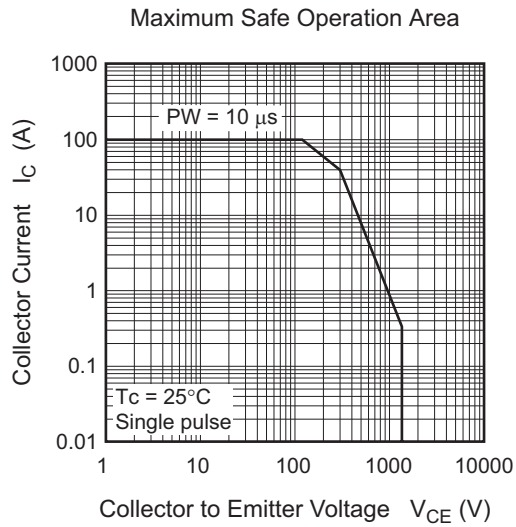
## Electrical Characteristics

(T<sub>j</sub> = 25°C)

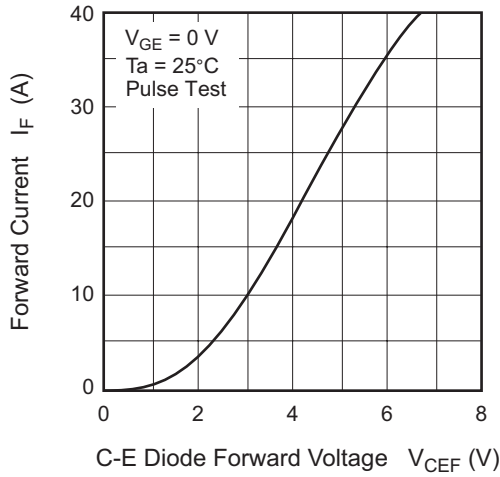
Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I <sub>CES</sub>	—	—	100	μA	V <sub>CE</sub> = 1350 V, V <sub>GE</sub> = 0
Gate to emitter leak current	I <sub>GES</sub>	—	—	±1	μA	V <sub>GE</sub> = ±30 V, V <sub>CE</sub> = 0
Gate to emitter cutoff voltage	V <sub>GE(off)</sub>	3.5	—	7.0	V	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 1 mA
Collector to emitter saturation voltage	V <sub>CE(sat)</sub>	—	1.95	2.55	V	I <sub>C</sub> = 35 A, V <sub>GE</sub> = 15 V <sup>Note2</sup>
Input capacitance	C <sub>ies</sub>	—	3330	—	pF	V <sub>CE</sub> = 25 V
Output capacitance	C <sub>oes</sub>	—	62	—	pF	V <sub>GE</sub> = 0 V
Reverse transfer capacitance	C <sub>res</sub>	—	50	—	pF	f = 1 MHz
Switching time	t <sub>d(on)</sub>	—	58	—	ns	I <sub>C</sub> = 35 A V <sub>CE</sub> = 600 V, V <sub>GE</sub> = 15 V R <sub>g</sub> = 5 Ω <sup>Note2</sup> Resistive Load
	t <sub>r</sub>	—	78	—	ns	
	t <sub>d(off)</sub>	—	144	—	ns	
	t <sub>f</sub>	—	208	—	ns	
C-E diode forward voltage	V <sub>F</sub>	—	3.4	4.4	V	I <sub>F</sub> = 10 A <sup>Note2</sup>

Notes: 2. Pulse test

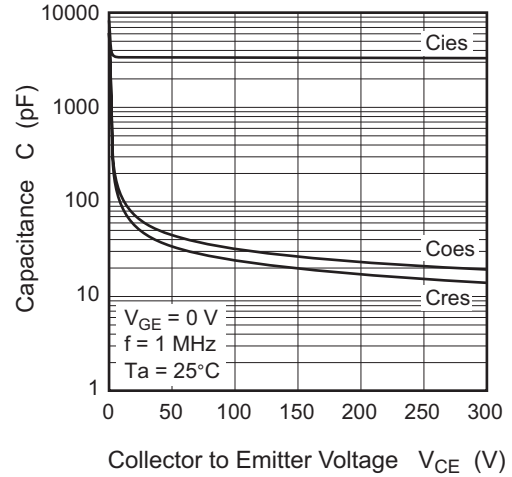
Main Characteristics



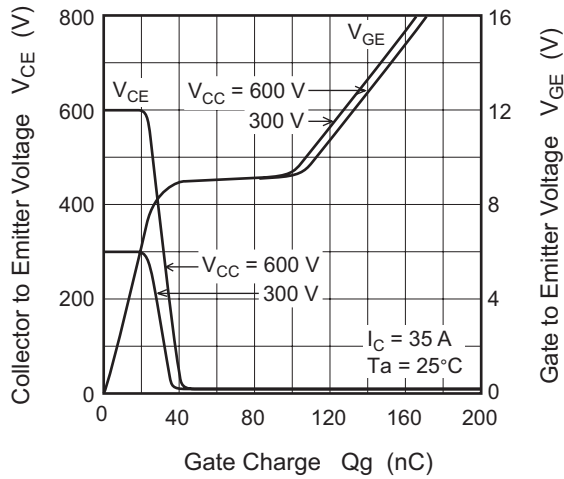
Forward Current vs. Forward Voltage (Typical)



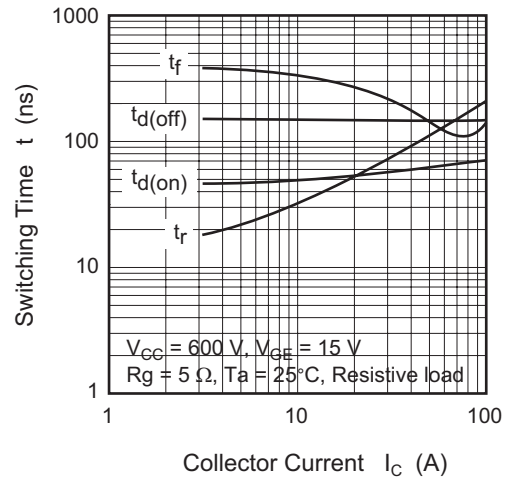
Typical Capacitance vs. Collector to Emitter Voltage



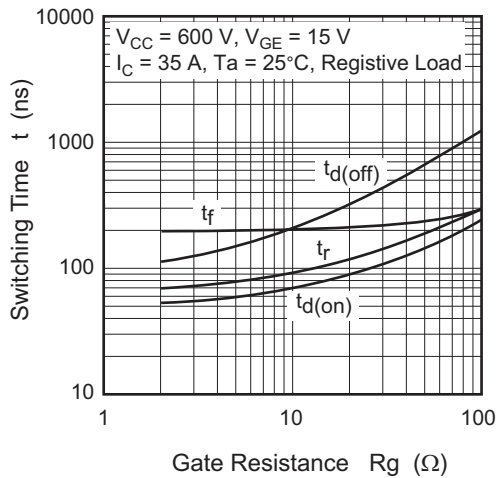
Dynamic Input Characteristics (Typical)



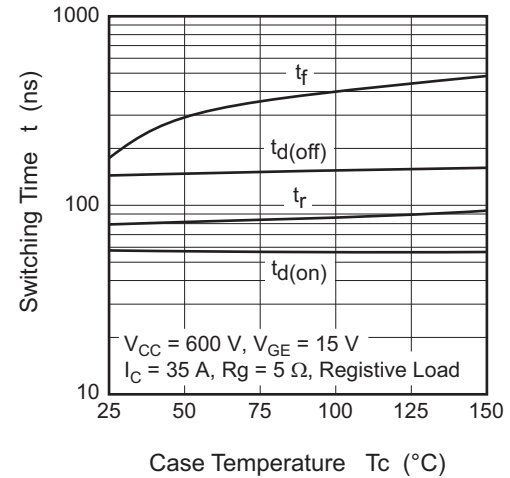
Switching Characteristics (Typical) (1)

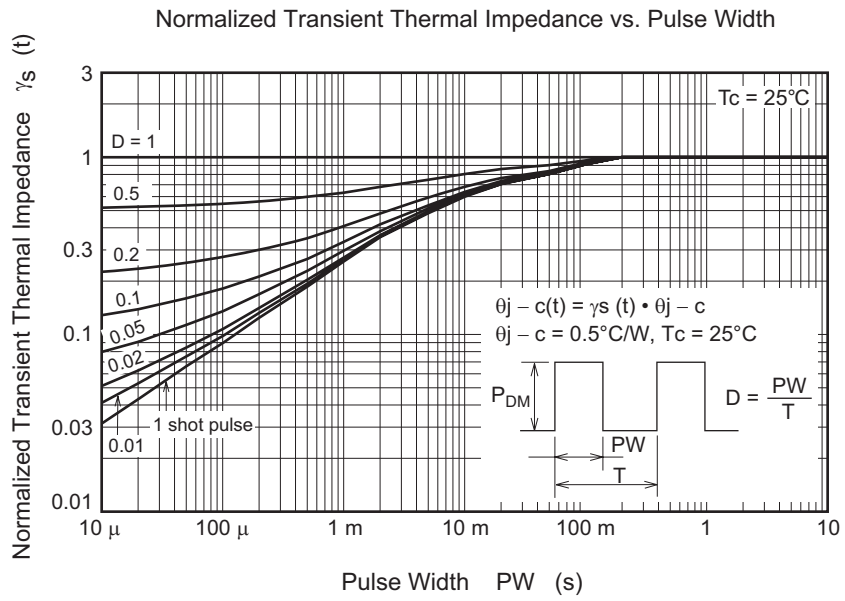


Switching Characteristics (Typical) (2)

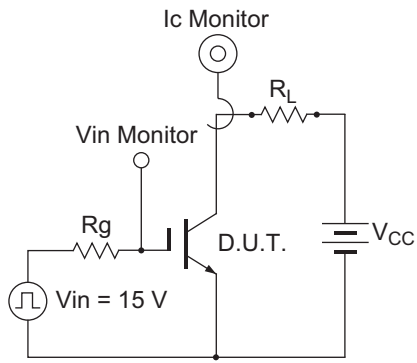


Switching Characteristics (Typical) (3)

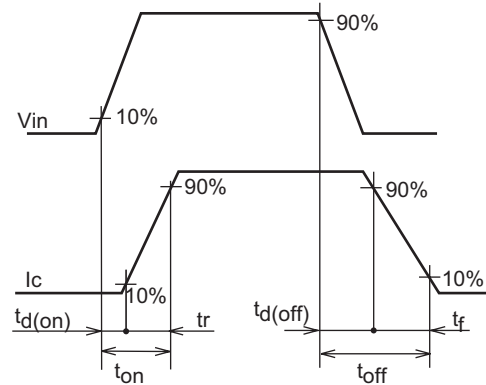




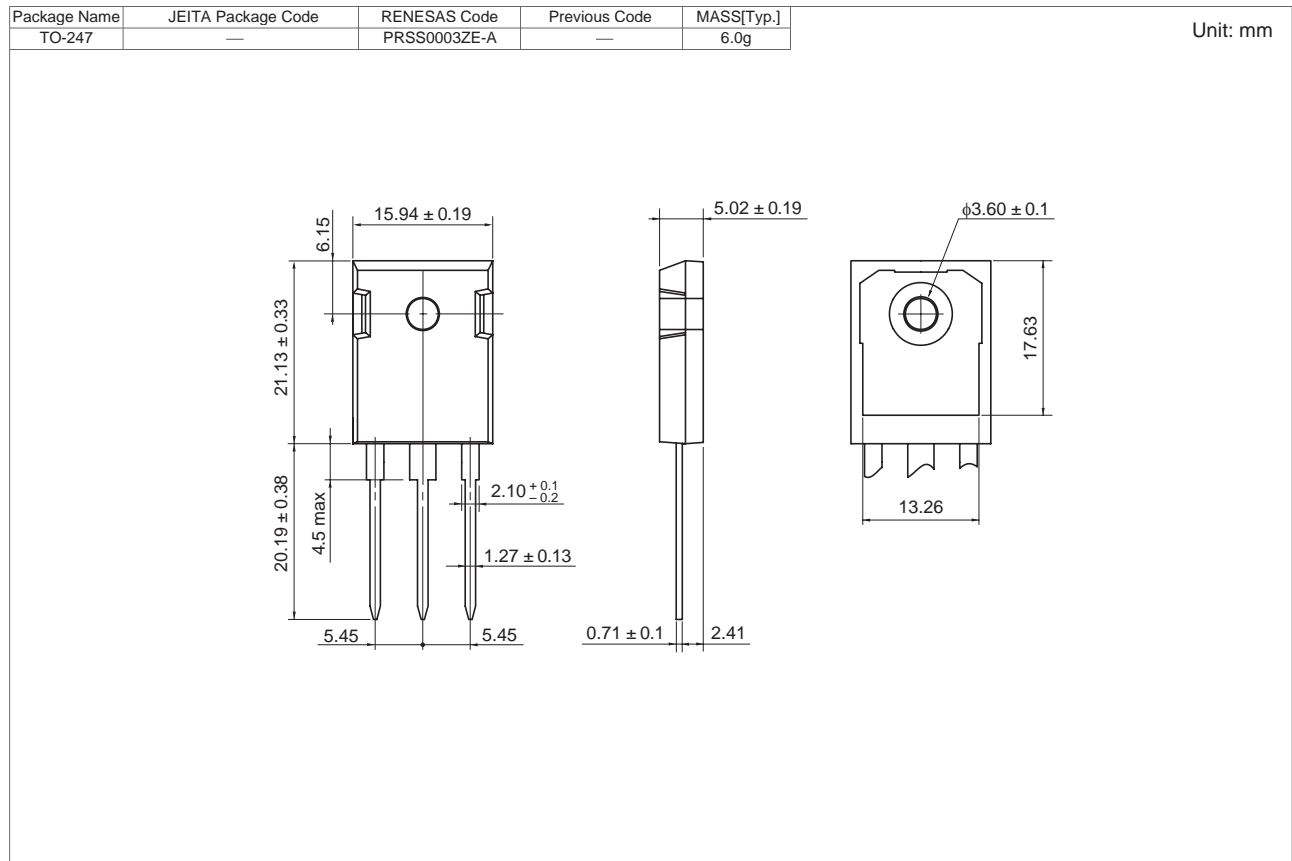
Switching Time Test Circuit



Waveform



### Package Dimensions



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH1DF7RDPQ-80-T2	450 pcs	Box (Tube)

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**Renesas Electronics Canada Limited**  
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada  
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**Renesas Electronics Europe Limited**  
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K.  
Tel: +44-1628-585-100, Fax: +44-1628-585-900

**Renesas Electronics Europe GmbH**  
Arcadiastrasse 10, 40472 Düsseldorf, Germany  
Tel: +49-211-65030, Fax: +49-211-6503-1327

**Renesas Electronics (China) Co., Ltd.**  
7th Floor, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100083, P.R.China  
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

**Renesas Electronics (Shanghai) Co., Ltd.**  
Unit 204, 205, AZIA Center, No.1233 Lujiazui Ring Rd., Pudong District, Shanghai 200120, China  
Tel: +86-21-5877-1818, Fax: +86-21-6887-7858 / -7898

**Renesas Electronics Hong Kong Limited**  
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong  
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**Renesas Electronics Taiwan Co., Ltd.**  
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**Renesas Electronics Korea Co., Ltd.**  
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