RJH1DF7RDPQ-80

Silicon N Channel IGBT
High Speed Power Switching

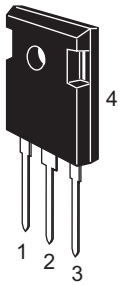
R07DS0413EJ0100
Rev.1.00
May 18, 2011

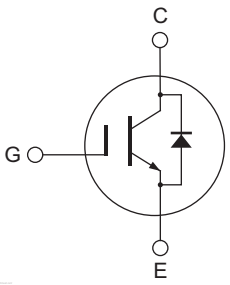
Features

- 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 V typ. (at I_C = 35 A, V_{GE} = 15 V, Tj = 25°C)
- Gate to emitter voltage rating ±30 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

(Tc = 25°C)

Item		Symbol	Ratings	Unit
Collector to emitter voltage		V_{CES}	1350	V
Gate to emitter voltage		V_{GES}	±30	V
Collector current	Tc = 25°C	I_C	60	A
	Tc = 100°C	I_C	35	A
Collector peak current		ic(peak) Note1	100	A
Collector to emitter diode forward current		i_{DF}	25	A
Collector dissipation		P_C	250	W
Junction to case thermal impedance		θj-c	0.5	°C/W
Junction temperature		Tj	150	°C
Storage temperature		Tstg	–55 to +150	°C

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

Electrical Characteristics

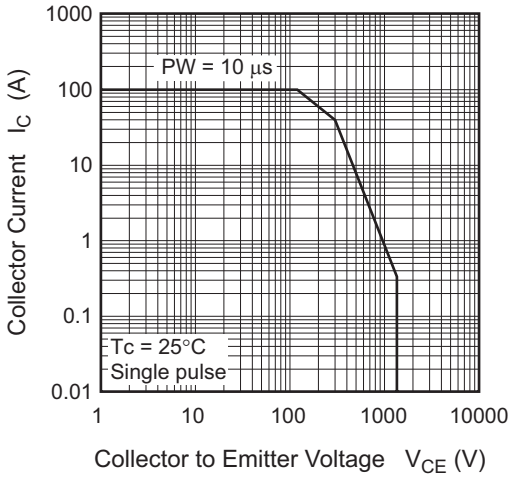
(Tj = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current	I_{CES}	—	—	100	μA	V_{CE} = 1350 V, V_{GE} = 0
Gate to emitter leak current	I_{GES}	—	—	±1	μA	V_{GE} = ±30 V, V_{CE} = 0
Gate to emitter cutoff voltage	$V_{GE(off)}$	3.5	—	7.0	V	V_{CE} = 10 V, I_C = 1 mA
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	1.95	2.55	V	I_C = 35 A, V_{GE} = 15 V Note2
Input capacitance	Cies	—	3330	—	pF	V_{CE} = 25 V V_{GE} = 0 V f = 1 MHz
Output capacitance	Coes	—	62	—	pF	
Reverse transfer capacitance	Cres	—	50	—	pF	
Switching time	$t_{d(on)}$	—	58	—	ns	I_C = 35 A V_{CE} = 600 V, V_{GE} = 15 V Rg = 5 Ω Note2 Resistive Load
	t_r	—	78	—	ns	
	$t_{d(off)}$	—	144	—	ns	
	t_f	—	208	—	ns	
C-E diode forward voltage	V_F	—	3.4	4.4	V	I_F = 10 A Note2

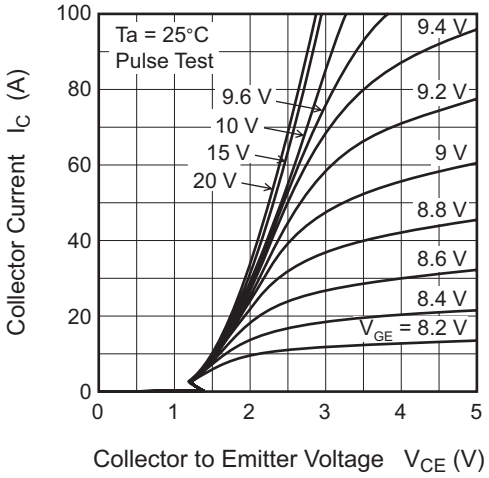
Notes: 2. Pulse test

Main Characteristics

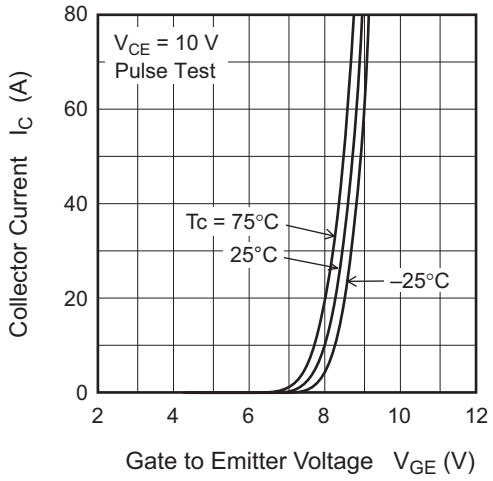
Maximum Safe Operation Area



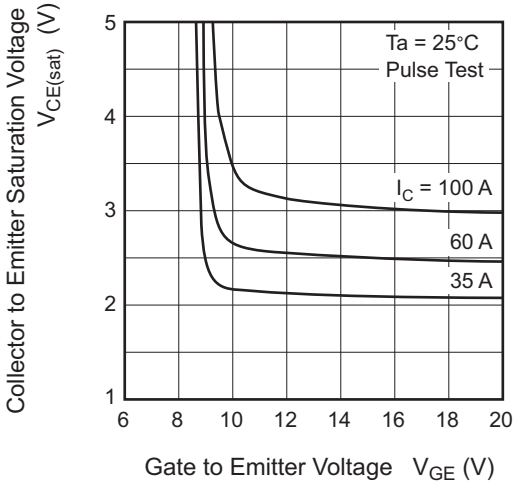
Typical Output Characteristics



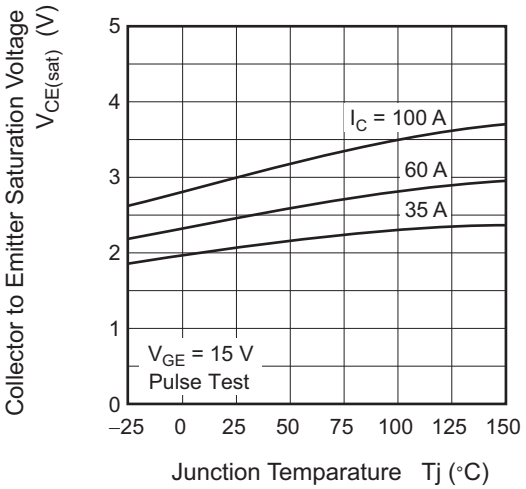
Typical Transfer Characteristics



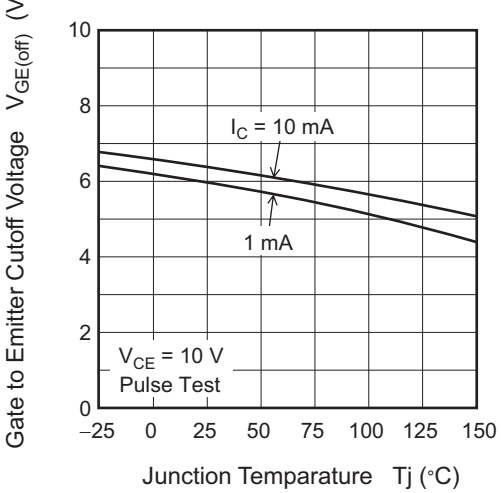
Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)



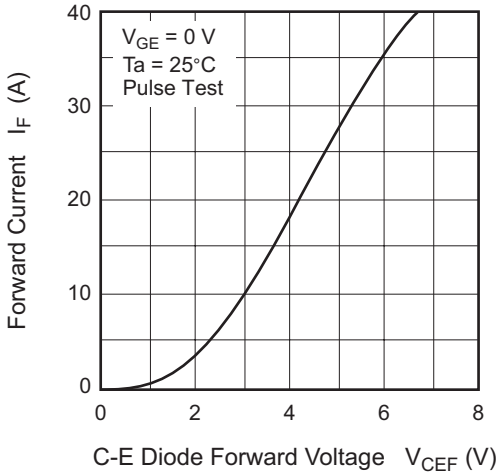
Collector to Emitter Saturation Voltage vs. Junction Temparature (Typical)



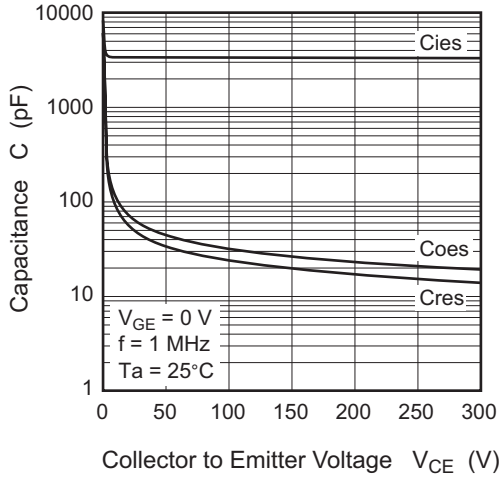
Gate to Emitter Cutoff Voltage vs. Junction Temparature (Typical)



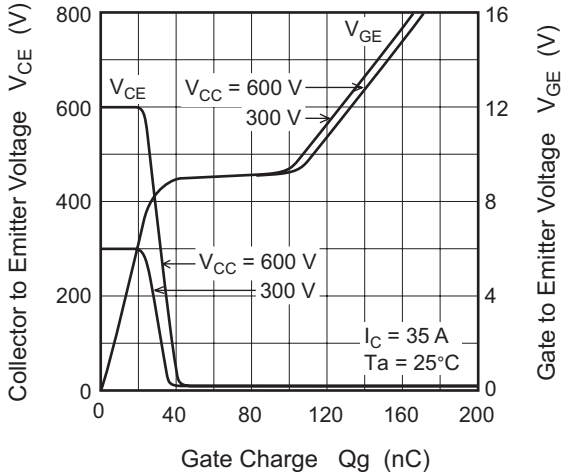
Forward Current vs. Forward Voltage (Typical)



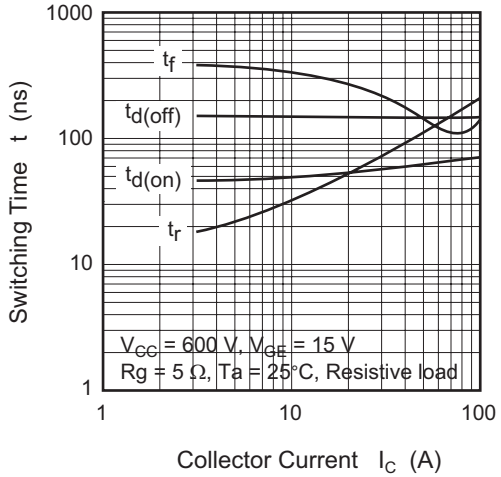
Typical Capacitance vs. Collector to Emitter Voltage



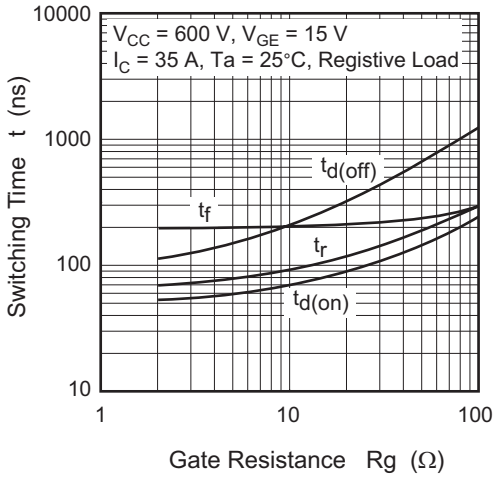
Dynamic Input Characteristics (Typical)



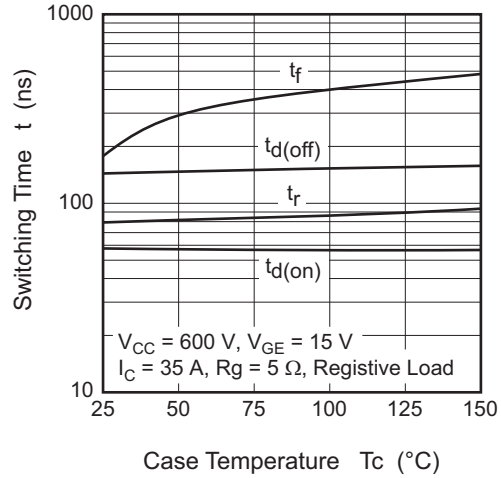
Switching Characteristics (Typical) (1)



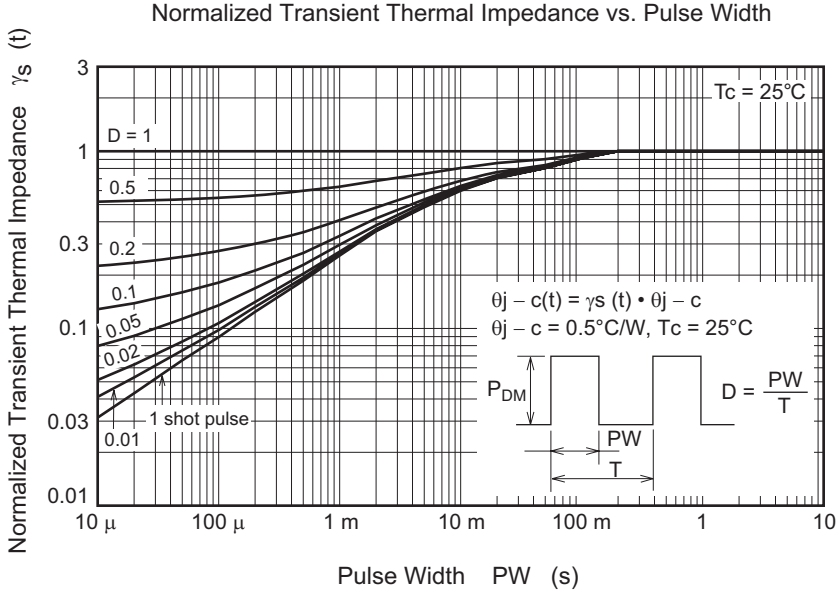
Switching Characteristics (Typical) (2)



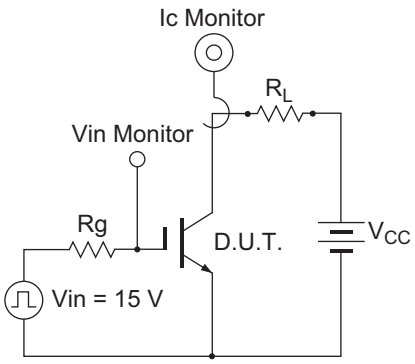
Switching Characteristics (Typical) (3)



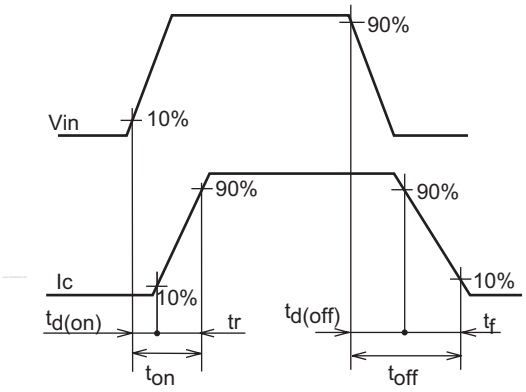
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit



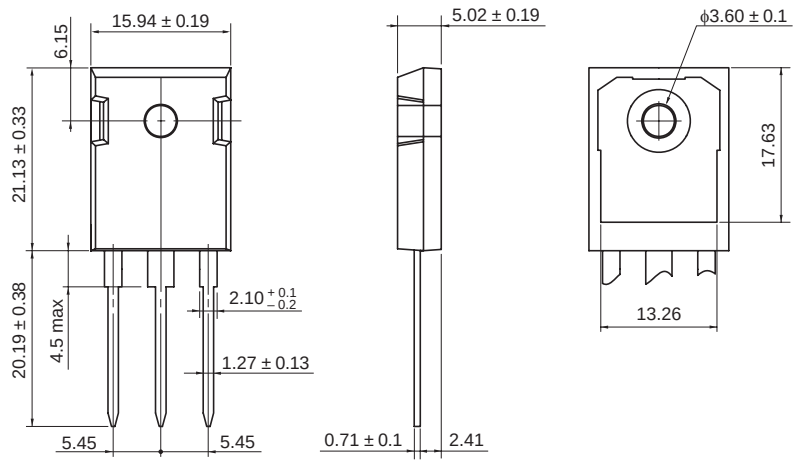
Waveform



Package Dimensions

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-247	—	PRSS0003ZE-A	—	6.0g

Unit: mm



Ordering Information

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

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