

# RJH1CD6DPQ-A0

1200 V - 20 A - IGBT

Application: Inverter

R07DS0452EJ0100

Rev.1.00

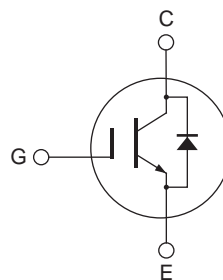
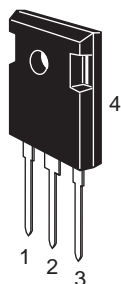
Jul 22, 2011

## Features

- Short circuit withstand time (5  $\mu$ s typ.)
- Low collector to emitter saturation voltage  
 $V_{CE(sat)} = 2.2$  V typ. (at  $I_C = 20$  A,  $V_{GE} = 15$  V,  $T_a = 25^\circ\text{C}$ )
- Built in fast recovery diode ( $t_{tr} = 100$  ns typ.) in one package
- Trench gate and thin wafer technology
- High speed switching  
 $t_f = 100$  ns typ. (at  $V_{CC} = 600$  V,  $V_{GE} = 15$  V,  $I_C = 20$  A,  $R_g = 5 \Omega$ ,  $T_a = 25^\circ\text{C}$ , inductive load)

## Outline

RENESAS Package code: PRSS0003ZH-A  
 (Package name: TO-247A)



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

## Absolute Maximum Ratings

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

Item	Symbol	Ratings	Unit
Collector to emitter voltage / diode reverse voltage	$V_{CES} / V_R$	1200	V
Gate to emitter voltage	$V_{GES}$	$\pm 30$	V
Collector current	$T_C = 25^\circ\text{C}$	$I_C$	40 A
	$T_C = 100^\circ\text{C}$	$I_C$	20 A
Collector peak current	$i_{c(peak)}$ <sup>Note1</sup>	80	A
Collector to emitter diode forward current	$I_{DF}$	20	A
Collector to emitter diode forward peak current	$i_{DF(peak)}$ <sup>Note1</sup>	80	A
Collector dissipation	$P_C$ <sup>Note2</sup>	297.6	W
Junction to case thermal resistance (IGBT)	$\theta_{j-c}$ <sup>Note2</sup>	0.42	$^\circ\text{C}/\text{W}$
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. Value at  $T_c = 25^\circ\text{C}$

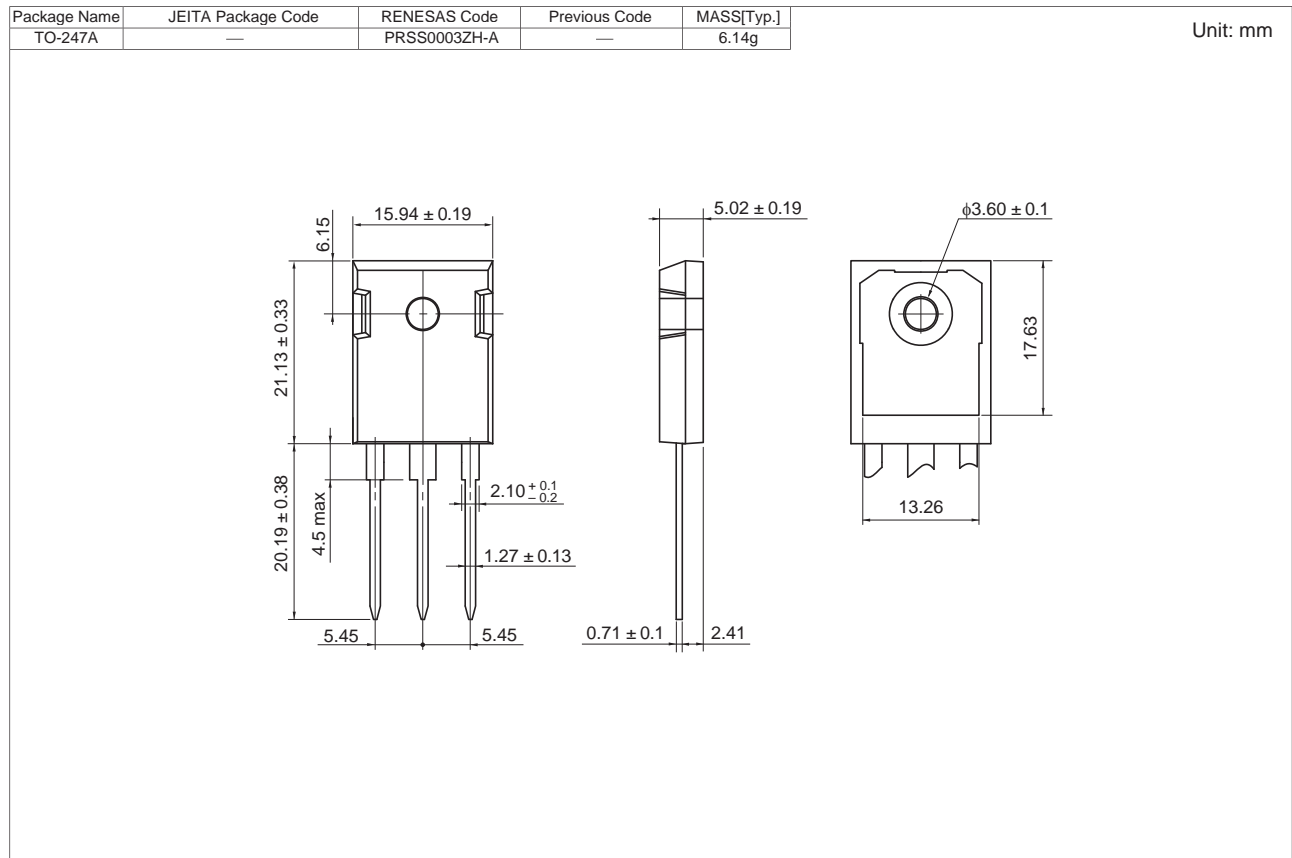
## Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current / Diode reverse current	$I_{CES}/I_R$	—	—	5	$\mu\text{A}$	$V_{CE} = 1200\text{ V}, V_{GE} = 0$
Gate to emitter leak current	$I_{GES}$	—	—	$\pm 1$	$\mu\text{A}$	$V_{GE} = \pm 30\text{ V}, V_{CE} = 0$
Gate to emitter cutoff voltage	$V_{GE(off)}$	4	—	8	V	$V_{CE} = 10\text{ V}, I_C = 1\text{ mA}$
Collector to emitter saturation voltage	$V_{CE(sat)}$	—	2.2	—	V	$I_C = 20\text{ A}, V_{GE} = 15\text{ V}$ <sup>Note3</sup>
Input capacitance	$C_{ies}$	—	1600	—	pF	$V_{CE} = 25\text{ V}$
Output capacitance	$C_{oes}$	—	60	—	pF	$V_{GE} = 0$
Reveres transfer capacitance	$C_{res}$	—	35	—	pF	$f = 1\text{ MHz}$
Switching time	$t_{d(on)}$	—	45	—	ns	$V_{CC} = 600\text{ V}, V_{GE} = 15\text{ V}$
	$t_r$	—	15	—	ns	$I_C = 20\text{ A}$
	$t_{d(off)}$	—	100	—	ns	$R_g = 5\ \Omega$
	$t_f$	—	100	—	ns	Inductive load
Short circuit withstand time	$t_{sc}$	—	5	—	$\mu\text{s}$	$V_{CC} \leq 720\text{ V}, V_{GE} = 15\text{ V}$ $T_C \leq 125^\circ\text{C}$
FRD forward voltage	$V_F$	—	1.7	—	V	$I_F = 20\text{ A}$ <sup>Note3</sup>
FRD reverse recovery time	$t_{rr}$	—	100	—	ns	$I_F = 20\text{ A}$ $di_F/dt = 100\text{ A}/\mu\text{s}$

Notes: 3. Pulse test.

### Package Dimension



### Ordering Information

Orderable Part Number	Quantity	Shipping Container
RJH1CD6DPQ-A0-T0	240 pcs	Box (Tube)

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