

RJH1CD5DPQ-E0

1200V - 20A - IGBT

Application: Inverter

R07DS0517EJ0400

Rev.4.00

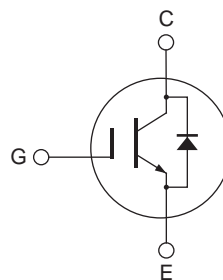
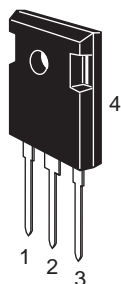
Jan 19, 2012

Features

- Short circuit withstand time (5 μ s typ.)
- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 2.0$ V typ. (at $I_C = 20$ A, $V_{GE} = 15$ V, $T_a = 25^\circ\text{C}$)
- Built-in fast recovery diode ($t_{tr} = 200$ 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: PRSS0003ZE-A
 (Package name: TO-247)



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}	± 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	$i_{c(peak)}$ ^{Note1}	60	A	
Collector to emitter diode forward current	I_{DF}	20	A	
Collector to emitter diode forward peak current	$i_{DF(peak)}$ ^{Note1}	60	A	
Collector dissipation	P_C ^{Note2}	260.4	W	
Junction to case thermal resistance (IGBT)	θ_{j-c} ^{Note2}	0.48	$^\circ\text{C}/\text{W}$	
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 $T_c = 25^\circ\text{C}$

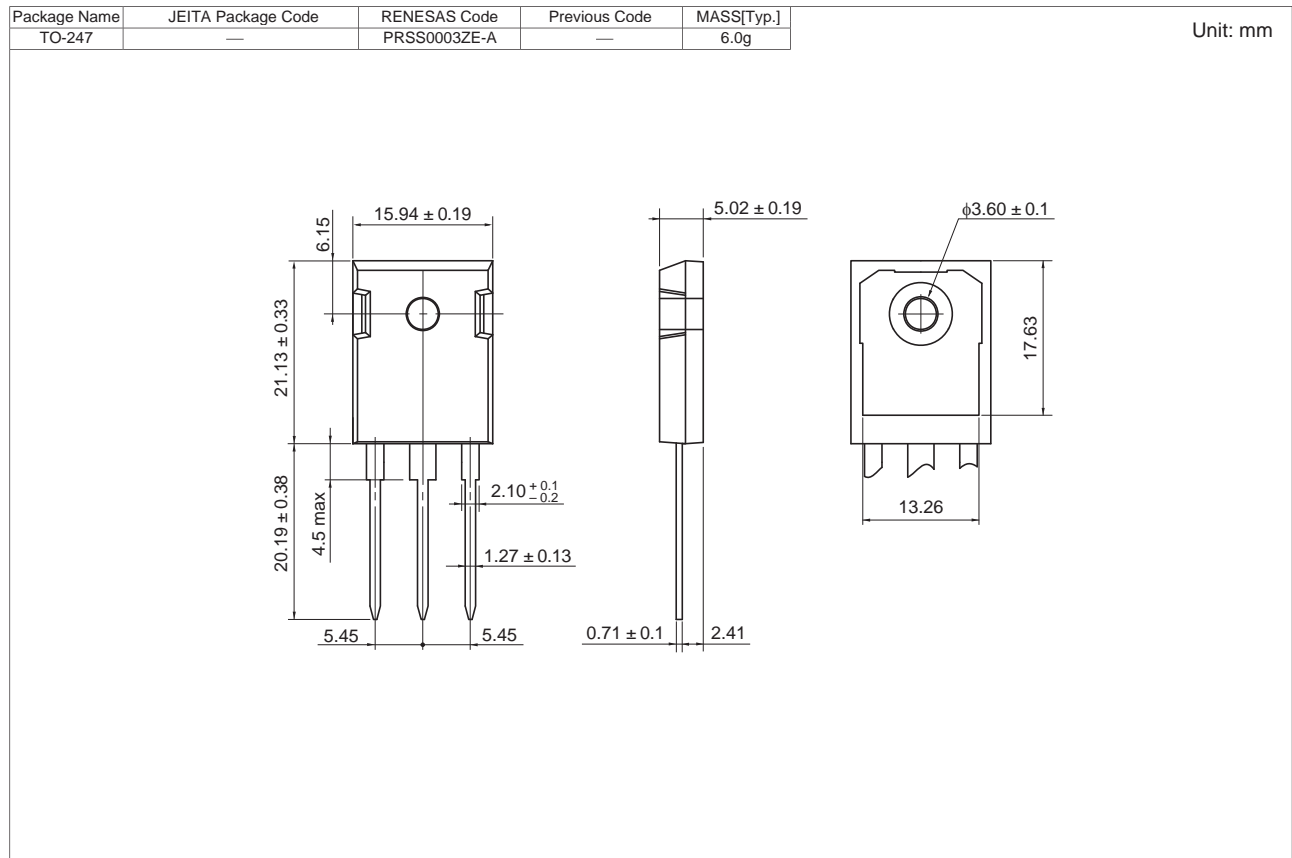
Electrical Characteristics

(Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit	Test Conditions
Zero gate voltage collector current / Diode reverse current	I_{CES}/I_R	—	—	5	μA	$V_{CE} = 1200\text{ V}, V_{GE} = 0$
Gate to emitter leak current	I_{GES}	—	—	± 1	μA	$V_{GE} = \pm 30\text{ V}, V_{CE} = 0$
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	$V_{CE(sat)}$	—	2.0	—	V	$I_C = 20\text{ A}, V_{GE} = 15\text{ V}$ ^{Note3}
Input capacitance	C_{ies}	—	1100	—	pF	$V_{CE} = 25\text{ V}$
Output capacitance	C_{oes}	—	40	—	pF	$V_{GE} = 0$
Reveres transfer capacitance	C_{res}	—	25	—	pF	$f = 1\text{ MHz}$
Switching time	$t_{d(on)}$	—	40	—	ns	$V_{CC} = 600\text{ V}, V_{GE} = 15\text{ V}$
	t_r	—	15	—	ns	$I_C = 20\text{ A}$
	$t_{d(off)}$	—	90	—	ns	$R_g = 5\ \Omega$
	t_f	—	100	—	ns	Inductive load
Short circuit withstand time	t_{sc}	—	5	—	μs	$V_{CC} \leq 720\text{ V}, V_{GE} = 15\text{ V}$ $T_C \leq 125^\circ\text{C}$
FRD forward voltage	V_F	—	1.7	—	V	$I_F = 20\text{ A}$ ^{Note3}
FRD reverse recovery time	t_{rr}	—	200	—	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
RJH1CD5DPQ-E0#T2	450 pcs	Box (Tube)

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