

RJH1CM6DPQ-E0

1200V - 20A - IGBT

Application: Inverter

R07DS0521EJ0300

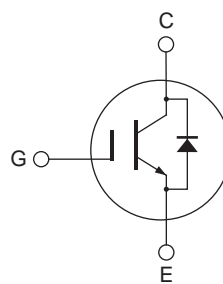
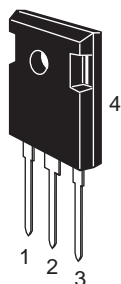
Rev.3.00

Jan 19, 2012

Features

- Short circuit withstand time (10 μ s typ.)
- Low collector to emitter saturation voltage
 $V_{CE(sat)} = 2.1$ 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, $R_g = 5$ Ω , $T_a = 25^\circ\text{C}$, inductive load)

Outline

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


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

Absolute Maximum Ratings

(Ta = 25°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} | 80 | A | |
| Collector to emitter diode forward current | I_{DF} | 20 | A | |
| Collector to emitter diode forward peak current | $i_{DF(peak)}$ ^{Note1} | 80 | A | |
| Collector dissipation | P_C ^{Note2} | 297.6 | W | |
| Junction to case thermal resistance (IGBT) | θ_{j-c} ^{Note2} | 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. $PW \leq 10$ μ s, duty cycle $\leq 1\%$

 2. Value at $T_C = 25^\circ\text{C}$

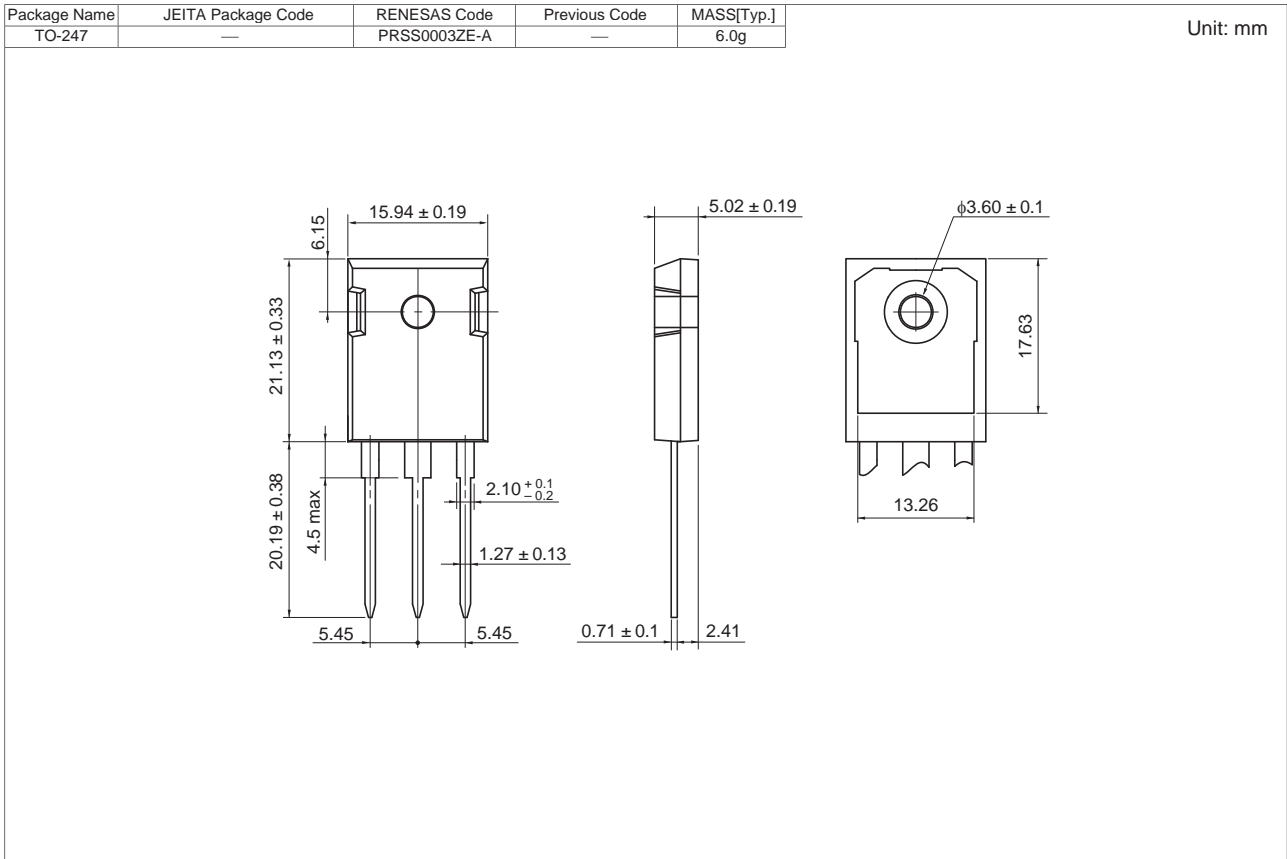
Electrical Characteristics

(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 | $V_{CE(sat)}$ | — | 2.1 | — | V | $I_C = 20\text{ A}, V_{GE} = 15\text{ V}$ ^{Note3} |
| 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} | — | 10 | — | 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 |
|-----------------------|----------|--------------------|
| RJH1CM6DPQ-E0#T2 | 450 pcs | Box (Tube) |

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