

# RJP30E2DPP-M0

Silicon N Channel IGBT  
High Speed Power Switching

R07DS0347EJ0200

Rev.2.00

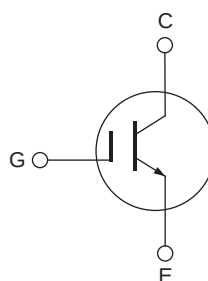
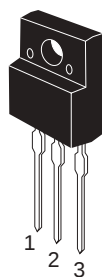
Apr 12, 2011

## Features

- Trench gate technology (G5H series)
- Low collector to emitter saturation voltage  $V_{CE(sat)} = 1.7 \text{ V typ}$
- High speed switching  $t_f = 150 \text{ ns typ}$
- Low leak current  $I_{CES} = 1 \mu\text{A max}$
- Isolated package TO-220FL

## Outline

RENESAS Package code: PRSS0003AF-A)  
(Package name: TO-220FL)



1. Gate
2. Collector
3. Emitter

## Absolute Maximum Ratings

(Ta = 25°C)

| Item                               | Symbol                         | Ratings     | Unit  |
|------------------------------------|--------------------------------|-------------|-------|
| Collector to emitter voltage       | $V_{CES}$                      | 360         | V     |
| Gate to emitter voltage            | $V_{GES}$                      | $\pm 30$    | V     |
| Collector current                  | $I_C$                          | 35          | A     |
| Collector peak current             | $i_{c(peak)}$ <sup>Note1</sup> | 200         | A     |
| Collector dissipation              | $P_C$ <sup>Note2</sup>         | 25          | W     |
| Junction to case thermal impedance | $\theta_{j-c}$                 | 5           | °C/ W |
| Junction temperature               | $T_j$                          | 150         | °C    |
| Storage temperature                | $T_{stg}$                      | -55 to +150 | °C    |

Notes: 1.  $PW \leq 10 \mu\text{s}$ , duty cycle  $\leq 1\%$

2.  $T_c = 25^\circ\text{C}$

## Electrical Characteristics

(Ta = 25°C)

| Item                                    | Symbol        | Min | Typ  | Max       | Unit          | Test Conditions                                                                           |
|-----------------------------------------|---------------|-----|------|-----------|---------------|-------------------------------------------------------------------------------------------|
| Zero gate voltage collector current     | $I_{CES}$     | —   | —    | 1         | $\mu\text{A}$ | $V_{CE} = 360\text{ V}$ , $V_{GE} = 0$                                                    |
| Gate to emitter leak current            | $I_{GES}$     | —   | —    | $\pm 100$ | nA            | $V_{GE} = \pm 30\text{ V}$ , $V_{CE} = 0$                                                 |
| Gate to emitter cutoff voltage          | $V_{GE(off)}$ | 2.5 | —    | 5         | V             | $V_{CE} = 10\text{ V}$ , $I_C = 1\text{ mA}$                                              |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | 1.7  | 2.2       | V             | $I_C = 35\text{ A}$ , $V_{GE} = 15\text{ V}$ <sup>Note3</sup>                             |
| Input capacitance                       | $C_{ies}$     | —   | 1160 | —         | pF            | $V_{CE} = 25\text{ V}$<br>$V_{GE} = 0$<br>$f = 1\text{ MHz}$                              |
| Output capacitance                      | $C_{oes}$     | —   | 60   | —         | pF            |                                                                                           |
| Reveres transfer capacitance            | $C_{res}$     | —   | 26   | —         | pF            |                                                                                           |
| Total gate charge                       | $Q_g$         | —   | 34   | —         | nC            | $V_{GE} = 15\text{ V}$<br>$V_{CE} = 150\text{ V}$<br>$I_C = 35\text{ A}$                  |
| Gate to emitter charge                  | $Q_{ge}$      | —   | 6    | —         | nC            |                                                                                           |
| Gate to collector charge                | $Q_{gc}$      | —   | 10   | —         | nC            |                                                                                           |
| Switching time                          | $t_{d(on)}$   | —   | 0.03 | —         | $\mu\text{s}$ | $I_C = 35\text{ A}$<br>$R_L = 4.5\ \Omega$<br>$V_{GE} = 15\text{ V}$<br>$R_G = 5\ \Omega$ |
|                                         | $t_r$         | —   | 0.1  | —         | $\mu\text{s}$ |                                                                                           |
|                                         | $t_{d(off)}$  | —   | 0.08 | —         | $\mu\text{s}$ |                                                                                           |
|                                         | $t_f$         | —   | 0.15 | —         | $\mu\text{s}$ |                                                                                           |

Notes: 3. Pulse test.