

# RJP30E2DPP-M0

Silicon N Channel IGBT  
High Speed Power Switching

R07DS0347EJ0200

Rev.2.00

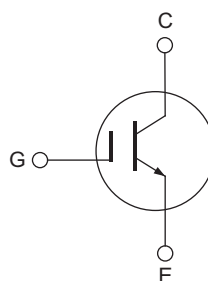
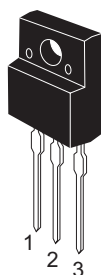
Apr 12, 2011

## 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  $I_{CES} = 1\text{ }\mu\text{A max}$
- Isolated package TO-220FL

## Outline

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



1. Gate
2. Collector
3. Emitter

## Absolute Maximum Ratings

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

| 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           | $^\circ\text{C}/\text{W}$ |
| Junction temperature               | $T_j$                          | 150         | $^\circ\text{C}$          |
| Storage temperature                | $T_{stg}$                      | -55 to +150 | $^\circ\text{C}$          |

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

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

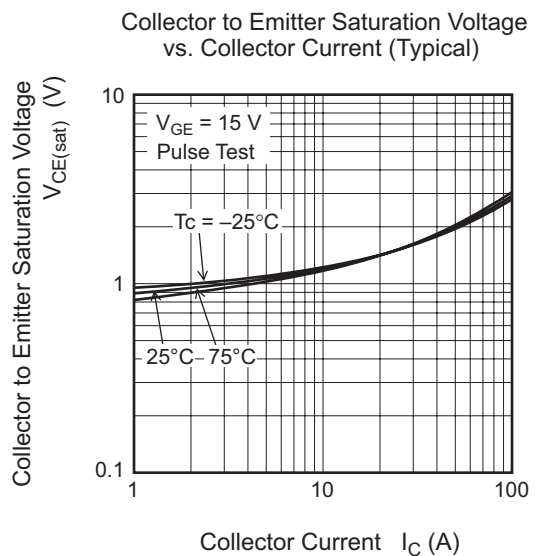
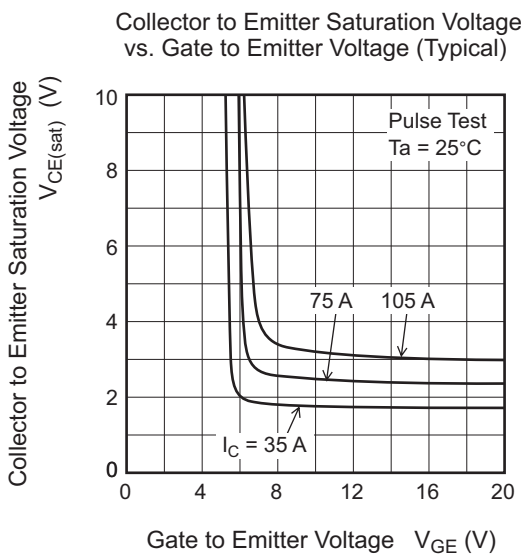
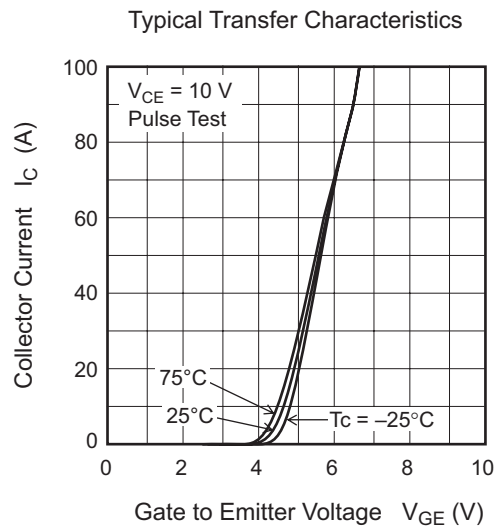
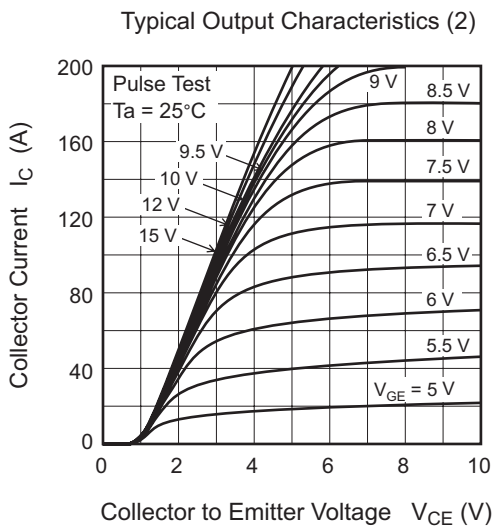
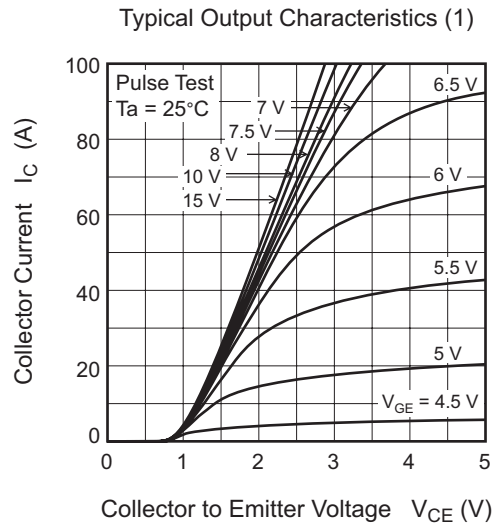
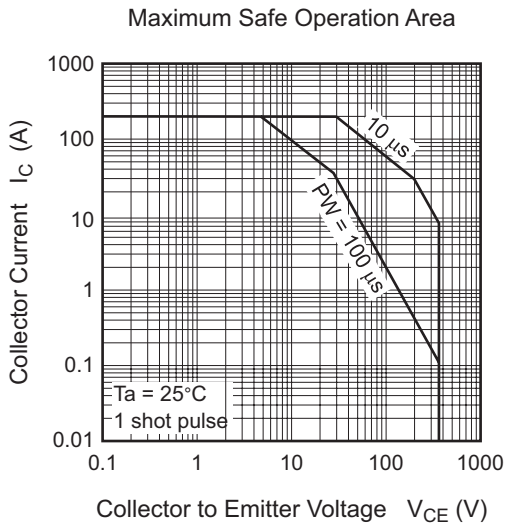
## Electrical Characteristics

(Ta = 25°C)

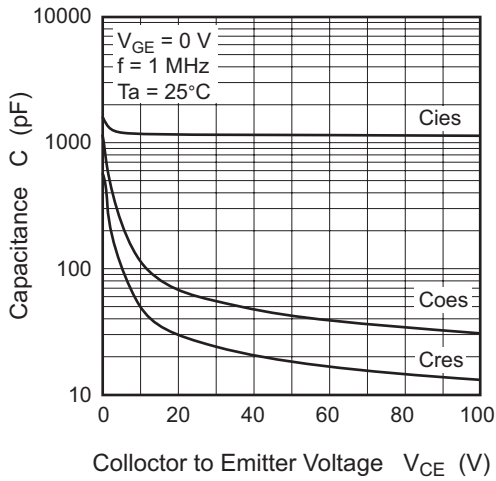
| Item                                    | Symbol        | Min | Typ  | Max       | Unit          | Test Conditions  |
|---|---------------|-----|------|-----------|---------------|--|
| Zero gate voltage collector current     | $I_{CES}$     | —   | —    | 1         | $\mu\text{A}$ | $V_{CE} = 360 \text{ V}, V_{GE} = 0$                         |
| 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            | $V_{CE} = 25 \text{ V}$                                      |
| Output capacitance                      | $C_{oes}$     | —   | 60   | —         | pF            | $V_{GE} = 0$   |
| Reveres transfer capacitance            | $C_{res}$     | —   | 26   | —         | pF            | $f = 1 \text{ MHz}$  |
| Total gate charge                       | $Q_g$         | —   | 34   | —         | nC            | $V_{GE} = 15 \text{ V}$                                      |
| Gate to emitter charge                  | $Q_{ge}$      | —   | 6    | —         | nC            | $V_{CE} = 150 \text{ V}$                                     |
| Gate to collector charge                | $Q_{gc}$      | —   | 10   | —         | nC            | $I_C = 35 \text{ A}$   |
| Switching time                          | $t_{d(on)}$   | —   | 0.03 | —         | $\mu\text{s}$ | $I_C = 35 \text{ A}$   |
|   | $t_r$         | —   | 0.1  | —         | $\mu\text{s}$ | $R_L = 4.5 \Omega$   |
|   | $t_{d(off)}$  | —   | 0.08 | —         | $\mu\text{s}$ | $V_{GE} = 15 \text{ V}$                                      |
|   | $t_f$         | —   | 0.15 | —         | $\mu\text{s}$ | $R_G = 5 \Omega$   |

Notes: 3. Pulse test.

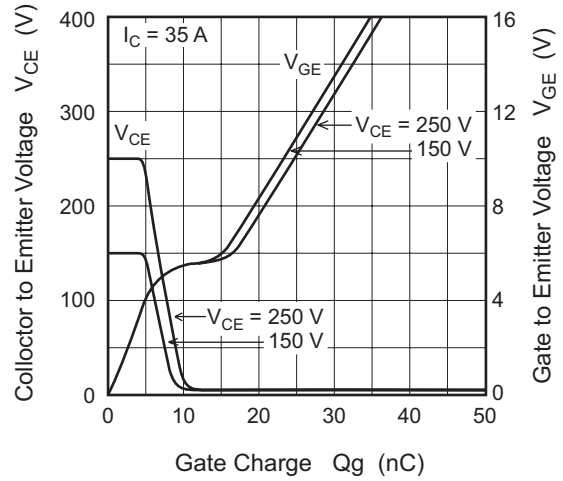
### Main Characteristics



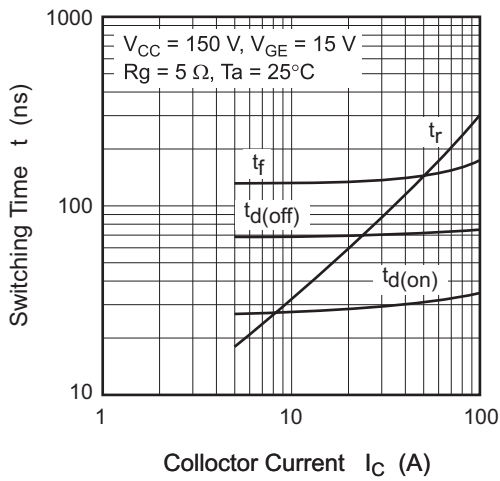
Typical Capacitance vs. Collector to Emitter Voltage



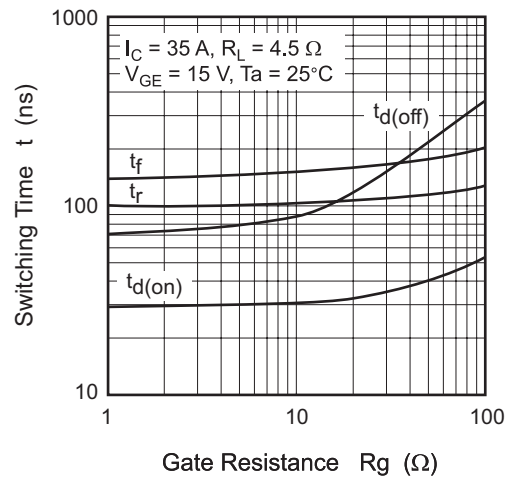
Dynamic Input Characteristics (Typical)



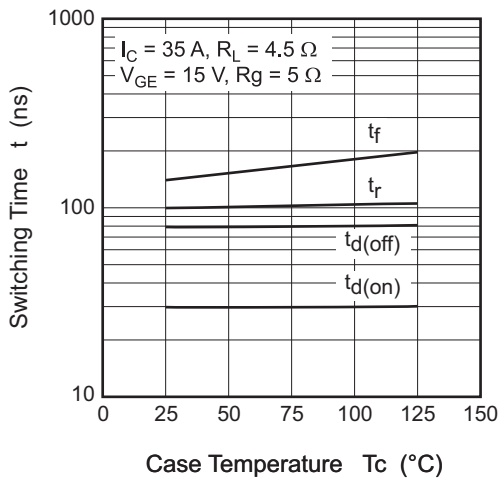
Switching Characteristics (Typical) (1)



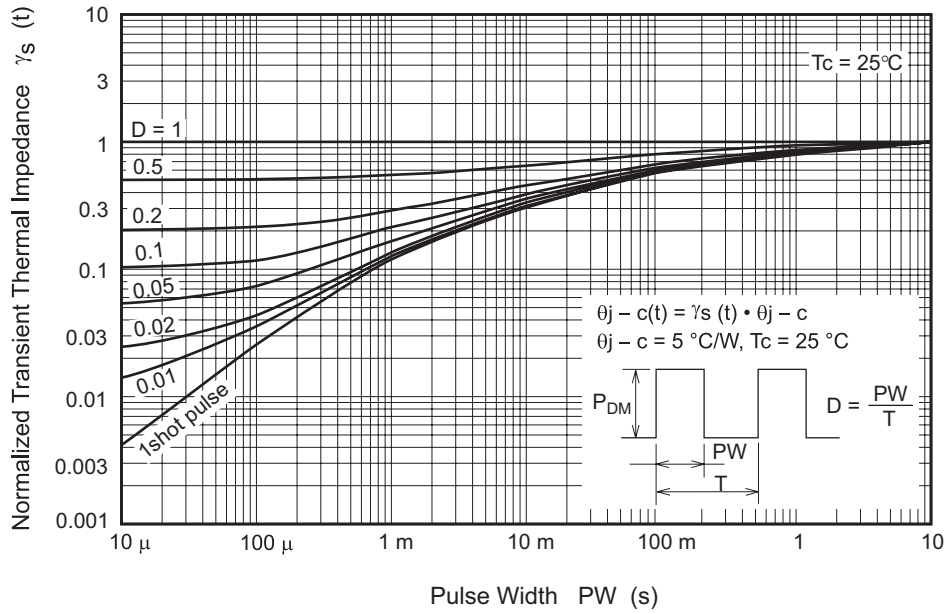
Switching Characteristics (Typical) (2)



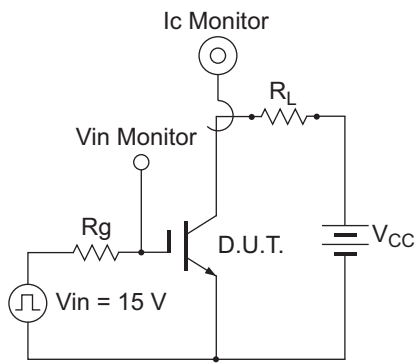
Switching Characteristics (Typical) (3)



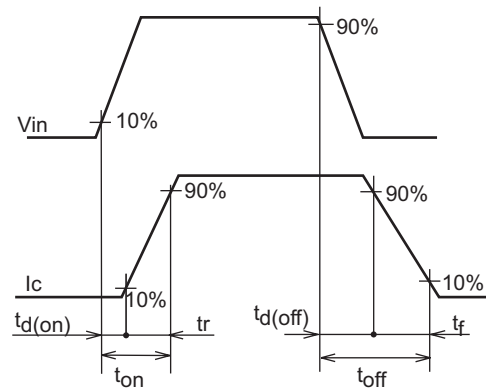
Normalized Transient Thermal Impedance vs. Pulse Width



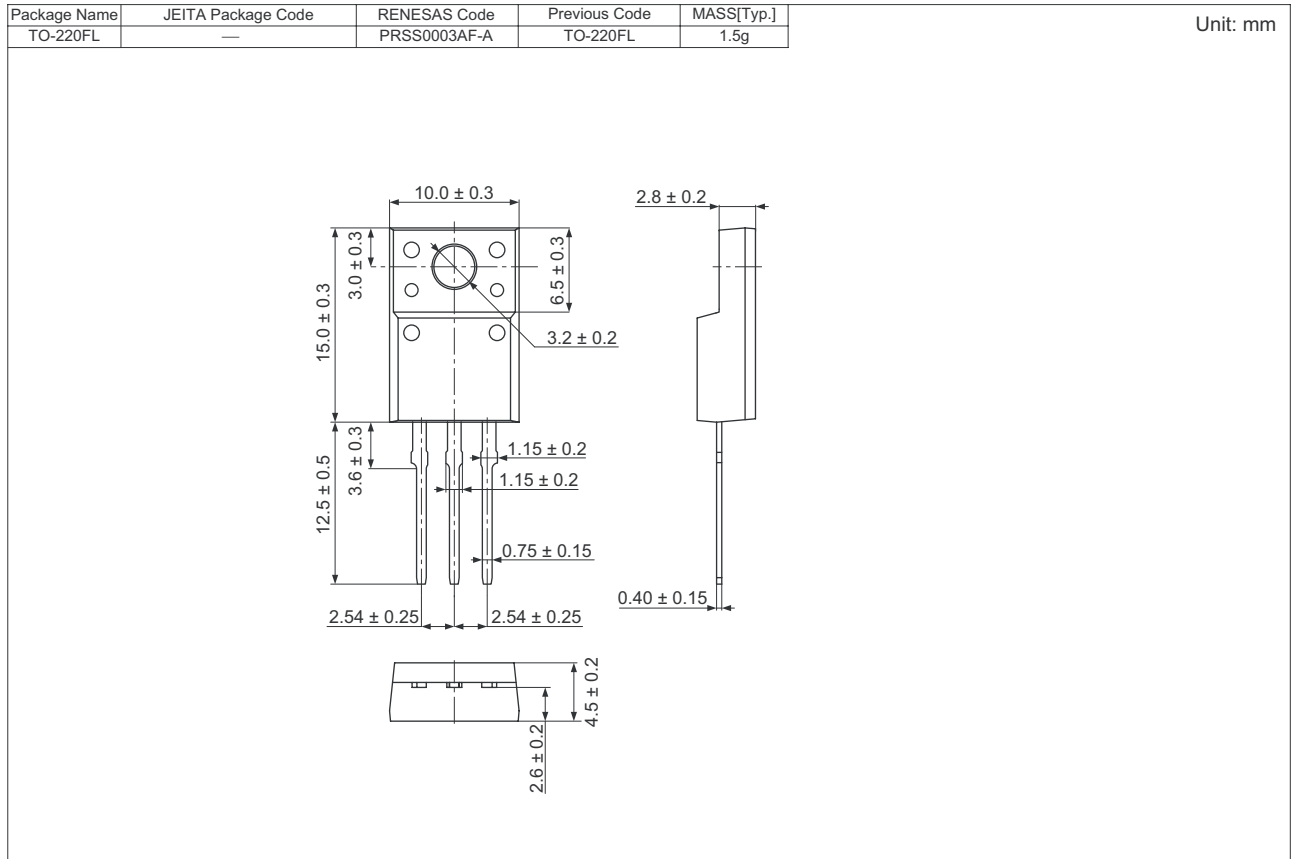
Switching Time Test Circuit



Waveform



### Package Dimension



### Ordering Information

| Orderable Part Number | Quantity | Shipping Container |
|-----------------------|----------|--------------------|
| RJP30E2DPP-M0-T2      | 600 pcs  | Box (Tube)         |

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