

RJP30H1DPP-M0

Silicon N Channel IGBT
High speed power switching

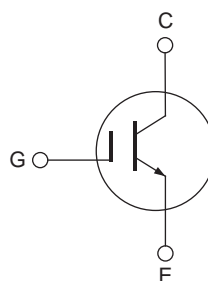
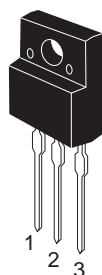
R07DS0466EJ0200
Rev.2.00
Jun 15, 2011

Features

- Trench gate and thin wafer technology (G6H-II series)
- High speed switching: $t_r = 80$ ns typ., $t_f = 150$ ns typ.
- Low collector to emitter saturation voltage: $V_{CE(sat)} = 1.5$ V typ.
- Low leak current: $I_{CES} = 1$ μ 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} | ± 30 | V |
| Collector current | I_C | 30 | A |
| Collector peak current | $i_{c(peak)}$ ^{Note1} | 200 | A |
| Collector dissipation | P_C ^{Note2} | 20 | W |
| Junction to case thermal impedance | θ_{j-c} | 6.25 | $^\circ\text{C}/\text{W}$ |
| 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. $T_c = 25^\circ\text{C}$

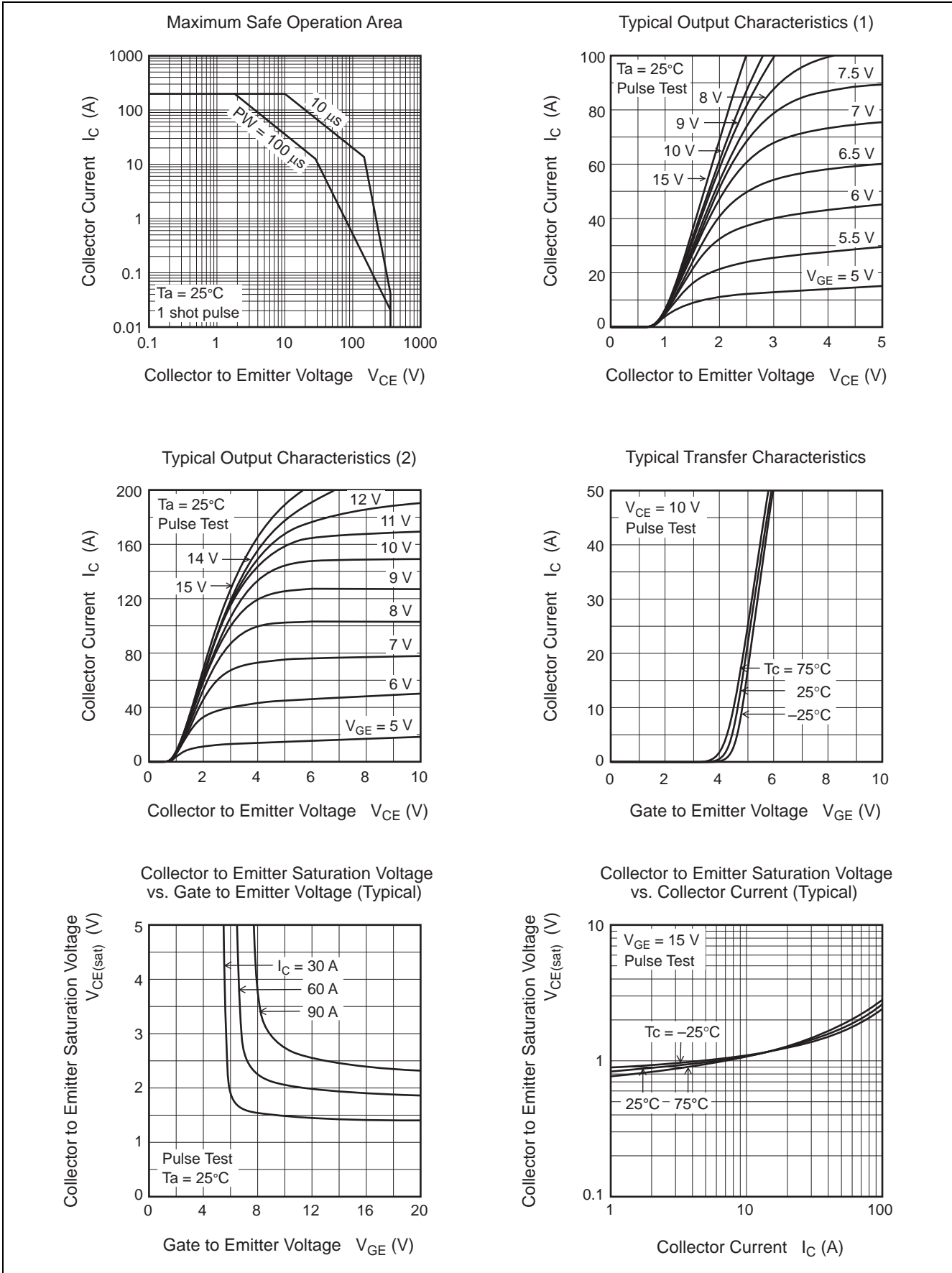
Electrical Characteristics

(Ta = 25°C)

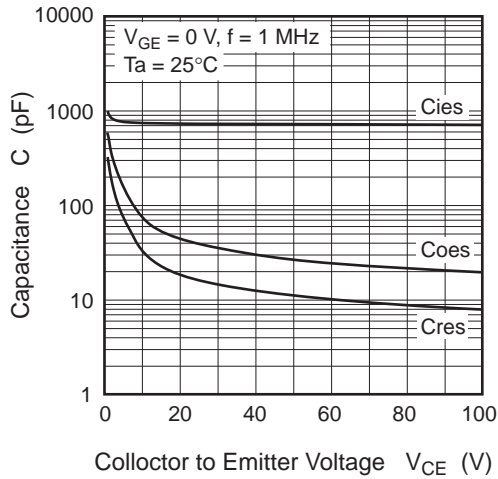
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|---------------|-----|------|-----------|---------------|---|
| Zero gate voltage collector current | I_{CES} | — | — | 1 | μA | $V_{CE} = 360\text{ V}, V_{GE} = 0$ |
| Gate to emitter leak current | I_{GES} | — | — | ± 100 | nA | $V_{GE} = \pm 30\text{ V}, V_{CE} = 0$ |
| 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 | $V_{CE(sat)}$ | — | 1.5 | 2 | V | $I_C = 30\text{ A}, V_{GE} = 15\text{ V}$ ^{Note3} |
| Input capacitance | C_{ies} | — | 740 | — | pF | $V_{CE} = 25\text{ V}$ $V_{GE} = 0$ $f = 1\text{ MHz}$ |
| Output capacitance | C_{oes} | — | 40 | — | pF | |
| Reveres transfer capacitance | C_{res} | — | 17 | — | pF | |
| Total gate charge | Q_g | — | 23 | — | nC | $V_{GE} = 15\text{ V}$ $V_{CE} = 150\text{ V}$ $I_C = 30\text{ A}$ |
| Gate to emitter charge | Q_{ge} | — | 4 | — | nC | |
| Gate to collector charge | Q_{gc} | — | 8 | — | nC | |
| Switching time | $t_{d(on)}$ | — | 0.02 | — | μs | $I_C = 30\text{ A}$ $R_L = 5\ \Omega$ $V_{GE} = 15\text{ V}$ $R_G = 5\ \Omega$ |
| | t_r | — | 0.08 | — | μs | |
| | $t_{d(off)}$ | — | 0.04 | — | μs | |
| | t_f | — | 0.15 | — | μs | |

Notes: 3. Pulse test

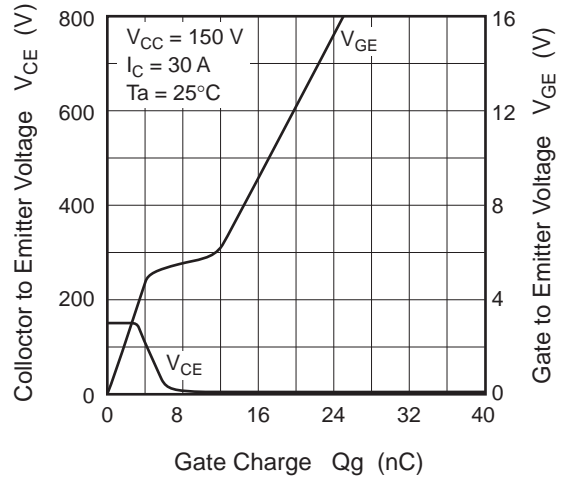
Main Characteristics



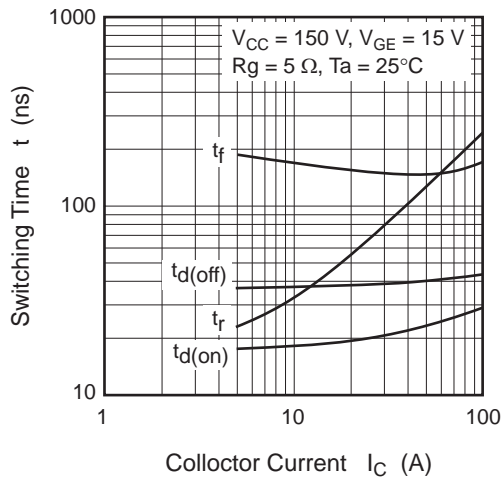
Typical Capacitance vs. Collector to Emitter Voltage



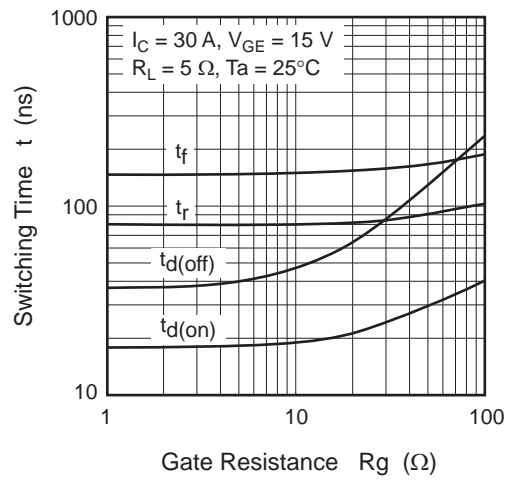
Dynamic Input Characteristics (Typical)



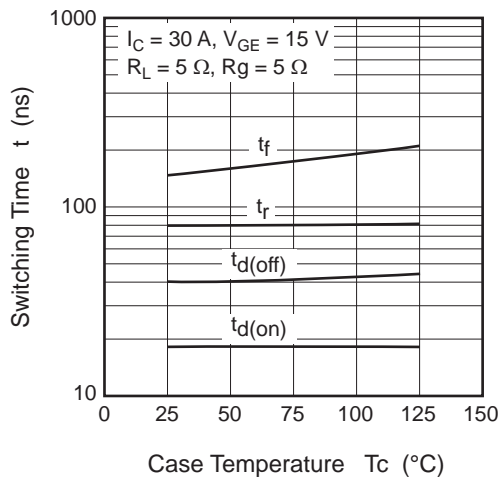
Switching Characteristics (Typical) (1)



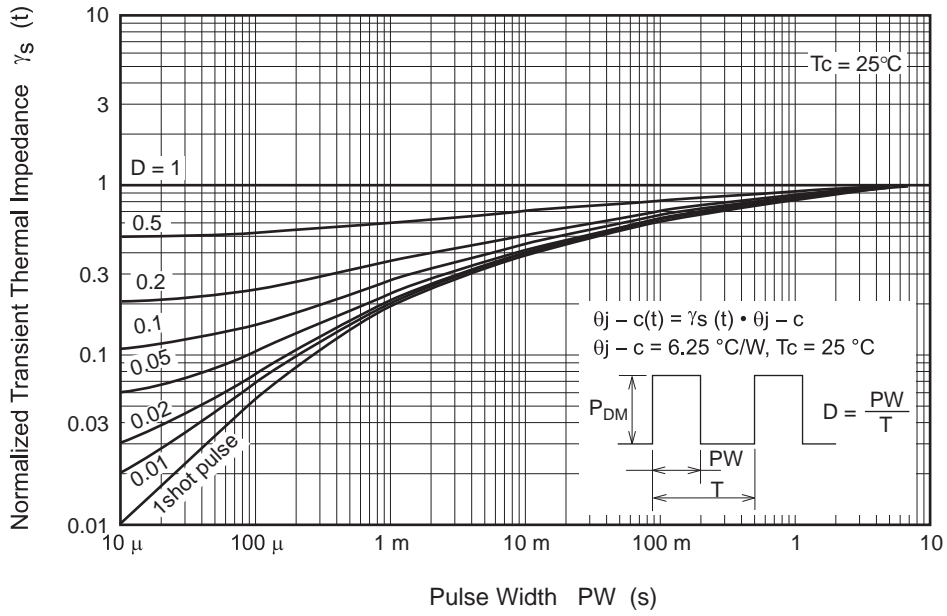
Switching Characteristics (Typical) (2)



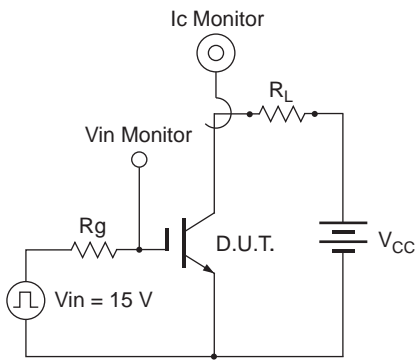
Switching Characteristics (Typical) (3)



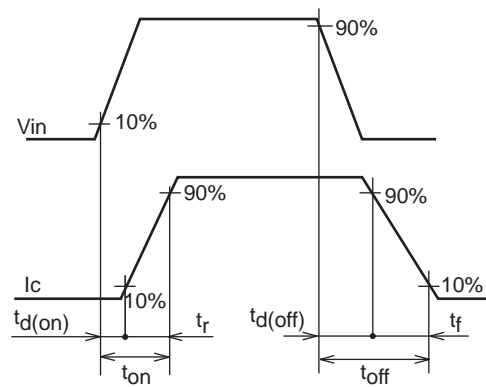
Normalized Transient Thermal Impedance vs. Pulse Width



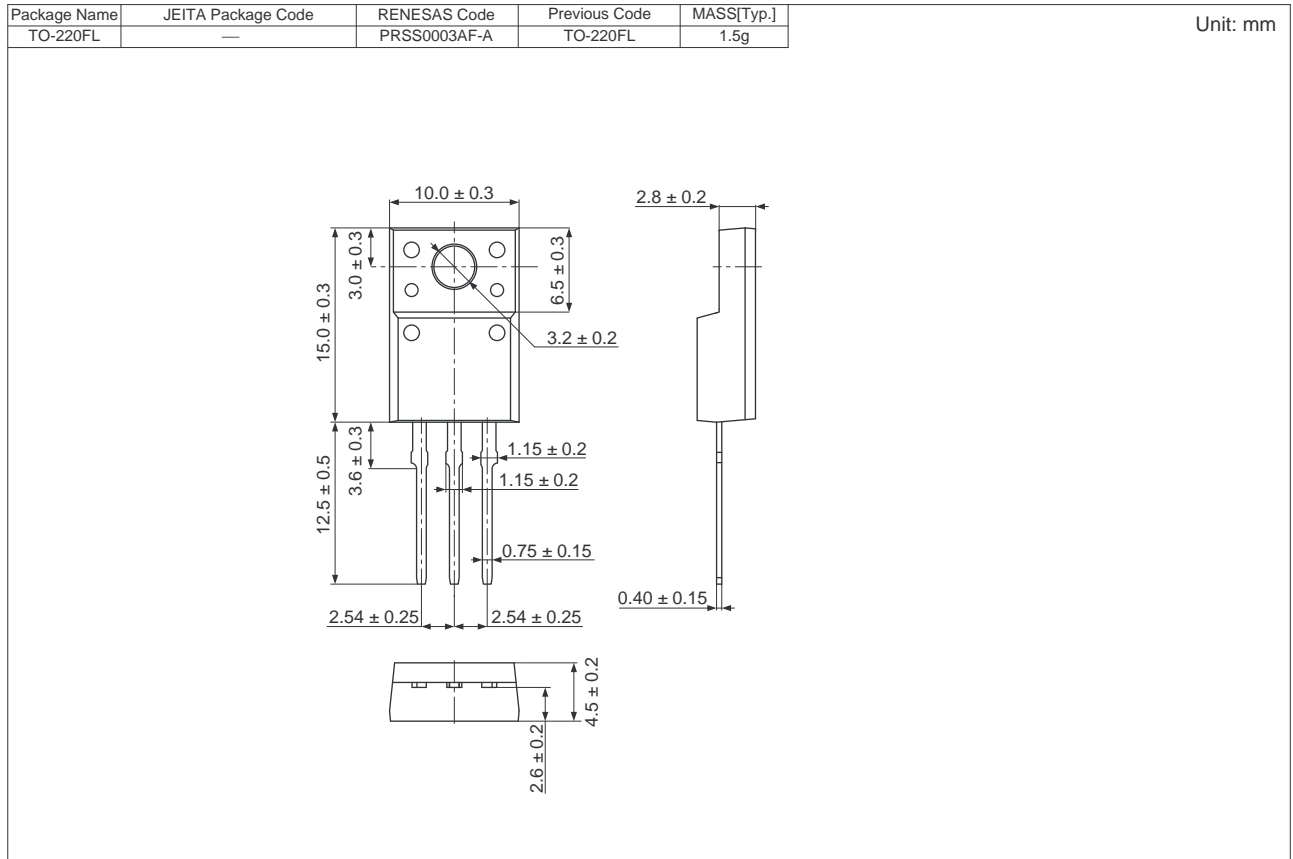
Switching Time Test Circuit



Waveform



Package Dimensions



Ordering Information

| Orderable Part Number | Quantity | Shipping Container |
|-----------------------|----------|--------------------|
| RJP30H1DPP-M0-T2 | 600 pcs | Box (Tube) |

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