

RJP30H1DPD

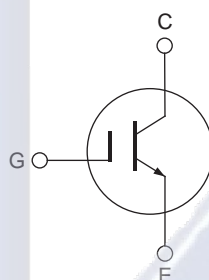
Silicon N Channel IGBT High speed power switching

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.

Outline

RENESAS Package code: PRSS0004ZJ-A
(Package name : TO-252)



1. Gate
2. Collector
3. Emitter
4. Collector (Flange)

Absolute Maximum Ratings

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

| 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} | 40 | W |
| Junction to case thermal impedance | θ_{j-c} | 3.13 | $^\circ\text{C/W}$ |
| 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. $T_c = 25^\circ\text{C}$

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Electrical Characteristics

(T_j = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|----------------------|-----|------|------|------|---|
| Zero gate voltage collector current | I _{CES} | — | — | 1 | μA | V _{CE} = 360 V, V _{GE} = 0 |
| Gate to emitter leak current | I _{GES} | — | — | ±100 | nA | V _{GE} = ± 30 V, V _{CE} = 0 |
| Gate to emitter cutoff voltage | V _{GE(off)} | 2.5 | — | 5 | V | V _{CE} = 10 V, I _C = 1 mA |
| Collector to emitter saturation voltage | V _{CE(sat)} | — | 1.5 | 2 | V | I _C = 30A, V _{GE} = 15 V ^{Note3} |
| Input capacitance | C _{ies} | — | 740 | — | pF | V _{CE} = 25 V V _{GE} = 0 f = 1 MHz |
| Output capacitance | C _{oes} | — | 40 | — | pF | |
| Reveres transfer capacitance | C _{res} | — | 17 | — | pF | |
| Total gate charge | Q _g | — | 23 | — | nC | |
| Gate to emitter charge | Q _{ge} | — | 4 | — | nC | V _{CE} = 150 V I _C = 30 A |
| Gate to collector charge | Q _{gc} | — | 8 | — | nC | |
| Switching time | t _{d(on)} | — | 0.02 | — | μs | I _C = 30 A R _L = 5 Ω V _{GE} = 15 V R _G = 5 Ω |
| | t _r | — | 0.08 | — | μs | |
| | t _{d(off)} | — | 0.04 | — | μs | |
| | t _f | — | 0.15 | — | μs | |

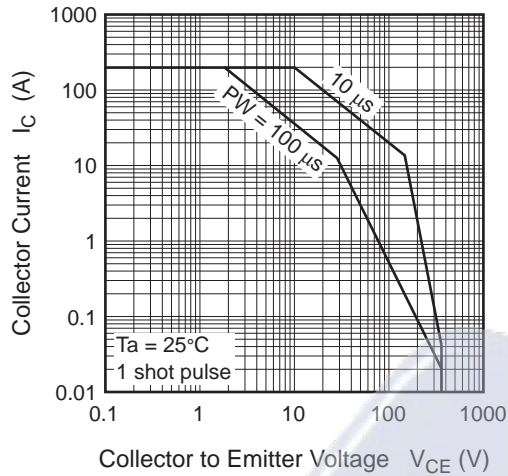
Notes: 3. Pulse test

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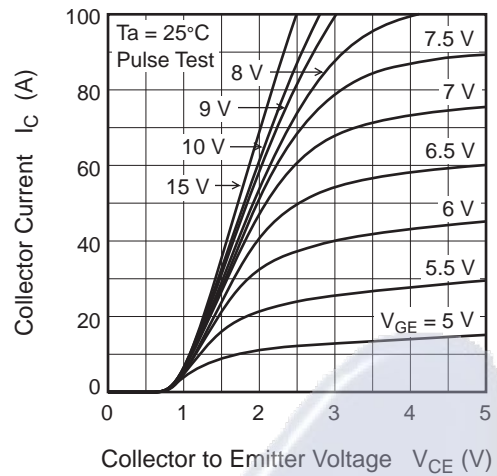
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Main Characteristics

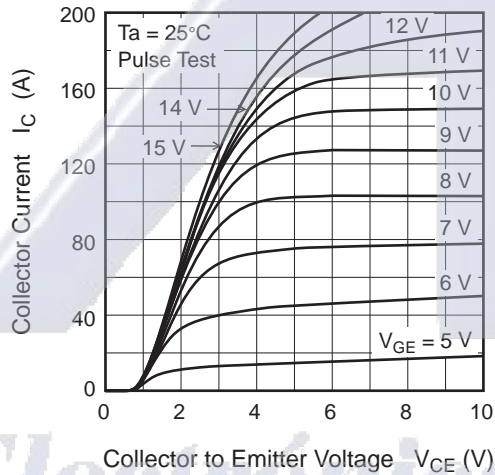
Maximum Safe Operation Area



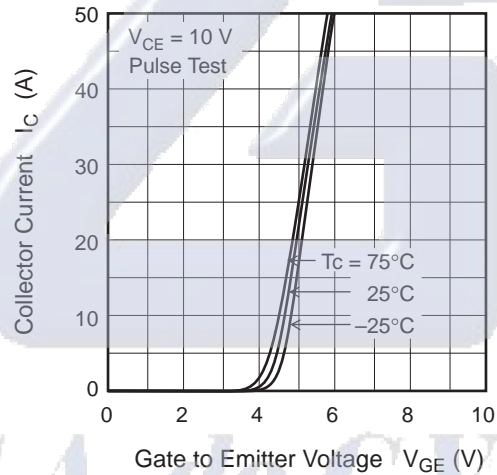
Typical Output Characteristics (1)



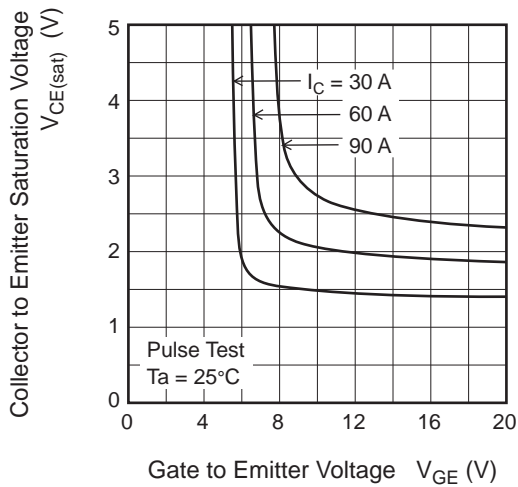
Typical Output Characteristics (2)



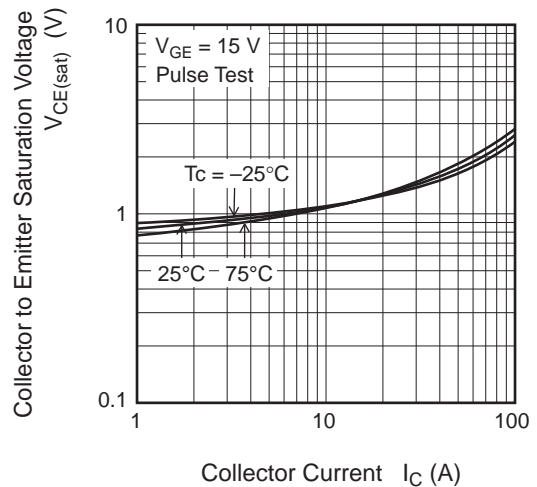
Typical Transfer Characteristics



Collector to Emitter Saturation Voltage vs. Gate to Emitter Voltage (Typical)

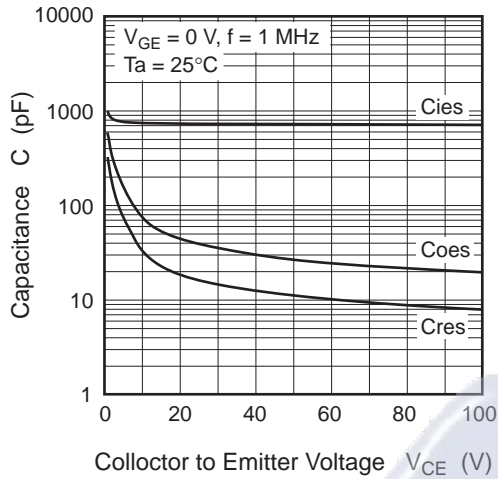


Collector to Emitter Saturation Voltage vs. Collector Current (Typical)

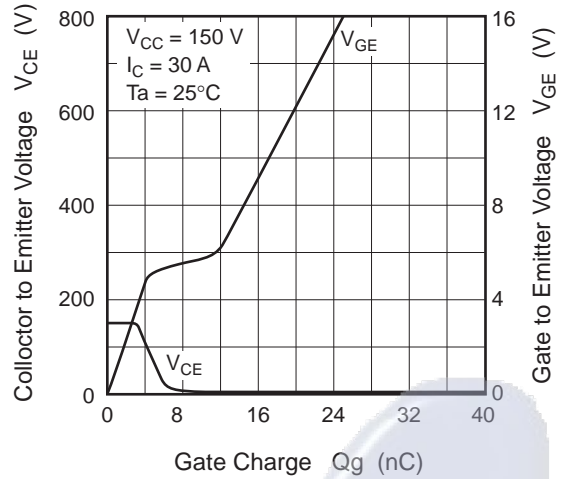


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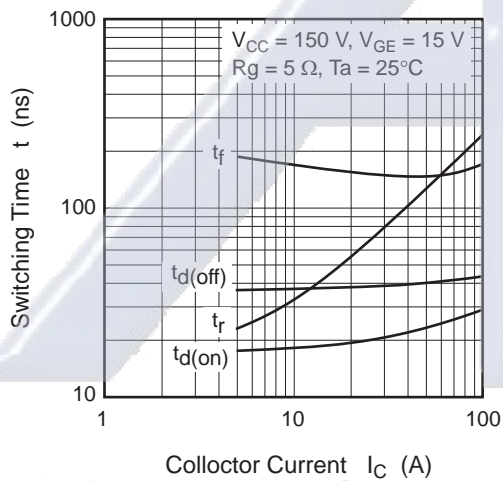
Typical Capacitance vs. Collector to Emitter Voltage



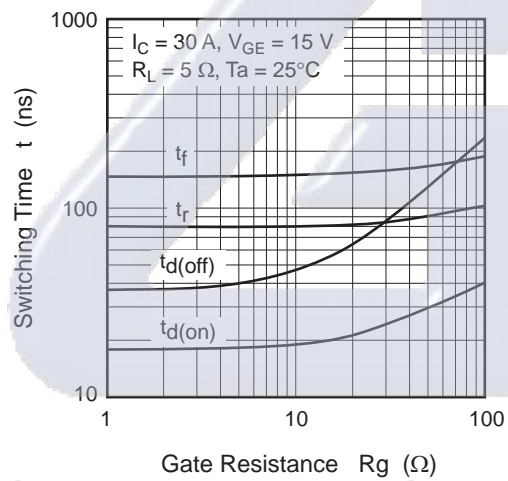
Dynamic Input Characteristics (Typical)



Switching Characteristics (Typical) (1)

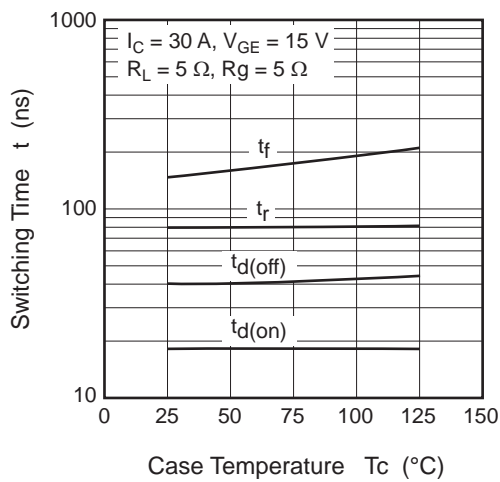


Switching Characteristics (Typical) (2)



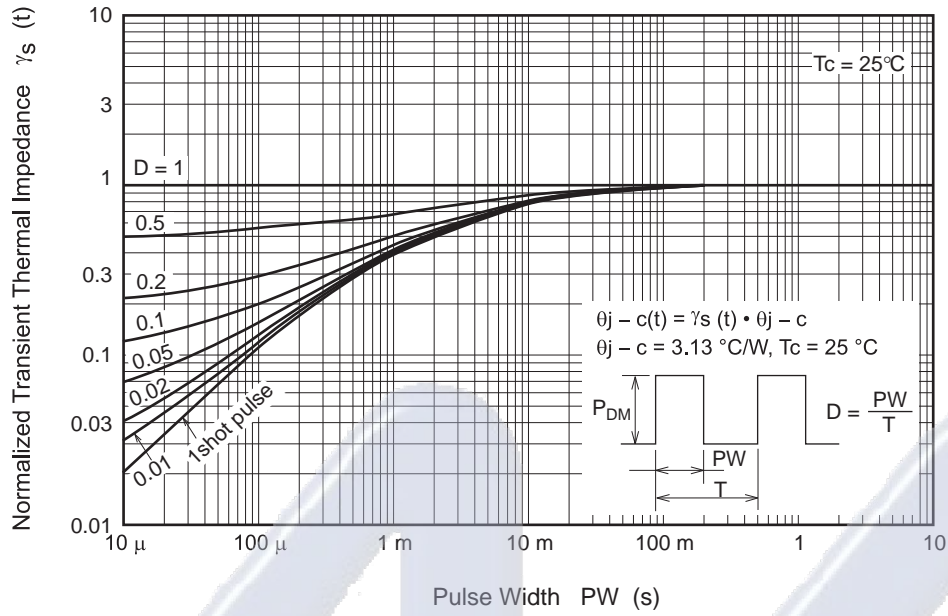
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Switching Characteristics (Typical) (3)

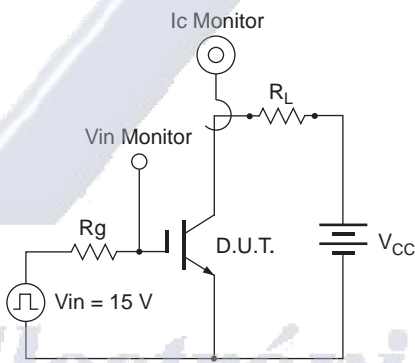


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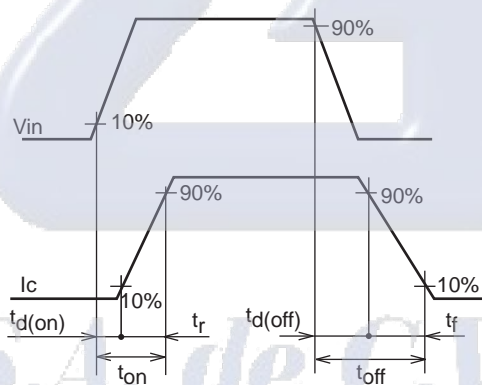
Normalized Transient Thermal Impedance vs. Pulse Width



Switching Time Test Circuit

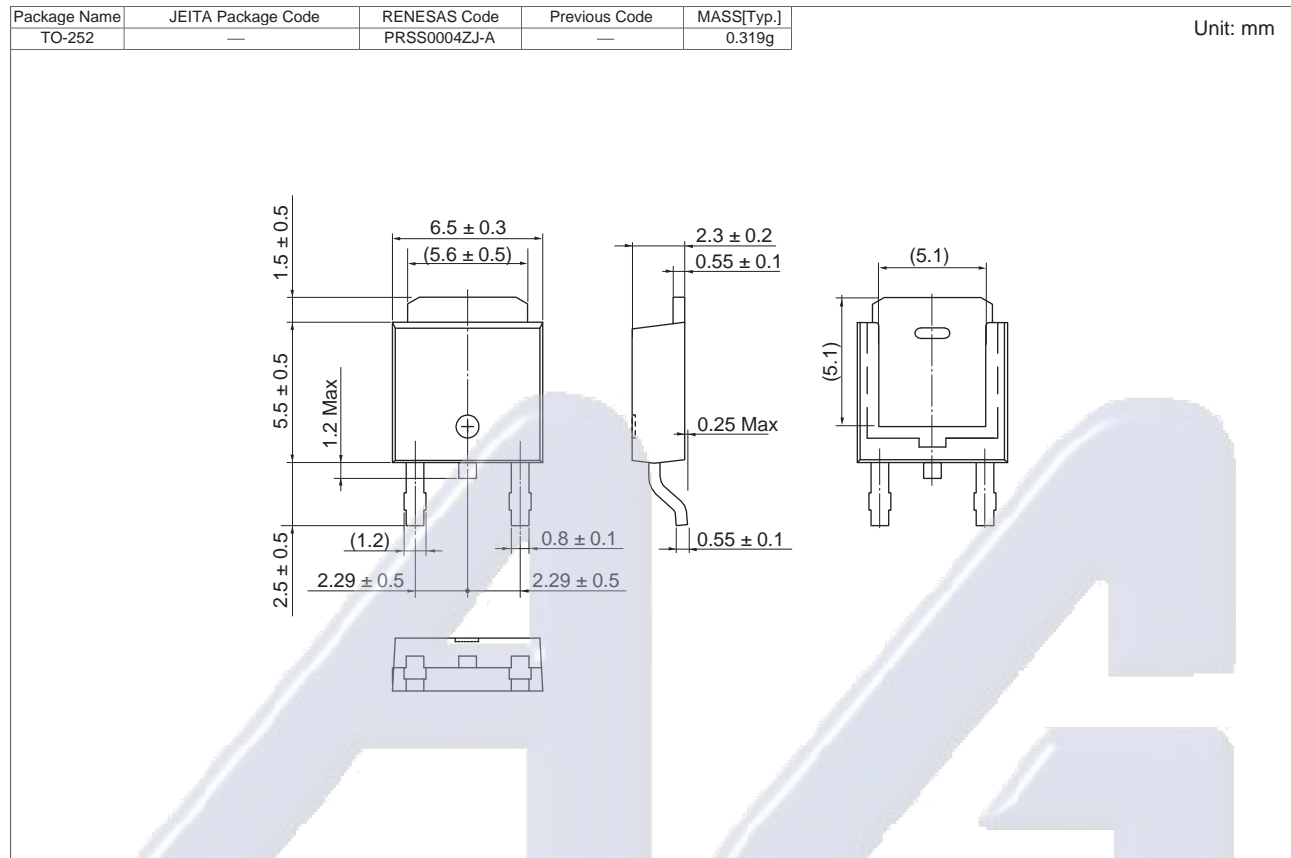


Waveform



RJP30H1DPD

Package Dimensions



Ordering Information

| Orderable Part Number | Quantity | Shipping Container |
|-----------------------|----------|--------------------|
| RJP30H1DPD-00-J2 | 3000 pcs | Taping |

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