

# RJP1CS03DWT/RJP1CS03DWA

1250V - 30A - IGBT

Application: Inverter

R07DS0826EJ0001

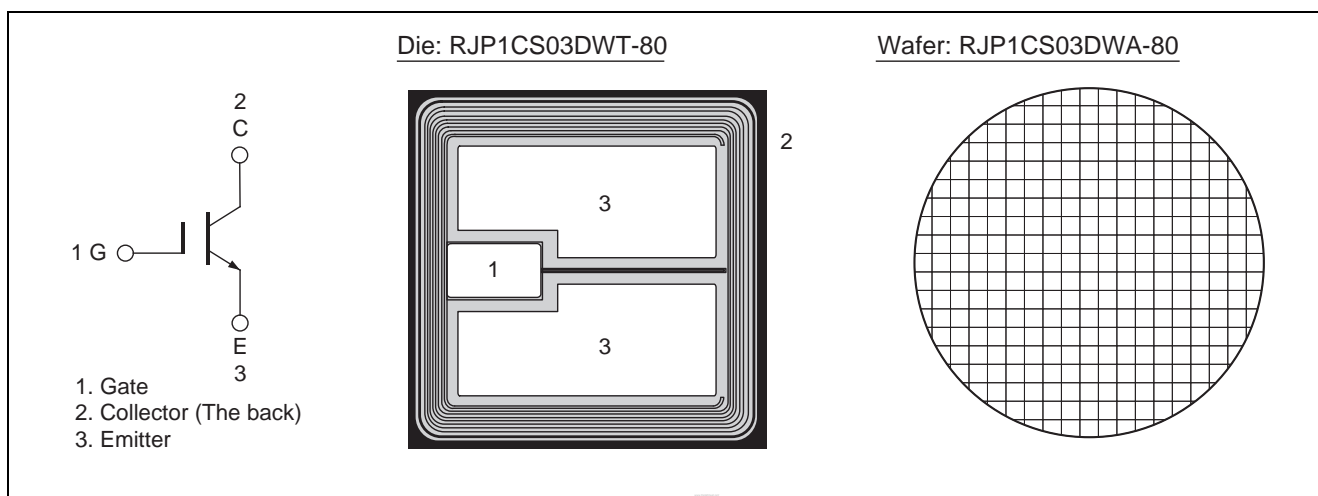
Rev.0.01

Jul 03, 2012

## Features

- Low collector to emitter saturation voltage  
 $V_{CE(sat)} = 1.8 \text{ V typ. (at } I_C = 30 \text{ A, } V_{GE} = 15 \text{ V, } T_a = 25^\circ\text{C)}$
- High speed switching
- Short circuit withstands time (10  $\mu\text{s min.}$ )

## Outline



## Absolute Maximum Ratings

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

| Item                         | Symbol                    | Ratings                | Unit             |   |
|------------------------------|---------------------------|------------------------|------------------|---|
| Collector to emitter voltage | $V_{CES}$                 | 1250                   | V                |   |
| Gate to emitter voltage      | $V_{GES}$                 | $\pm 30$               | V                |   |
| Collector current            | $T_c = 25^\circ\text{C}$  | $I_C$ <sup>Note1</sup> | 60               | A |
|                              | $T_c = 100^\circ\text{C}$ | $I_C$ <sup>Note1</sup> | 30               | A |
| Junction temperature         | $T_j$                     | 150                    | $^\circ\text{C}$ |   |

Notes: 1. This data is a regulated value in evaluation package.

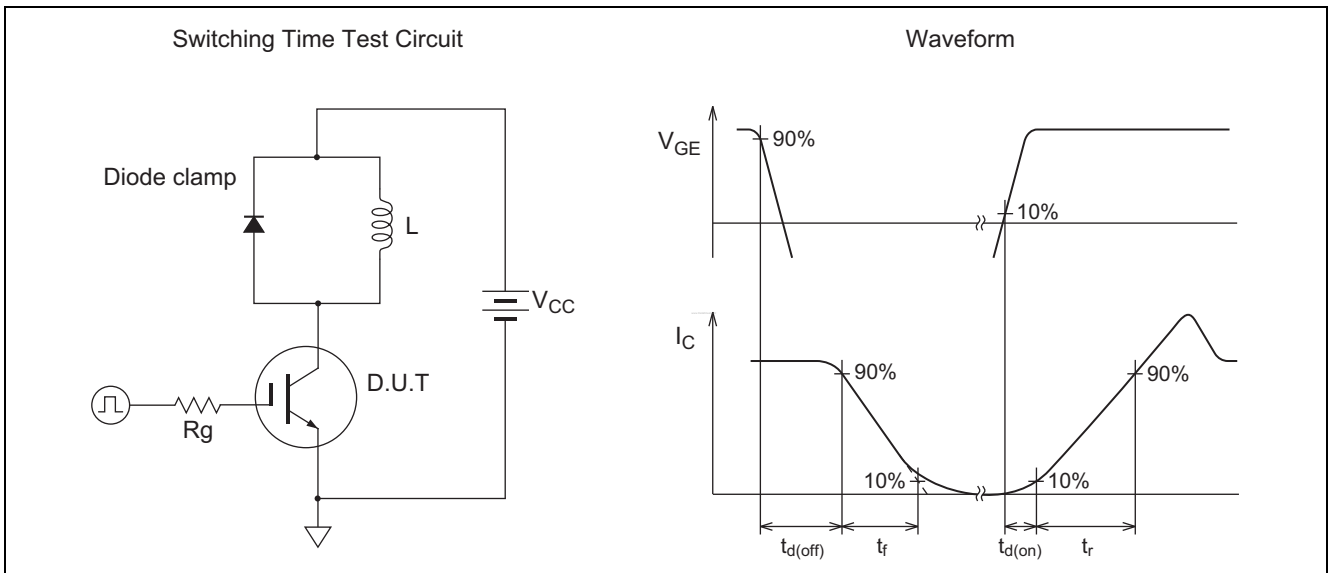
**Electrical Characteristics** (These data are an actual measurement value in evaluation package.)

(Ta = 25°C)

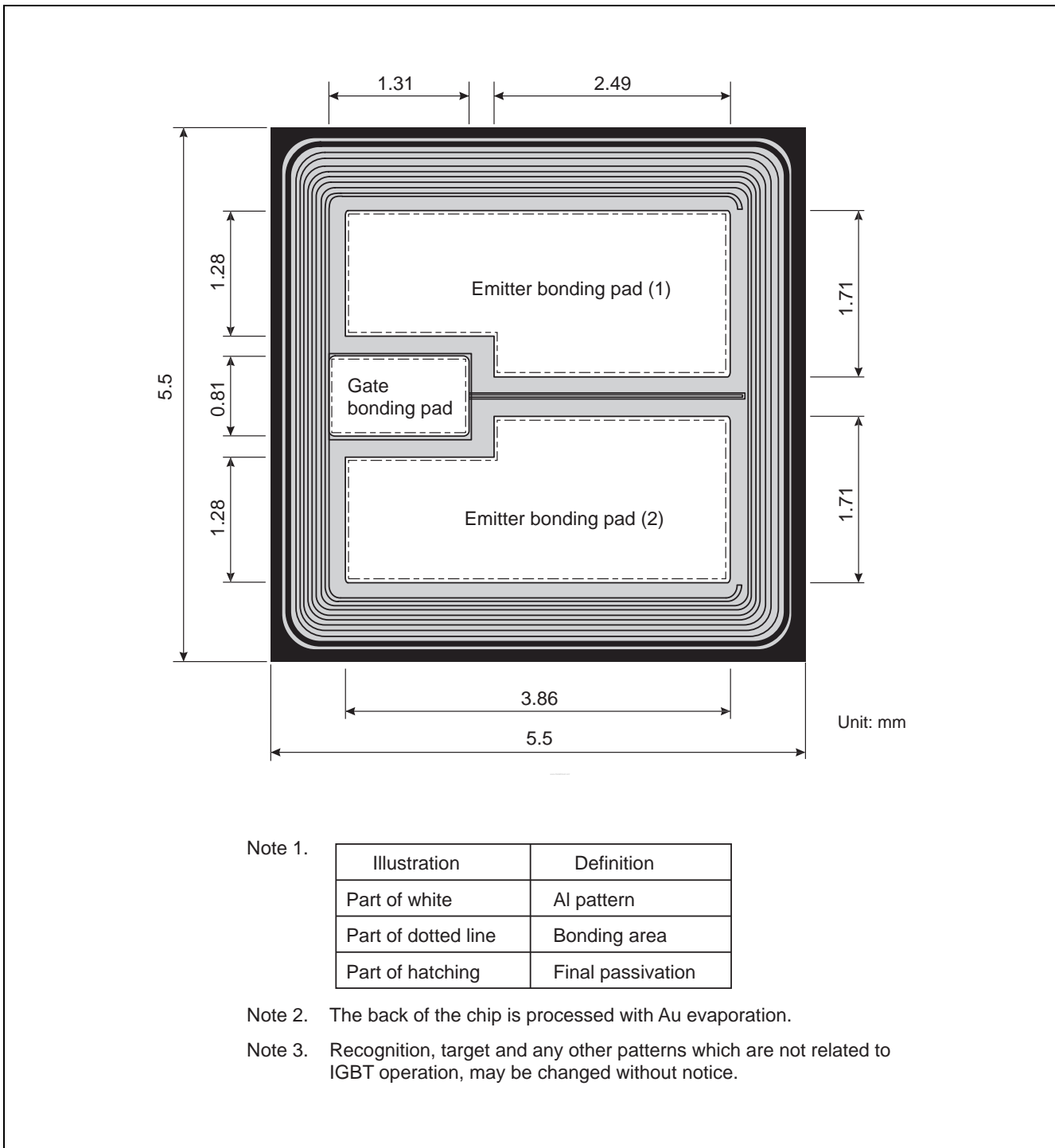
| Item                                    | Symbol        | Min | Typ  | Max     | Unit          | Test Conditions   |
|---|---------------|-----|------|---------|---------------|---|
| Zero gate voltage collector current     | $I_{CES}$     | —   | —    | 1       | $\mu\text{A}$ | $V_{CE} = 1250 \text{ V}, V_{GE} = 0$   |
| Gate to emitter leak current            | $I_{GES}$     | —   | —    | $\pm 1$ | $\mu\text{A}$ | $V_{GE} = \pm 30 \text{ V}, V_{CE} = 0$   |
| Gate to emitter cutoff voltage          | $V_{GE(off)}$ | 5.0 | —    | 6.8     | V             | $V_{CE} = 10 \text{ V}, I_C = 1.0 \text{ mA}$   |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | —   | 1.8  | —       | V             | $I_C = 30 \text{ A}, V_{GE} = 15 \text{ V}$ <sup>Note2</sup>  |
| Input capacitance                       | $C_{ies}$     | —   | 3.2  | —       | nF            | $V_{CE} = 25 \text{ V}$   |
| Output capacitance                      | $C_{oes}$     | —   | 0.10 | —       | nF            | $V_{GE} = 0$  |
| Reverse transfer capacitance            | $C_{res}$     | —   | 0.07 | —       | nF            | $f = 1 \text{ MHz}$   |
| Switching time                          | $t_{d(on)}$   | —   | 20   | —       | ns            | $V_{CC} = 600 \text{ V}$ <sup>Note3</sup><br>$I_C = 30 \text{ A}$<br>$V_{GE} = \pm 15 \text{ V}$<br>$R_g = 10 \Omega, T_j = 125 \text{ }^\circ\text{C}$<br>Inductive load |
|   | $t_r$         | —   | 20   | —       | ns            |   |
|   | $t_{d(off)}$  | —   | 240  | —       | ns            |   |
|   | $t_f$         | —   | 130  | —       | ns            |   |
| Short circuit withstand time            | $t_{sc}$      | 10  | —    | —       | $\mu\text{s}$ | $V_{CC} \leq 720 \text{ V}, V_{GE} = 15 \text{ V}$<br>$T_j = 150 \text{ }^\circ\text{C}$  |

Notes: 2. Pulse test.

3. Switching time test circuit and waveform are shown below.



Die Dimension



Note 1.

| Illustration        | Definition        |
|---------------------|-------------------|
| Part of white       | Al pattern        |
| Part of dotted line | Bonding area      |
| Part of hatching    | Final passivation |

Note 2. The back of the chip is processed with Au evaporation.

Note 3. Recognition, target and any other patterns which are not related to IGBT operation, may be changed without notice.

Ordering Information

| Orderable Part Number |
|-----------------------|
| RJP1CS03DWA-80#W0     |
| RJP1CS03DWT-80#X0     |

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