

To our customers,

Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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SILICON POWER TRANSISTOR
2SA1412-Z

PNP SILICON TRIPLE DIFFUSED TRANSISTOR

DESCRIPTION

The 2SA1412-Z is designed for High Voltage Switching, especially in Hybrid Integrated Circuits.

FEATURES

- High Voltage: $V_{CE0} = -400$ V
- High Speed: $t_r \leq 0.7$ μ s
- Complement to 2SC3631-Z

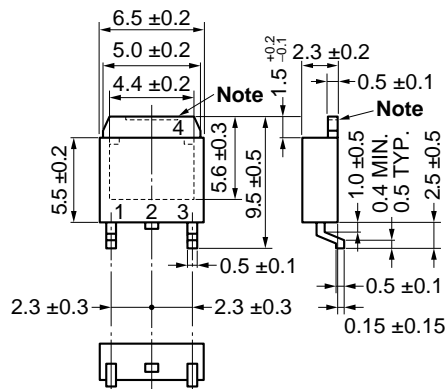
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

| | | | |
|--|----------------|-------------|------------------|
| Collector to base voltage | V_{CBO} | -400 | V |
| Collector to emitter voltage | V_{CE0} | -400 | V |
| Base to emitter voltage | V_{EBO} | -7 | V |
| Collector current (DC) | $I_{C(DC)}$ | -2.0 | A |
| Collector current (pulse) ^{Note 1} | $I_{C(pulse)}$ | -4.0 | A |
| Total power dissipation ($T_A = 25^\circ\text{C}$) ^{Note 2} | P_T | 2.0 | W |
| Junction temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

Notes 1. $PW \leq 10$ ms, Duty Cycle $\leq 50\%$

2. When mounted on ceramic substrate of $7.5 \text{ cm}^2 \times 0.7$ mm

<R> PACKAGE DRAWING (Unit: mm)



1. Base
 2. Collector
 3. Emitter
 4. Collector Fin
- TO-252 (MP-3Z)

Note The depth of notch at the top of the fin is from 0 to 0.2 mm.

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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

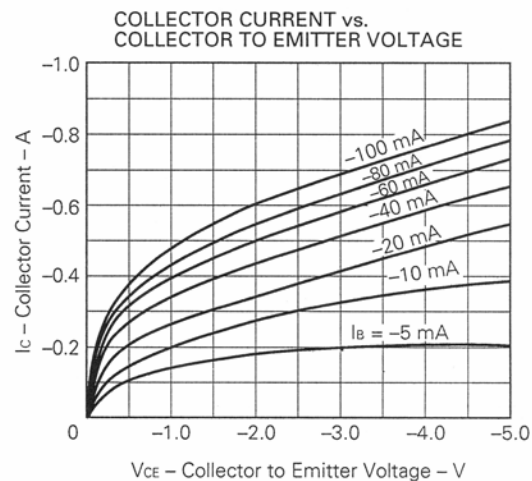
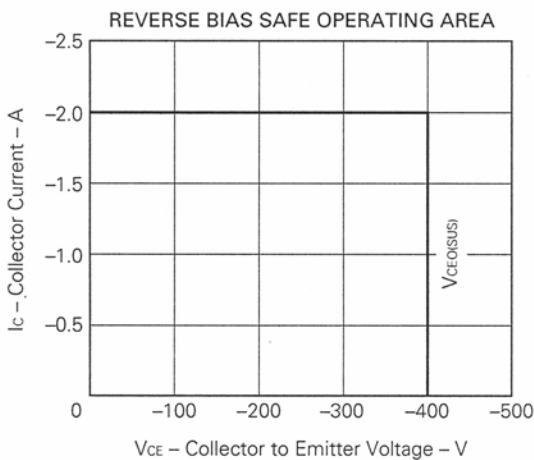
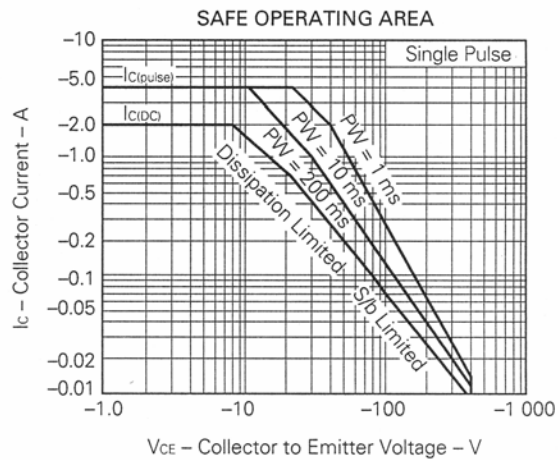
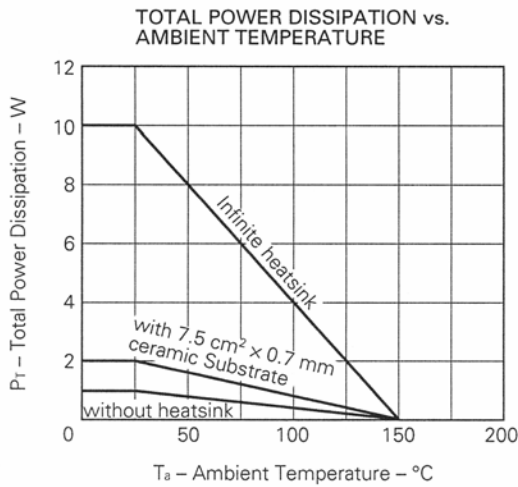
| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|------------------------------|------------------------|------|-------|------|------|--|
| Collector Cutoff Current | I _{cBO} | | | -10 | μA | V _{CE} = -400 V, I _E = 0 |
| Emitter Cutoff Current | I _{EBO} | | | -10 | μA | V _{EB} = -5.0 V, I _C = 0 |
| DC Current Gain | h _{FE1} * | 40 | 60 | 120 | | V _{CE} = -5.0 V, I _C = -0.1 A |
| DC Current Gain | h _{FE2} * | 10 | 22 | | | V _{CE} = -5.0 V, I _C = -1.0 A |
| Collector Saturation Voltage | V _{CE(sat)} * | | -0.25 | -0.5 | V | I _C = -0.5 A, I _B = -0.1 A |
| Base Saturation Voltage | V _{BE(sat)} * | | -0.85 | -1.2 | V | I _C = -0.5 A, I _B = -0.1 A |
| Gain Bandwidth Product | f _T | | 40 | | MHz | V _{CE} = -10 V, I _E = -100 mA |
| Output Capacitance | C _{ob} | | 30 | | pF | V _{CB} = -10 V, I _E = 0, f = 1.0 MHz |
| Turn-on Time | t _{on} | | 0.03 | 0.5 | μs | I _C = -1.0 A, R _L = 150 Ω I _{B1} = -1 B ₂ = -0.2 A, V _{CC} = -150 V |
| Storage Time | t _{stg} | | 1.4 | 2.0 | μs | |
| Fall time | t _f | | 0.1 | 0.7 | μs | |

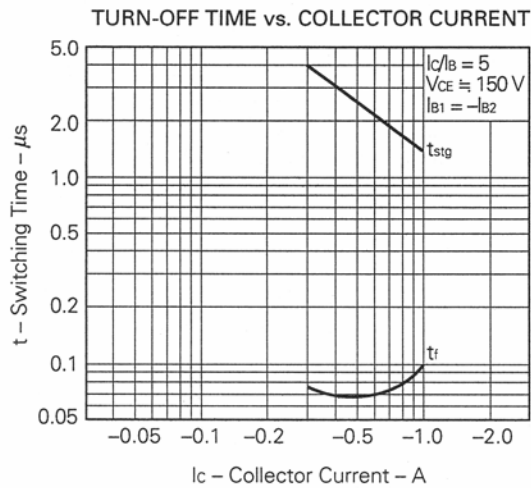
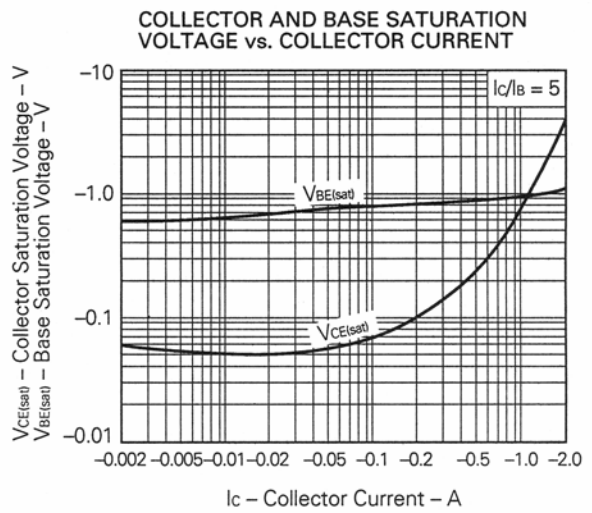
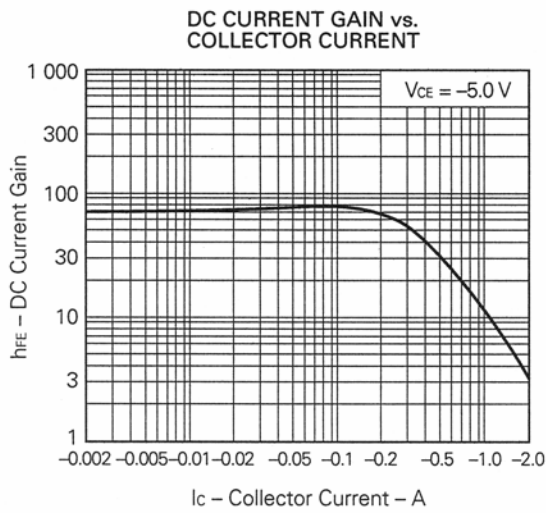
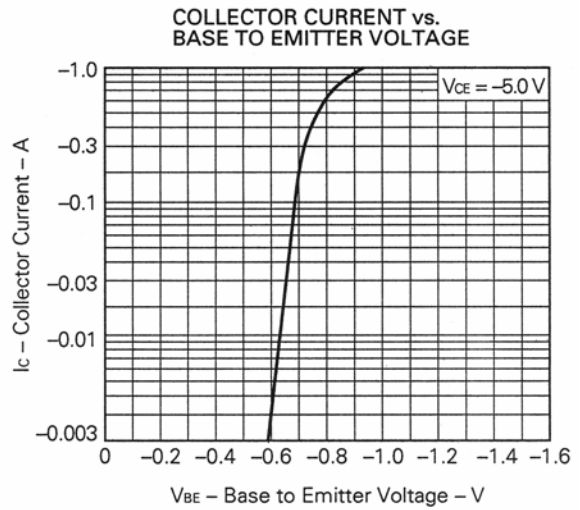
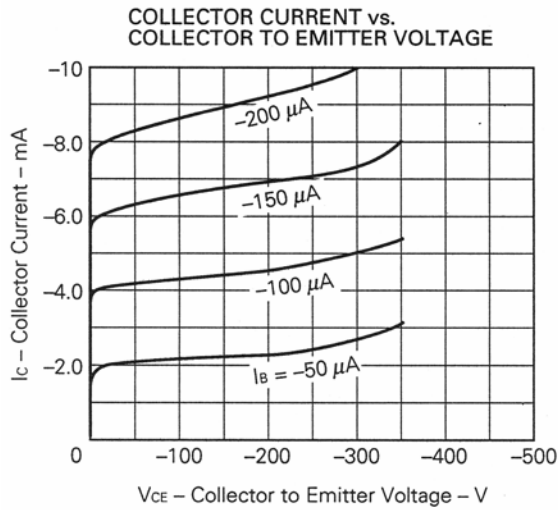
* Pulsed: PW ≤ 350 μs, Duty Cycle ≤ 2 %

h_{FE} Classification

| MARKING | L | K |
|------------------|----------|-----------|
| h _{FE1} | 40 to 80 | 60 to 120 |

TYPICAL CHARACTERISTICS (T_a = 25 °C)





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