

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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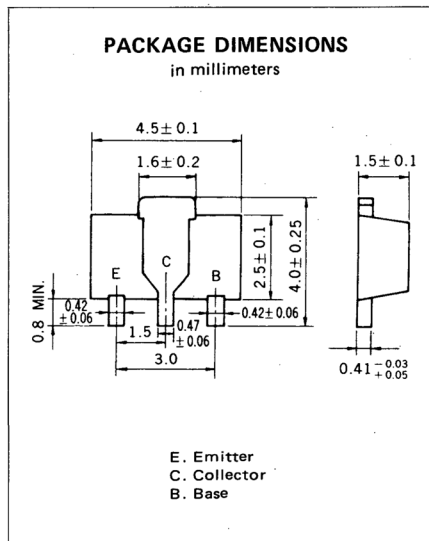
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NPN SILICON EPITAXIAL TRANSISTOR
POWER MINI MOLD

DESCRIPTION

2SD1614 is designed for audio frequency power amplifier and switching application, especially in Hybrid Integrated Circuits.



FEATURES

- High DC Current Gain : h_{FE} 135 to 600
- Low $V_{CE(sat)}$: $V_{CE(sat)} = 0.2$ V
- Complement to 2SB1114

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

| | | | |
|------------------------------|---------------------|-------------|------------------|
| Collector to Base Voltage | V_{CB0} | 40 | V |
| Collector to Emitter Voltage | V_{CEO} | 20 | V |
| Emitter to Base Voltage | V_{EBO} | 6.0 | V |
| Collector Current (DC) | $I_C(\text{DC})$ | 2.0 | A |
| Collector Current (Pulse)* | $I_C(\text{Pulse})$ | 3.0 | A |
| Total Power Dissipation** | P_T | 2.0 | W |
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | -55 to +150 | $^\circ\text{C}$ |

* $PW \leq 10$ ms, Duty Cycle $\leq 50\%$
**When mounted on ceramic substrate of $16\text{ cm}^2 \times 0.7\text{ mm}$

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|------------------------------|---------------------|------|------|------|------|---|
| Collector Cutoff Current | I_{CB0} | | | 100 | nA | $V_{CB} = 30\text{ V}, I_E = 0$ |
| Emitter Cutoff Current | I_{EB0} | | | 100 | nA | $V_{EB} = 6.0\text{ V}, I_C = 0$ |
| DC Current Gain | h_{FE1}^{***} | 135 | 350 | 600 | | $V_{CE} = 2.0\text{ V}, I_C = 100\text{ mA}$ |
| DC Current Gain | h_{FE2}^{***} | 40 | 250 | | | $V_{CE} = 2.0\text{ V}, I_C = 2.0\text{ A}$ |
| Collector Saturation Voltage | $V_{CE(sat)}^{***}$ | | 0.3 | 0.5 | V | $I_C = 2.0\text{ A}, I_B = 50\text{ mA}$ |
| Base Saturation Voltage | $V_{BE(sat)}^{***}$ | | 0.95 | 1.2 | V | $I_C = 2.0\text{ A}, I_B = 50\text{ mA}$ |
| Base to Emitter Voltage | V_{BE}^{***} | 650 | 680 | 750 | mV | $V_{CE} = 6.0\text{ V}, I_C = 100\text{ mA}$ |
| Gain Bandwidth Product | f_T | | 200 | | MHz | $V_{CE} = 10\text{ V}, I_E = -50\text{ mA}$ |
| Output Capacitance | C_{ob} | | 28 | | pF | $V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$ |

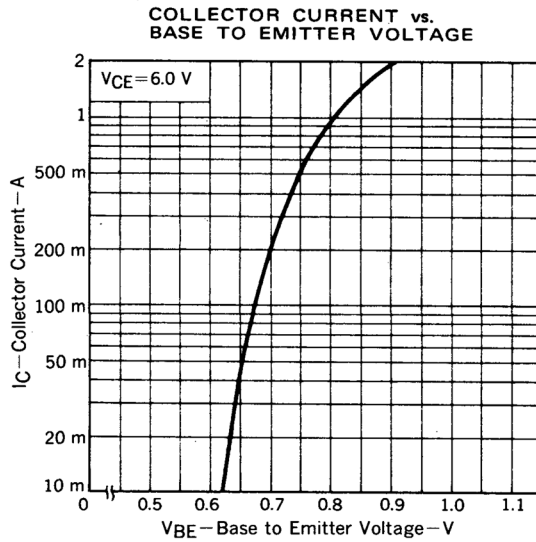
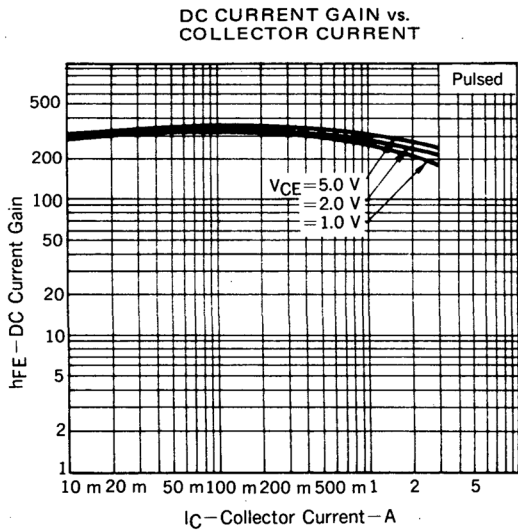
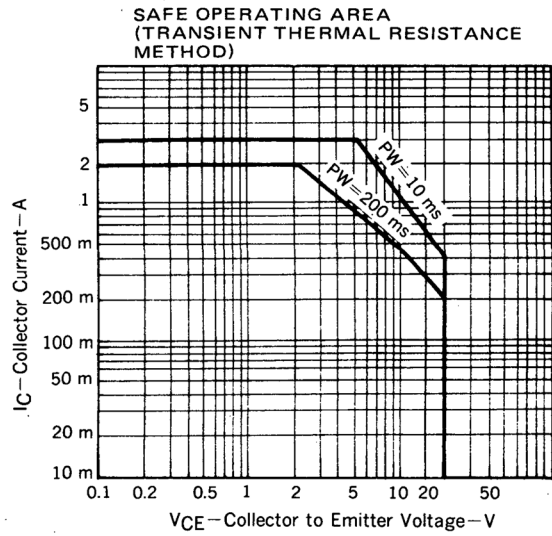
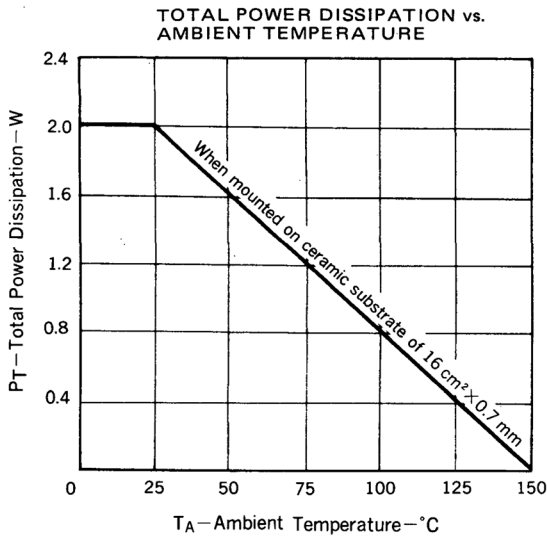
***Pulsed: $PW \leq 350\ \mu\text{s}$, Duty Cycle $\leq 2\%$

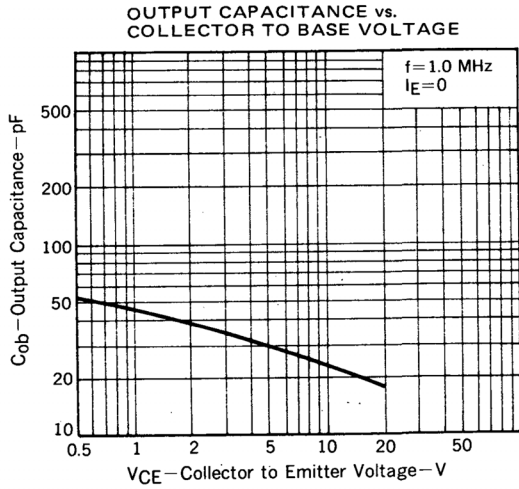
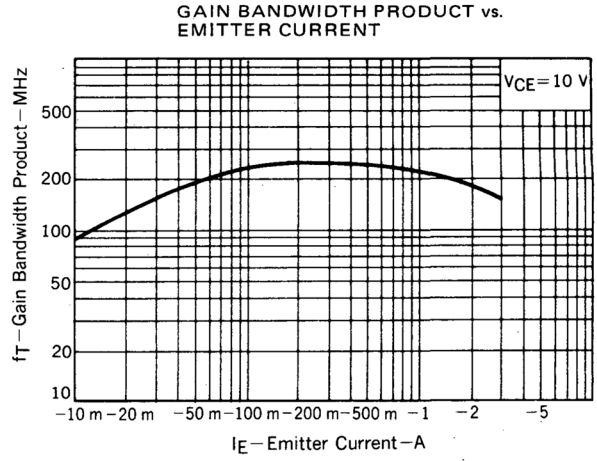
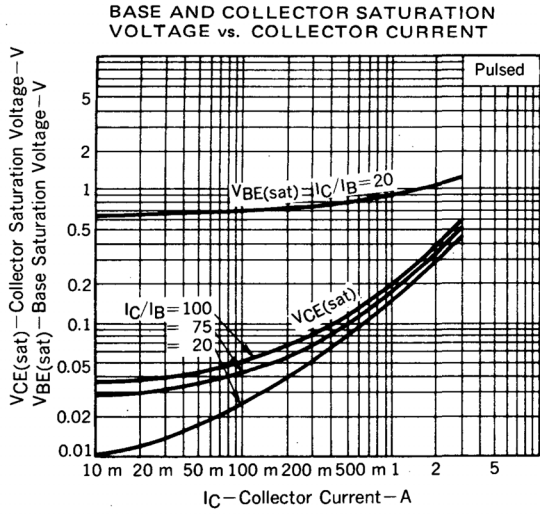
h_{FE} Classification

| MARKING | XM | XL | XK |
|-----------|------------|------------|------------|
| h_{FE1} | 135 to 270 | 200 to 400 | 300 to 600 |

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