

To all our customers

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Renesas Technology Corp.  
Customer Support Dept.  
April 1, 2003

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# 2SB715, 2SB716, 2SB716A

Silicon PNP Epitaxial

**RENESAS**

ADE-208-1027A (Z)  
2nd. Edition  
Mar. 2001

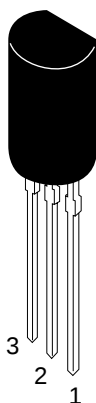
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## Application

- Low frequency high voltage amplifier

## Outline

TO-92MOD



1. Emitter
2. Collector
3. Base

2SB715, 2SB716, 2SB716A

Absolute Maximum Ratings (Ta = 25°C)

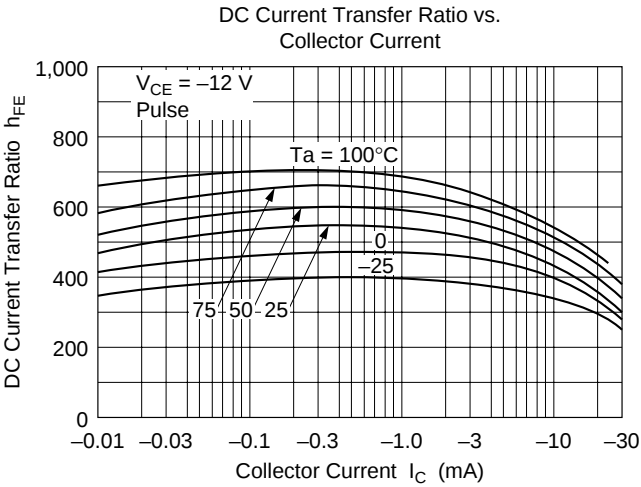
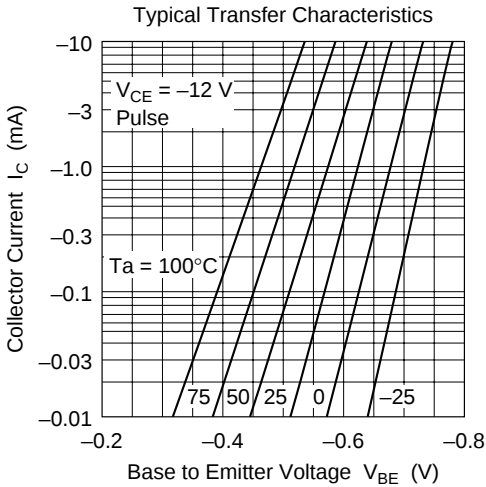
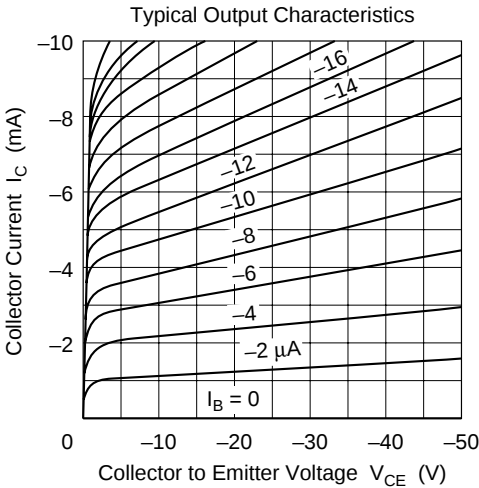
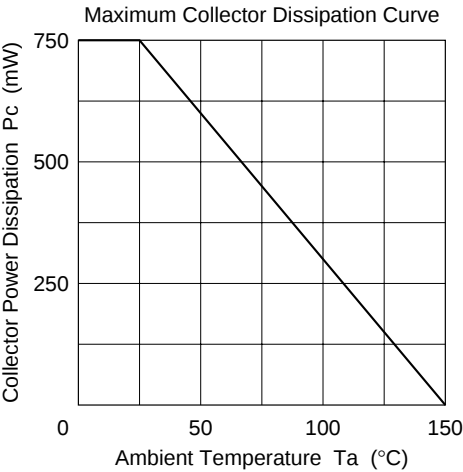
| Item                         | Symbol    | 2SB715      | 2SB716      | 2SB716A     | Unit |
|------------------------------|-----------|-------------|-------------|-------------|------|
| Collector to base voltage    | $V_{CBO}$ | -100        | -120        | -140        | V    |
| Collector to emitter voltage | $V_{CEO}$ | -100        | -120        | -140        | V    |
| Emitter to base voltage      | $V_{EBO}$ | -5          | -5          | -5          | V    |
| Collector current            | $I_C$     | -50         | -50         | -50         | mA   |
| Collector power dissipation  | $P_C$     | 750         | 750         | 750         | mW   |
| Junction temperature         | $T_j$     | 150         | 150         | 150         | °C   |
| Storage temperature          | $T_{stg}$ | -55 to +150 | -55 to +150 | -55 to +150 | °C   |

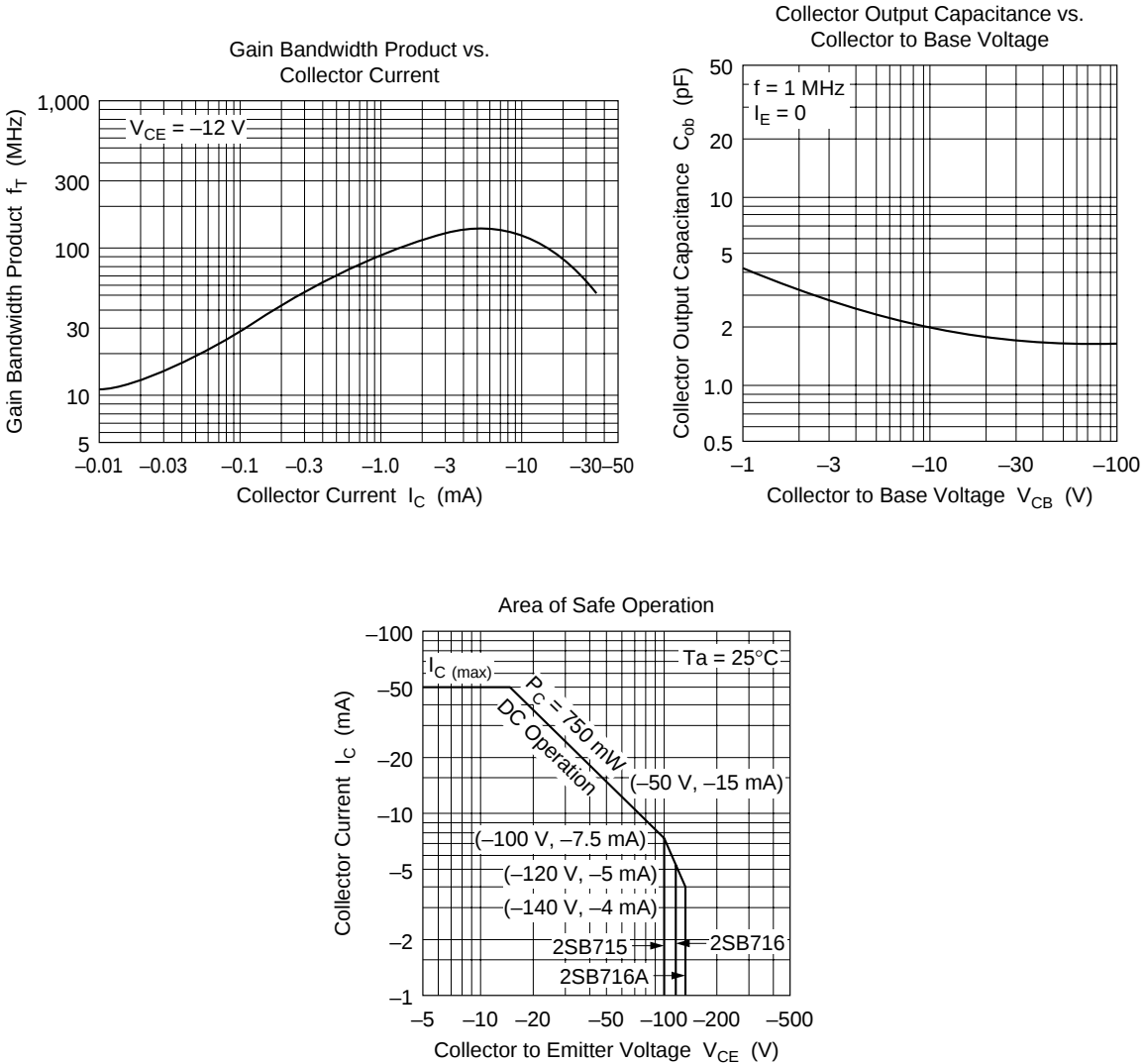
Electrical Characteristics (Ta = 25°C)

| Item                                    | Symbol         | 2SB715 |     |       | 2SB716 |     |       | 2SB716A |     |       | Unit          | Test conditions                                             |
|-----------------------------------------|----------------|--------|-----|-------|--------|-----|-------|---------|-----|-------|---------------|-------------------------------------------------------------|
|                                         |                | Min    | Typ | Max   | Min    | Typ | Max   | Min     | Typ | Max   |               |                                                             |
| Collector to base breakdown voltage     | $V_{(BR)CBO}$  | -100   | —   | —     | -120   | —   | —     | -140    | —   | —     | V             | $I_C = -10\text{ }\mu\text{A}$ , $I_E = 0$                  |
| Collector to emitter breakdown voltage  | $V_{(BR)CEO}$  | -100   | —   | —     | -120   | —   | —     | -140    | —   | —     | V             | $I_C = -1\text{ mA}$ ,<br>$R_{BE} = \infty$                 |
| Collector cutoff current                | $I_{CBO}$      | —      | —   | -0.5  | —      | —   | —     | —       | —   | —     | $\mu\text{A}$ | $V_{CB} = -80\text{ V}$ , $I_E = 0$                         |
|                                         |                | —      | —   | —     | —      | —   | -0.5  | —       | —   | -0.5  | $\mu\text{A}$ | $V_{CB} = -100\text{ V}$ , $I_E = 0$                        |
| DC current transfer ratio               | $h_{FE1}^{*1}$ | 250    | —   | 800   | 250    | —   | 800   | 250     | —   | 500   |               | $V_{CE} = -12\text{ V}$ ,<br>$I_C = -2\text{ mA}$           |
|                                         | $h_{FE2}$      | 125    | —   | —     | 125    | —   | —     | 125     | —   | —     |               | $V_{CE} = -12\text{ V}$ ,<br>$I_C = -10\text{ mA}$          |
| Base to emitter voltage                 | $V_{BE}$       | —      | —   | -0.75 | —      | —   | -0.75 | —       | —   | -0.75 | V             | $V_{CE} = -12\text{ V}$ ,<br>$I_C = -2\text{ mA}$           |
| Collector to emitter saturation voltage | $V_{CE(sat)}$  | —      | —   | -0.2  | —      | —   | -0.2  | —       | —   | -0.2  | V             | $I_C = -10\text{ mA}$ ,<br>$I_B = -1\text{ mA}$             |
| Gain bandwidth product                  | $f_T$          | —      | 150 | —     | —      | 150 | —     | —       | 150 | —     | MHz           | $V_{CE} = -12\text{ V}$ ,<br>$I_C = -5\text{ mA}$           |
| Collector output capacitance            | $C_{ob}$       | —      | 1.8 | —     | —      | 1.8 | —     | —       | 1.8 | —     | pF            | $V_{CB} = -25\text{ V}$ , $I_E = 0$ ,<br>$f = 1\text{ MHz}$ |

Note: 1. The 2SB715, 2SB716 and 2SB716A are grouped by  $h_{FE1}$  as follows.

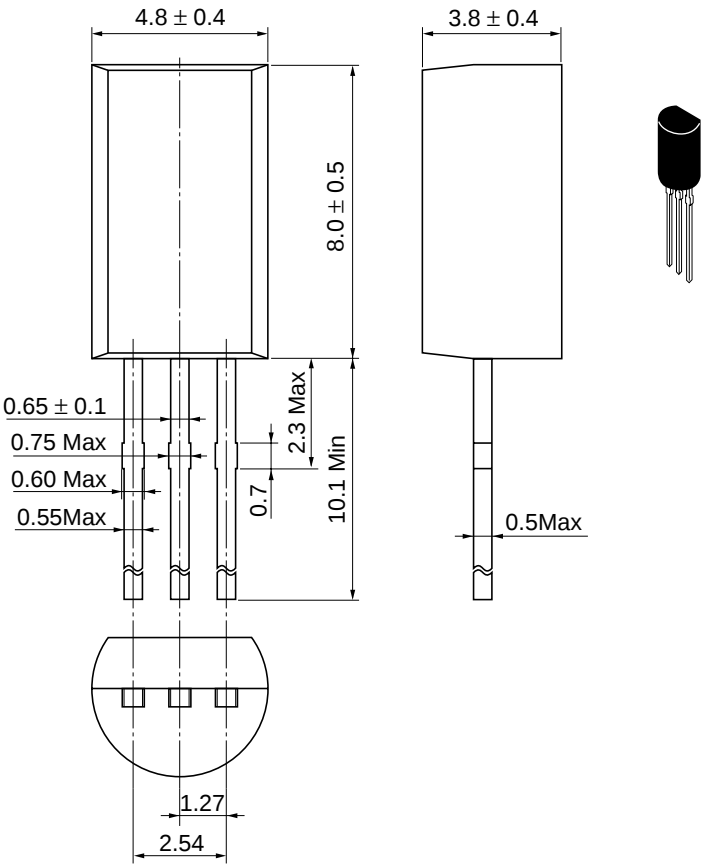
|                | D          | E          |
|----------------|------------|------------|
| 2SB715, 2SB716 | 250 to 500 | 400 to 800 |
| 2SB716A        | 250 to 500 | —          |





Package Dimensions

As of January, 2001  
Unit: mm



|                        |           |
|------------------------|-----------|
| Hitachi Code           | TO-92 Mod |
| JEDEC                  | —         |
| EIAJ                   | Conforms  |
| Mass (reference value) | 0.35 g    |

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