
2SB647, 2SB647A

Silicon PNP Epitaxial

HITACHI

Application

- Low frequency power amplifier
- Complementary pair with 2SD667/A

Outline

TO-92MOD



1. Emitter
2. Collector
3. Base

2SB647, 2SB647A

Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | 2SB647 | 2SB647A | Unit |
|------------------------------|---------------|-------------|-------------|------|
| Collector to base voltage | V_{CBO} | -120 | -120 | V |
| Collector to emitter voltage | V_{CEO} | -80 | -100 | V |
| Emitter to base voltage | V_{EBO} | -5 | -5 | V |
| Collector current | I_C | -1 | -1 | A |
| Collector peak current | $i_{C(peak)}$ | -2 | -2 | A |
| Collector power dissipation | P_C | 0.9 | 0.9 | W |
| Junction temperature | T_j | 150 | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | -55 to +150 | °C |

Electrical Characteristics (Ta = 25°C)

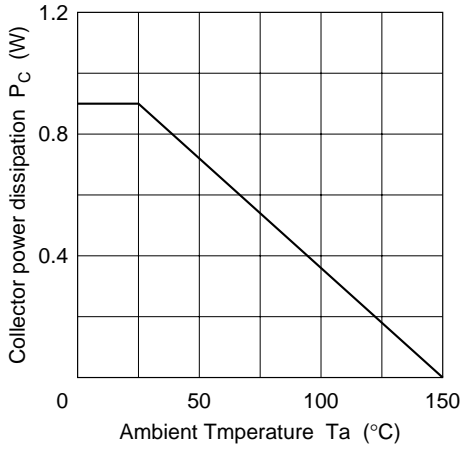
| Item | Symbol | 2SB647 | | | 2SB647A | | | Unit | Test conditions |
|---|----------------|--------|-----|------|---------|-----|------|---------|--|
| | | Min | Typ | Max | Min | Typ | Max | | |
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | -120 | — | — | -120 | — | — | V | $I_C = -10 \mu A, I_E = 0$ |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | -80 | — | — | -100 | — | — | V | $I_C = -1 \text{ mA}, R_{BE} = \infty$ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | -5 | — | — | -5 | — | — | V | $I_E = -10 \mu A, I_C = 0$ |
| Collector cutoff current | I_{CBO} | — | — | -10 | — | — | -10 | μA | $V_{CB} = -100 \text{ V}, I_E = 0$ |
| DC current transfer ratio | h_{FE1}^{*1} | 60 | — | 320 | 60 | — | 200 | | $V_{CE} = -5 \text{ V},$ $I_C = -150 \text{ mA}^{*2}$ |
| | h_{FE2} | 30 | — | — | 30 | — | — | | $V_{CE} = -5 \text{ V},$ $I_C = -500 \text{ mA}^{*2}$ |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | — | -1 | — | — | -1 | V | $I_C = -500 \text{ mA},$ $I_B = -50 \text{ mA}^{*2}$ |
| Base to emitter voltage | V_{BE} | — | — | -1.5 | — | — | -1.5 | V | $V_{CE} = -5 \text{ V},$ $I_C = -150 \text{ mA}^{*2}$ |
| Gain bandwidth product | f_T | — | 140 | — | — | 140 | — | MHz | $V_{CE} = -5 \text{ V}, I_C = -150 \text{ mA}$ |
| Collector output capacitance | C_{ob} | — | 20 | — | — | 20 | — | pF | $V_{CB} = -10 \text{ V}, I_E = 0$ $f = 1 \text{ MHz}$ |

Notes: 1. The 2SB647 and 2SB647A are grouped by h_{FE1} as follows.

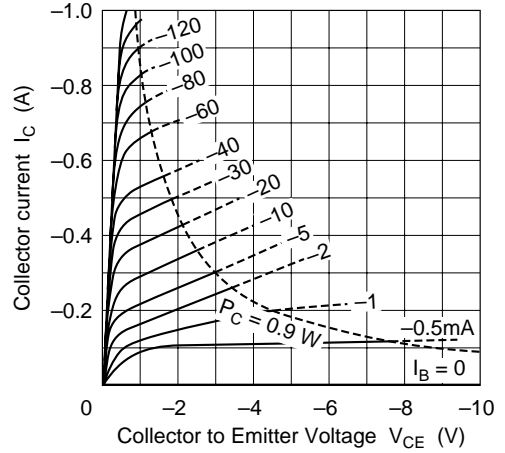
2. Pulse test

| | B | C | D |
|---------|-----------|------------|------------|
| 2SB647 | 60 to 120 | 100 to 200 | 160 to 320 |
| 2SB647A | 60 to 120 | 100 to 200 | — |

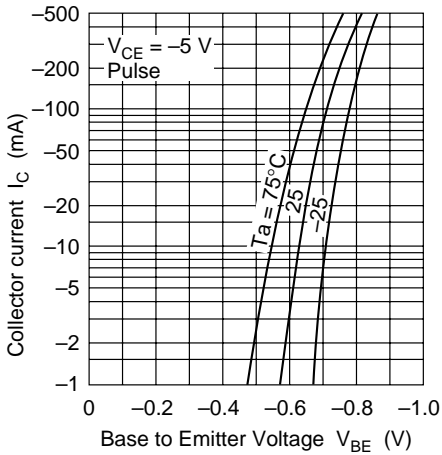
Maximum Collector Dissipation Curve



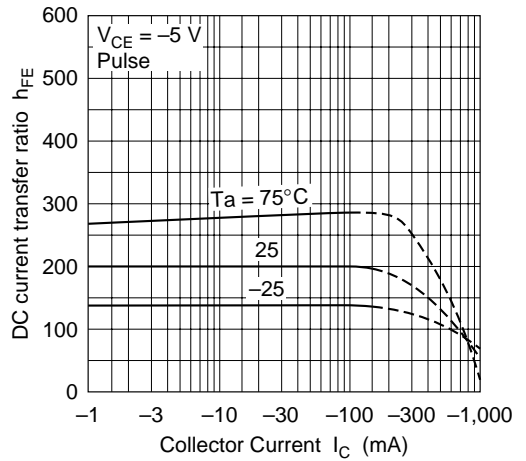
Typical Output Characteristics



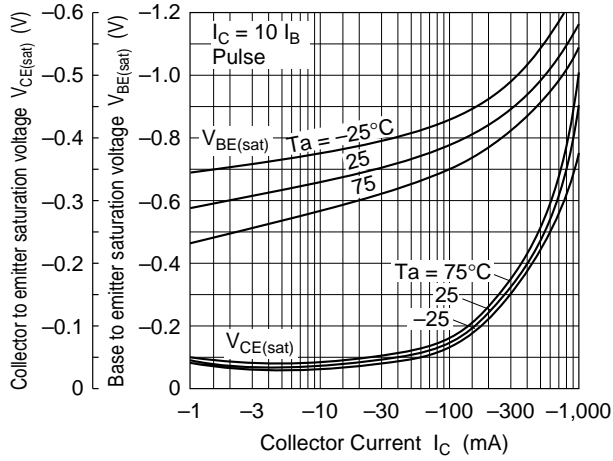
Typical Transfer Characteristics



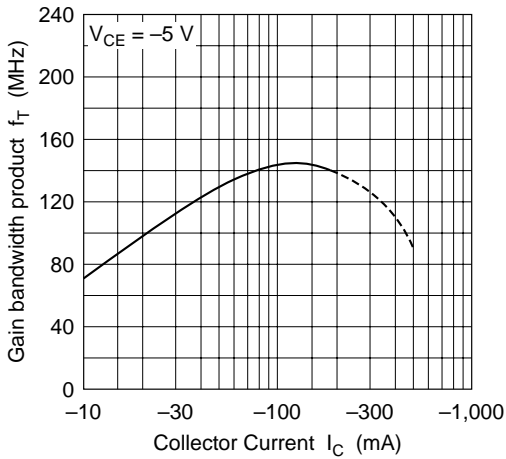
DC Current Transfer Ratio vs. Collector Current



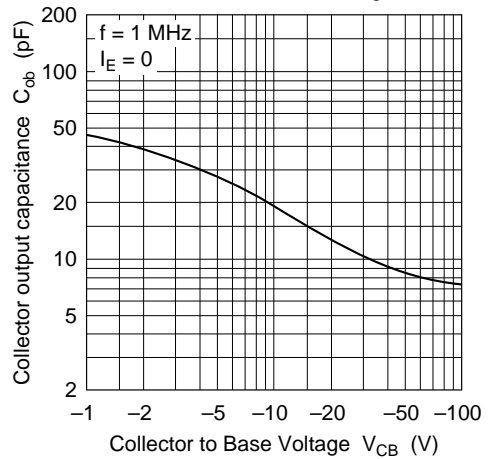
Saturation Voltage vs. Collector Current

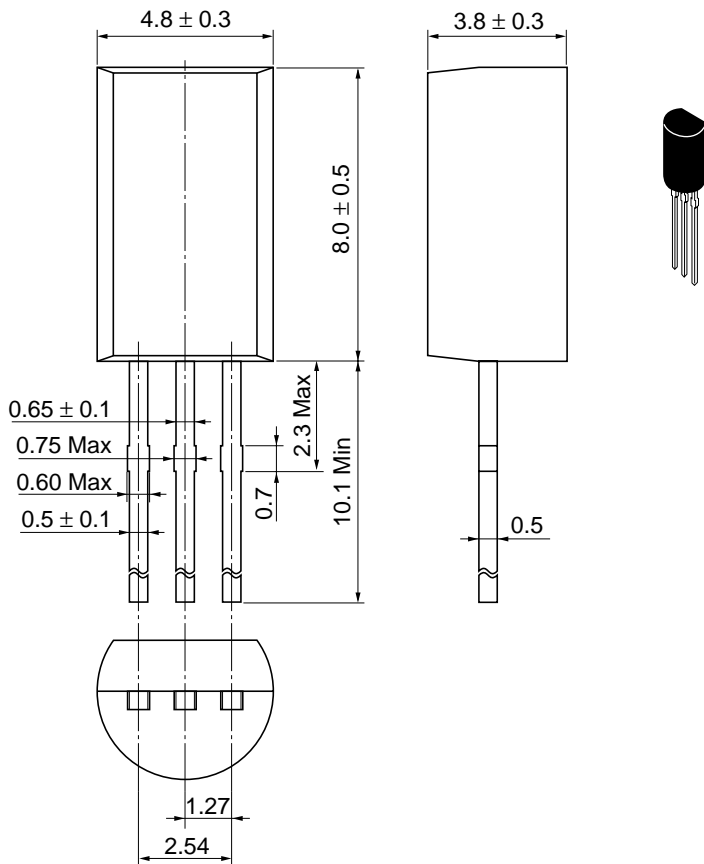


Gain Bandwidth Product vs. Collector Current



Collector Output Capacitance vs. Collector to Base Voltage





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

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