# 2SC2545, 2SC2546, 2SC2547

Silicon NPN Epitaxial

HITACHI

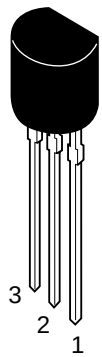
ADE-208-1067A (Z)
2nd. Edition
Mar. 2001

## Application

- Low frequency low noise amplifier

## Outline

TO-92 (1)




1. Emitter
2. Collector
3. Base

Hitachi semiconductor

## Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | 2SC2545 | 2SC2546 | 2SC2547 | Unit |
|---|---|---|---|---|---|
| Collector to base voltage | $V_{CBO}$ | 60 | 90 | 120 | V |
| Collector to emitter voltage | $V_{CEO}$ | 60 | 90 | 120 | V |
| Emitter to base voltage | $V_{EBO}$ | 5 | 5 | 5 | V |
| Collector current | $I_C$ | 100 | 100 | 100 | mA |
| Emitter current | $I_E$ | –100 | –100 | –100 | mA |
| Collector power dissipation | $P_C$ | 400 | 400 | 400 | mW |
| Junction temperature | Tj | 150 | 150 | 150 | °C |
| Storage temperature | Tstg | –55 to +150 | –55 to +150 | –55 to +150 | °C |

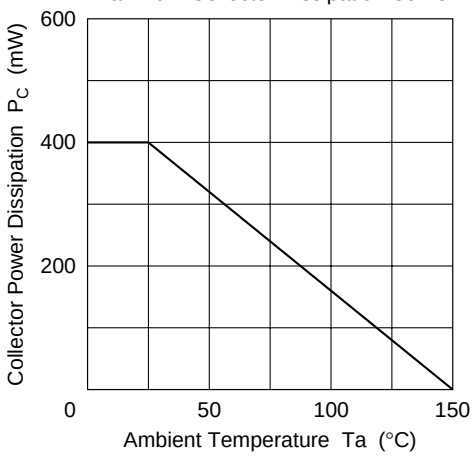
## Electrical Characteristics (Ta = 25°C)

| Item | Symbol | 2SC2545 | | | 2SC2546 | | | 2SC2547 | | | Unit | Test conditions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Typ | Max | Min | Typ | Max | | |
| Collector to base breakdown voltage | $V_{(BR)CBO}$ | 60 | — | — | 90 | — | — | 120 | — | — | V | $I_C$ = 10 µA, $I_E$ = 0 |
| Collector to emitter breakdown voltage | $V_{(BR)CEO}$ | 60 | — | — | 90 | — | — | 120 | — | — | V | $I_C$ = 1 mA, $R_{BE}$ = ∞ |
| Emitter to base breakdown voltage | $V_{(BR)EBO}$ | 5 | — | — | 5 | — | — | 5 | — | — | V | $I_E$ = 10 µA, $I_C$ = 0 |
| Collector cutoff current | $I_{CBO}$ | — | — | 0.1 | — | — | 0.1 | — | — | 0.1 | µA | $V_{CB}$ = 50 V, $I_E$ = 0 |
| Emitter cutoff current | $I_{EBO}$ | — | — | 0.1 | — | — | 0.1 | — | — | 0.1 | µA | $V_{EB}$ = 2 V, $I_C$ = 0 |
| DC current transfer ratio | $h_{FE}$*[1] | 250 | — | 1200 | 250 | — | 1200 | 250 | — | 800 | | $V_{CE}$ = 12 V, $I_C$ = 2 mA |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | — | — | 0.2 | — | — | 0.2 | — | — | 0.2 | V | $I_C$ = 10 mA, $I_B$ = 1 mA |
| Base to emitter voltage | $V_{BE}$ | — | 0.6 | — | — | 0.6 | — | — | 0.6 | — | V | $V_{CE}$ = 12 V, $I_C$ = 2 mA |
| Gain bandwidth product | $f_T$ | — | 90 | — | — | 90 | — | — | 90 | — | MHz | $V_{CE}$ = 12 V, $I_C$ = 2 mA |
| Collector output capacitance | Cob | — | 3.0 | — | — | 3.0 | — | — | 3.0 | — | pF | $V_{CB}$ = 10 V, $I_E$ = 0, f = 1 MHz |
| Noise voltage referred input | $e_n$ | — | 0.5 | — | — | 0.5 | — | — | 0.5 | — | nV/$\sqrt{Hz}$ | $V_{CE}$ = 6V, $I_C$ = 10 mA, f = 1 kHz, $R_g$ = 0, Δf = 1Hz |

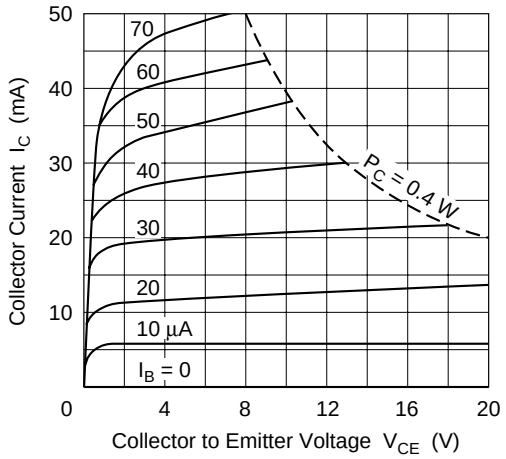
Note: 1. The 2SC2545, 2SC2546 and 2SC2547 are grouped by $h_{FE}$ as follows.

| | D | E | F |
|---|---|---|---|
| 2SC2545, 2SC2546 | 250 to 500 | 400 to 800 | 600 to 1200 |
| 2SC2547 | 250 to 500 | 400 to 800 | — |

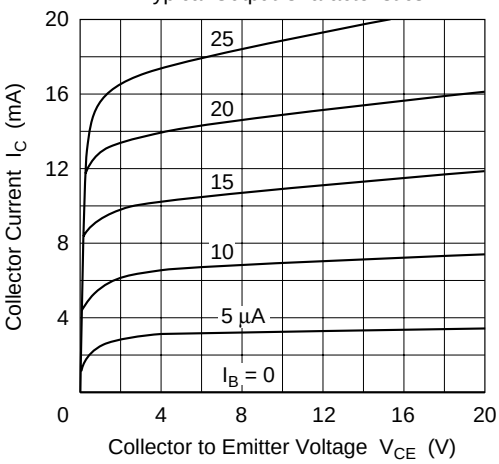
Maximum Collector Dissipation Curve



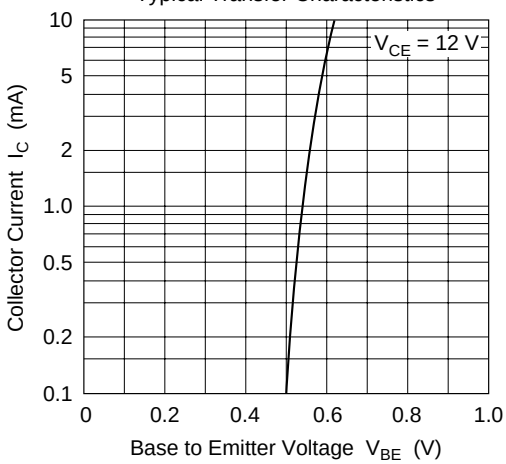

Typical Output Characteristics



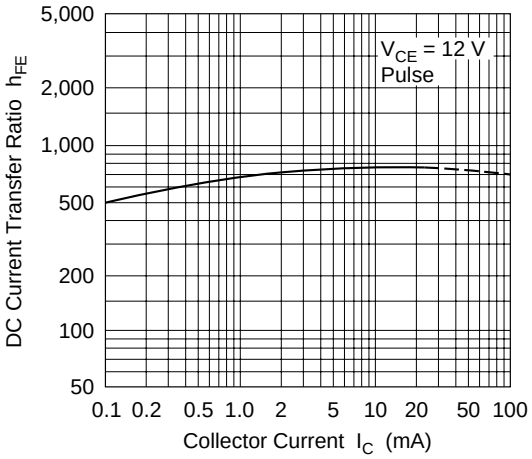

Typical Output Characteristics



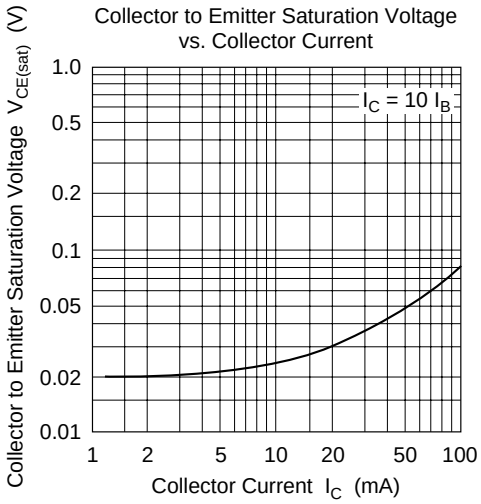

Typical Transfer Characteristics



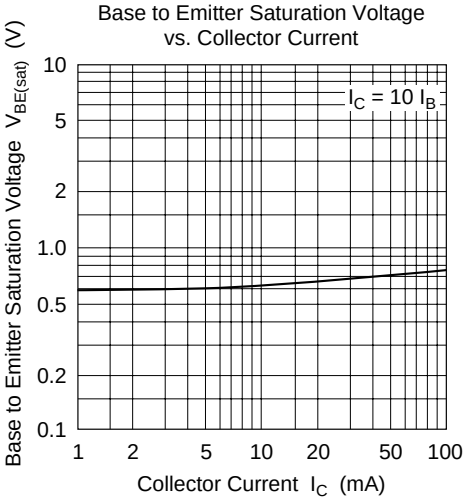
DC Current Transfer Ratio vs. Collector Current



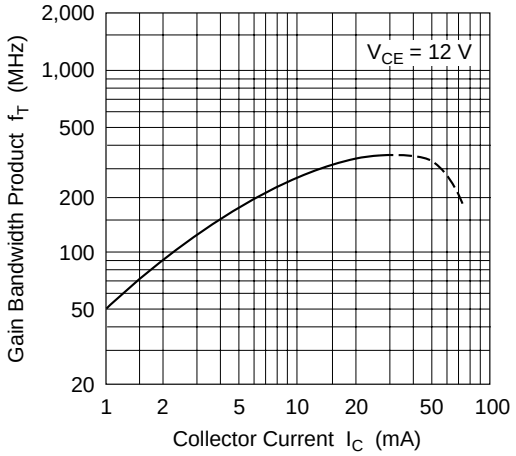

Collector to Emitter Saturation Voltage vs. Collector Current



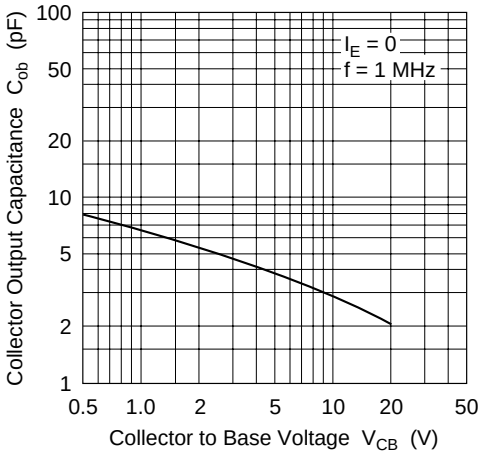

Base to Emitter Saturation Voltage vs. Collector Current



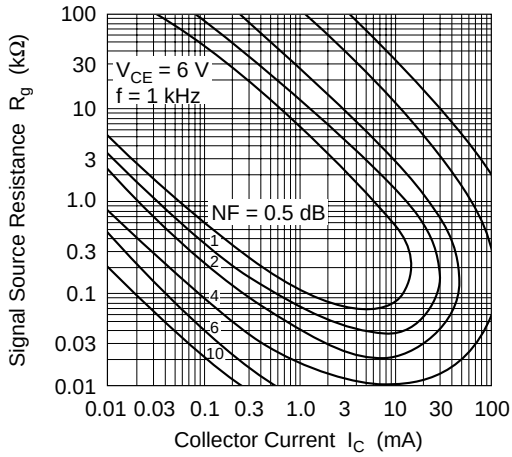

Gain Bandwidth Product vs. Collector Current



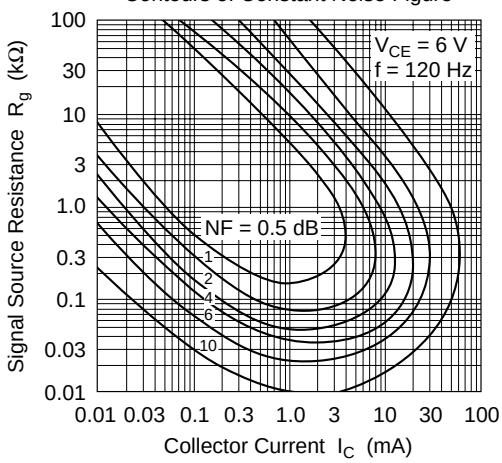
Collector Output Capacitance vs. Collector to Base Voltage



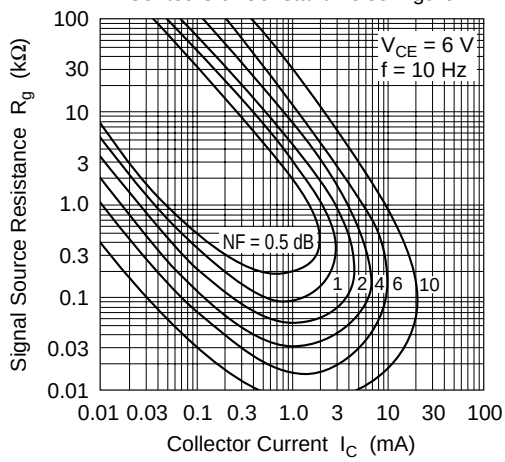

Contours of Constant Noise Figure




Contours of Constant Noise Figure

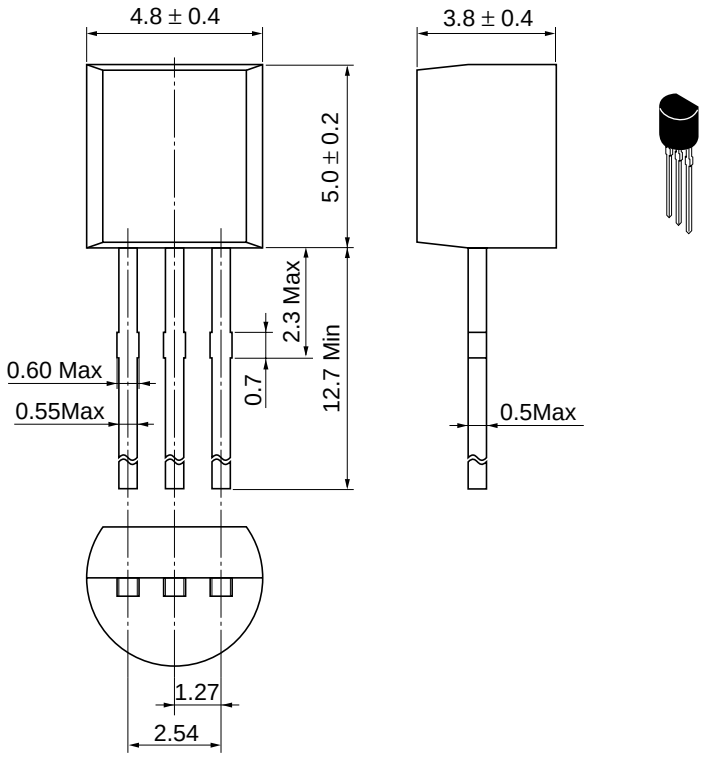



Contours of Constant Noise Figure



## Package Dimensions

As of January, 2001
Unit: mm




| | |
|---|---|
| Hitachi Code | TO-92 (1) |
| JEDEC | Conforms |
| EIAJ | Conforms |
| Mass (reference value) | 0.25 g |

## Cautions

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