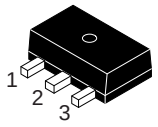
# RF Transistor

## 30 V, 300 mA, $f_T$ = 3.5 GHz, NPN Single PCP

# 2SC5551A




1: Base
2: Collector
3: Emitter

**SOT−89 / PCP−1**
**CASE 419AU**

### Features

- High $f_T$: ($f_T$ = 3.5 GHz Typ)
- Large Current: ($I_C$ = 300 mA)
- Large Allowable Collector Dissipation (1.3 W Max)
- These are Pb−Free Devices

### Product & Package Information

- Package: PCP
- JEITA, JEDEC: SC−62, SOT−89, TO−243
- Minimum Packing Quantity: 1,000 Pcs./Reel

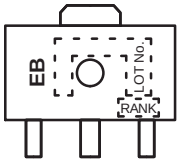
### Specifications

**ABSOLUTE MAXIMUM RATINGS** (at Ta = 25°C)

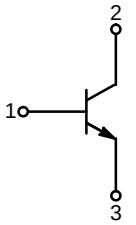
| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Collector−to−Base Voltage | $V_{CBO}$ | | 40 | V |
| Collector−to−Emitter Voltage | $V_{CEO}$ | | 30 | V |
| Emitter−to−Base Voltage | $V_{EBO}$ | | 2 | V |
| Collector Current | $I_C$ | | 300 | mA |
| Collector Current (Pulse) | $I_{CP}$ | | 600 | mA |
| Collector Dissipation | $P_C$ | When mounted on ceramic substrate (250 $mm^2$ x 0.8 mm) | 1.3 | W |
| Junction Temperature | Tj | | 150 | °C |
| Storage Temperature | Tstg | | −55 to +150 | °C |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### MARKING DIAGRAM




### ELECTRICAL CONNECTION




### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| 2SC5551AE−TD−E | PCP (Pb−Free) | 1,000 / Tape & Reel |
| 2SC5551AF−TD−E | PCP (Pb−Free) | 1,000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**ELECTRICAL CHARACTERISTICS** (at Ta = 25°C)

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min | Typ | Max | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$ = 20 V, $I_E$ = 0 A | − | − | 1.0 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$ = 1 V, $I_C$ = 0 A | − | − | 5.0 | μA |
| DC Current Gain | $h_{FE}1$ | $V_{CE}$ = 5 V, $I_C$ = 50 mA | 90 | − | 270 | |
| | $h_{FE}2$ | $V_{CE}$ = 5 V, $I_C$ = 300 mA | 20 | − | − | |
| Gain−Bandwidth Product | $f_T$ | $V_{CE}$ = 5 V, $I_C$ = 50 mA | − | 3.5 | − | GHz |
| Output Capacitance | Cob | $V_{CB}$ = 10 V, f = 1 MHz | − | 2.9 | 4.0 | pF |
| Reverse Transfer Capacitance | Cre | | − | 1.5 | | pF |
| Collector−to−Emitter Saturation Voltage | $V_{CE}$(sat) | $I_C$ = 50 mA, $I_B$ = 5 mA | − | 0.07 | 0.3 | V |
| Base−to−Emitter Saturation Voltage | $V_{BE}$(sat) | $I_C$ = 50 mA, $I_B$ = 5 mA | − | 0.8 | 1.2 | V |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
*The 2SC5551A is classified by 50 mA $h_{FE}$ as follows :

**Table 1.**

| Rank | E | F |
|---|---|---|
| $h_{FE}$ | 90 to 180 | 135 to 270 |

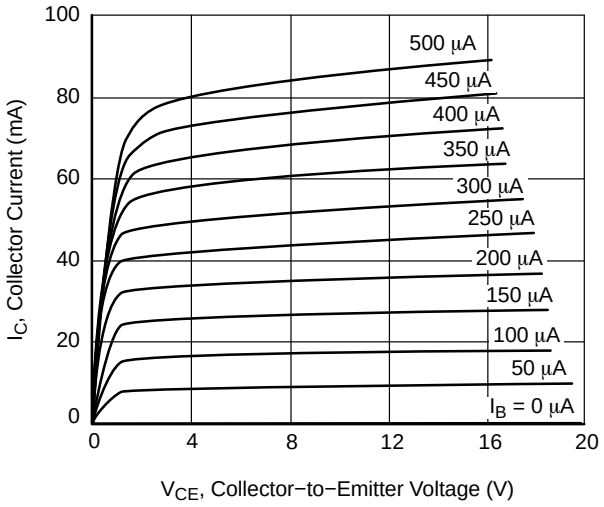



**Figure 1. $I_C$ − $V_{CE}$**

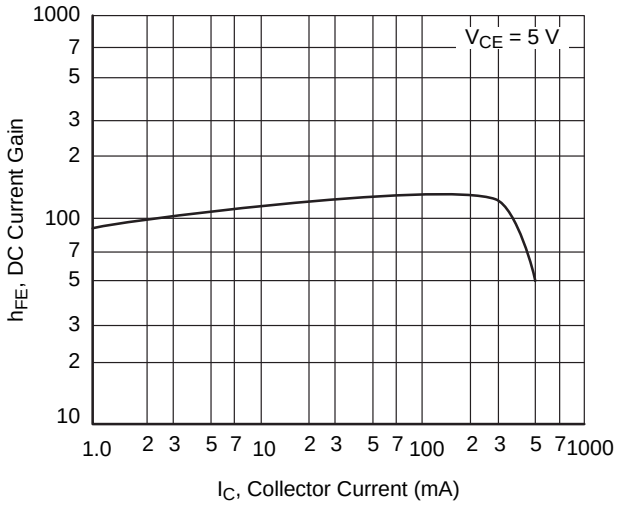



**Figure 2. $h_{FE}$− $I_C$**

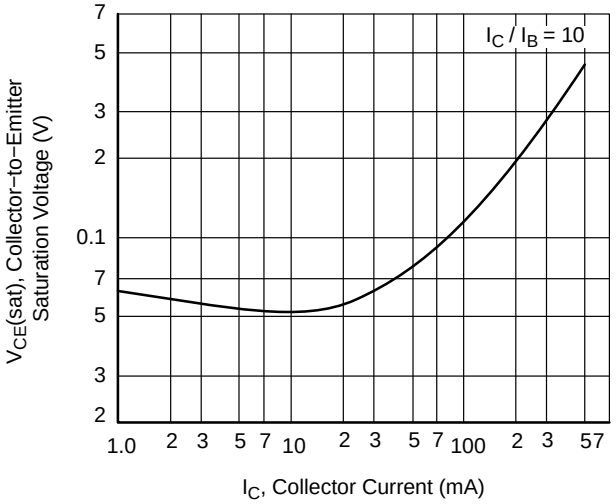



**Figure 3. $V_{CE}$(sat) − $I_C$**

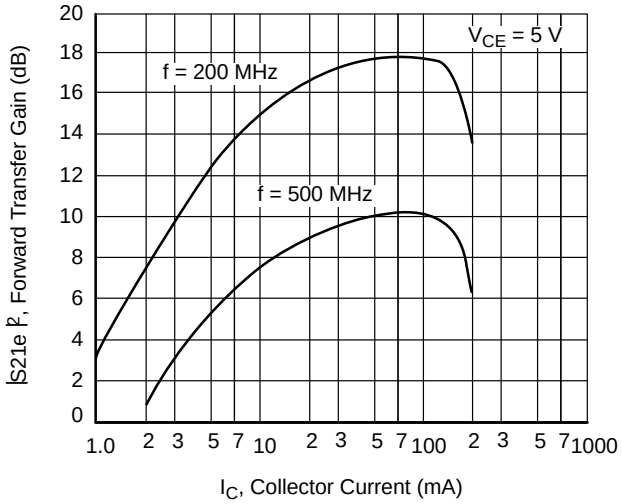



**Figure 4. |S21e|² − $I_C$**

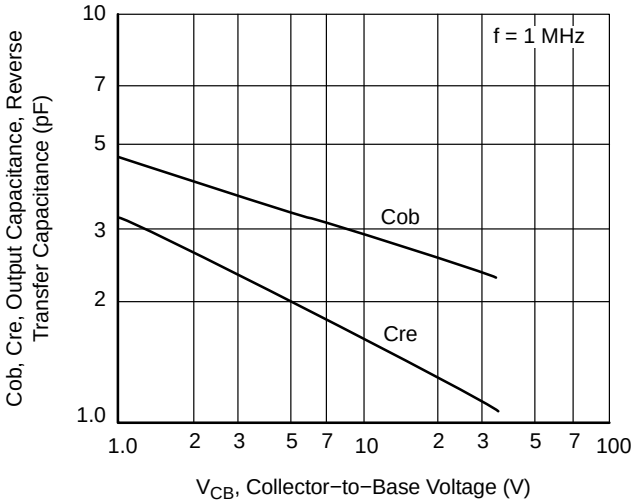



**Figure 5. Cob, Cre − $V_{CB}$**

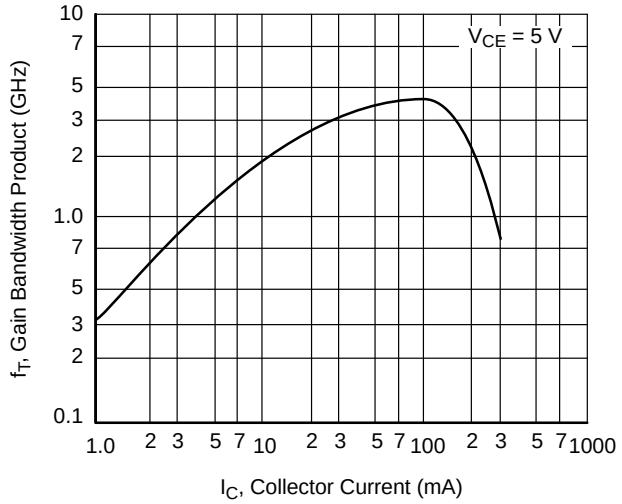



**Figure 6. $f_T$ − $I_C$**

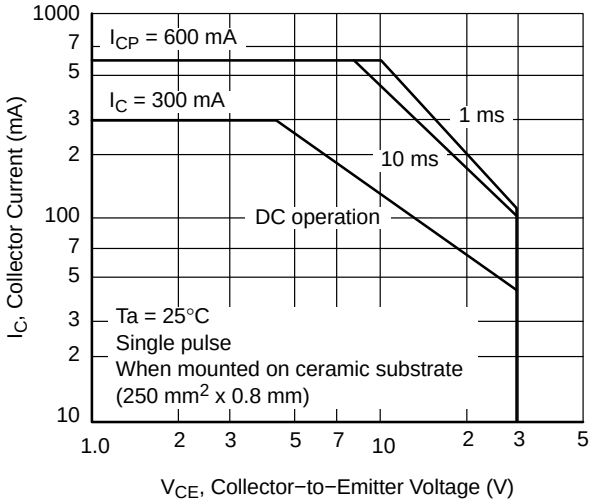



**Figure 7. ASO**

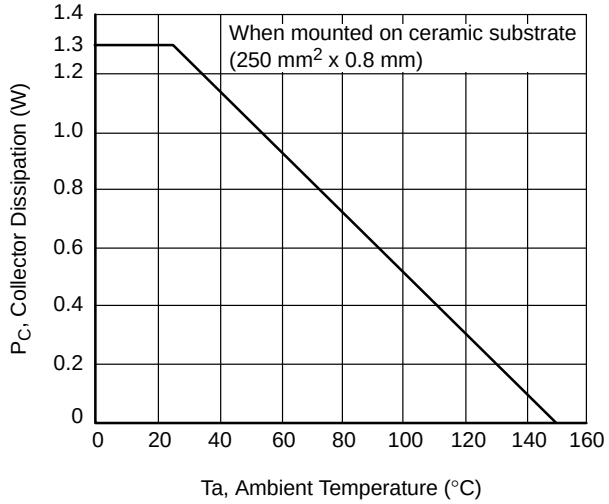



**Figure 8. $P_C$ − Ta**

**Land Pattern Example**

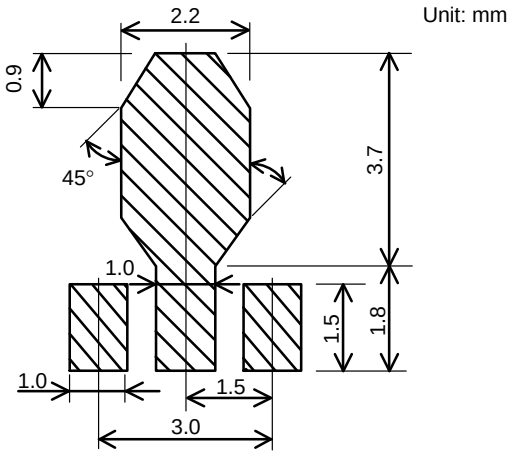



**Figure 9. Land Pattern Example**

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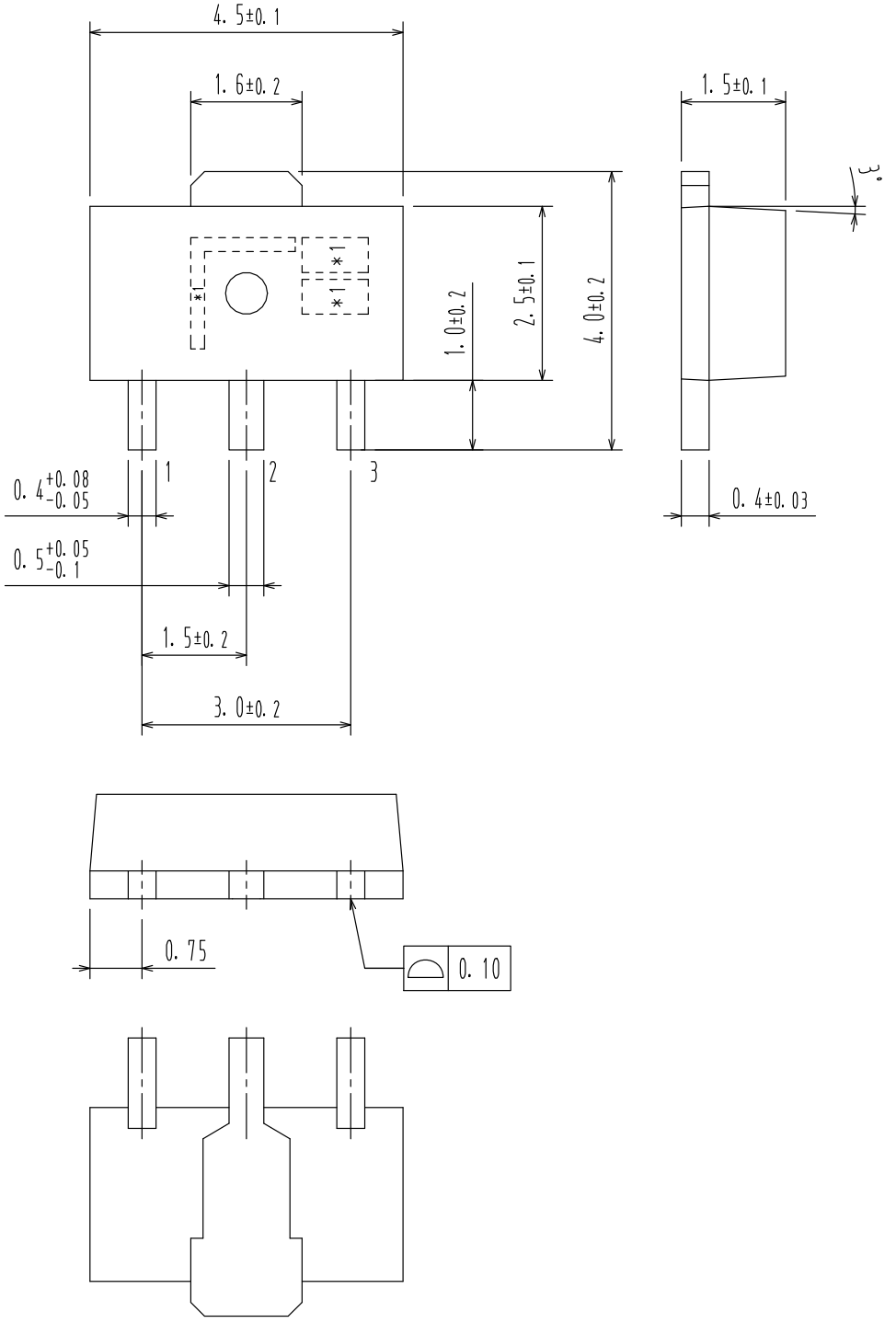


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