

RF Transistor

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

2SC5551A

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

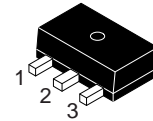
- Package: PCP
- JEITA, JEDEC: SC-62, SOT-89, TO-243
- Minimum Packing Quantity: 1,000 Pcs./Reel

Specifications

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

| 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 | T_J | | 150 | °C |
| Storage Temperature | T_{stg} | | -55 to +150 | °C |

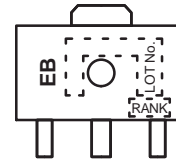
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



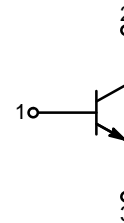
- 1: Base
- 2: Collector
- 3: Emitter

SOT-89 / PCP-1
CASE 419AU

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.

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

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|--|---------|------|-----|---------------|
| | | | Min | Typ | Max | |
| Collector Cutoff Current | I_{CBO} | $V_{CB} = 20\text{ V}, I_E = 0\text{ A}$ | – | – | 1.0 | μA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 1\text{ V}, I_C = 0\text{ A}$ | – | – | 5.0 | μA |
| DC Current Gain | h_{FE1} | $V_{CE} = 5\text{ V}, I_C = 50\text{ mA}$ | 90 | – | 270 | |
| | h_{FE2} | $V_{CE} = 5\text{ V}, I_C = 300\text{ mA}$ | 20 | – | – | |
| Gain–Bandwidth Product | f_T | $V_{CE} = 5\text{ V}, I_C = 50\text{ mA}$ | – | 3.5 | – | GHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$ | – | 2.9 | 4.0 | pF |
| Reverse Transfer Capacitance | C_{re} | | – | 1.5 | | pF |
| Collector–to–Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 50\text{ mA}, I_B = 5\text{ mA}$ | – | 0.07 | 0.3 | V |
| Base–to–Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C = 50\text{ mA}, I_B = 5\text{ mA}$ | – | 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 |

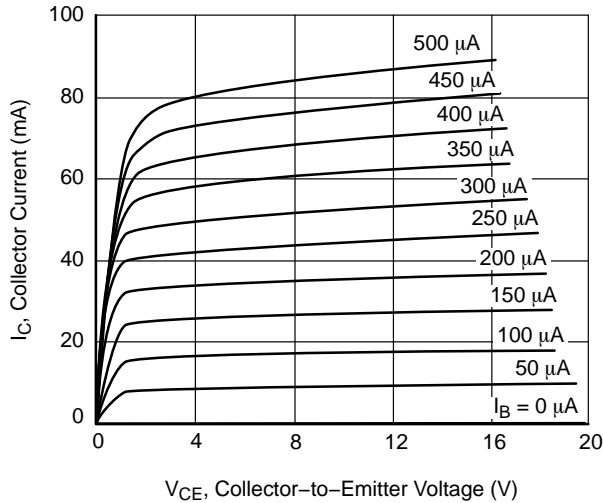


Figure 1. $I_C - V_{CE}$

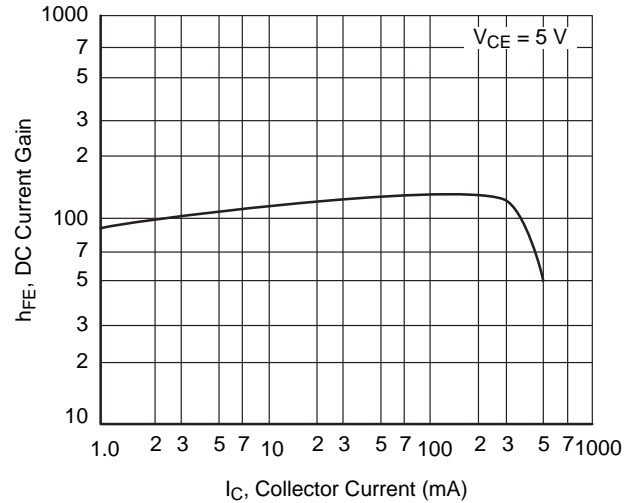


Figure 2. $h_{FE} - I_C$

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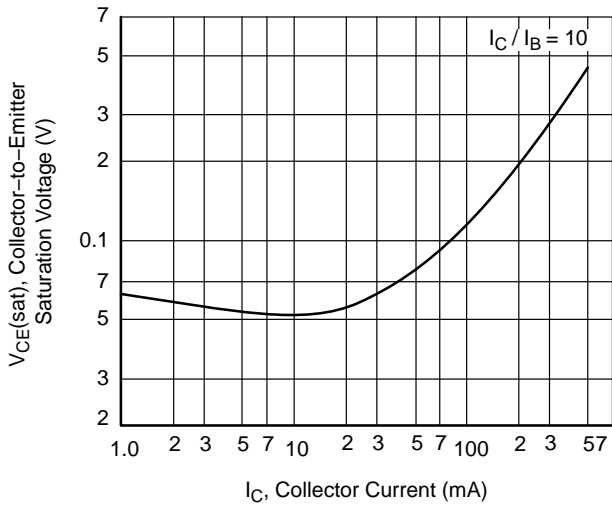


Figure 3. $V_{CE(sat)}$ – I_C

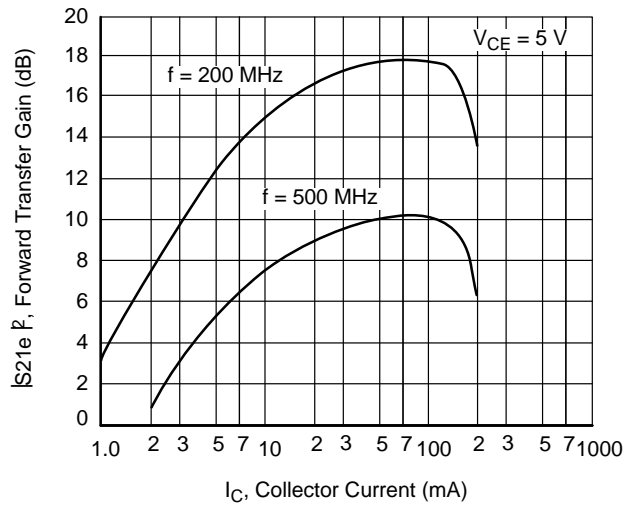


Figure 4. $|S_{21e}|^2$ – I_C

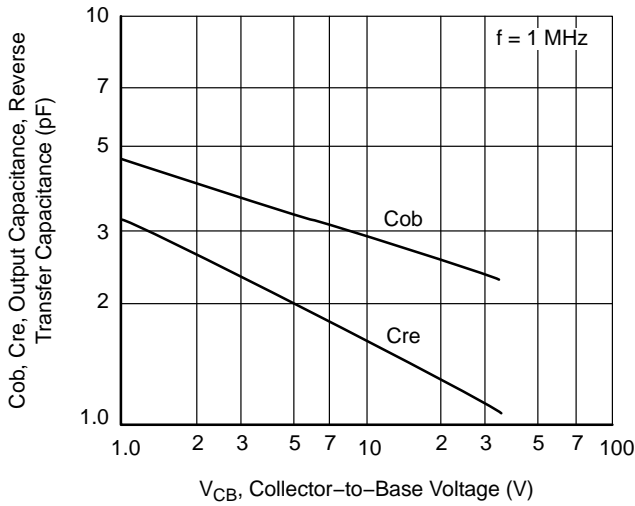


Figure 5. C_{ob} , C_{re} – V_{CB}

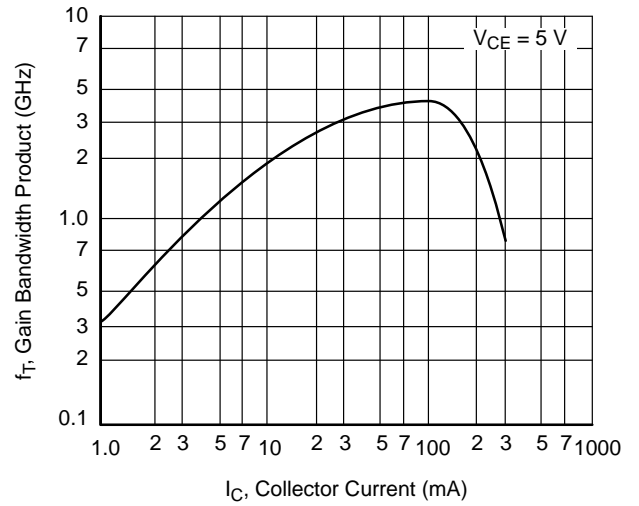


Figure 6. f_T – I_C

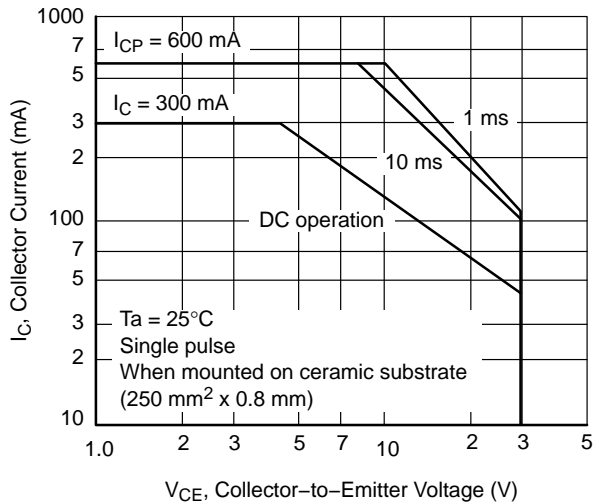


Figure 7. ASO

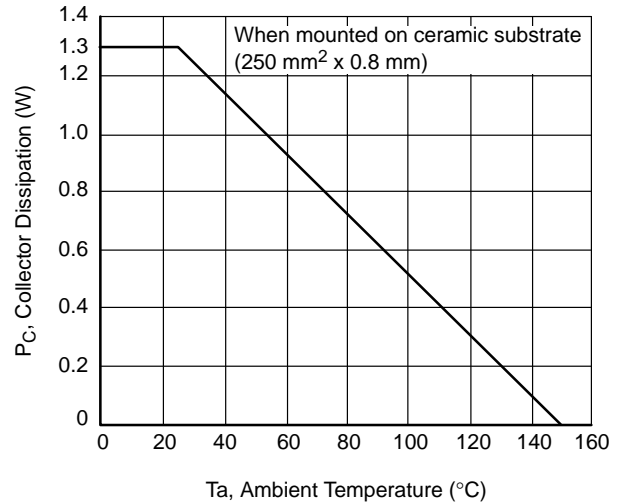


Figure 8. P_C – T_a

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Land Pattern Example

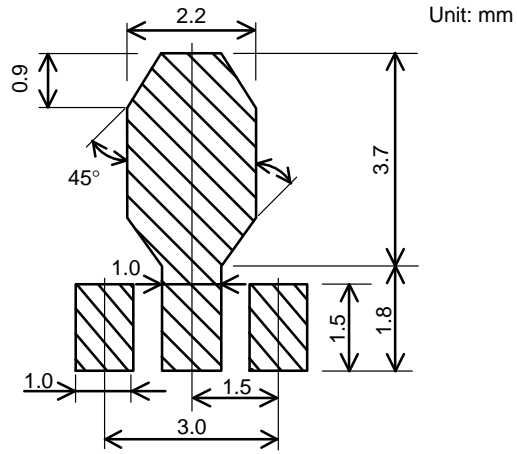
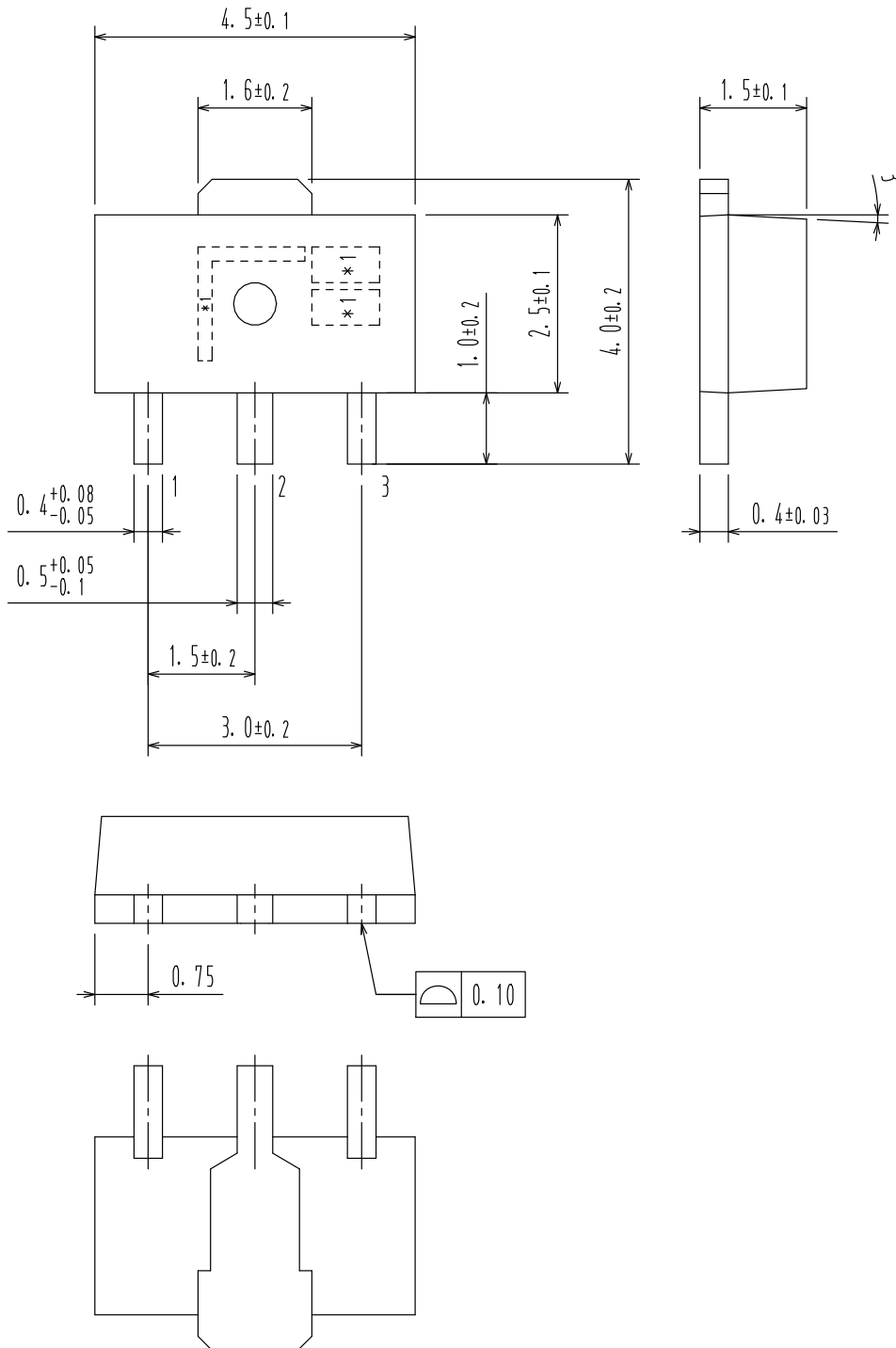


Figure 9. Land Pattern Example

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