

# 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

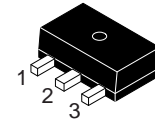
- Package: PCP
- JEITA, JEDEC: SC-62, SOT-89, TO-243
- Minimum Packing Quantity: 1,000 Pcs./Reel

### 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 <sup>2</sup> x 0.8 mm)	1.3	W
Junction Temperature	$T_J$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

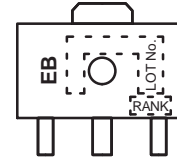
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



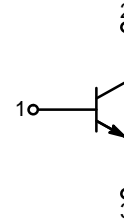
- 1: Base  
2: Collector  
3: Emitter

SOT-89 / PCP-1  
CASE 419AU

### MARKING DIAGRAM



### ELECTRICAL CONNECTION



### ORDERING INFORMATION

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

<sup>†</sup>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.

# 2SC5551A

## ELECTRICAL CHARACTERISTICS (at Ta = 25°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	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 1 \text{ V}, I_C = 0 \text{ A}$	–	–	5.0	$\mu\text{A}$
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

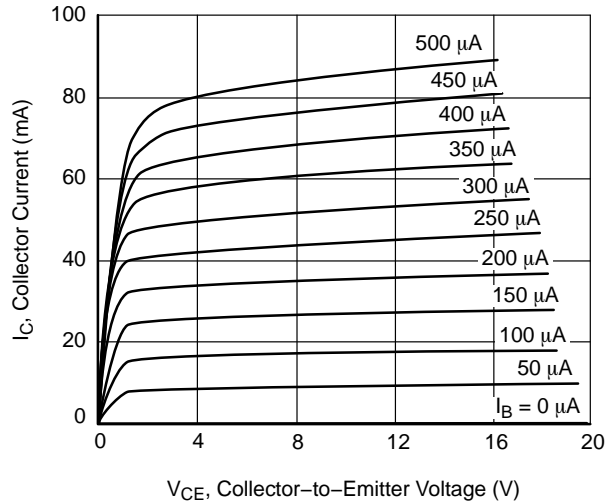


Figure 1.  $I_C - V_{CE}$

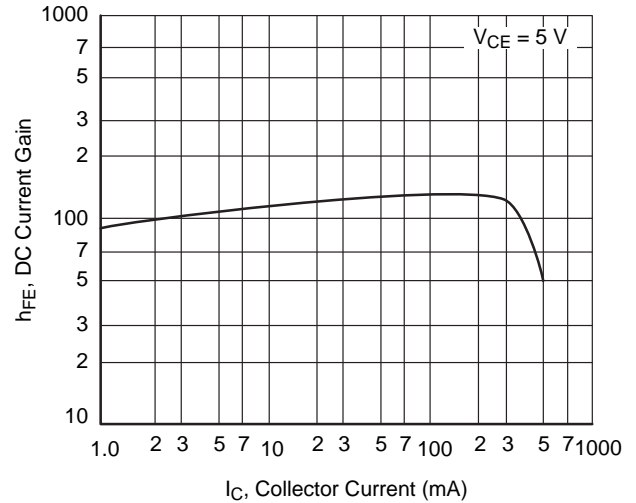


Figure 2.  $h_{FE} - I_C$

## 2SC5551A

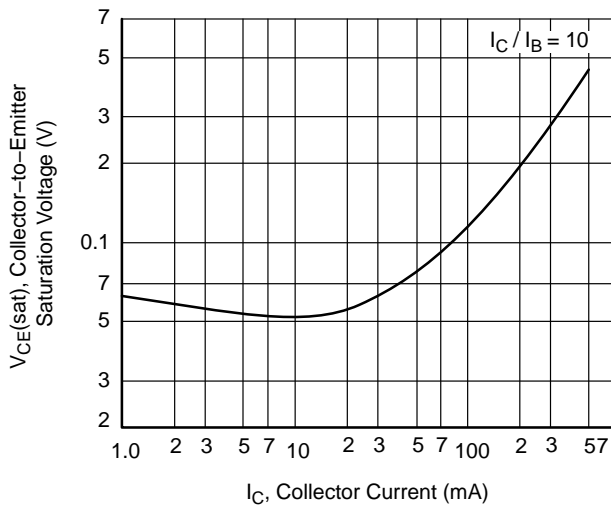


Figure 3.  $V_{CE(sat)} - I_C$

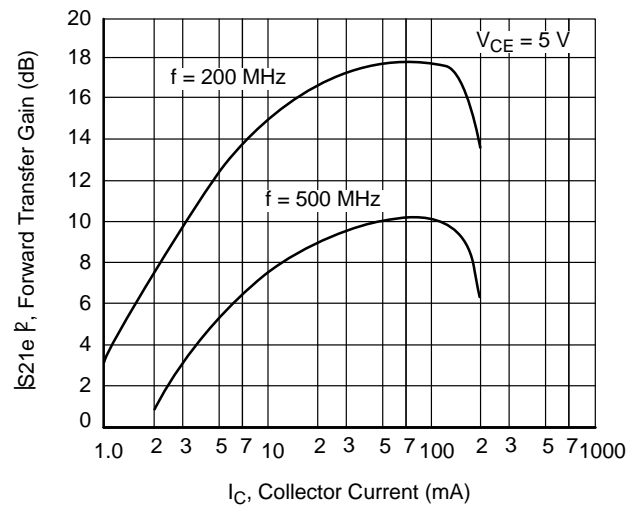


Figure 4.  $|S21e|^2 - I_C$

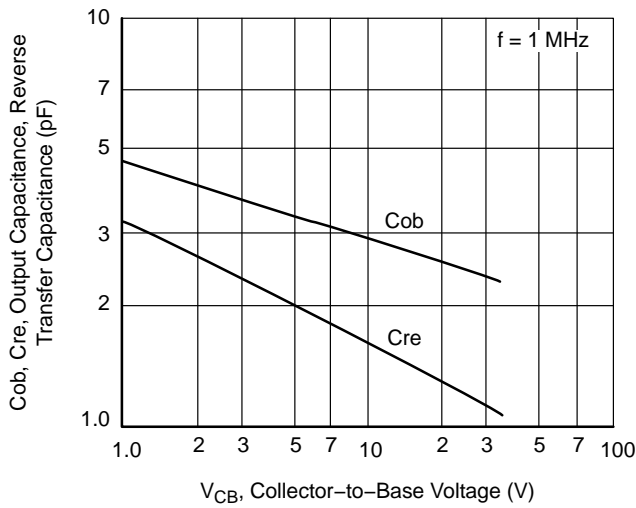


Figure 5.  $C_{ob}, C_{re} - V_{CB}$

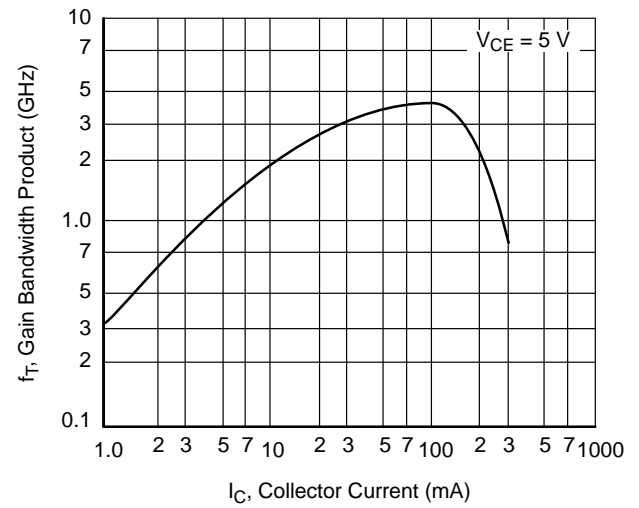


Figure 6.  $f_T - I_C$

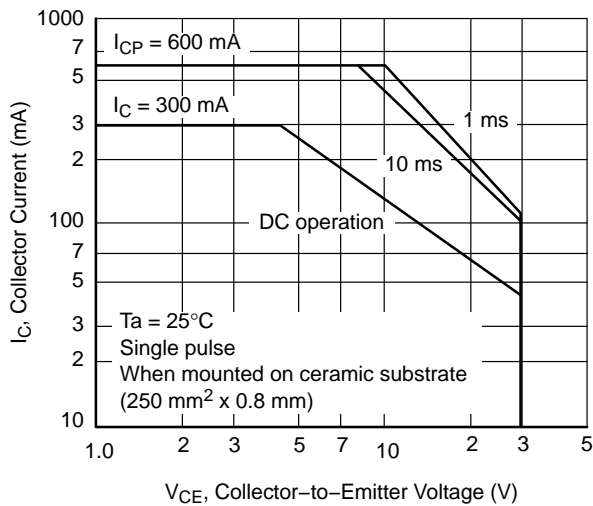


Figure 7. ASO

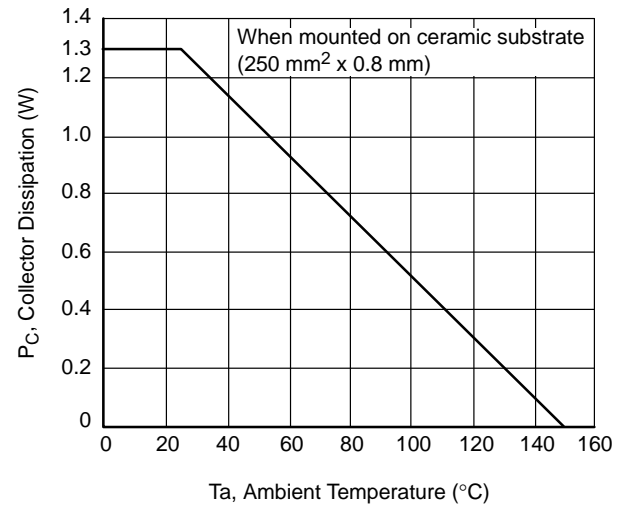
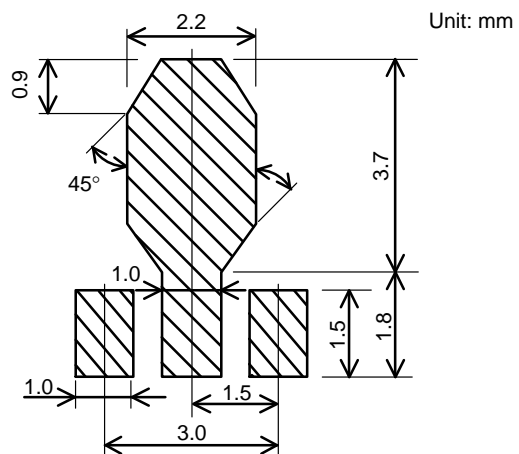


Figure 8.  $P_C - T_a$



# MECHANICAL CASE OUTLINE

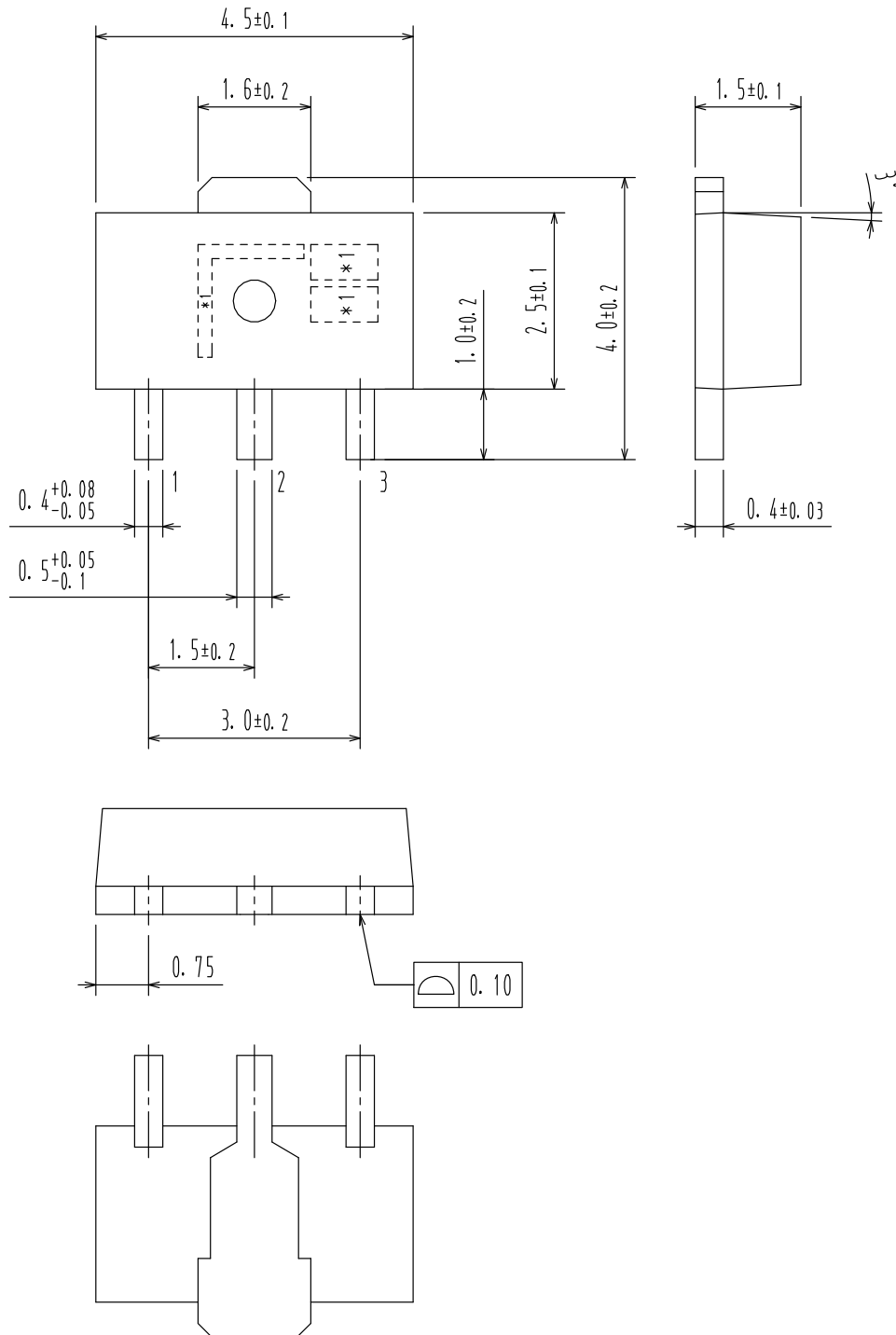
## PACKAGE DIMENSIONS

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DATE 30 APR 2012



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