

# DATA SHEET

# NEC

## NPN SILICON RF TRANSISTOR **2SC4570**

### NPN EPITAXIAL SILICON RF TRANSISTOR FOR UHF TUNER OSC/MIX 3-PIN SUPER MINIMOLD

#### DESCRIPTION

The 2SC4570 is a low supply voltage transistor designed for UHF OSC/MIX. It is suitable for a high density surface mount assembly since the transistor has been applied super minimold package.

#### FEATURES

- High Gain Bandwidth Product  
 $f_T = 5.5 \text{ GHz TYP. @ } V_{CE} = 5 \text{ V, } I_C = 5 \text{ mA, } f = 1 \text{ GHz}$
- Low Output Capacitance  
 $C_{ob} = 0.7 \text{ pF TYP. @ } V_{CB} = 5 \text{ V, } I_E = 0 \text{ mA, } f = 1 \text{ MHz}$
- 3-pin super minimold Package

#### ★ ORDERING INFORMATION

Part Number	Quantity	Supplying Form
2SC4570	50 pcs (Non reel)	<ul style="list-style-type: none"> <li>• 8 mm wide embossed taping</li> <li>• Pin 3 (collector) face to perforation side of the tape</li> </ul>
2SC4570-T1	3 kpcs/reel	

**Remark** To order evaluation samples, contact your nearby sales office.  
 The unit sample quantity is 50 pcs.

#### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = +25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V <sub>CBO</sub>	20	V
Collector to Emitter Voltage	V <sub>CEO</sub>	12	V
Emitter to Base Voltage	V <sub>EBO</sub>	3	V
Collector Current	I <sub>C</sub>	30	mA
Total Power Dissipation	P <sub>tot</sub> <small>Note</small>	120	mW
Junction Temperature	T <sub>j</sub>	125	°C
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C

**Note** Free air

**Caution** Observe precautions when handling because these devices are sensitive to electrostatic discharge.

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 Not all devices/types available in every country. Please check with local NEC Compound Semiconductor Devices representative for availability and additional information.

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = +25°C)**

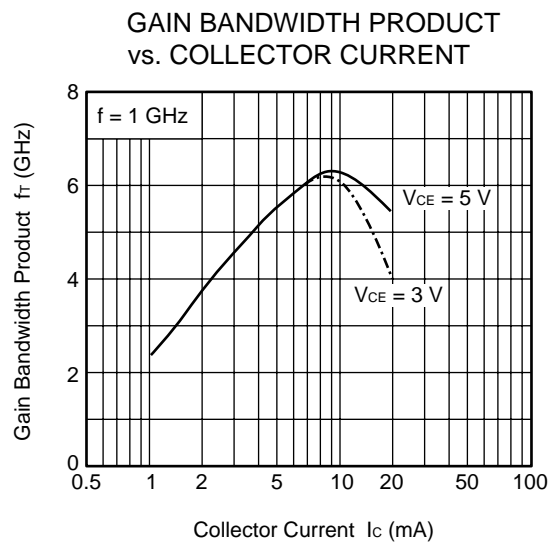
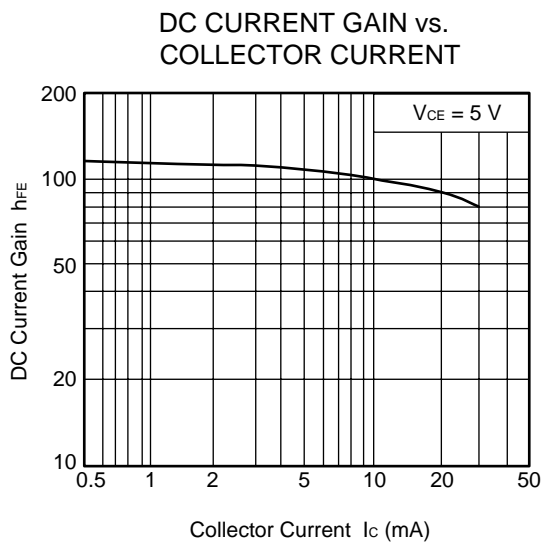
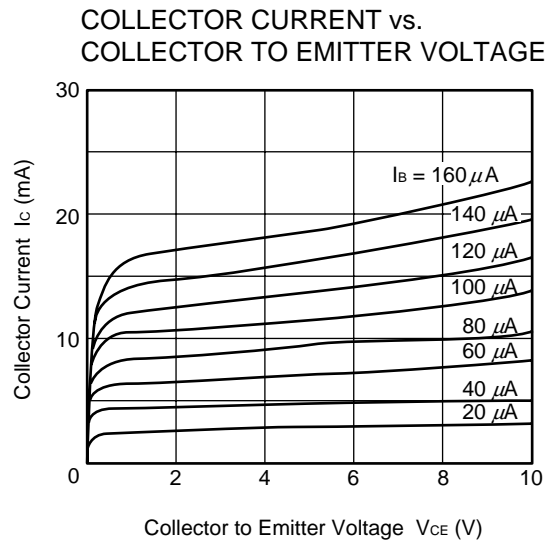
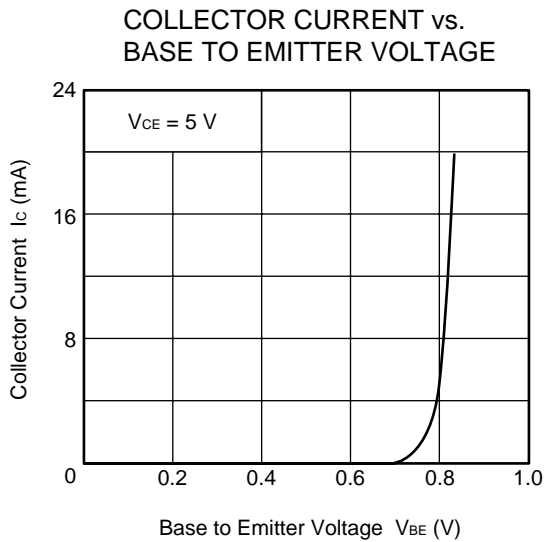
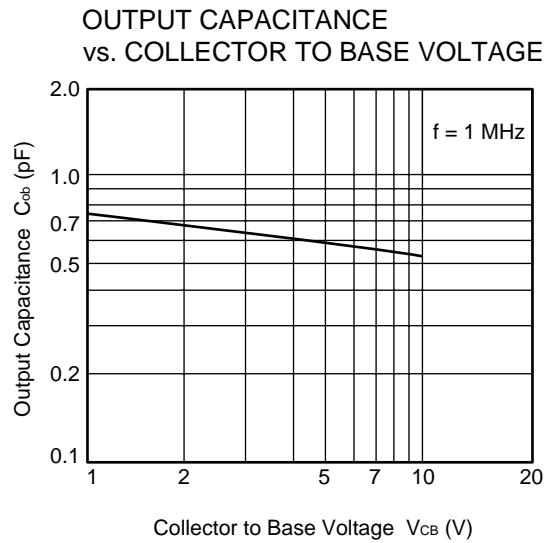
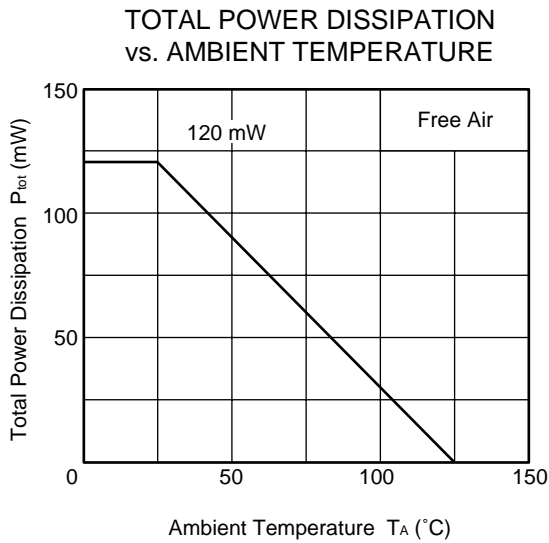
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I <sub>CBO</sub>	V <sub>CB</sub> = 15 V, I <sub>E</sub> = 0 mA	–	–	100	nA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0 mA	–	–	100	nA
Collector Saturation Voltage	V <sub>CE(sat)</sub>	h <sub>FE</sub> = 10, I <sub>C</sub> = 5 mA	–	–	0.5	V
DC Current Gain	h <sub>FE</sub> <sup>Note 1</sup>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 mA	40	100	200	–
RF Characteristics						
Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 mA, f = 1.0 GHz	–	5.5	–	GHz
Insertion Power Gain	S <sub>21e</sub>   <sup>2</sup>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 mA, f = 1.0 GHz	5.0	–	–	dB
Output Capacitance	C <sub>ob</sub> <sup>Note 2</sup>	V <sub>CB</sub> = 5 V, I <sub>E</sub> = 0 mA, f = 1.0 MHz	–	0.7	0.9	pF

- Notes 1.** Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%  
**2.** Collector to base capacitance when the emitter grounded

**h<sub>FE</sub> CLASSIFICATION**

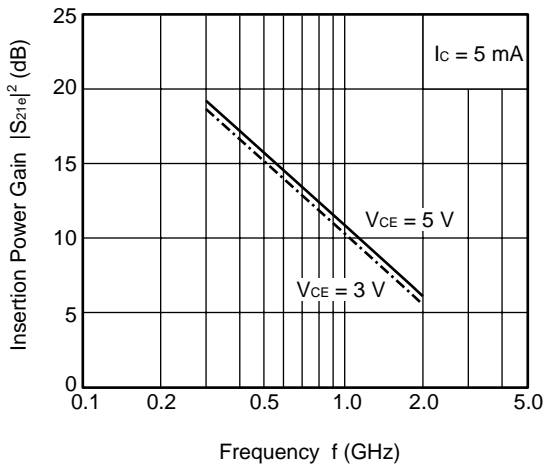
Rank	T72	T73	T74
Marking	T72	T73	T74
h <sub>FE</sub> Value	40 to 80	60 to 120	100 to 200

**TYPICAL CHARACTERISTICS ( $T_A = +25^\circ\text{C}$ , unless otherwise specified)**

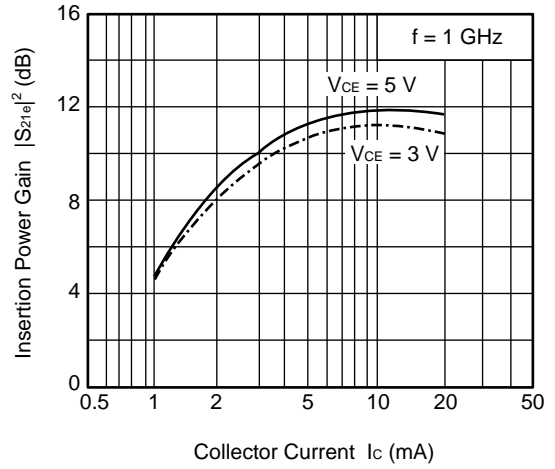


**Remark** The graphs indicate nominal characteristics.

INSERTION POWER GAIN vs. FREQUENCY



INSERTION POWER GAIN vs. COLLECTOR CURRENT



**Remark** The graphs indicate nominal characteristics.

★ **S-PARAMETERS**

S-parameters/Noise parameters are provided on the NEC Compound Semiconductor Devices Web site in a form (S2P) that enables direct import to a microwave circuit simulator without keyboard input.

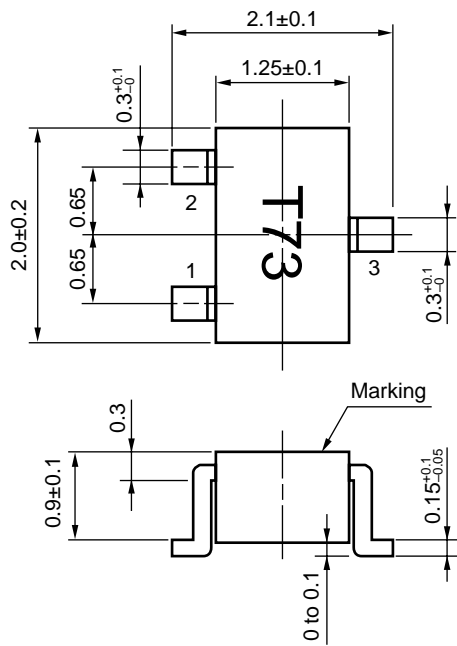
Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

URL <http://www.ncsd.necel.com/>

★ PACKAGE DIMENSIONS

3-PIN SUPER MINIMOLD PACKAGE (UNIT: mm)



**PIN CONNECTIONS**

1. Emitter
2. Base
3. Collector

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