To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: http://www.renesas.com

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (http://www.renesas.com)

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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 GHz TYP. @ V_{CE} = 5 V, I_C = 5 mA, f = 1 GHz
- Low Output Capacitance
  C_{ob} = 0.7 pF TYP. @ V_{CB} = 5 V, I_E = 0 mA, f = 1 MHz
- 3-pin super minimold Package

★ ORDERING INFORMATION

Part Number	Quantity	Supplying Form
2SC4570	50 pcs (Non reel)	• 8 mm wide embossed taping
2SC4570-T1	3 kpcs/reel	• Pin 3 (collector) face to perforation side of the tape

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

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	12	V
Emitter to Base Voltage	V_{EBO}	3	V
Collector Current	I_C	30	mA
Total Power Dissipation	P_{tot} Note	120	mW
Junction Temperature	T_j	125	°C
Storage Temperature	T_{stg}	–55 to +125	°C

Note Free air

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

Document No. PU10514EJ01V0DS (1st edition)
(Previous No. P10408EJ2V0DS00)
Date Published October 2004 CP(K)
Printed in Japan

The mark ★ shows major revised points.

ELECTRICAL CHARACTERISTICS (T_A = +25°C)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I_{CBO}	V_{CB} = 15 V, I_E = 0 mA	–	–	100	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_C = 0 mA	–	–	100	nA
Collector Saturation Voltage	$V_{CE(sat)}$	h_{FE} = 10, I_C = 5 mA	–	–	0.5	V
DC Current Gain	h_{FE} Note 1	V_{CE} = 5 V, I_C = 5 mA	40	100	200	–
RF Characteristics						
Gain Bandwidth Product	f_T	V_{CE} = 5 V, I_C = 5 mA, f = 1.0 GHz	–	5.5	–	GHz
Insertion Power Gain	$\lvert S_{21e} \rvert^2$	V_{CE} = 5 V, I_C = 5 mA, f = 1.0 GHz	5.0	–	–	dB
Output Capacitance	C_{ob} Note 2	V_{CB} = 5 V, I_E = 0 mA, f = 1.0 MHz	–	0.7	0.9	pF

Notes 1. Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%

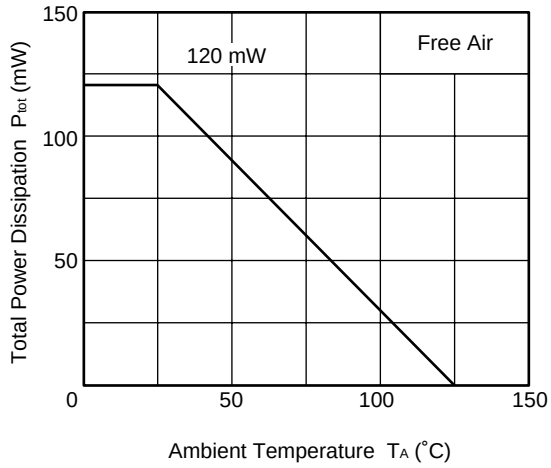
2. Collector to base capacitance when the emitter grounded

h_{FE} CLASSIFICATION

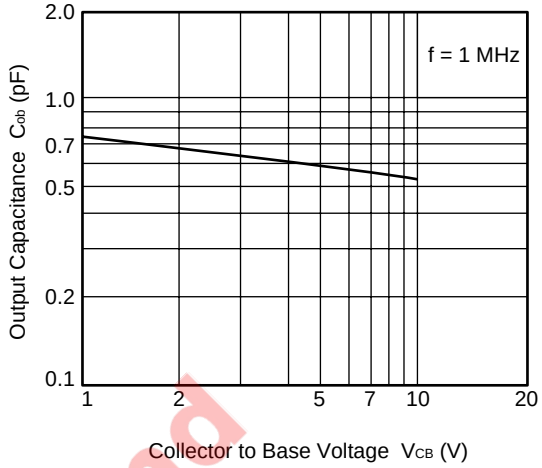
Rank	T72	T73	T74
Marking	T72	T73	T74
h_{FE} Value	40 to 80	60 to 120	100 to 200

TYPICAL CHARACTERISTICS (T_A = +25°C, unless otherwise specified)

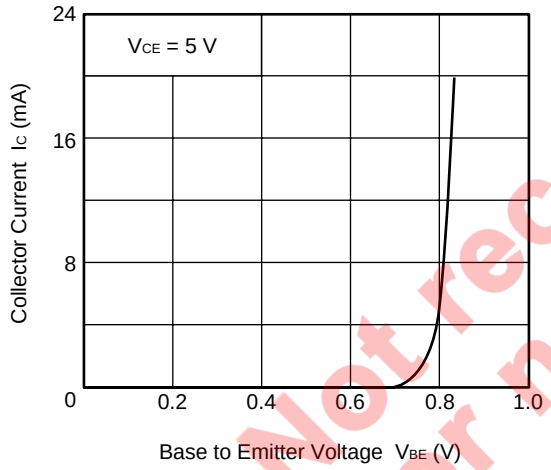
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



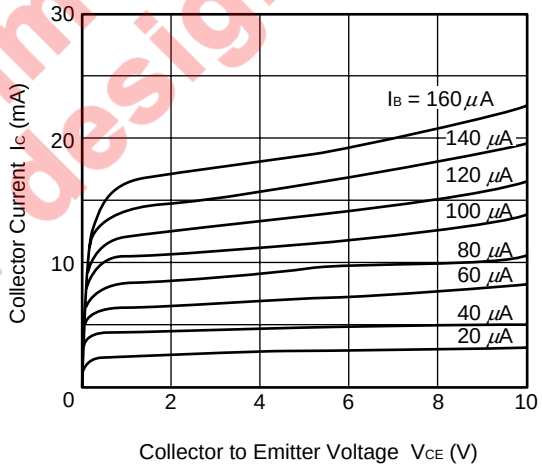
OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



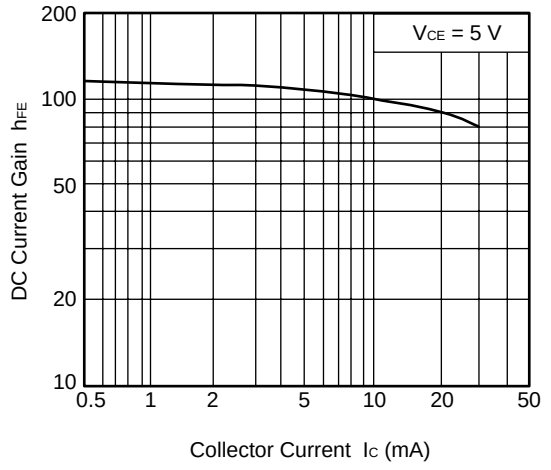
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



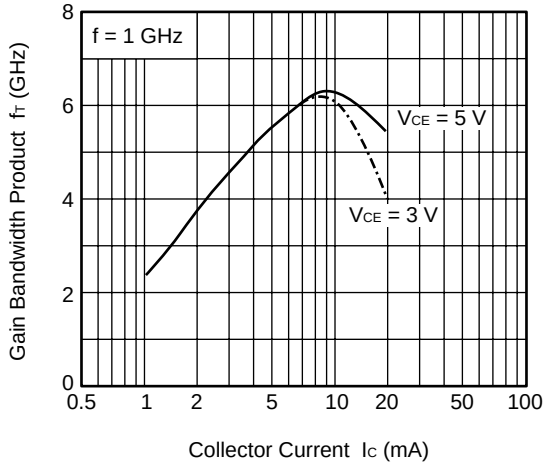
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



DC CURRENT GAIN vs. COLLECTOR CURRENT

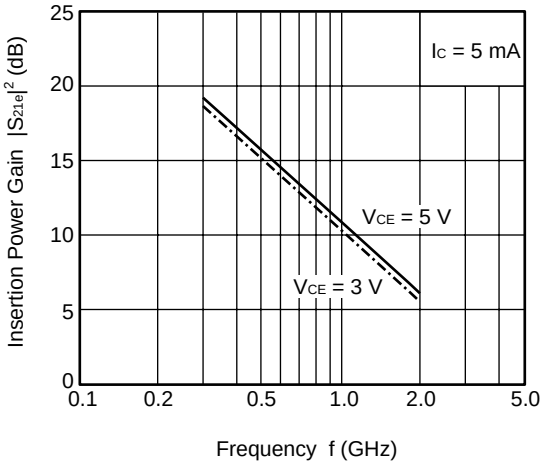


GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT

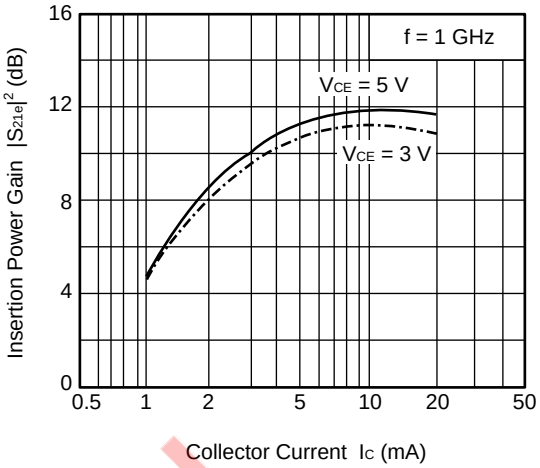


Remark The graphs indicate nominal characteristics.

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.

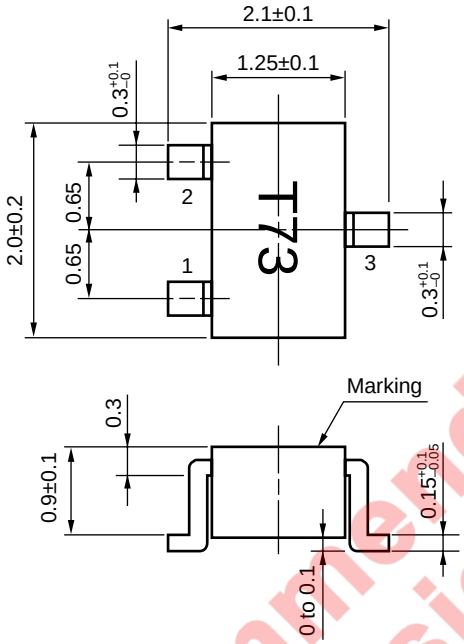
Click here to download S-parameters.

[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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M8E 00.4-0110

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