

# NE85630 / 2SC4226 JEITA Part No.

## Data Sheet

NPN Silicon RF Transistor

R09DS0022EJ0200

Rev.2.00

NPN Epitaxial Silicon RF Transistor for High-Frequency Low-Noise Amplification 3-pin super Minimold

Jun 29, 2011

### DESCRIPTION

The NE85630 / 2SC4226 is a low supply voltage transistor designed for VHF, UHF low noise amplifier. It is suitable for a high density surface mount assembly since the transistor has been applied 3-pin super minimold package.

### FEATURES

- Low noise :  $NF = 1.2 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_C = 7 \text{ mA, } f = 1 \text{ GHz}$
- High gain :  $|S_{21e}|^2 = 9 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_C = 7 \text{ mA, } f = 1 \text{ GHz}$
- 3-pin super minimold package

### <R> ORDERING INFORMATION

Part Number	Order Number	Package	Quantity	Supplying Form
NE85630 2SC4226	NE85630-A 2SC4226-A	3-pin super	50 pcs (Non reel)	• 8 mm wide embossed taping • Pin 3 (Collector) face the perforation side of the tape
NE85630-T1 2SC4226-T1	NE85630-T1-A 2SC4226-T1-A	Minimold (Pb-Free)	3 kpcs/reel	

**Remark** To order evaluation samples, please 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	$V_{CBO}$	20	V
Collector to Emitter Voltage	$V_{CEO}$	12	V
Emitter to Base Voltage	$V_{EBO}$	3	V
Collector Current	$I_C$	100	mA
Total Power Dissipation	$P_{tot}$ <sup>Note</sup>	150	mW
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-65 to +150	°C

**Note** Free air

### CAUTION

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

The mark <R> shows major revised points.

The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

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

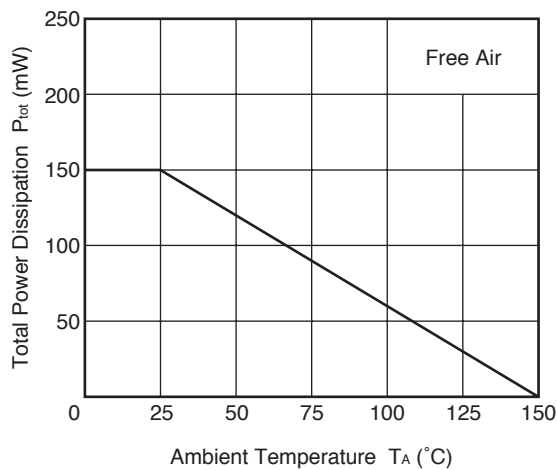
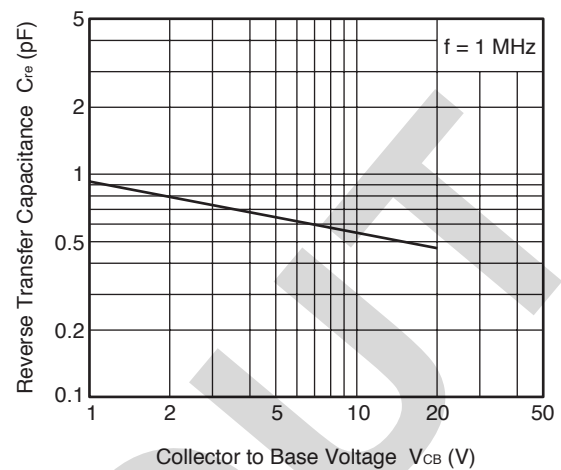
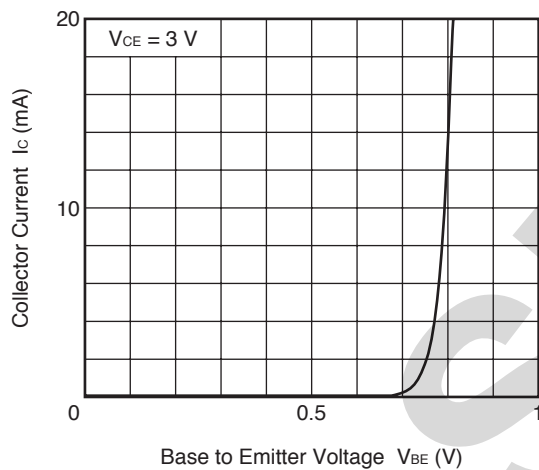
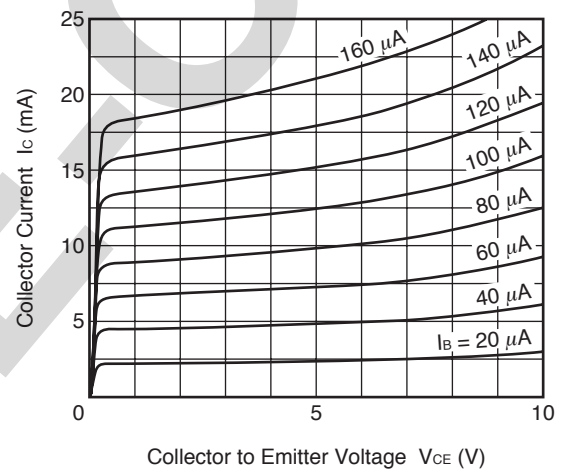
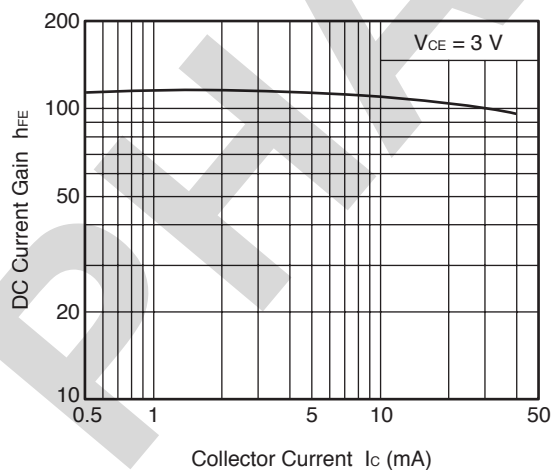
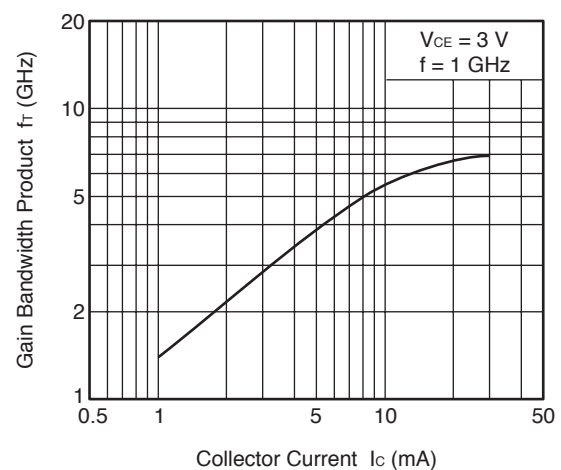
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I <sub>CBO</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0	–	–	1.0	μA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0	–	–	1.0	μA
DC Current Gain	h <sub>FE</sub> <sup>Note 1</sup>	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA	40	110	250	–
RF Characteristics						
Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA	3.0	4.5	–	GHz
Insertion Power Gain	S <sub>21e</sub>   <sup>2</sup>	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 1 GHz	7	9	–	dB
Noise Figure	NF	V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 1 GHz	–	1.2	2.5	dB
Reverse Transfer Capacitance	C <sub>re</sub> <sup>Note 2</sup>	V <sub>CB</sub> = 3 V, I <sub>E</sub> = 0, f = 1 MHz	–	0.7	1.5	pF

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

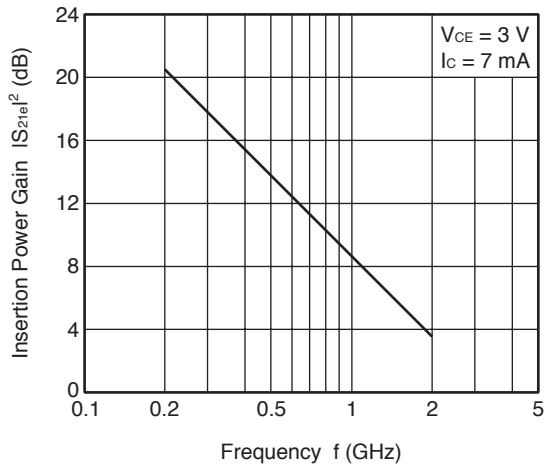
**2.** Collector to base capacitance when the emitter grounded

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

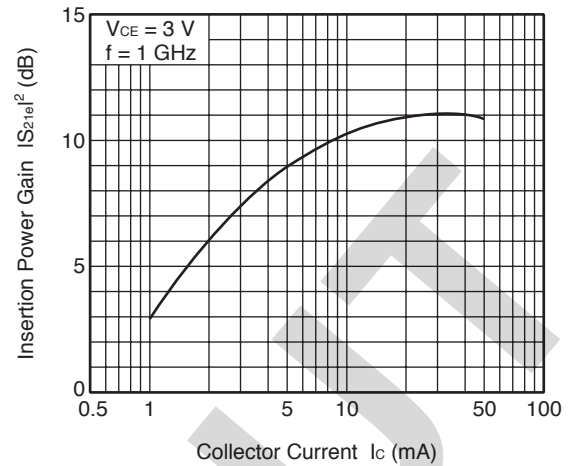
Rank	R23/Y23	R24/Y24	R25/Y25
Marking	R23	R24	R25
h <sub>FE</sub> Value	40 to 80	70 to 140	125 to 250

**TYPICAL CHARACTERISTICS ( $T_A = +25^\circ\text{C}$ , unless otherwise specified)****TOTAL POWER DISSIPATION  
vs. AMBIENT TEMPERATURE****REVERSE TRANSFER 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.

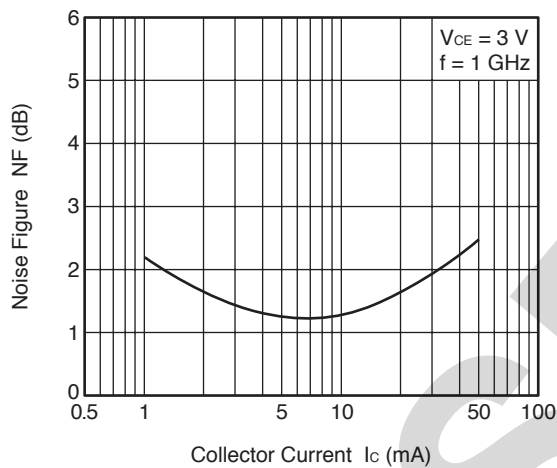
INSERTION POWER GAIN  
vs. FREQUENCY



INSERTION POWER GAIN  
vs. COLLECTOR CURRENT



NOISE FIGURE vs.  
COLLECTOR CURRENT



**Remark** The graphs indicate nominal characteristics.

## S-PARAMETERS

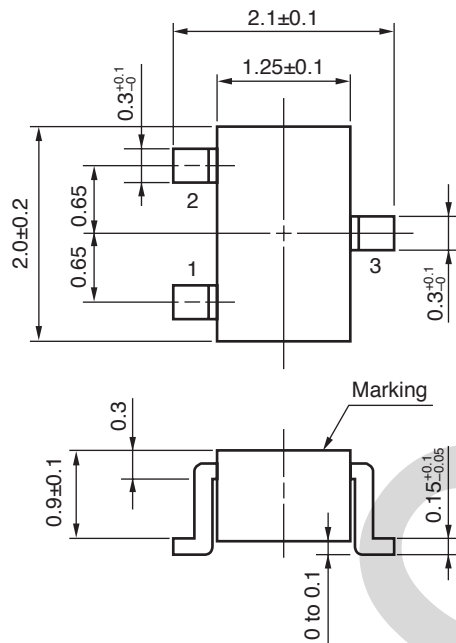
S-parameters and noise parameters are provided on our Web site in a format (S2P) that enables the direct import of the parameters to microwave circuit simulators without the need for keyboard inputs.

Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

URL <http://www2.renesas.com/microwave/en/download.html>

PHASE-OUT

**PACKAGE DIMENSIONS****3-PIN SUPER MINIMOLD (UNIT: mm)****PIN CONNECTIONS**

- 1. Emitter
  - 2. Base
  - 3. Collector
- (EIAJ : SC-70)

<b>Revision History</b>	<b>NE85630 / 2SC4226 Data Sheet</b>
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Rev.	Date	Description	
		Page	Summary
–	Dec 2003	–	Previous No. :PU10450EJ01V0DS
2.00	Jun 29, 2011	p.1	Modification of <b>ORDERING INFORMATION</b>
		p.2	Modification of <b>h<sub>FE</sub> CLASSIFICATION</b>

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