

# 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 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	$P_{tot}$ <small>Note</small>	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 ( $T_A = +25^\circ\text{C}$ )

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 10\text{ V}, I_E = 0$	–	–	1.0	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 1\text{ V}, I_C = 0$	–	–	1.0	$\mu\text{A}$
DC Current Gain	$h_{FE}$ <sup>Note 1</sup>	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}$	40	110	250	–
RF Characteristics						
Gain Bandwidth Product	$f_T$	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}$	3.0	4.5	–	GHz
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	7	9	–	dB
Noise Figure	NF	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	–	1.2	2.5	dB
Reverse Transfer Capacitance	$C_{re}$ <sup>Note 2</sup>	$V_{CB} = 3\text{ V}, I_E = 0, f = 1\text{ MHz}$	–	0.7	1.5	pF

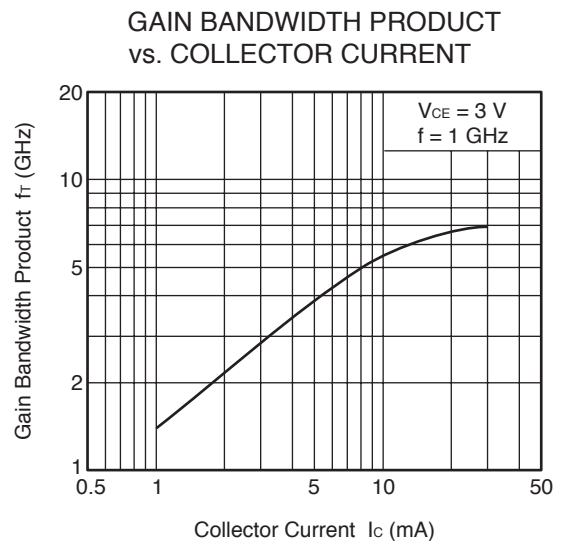
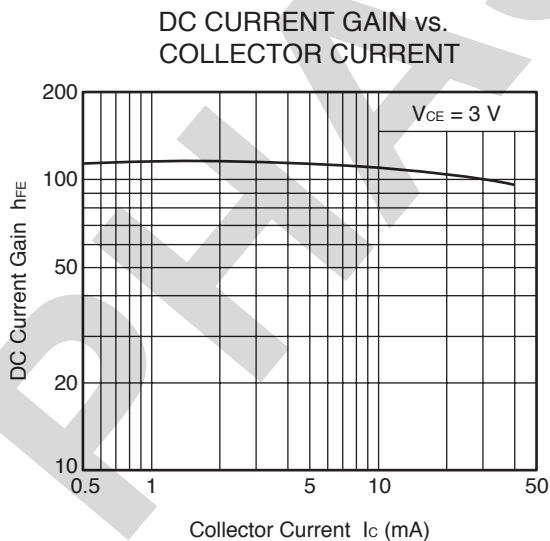
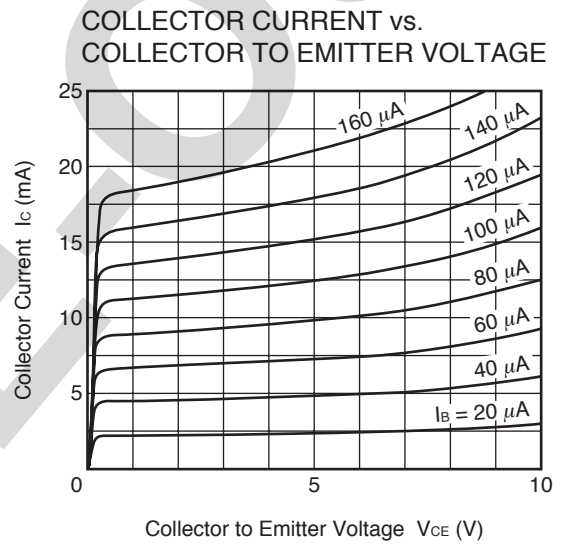
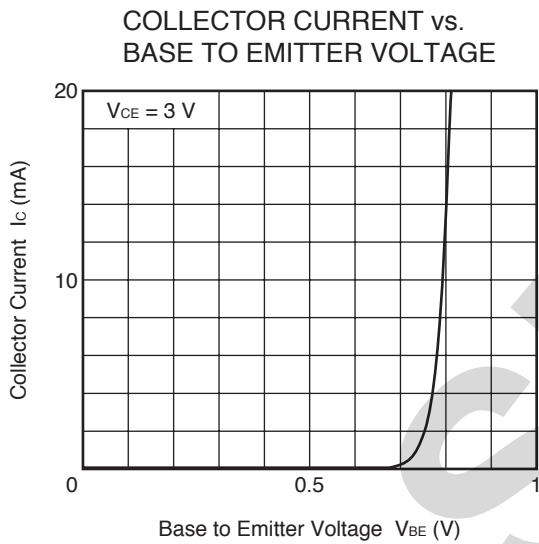
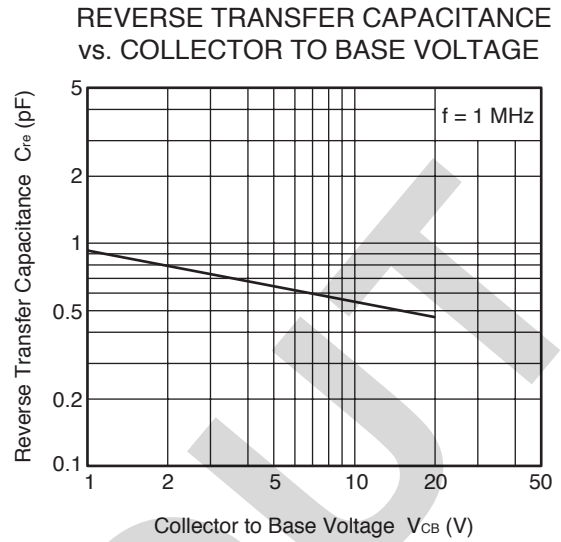
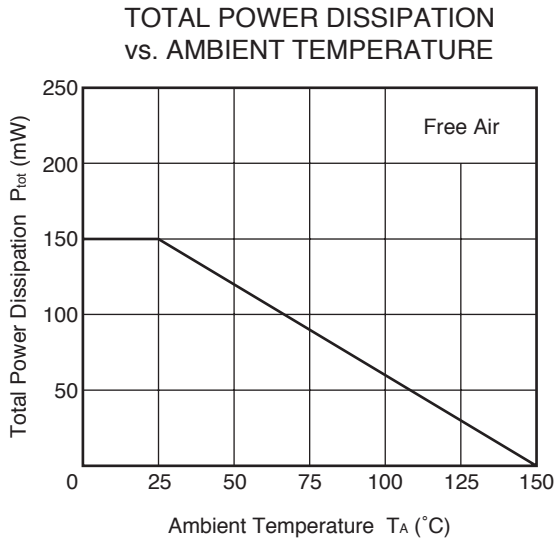
**Notes 1.** Pulse measurement:  $PW \leq 350\ \mu\text{s}$ , Duty Cycle  $\leq 2\%$

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

<R>  $h_{FE}$  CLASSIFICATION

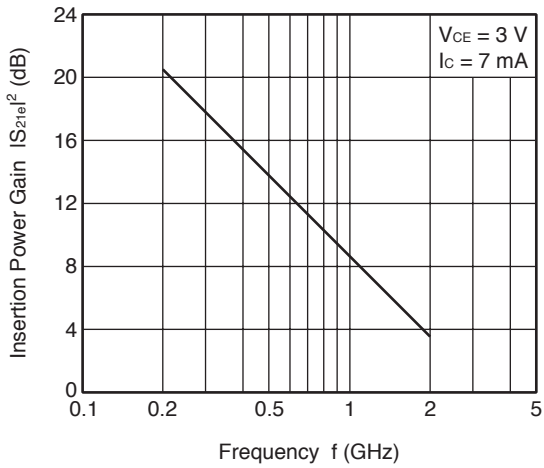
Rank	R23/Y23	R24/Y24	R25/Y25
Marking	R23	R24	R25
$h_{FE}$ Value	40 to 80	70 to 140	125 to 250

**TYPICAL CHARACTERISTICS (T<sub>A</sub> = +25°C, unless otherwise specified)**

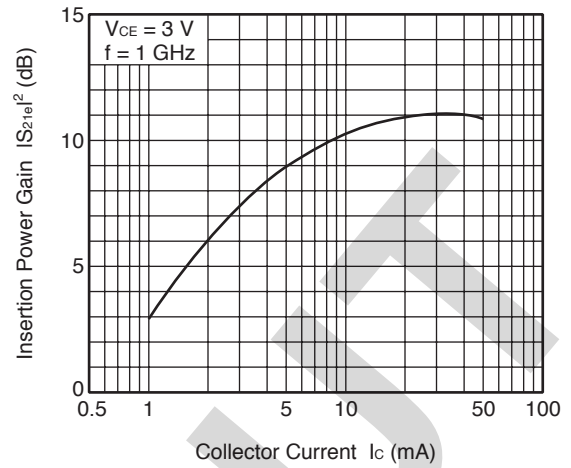


**Remark** The graphs indicate nominal characteristics.

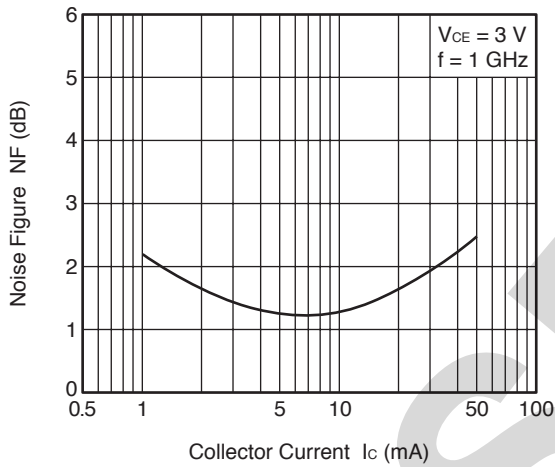
INSERTION POWER GAIN vs. FREQUENCY



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.

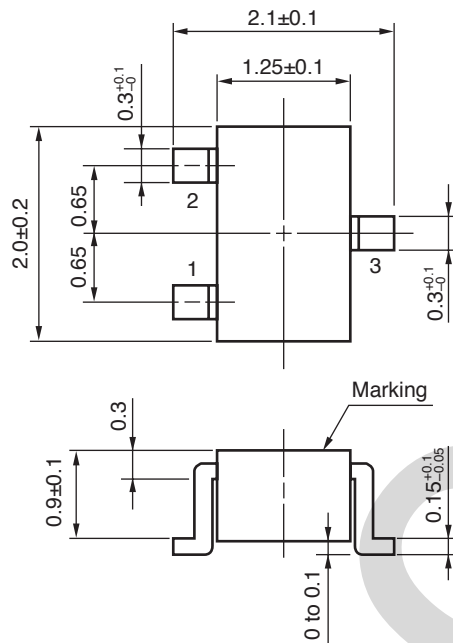
Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

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

PHASE-OUT

NE85630 / 2SC4226

**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>

PHASE-OUT

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