

DATA SHEET



NPN SILICON RF TRANSISTOR

NE68130 / 2SC4227 JEITA Part No.

NPN EPITAXIAL SILICON RF TRANSISTOR FOR HIGH-FREQUENCY LOW-NOISE AMPLIFICATION 3-PIN SUPER MINIMOLD

DESCRIPTION

The NE68130 / 2SC4227 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 : $NF = 1.4 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_c = 7 \text{ mA, } f = 1 \text{ GHz}$
- High gain : $|S_{21e}|^2 = 12 \text{ dB TYP. @ } V_{CE} = 3 \text{ V, } I_c = 7 \text{ mA, } f = 1 \text{ GHz}$
- 3-pin super minimold package

★ ORDERING INFORMATION

Part Number	Quantity	Supplying Form
NE68130 -A 2SC4227 -A	50 pcs (Non reel)	• 8 mm wide embossed taping • Pin 3 (Collector) face the perforation side of the tape
NE68130-T1-A 2SC4227-T1-A	3 kpcs/reel	

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

ABSOLUTE MAXIMUM RATINGS ($T_A = +25^\circ\text{C}$)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	20	V
Collector to Emitter Voltage	V_{CEO}	10	V
Emitter to Base Voltage	V_{EBO}	1.5	V
Collector Current	I_c	65	mA
Total Power Dissipation	P_{tot}^{Note}	150	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

Note Free air

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

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ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$)

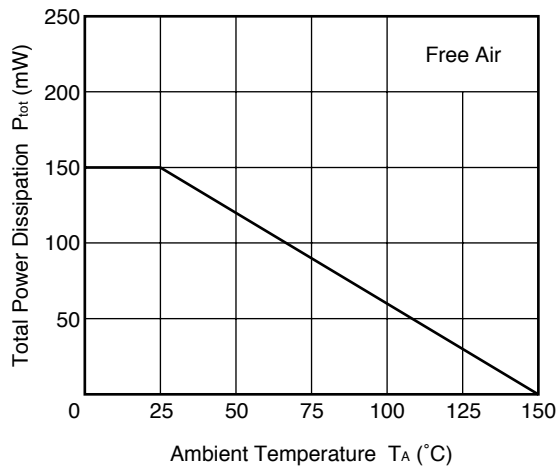
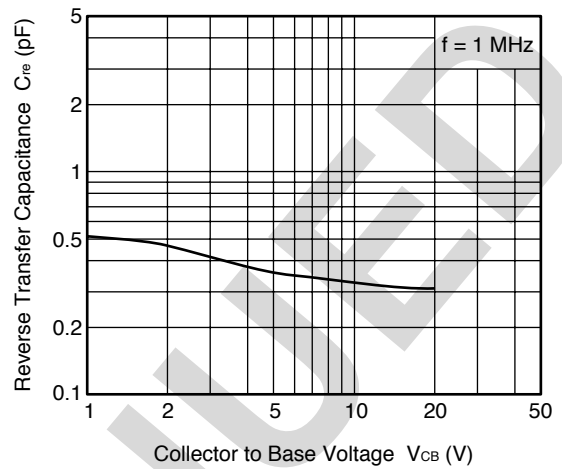
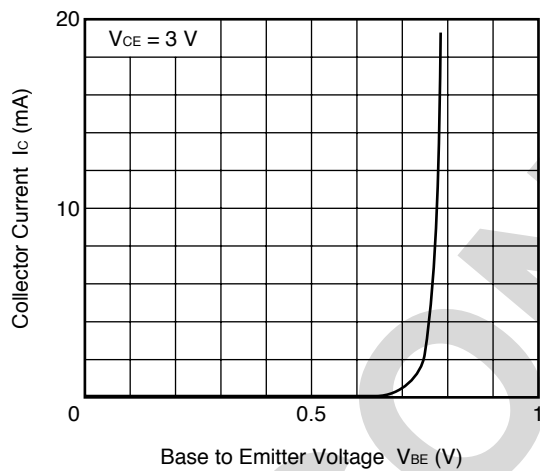
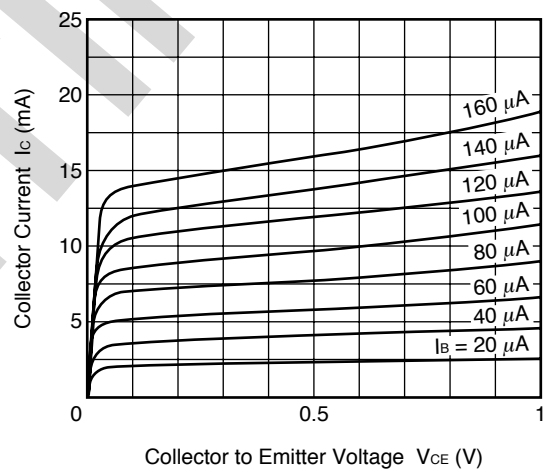
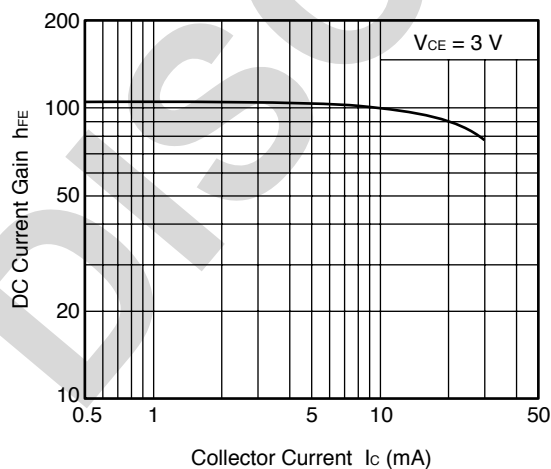
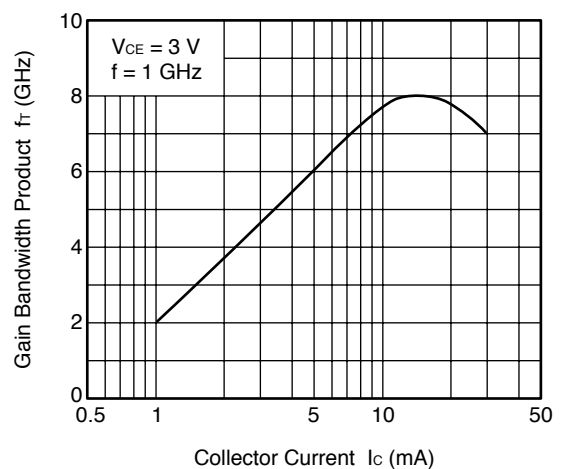
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I_{CBO}	$V_{CB} = 10\text{ V}, I_E = 0\text{ mA}$	–	–	0.8	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1\text{ V}, I_C = 0\text{ mA}$	–	–	0.8	μA
DC Current Gain	h_{FE} ^{Note 1}	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}$	40	–	240	–
RF Characteristics						
Gain Bandwidth Product	f_T	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}$	4.5	7.0	–	GHz
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	10	12	–	dB
Noise Figure	NF	$V_{CE} = 3\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	–	1.4	2.7	dB
★ Reverse Transfer Capacitance	C_{re} ^{Note 2}	$V_{CB} = 3\text{ V}, I_E = 0\text{ mA}, f = 1\text{ MHz}$	–	0.45	0.9	pF

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

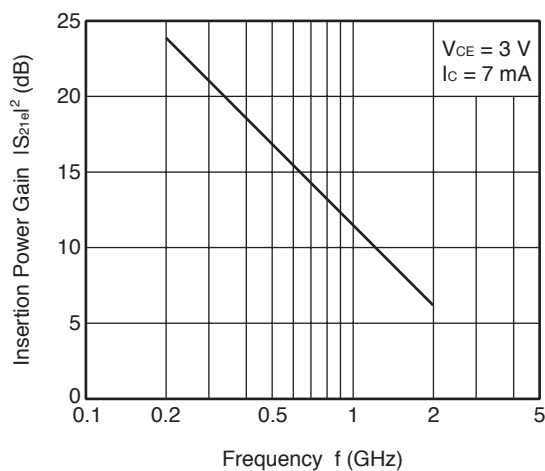
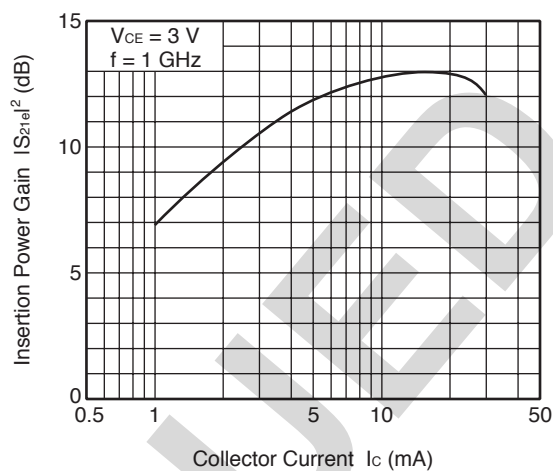
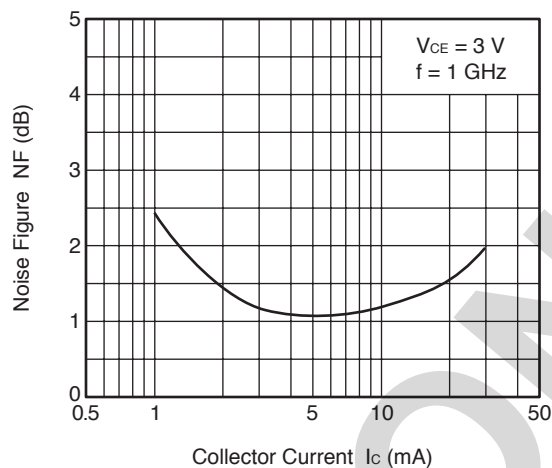
2. Collector to base capacitance when the emitter grounded

 h_{FE} CLASSIFICATION

Rank	R33	R34	R35
Marking	R33	R34	R35
h_{FE} Value	40 to 90	70 to 150	110 to 240

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. FREQUENCYINSERTION POWER GAIN
vs. COLLECTOR CURRENTNOISE FIGURE vs.
COLLECTOR CURRENT

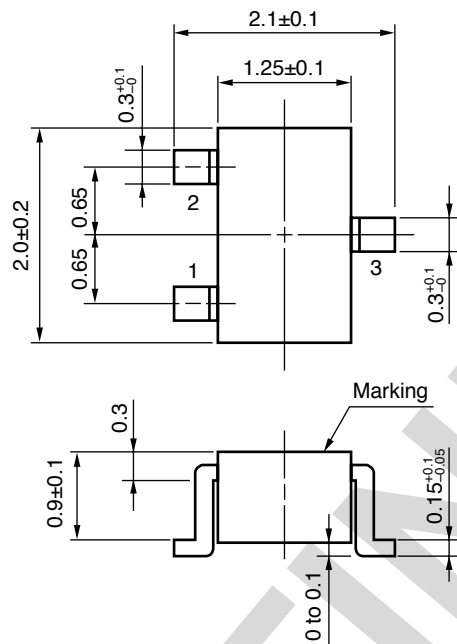
Remark The graphs indicate nominal characteristics.

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://www.necel.com/microwave/en/>

PACKAGE DIMENSIONS

3-PIN SUPER MINIMOLD (UNIT: mm)



PIN CONNECTIONS

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

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