

DATA SHEET



NPN SILICON RF TRANSISTOR NE68118 / 2SC5012 JEITA Part No.

NPN EPITAXIAL SILICON RF TRANSISTOR FOR HIGH-FREQUENCY LOW-NOISE AMPLIFICATION 4-PIN SUPER MINIMOLD

FEATURES

- High Gain Bandwidth Product ($f_r = 9 \text{ GHz TYP.}$)
- Low Noise, High Gain
- Low Voltage Operation
- 4-pin super minimold Package

★ ORDERING INFORMATION

Part Number	Quantity	Supplying Form
NE68118-A 2SC5012-A	50 pcs (Non reel)	• 8 mm wide embossed taping • Pin 3 (Base), Pin 4 (Emitter) face to perforation side of the tape
NE68118-T1-A 2SC5012-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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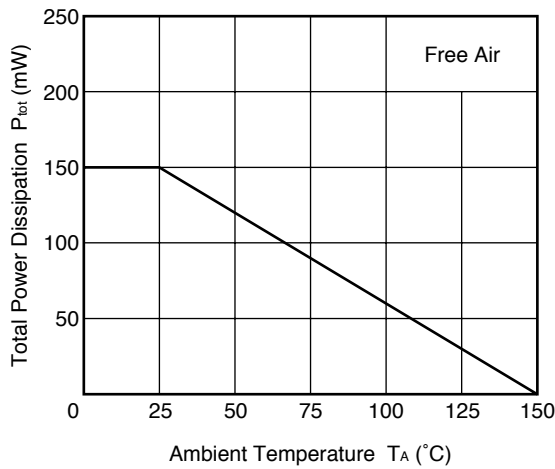
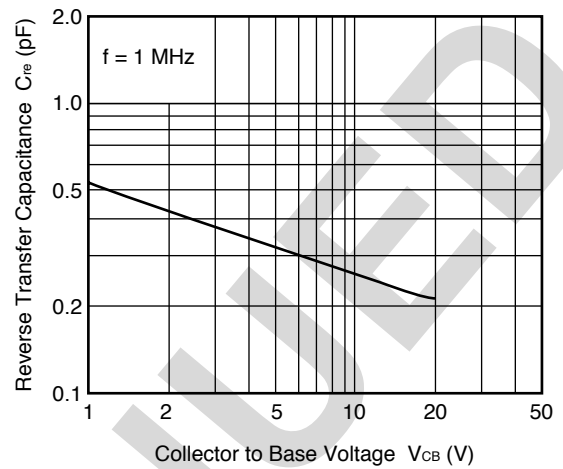
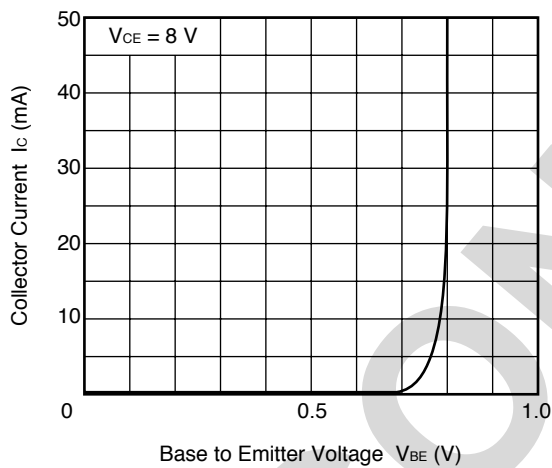
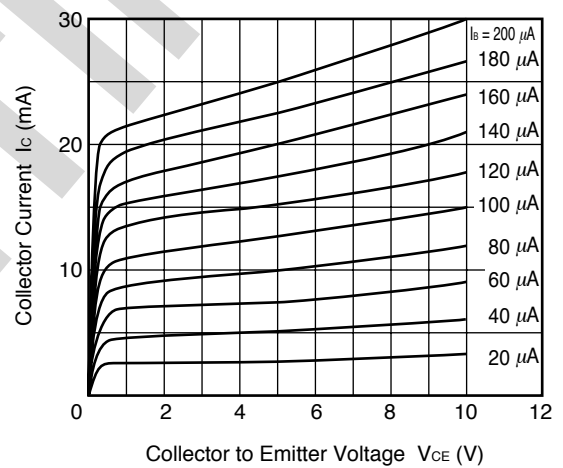
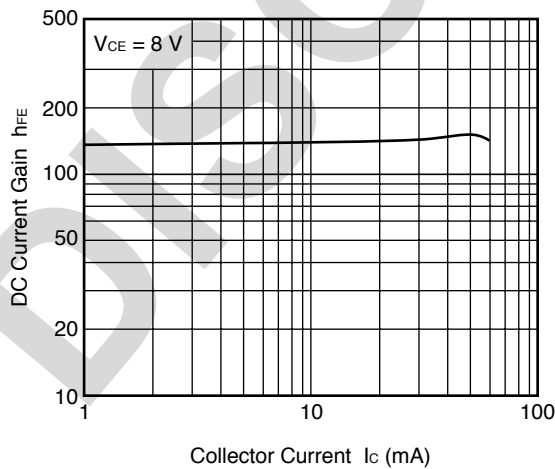
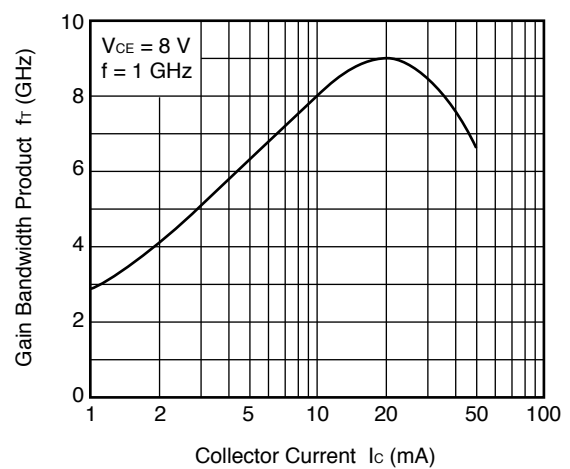
ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$)

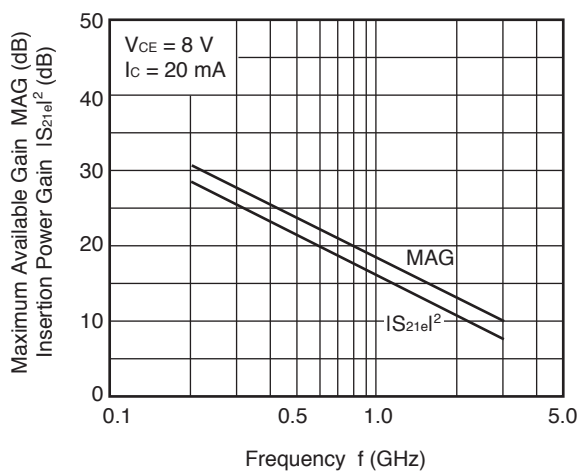
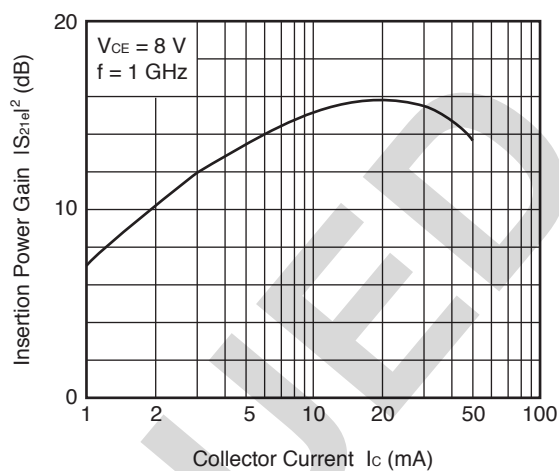
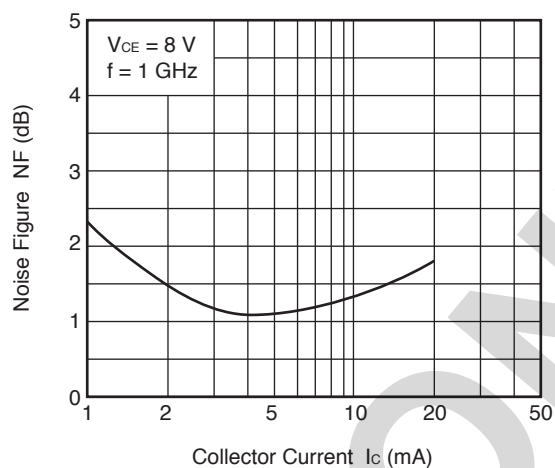
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	I_{CBO}	$V_{CB} = 10\text{ V}, I_E = 0\text{ mA}$	–	–	1.0	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 1\text{ V}, I_C = 0\text{ mA}$	–	–	1.0	μA
DC Current Gain	h_{FE} ^{Note 1}	$V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$	50	100	250	–
RF Characteristics						
Gain Bandwidth Product	f_T	$V_{CE} = 8\text{ V}, I_C = 20\text{ mA}$	–	9.0	–	GHz
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 8\text{ V}, I_C = 20\text{ mA}, f = 1.0\text{ GHz}$	13	15	–	dB
Noise Figure	NF	$V_{CE} = 8\text{ V}, I_C = 7\text{ mA}, f = 1.0\text{ GHz}$	–	1.2	2.5	dB
Reverse Transfer Capacitance	C_{re} ^{Note 2}	$V_{CB} = 10\text{ V}, I_E = 0\text{ mA}, f = 1.0\text{ MHz}$	–	0.25	0.8	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	EB	FB	GB
Marking	R36	R37	R38
h_{FE} Value	50 to 100	80 to 160	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.

MAXIMUM AVAILABLE GAIN/INSERTION
POWER GAIN vs. FREQUENCYINSERTION POWER GAIN
vs. COLLECTOR CURRENTNOISE FIGURE vs.
COLLECTOR CURRENT

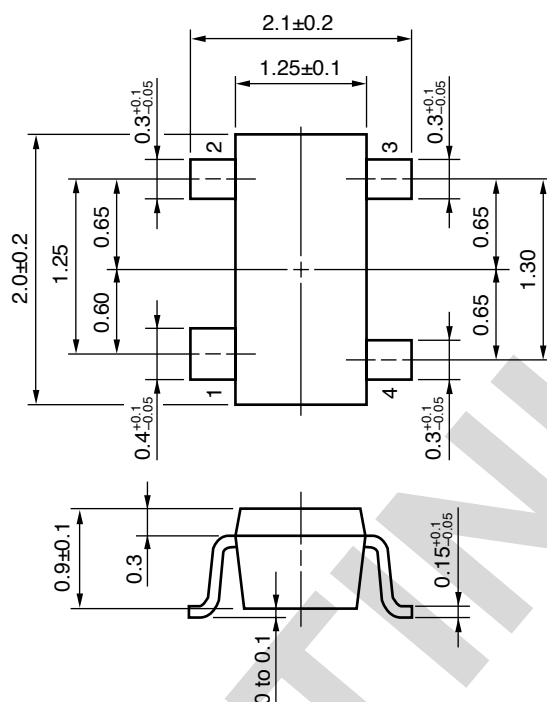
Remark The graphs indicate nominal characteristics.

★ 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

4-PIN SUPER MINIMOLD (UNIT: mm)



PIN CONNECTIONS

1. Collector
2. Emitter
3. Base
4. Emitter

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