



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





# NPN SILICON RF TRANSISTOR NE85634 / 2SC3357

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

### FEATURES

- Low noise and high gain
  - ★ NF = 1.1 dB TYP.,  $G_a = 7.5$  dB TYP. @  $V_{CE} = 10$  V,  $I_c = 7$  mA,  $f = 1$  GHz
  - NF = 1.8 dB TYP.,  $G_a = 9.0$  dB TYP. @  $V_{CE} = 10$  V,  $I_c = 40$  mA,  $f = 1$  GHz
- ★ • High power gain : MAG = 10 dB TYP. @  $I_c = 40$  mA,  $f = 1$  GHz
- Large  $P_{tot}$  :  $P_{tot} = 1.2$  W (Mounted on  $16\text{ cm}^2 \times 0.7$  mm (t) ceramic substrate)
- Small package : 3-pin power minimold package

### ★ ORDERING INFORMATION

Part Number	Quantity	Supplying Form
NE85634-A 2SC3357-A	25 pcs (Non reel) (Pb-Free)	• 12 mm wide embossed taping
NE85634-T1-A 2SC3357-T1-A	1 kpcs/reel (Pb-Free)	• Collector face the perforation side of the tape

**Remark** To order evaluation samples, contact your nearby sales office.  
The unit sample quantity is 25 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	$V_{CEO}$	12	V
Emitter to Base Voltage	$V_{EBO}$	3.0	V
Collector Current	$I_c$	100	mA
Total Power Dissipation	$P_{tot}$ <sup>Note</sup>	1.2	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-65 to +150	$^\circ\text{C}$

**Note** Mounted on  $16\text{ cm}^2 \times 0.7$  mm (t) ceramic substrate

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

The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version.

**THERMAL RESISTANCE**

Parameter	Symbol	Value	Unit
Junction to Ambient Resistance	$R_{th(j-a)}$ Note	62.5	°C/W

**Note** Mounted on 16 cm<sup>2</sup> × 0.7 mm (t) ceramic substrate

**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 mA	–	–	1.0	μA
Emitter Cut-off Current	I <sub>EBO</sub>	V <sub>EB</sub> = 1.0 V, I <sub>C</sub> = 0 mA	–	–	1.0	μA
DC Current Gain	h <sub>FE</sub> <sup>Note 1</sup>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 20 mA	50	120	250	–
RF Characteristics						
Gain Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 20 mA	–	6.5	–	GHz
Insertion Power Gain	S <sub>21e</sub>   <sup>2</sup>	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 20 mA, f = 1 GHz	–	9.0	–	dB
Noise Figure (1)	NF	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 7 mA, f = 1 GHz	–	1.1	–	dB
Noise Figure (2)	NF	V <sub>CE</sub> = 10 V, I <sub>C</sub> = 40 mA, f = 1 GHz	–	1.8	3.0	dB
Reverse Transfer Capacitance	C <sub>re</sub> <sup>Note 2</sup>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0 mA, f = 1 MHz	–	0.65	1.0	pF

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

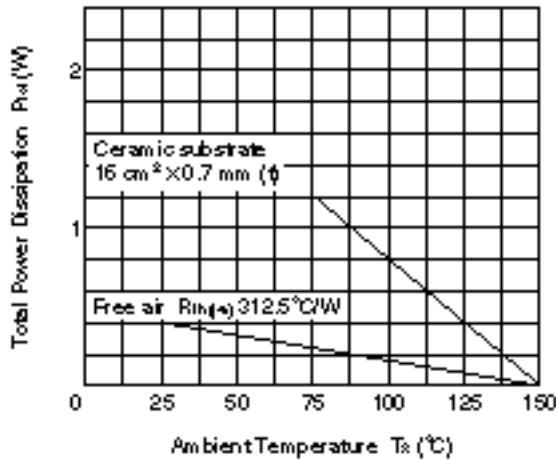
**2.** The emitter terminal and the case shall be connected to the guard terminal of the three-terminal capacitance bridge.

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

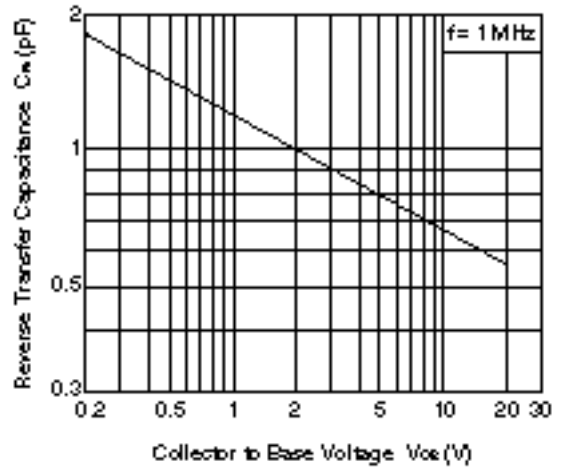
Rank	RH	RF	RE
Marking	RH	RF	RE
h <sub>FE</sub> Value	50 to 100	80 to 160	125 to 250

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

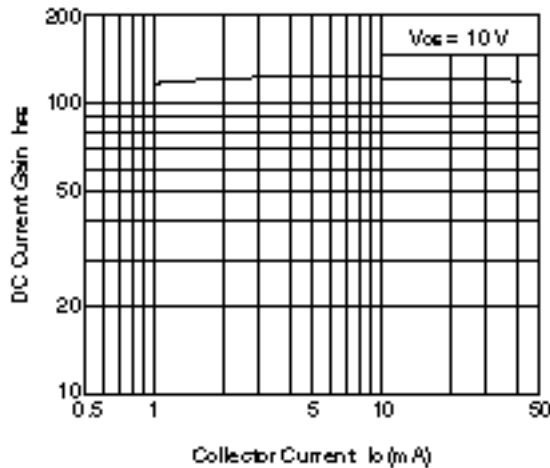
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



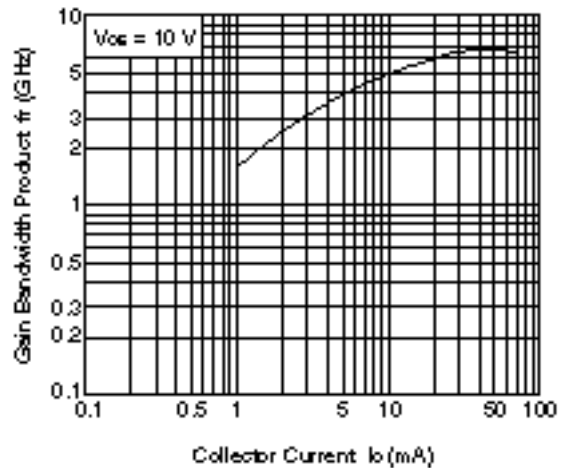
REVERSE TRANSFER CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



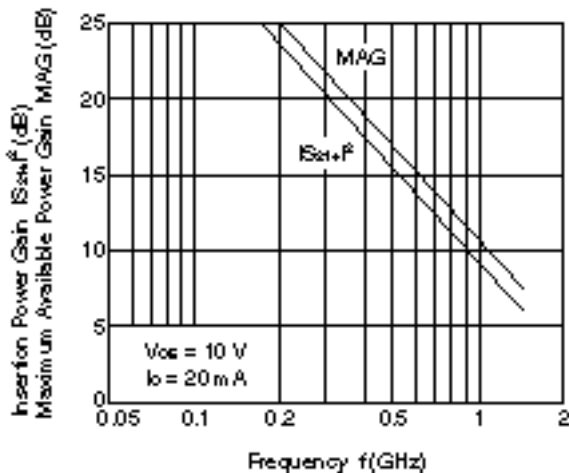
DC CURRENT GAIN vs. COLLECTOR CURRENT



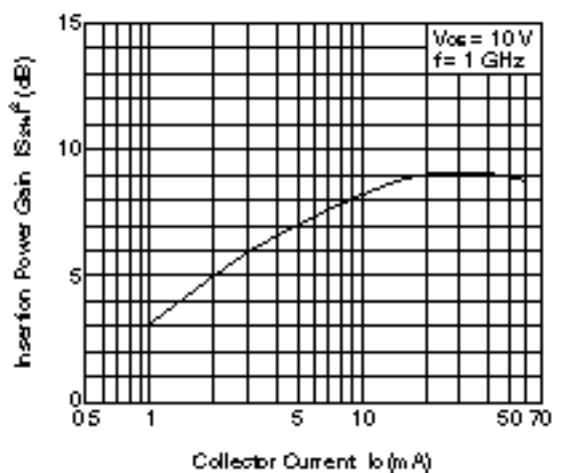
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT

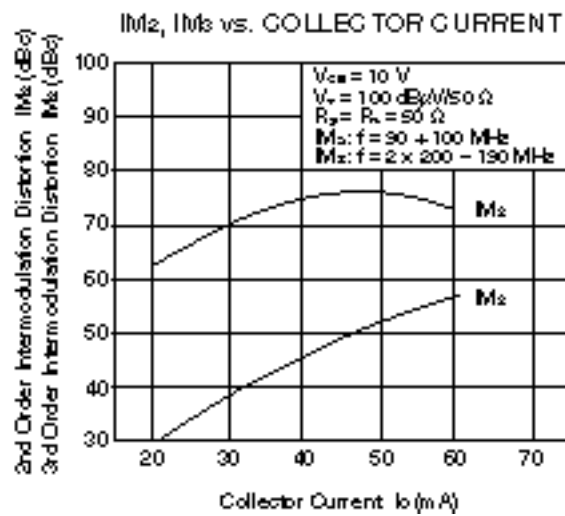
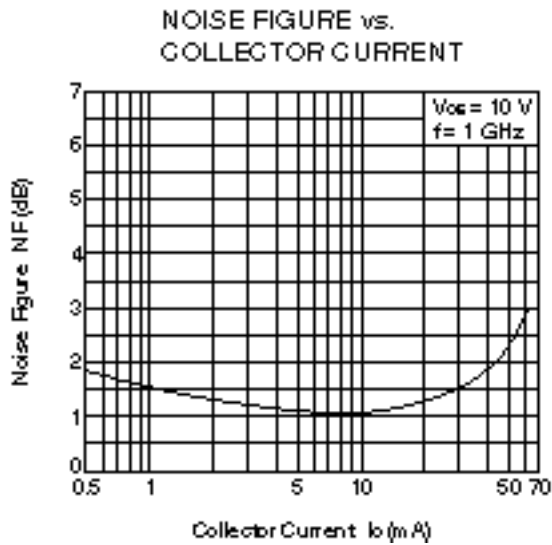


INSERTION POWER GAIN, MAG vs. FREQUENCY



INSERTION POWER GAIN vs. COLLECTOR CURRENT





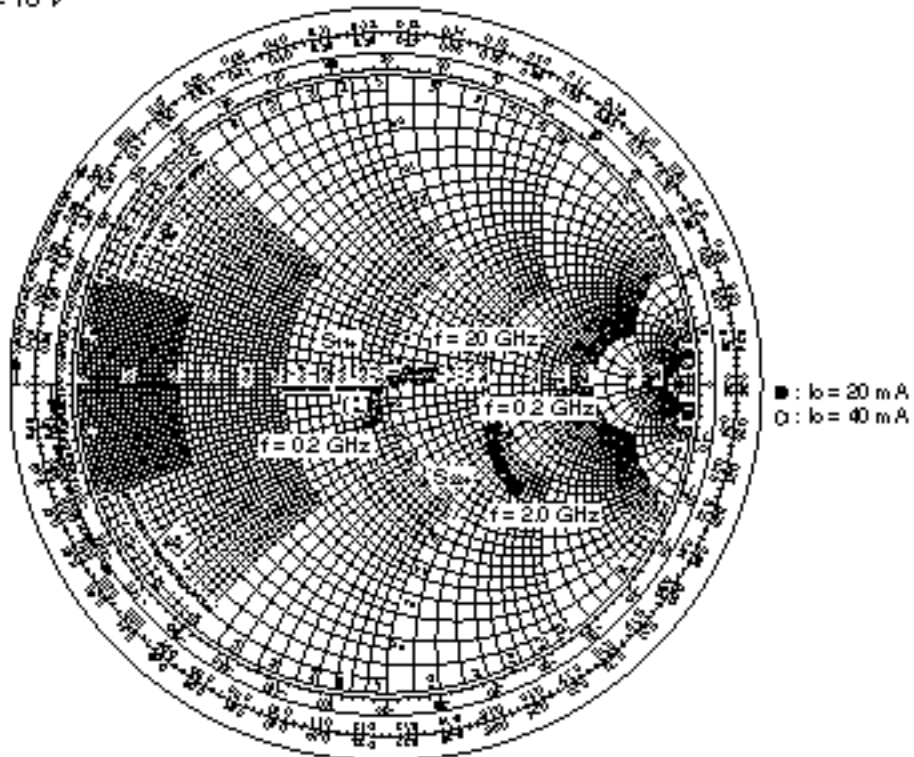
**Remark** The graphs indicate nominal characteristics.

**S-PARAMETERS**

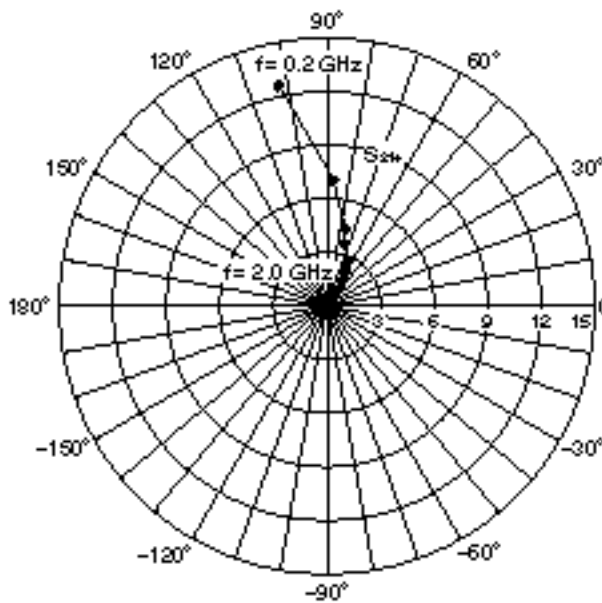
- S-parameters and noise parameters are provided on our Web site in a format (S2P) that enables the direct import of the parameters to microwave circuit simulators without the need for keyboard inputs.
- Click here to download S-parameters.
- [RF and Microwave] @ [Device Parameters]
- URL <http://www.necel.com/microwave/en/>

SMITH CHART

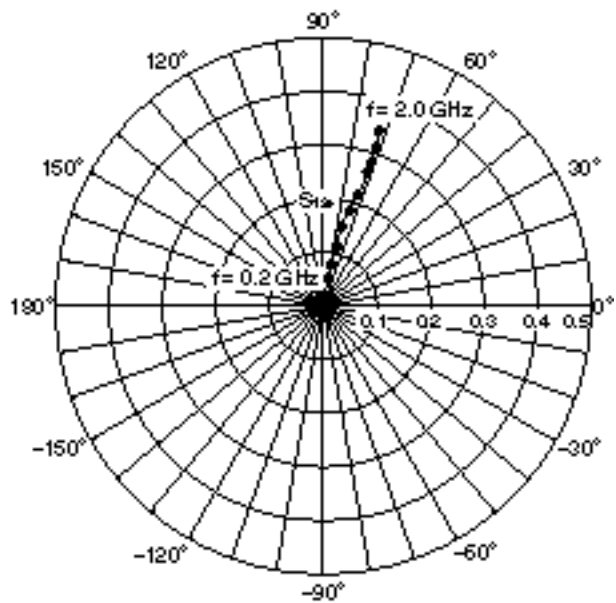
$S_{11}$ ,  $S_{22}$ -FREQUENCY  
 CONDITION :  $V_{CE} = 10\text{ V}$



$S_{21}$ -FREQUENCY  
 CONDITION :  $V_{CE} = 10\text{ V}$ ,  $I_b = 20\text{ mA}$

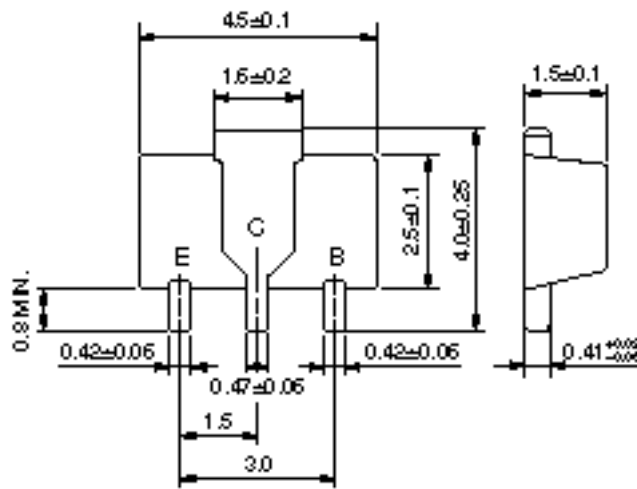


$S_{12}$ -FREQUENCY  
 CONDITION :  $V_{CE} = 10\text{ V}$ ,  $I_b = 20\text{ mA}$



PACKAGE DIMENSIONS

3-PIN POWER MINIMOLD (UNIT: mm)



PIN CONNECTIONS

- E : Emitter
- : Collector (Fin)
- B : Base

(IEC : SOT-89)