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NPN SILICON RF TRANSISTOR NE46234 / 2SC4703

NPN EPITAXIAL SILICON RF TRANSISTOR FOR HIGH-FREQUENCY LOW DISTORTION AMPLIFIER 3-PIN POWER MINIMOLD

DESCRIPTION

The NE46234 / 2SC4703 is designed for low distortion, low noise RF amplifier operating with low supply voltage ($V_{CE} = 5\text{ V}$). This low distortion characteristic makes it suitable for CATV, tele-communication and other use. It employs surface mount type plastic package, power mini mold (SOT-89).

FEATURES

- Low distortion, low voltage: $IM_2 = 55\text{ dBc TYP.}$, $IM_3 = 76\text{ dBc TYP.}$ @ $V_{CE} = 5\text{ V}$, $I_C = 50\text{ mA}$, $V_O = 105\text{ dB}\mu\text{V}/75\Omega$
- Large P_{tot} : $P_{tot} = 1.8\text{ W}$ (Mounted on double-sided copper-clad $16\text{ cm}^2 \times 0.7\text{ mm}$ (t) ceramic substrate)
- Small package : 3-pin power mini mold package

ORDERING INFORMATION

Part Number	Quantity	Supplying Form
NE46234-AZ 2SC4703	25 pcs (Non reel)	• 12 mm wide embossed taping
NE46234-T1-AZ 2SC4703-T1	1 kpcs/reel	• 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}	25	V
Collector to Emitter Voltage	V_{CEO}	12	V
Emitter to Base Voltage	V_{EBO}	2.5	V
Collector Current	I_C	150	mA
Total Power Dissipation	P_{tot} ^{Note}	1.8	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

Note Mounted on double-sided copper-clad $16\text{ cm}^2 \times 0.7\text{ mm}$ (t) ceramic substrate

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

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ELECTRICAL CHARACTERISTICS (T_A = +25°C)

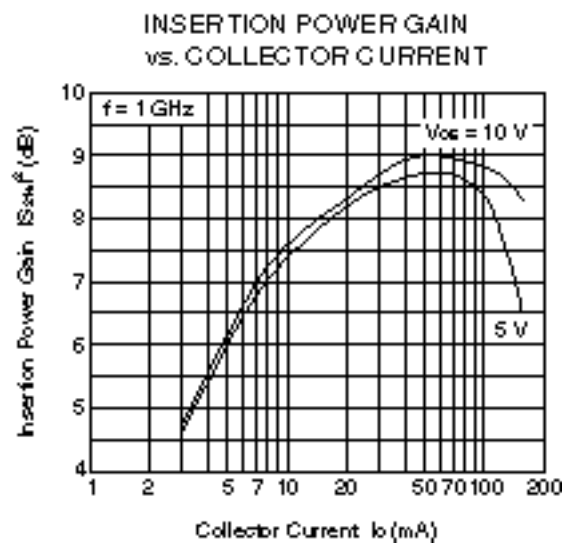
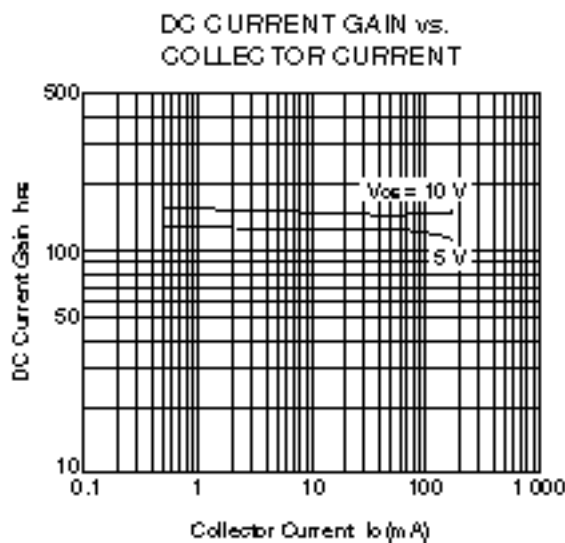
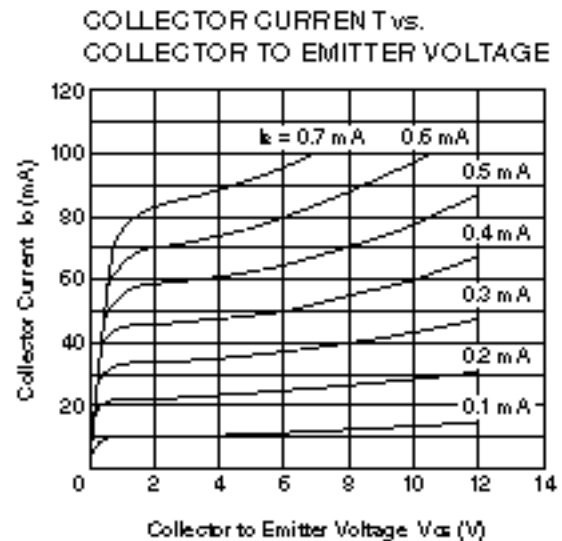
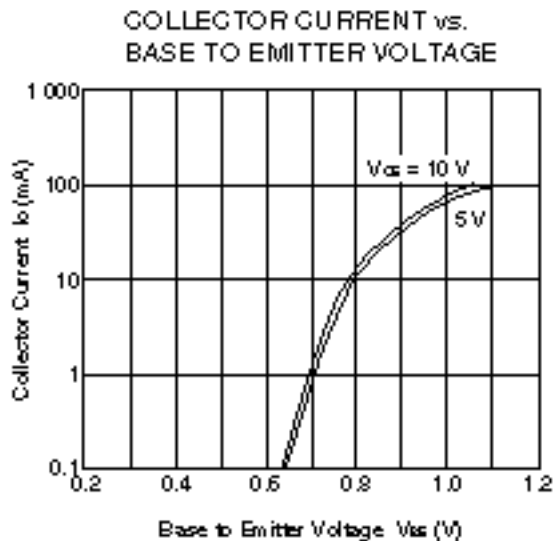
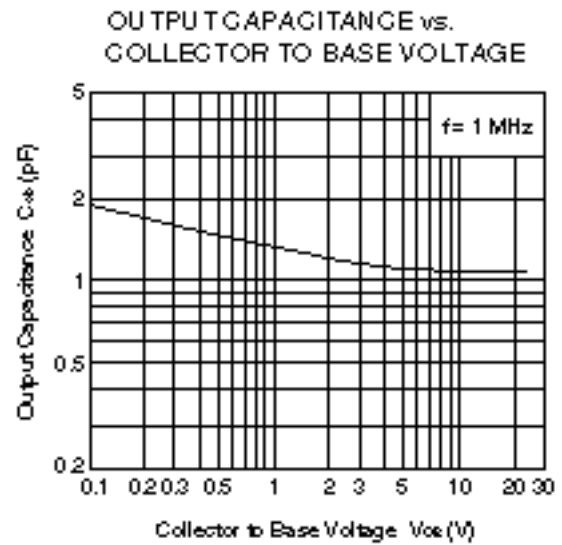
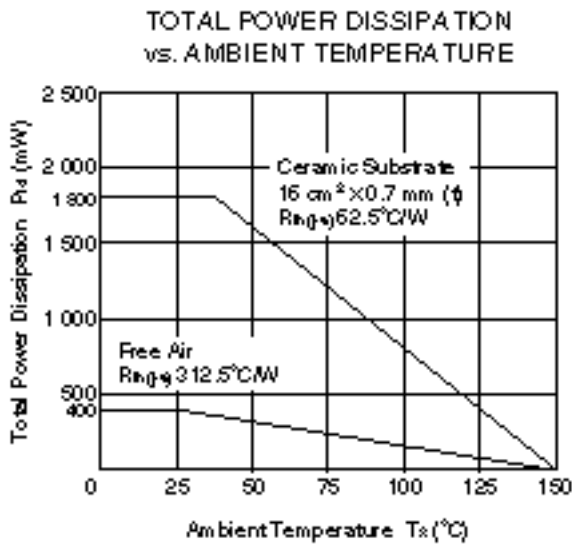
Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit	
DC Characteristics							
Collector Cut-off Current	I _{CBO}	V _{CB} = 20 V, I _E = 0 mA	–	–	1.5	μA	
Emitter Cut-off Current	I _{EBO}	V _{EB} = 2 V, I _C = 0 mA	–	–	1.5	μA	
DC Current Gain	h _{FE} ^{Note 1}	V _{CE} = 5 V, I _C = 50 mA	50	–	250	–	
RF Characteristics							
Gain Bandwidth Product	f _T	V _{CE} = 5 V, I _C = 50 mA	–	6.0	–	GHz	
Insertion Power Gain (1)	S _{21e} ²	V _{CE} = 5 V, I _C = 50 mA, f = 1 GHz	6.5	8.3	–	dB	
Insertion Power Gain (2)	S _{21e} ²	V _{CE} = 10 V, I _C = 20 mA, f = 1 GHz	–	8.5	–	dB	
Noise Figure	NF	V _{CE} = 5 V, I _C = 50 mA, f = 1 GHz	–	2.3	3.5	dB	
Collector Capacitance	C _{ob} ^{Note 2}	V _{CB} = 5 V, I _E = 0 mA, f = 1 MHz	–	1.5	2.5	pF	
2nd Order Intermodulation Distortion	IM ₂	I _C = 50 mA, V _O = 105 dBμV/75 Ω, f = 190 – 90 MHz	V _{CE} = 5 V	–	55	–	dBc
			V _{CE} = 10 V	–	63	–	
3rd Order Intermodulation Distortion	IM ₃	I _C = 50 mA, V _O = 105 dBμV/75 Ω, f = 2 × 190 – 200 MHz	V _{CE} = 5 V	–	76	–	dBc
			V _{CE} = 10 V	–	81	–	

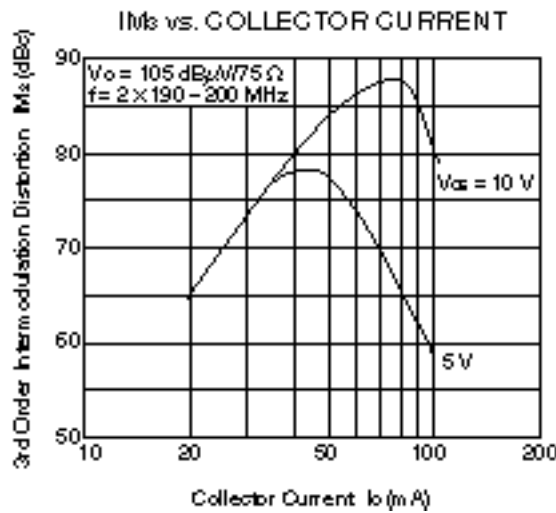
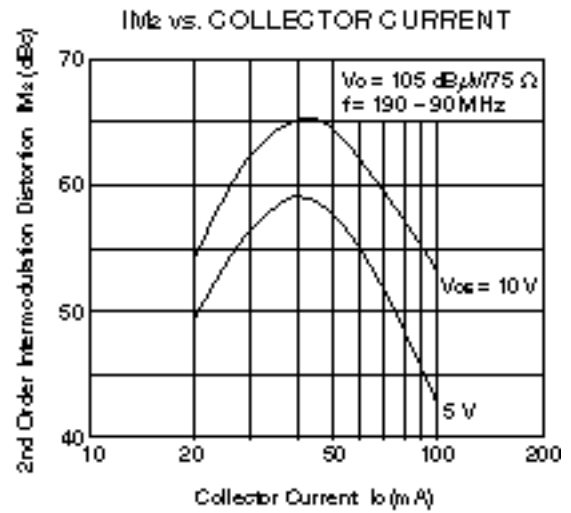
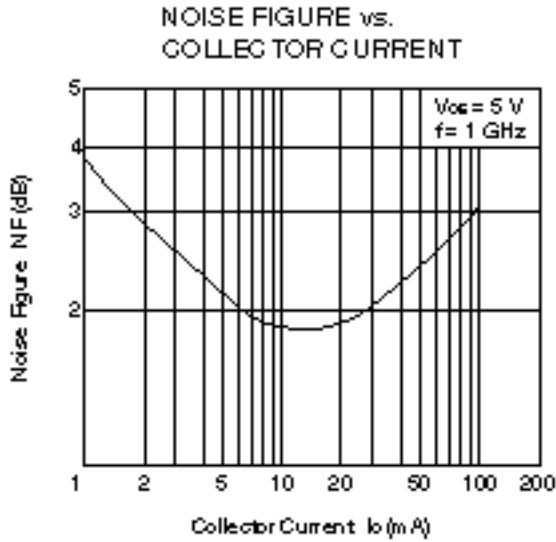
- Notes 1.** Pulse measurement: PW ≤ 350 μs, Duty Cycle ≤ 2%
2. Collector to base capacitance when the emitter grounded

h_{FE} CLASSIFICATION

Rank	SH	SF	SE
Marking	SH	SF	SE
h _{FE} Value	50 to 100	80 to 160	125 to 250

■ TYPICAL CHARACTERISTICS (T_A = +25°C)





Remark The graphs indicate nominal characteristics.

S-PARAMETERS

S-parameters/Noise parameters are provided on the NEC Compound Semiconductor Devices Web site in a form (S2P) that enables direct import to a microwave circuit simulator without keyboard input.

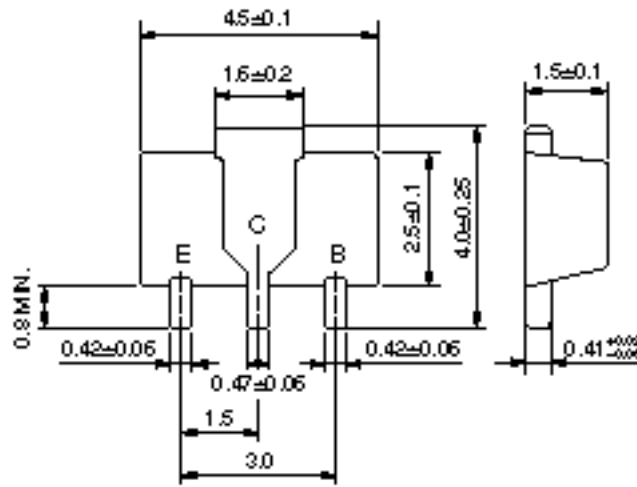
Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

URL <http://www.csd-nec.com/>

PACKAGE DIMENSIONS

3-PIN POWER MINIMOLD (UNIT: mm)



PIN CONNECTIONS

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

(IEC : SOT-89)

- * The information in this document is current as of May, 2003. The information is subject to change without notice. For actual design-in, refer to the latest publications of NEC's data sheets or data books, etc., for the most up-to-date specifications of NEC semiconductor products. Not all products and/or types are available in every country. Please check with an NEC sales representative for availability and additional information.
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MSE 00.4-0110

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