NEC

NPN SILICON RF TWIN TRANSISTOR

μPA895TD

NPN SILICON RF TRANSISTOR (WITH 2 ELEMENTS) IN A 6-PIN LEAD-LESS MINIMOLD (M16, 1208 PACKAGE)

FEATURES

- Built-in low phase distortion transistor suited for OSC applications
  f_T = 4.5 GHz TYP., $|S_{21e}|^2$ = 4.0 dB TYP. @ V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz
- Built-in 2 transistors (2 × 2SC5800)
- 6-pin lead-less minimold (M16, 1208 package)

BUILT-IN TRANSISTORS

	Q1, Q2
3-pin thin-type ultra super minimold part No.	2SC5800

★ ORDERING INFORMATION

Part Number	Quantity	Supplying Form
μPA895TD	50 pcs (Non reel)	• 8 mm wide embossed taping
μPA895TD-T3	10 kpcs/reel	• Pin 1 (Q1 Collector), Pin 6 (Q1 Base) face the perforation side of the tape

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

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

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Printed in Japan

The mark ★ shows major revised points.

ABSOLUTE MAXIMUM RATINGS (T_A = +25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	V_{CBO}	9	V
Collector to Emitter Voltage	V_{CEO}	5.5	V
Emitter to Base Voltage	V_{EBO}	1.5	V
Collector Current	I_C	100	mA
Total Power Dissipation	P_{tot} Note	190 in 1 element	mW
		210 in 2 elements	
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	−65 to +150	°C

Note Mounted on 1.08 $cm^2 \times 1.0$ mm (t) glass epoxy PCB

ELECTRICAL CHARACTERISTICS (T_A = +25°C)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
Collector Cut-off Current	I_{CBO}	V_{CB} = 5 V, I_E = 0 mA	–	–	600	nA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 1 V, I_C = 0 mA	–	–	600	nA
DC Current Gain	h_{FE} Note 1	V_{CE} = 1 V, I_C = 5 mA	100	120	145	–
Gain Bandwidth Product (1)	f_T	V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz	3.0	4.5	–	GHz
Gain Bandwidth Product (2)	f_T	V_{CE} = 1 V, I_C = 15 mA, f = 2 GHz	5.0	6.5	–	GHz
Insertion Power Gain (1)	$\lvert S_{21e} \rvert^2$	V_{CE} = 1 V, I_C = 5 mA, f = 2 GHz	3.0	4.0	–	dB
Insertion Power Gain (2)	$\lvert S_{21e} \rvert^2$	V_{CE} = 1 V, I_C = 15 mA, f = 2 GHz	4.5	5.5	–	dB
Noise Figure	NF	V_{CE} = 1 V, I_C = 10 mA, f = 2 GHz, $Z_S = Z_{opt}$	–	1.9	2.5	dB
Reverse Transfer Capacitance	C_{re} Note 2	V_{CB} = 0.5 V, I_E = 0 mA, f = 1 MHz	–	0.6	0.8	pF

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

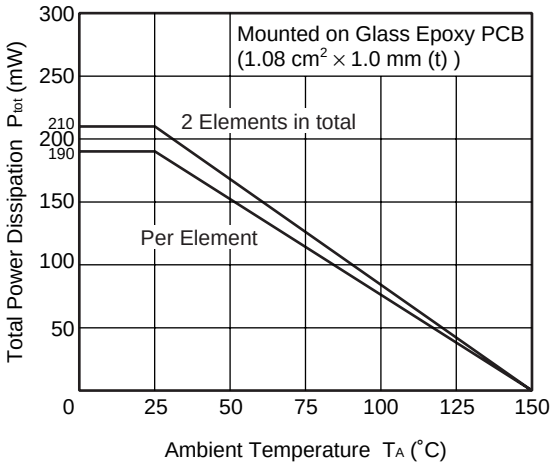
2. Collector to base capacitance when the emitter grounded

h_{FE} CLASSIFICATION

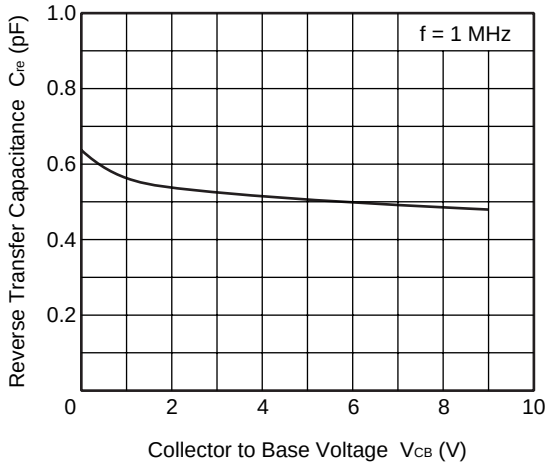
Rank	FB
Marking	kP
h_{FE} Value	100 to 145

TYPICAL CHARACTERISTICS (Unless otherwise specified, T_A = +25°C)

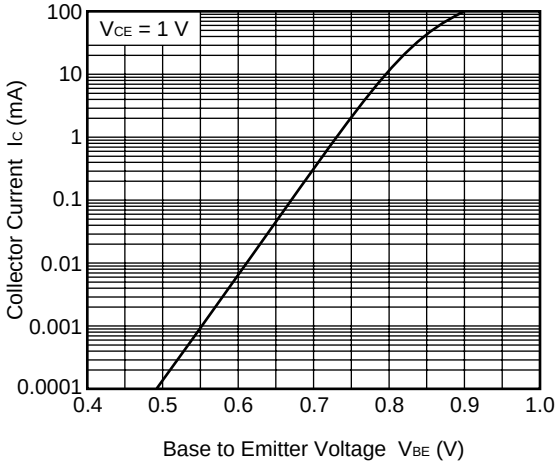
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



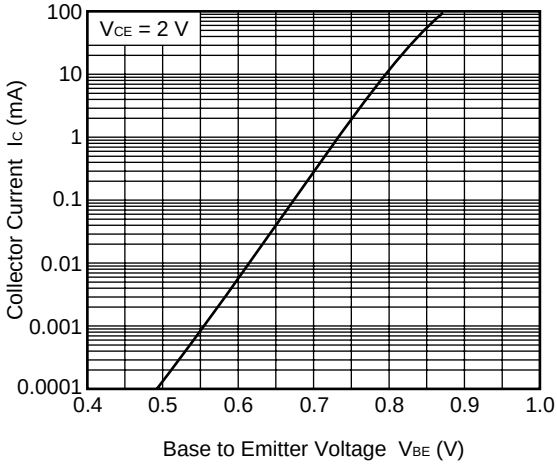
REVERSE TRANSFER CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



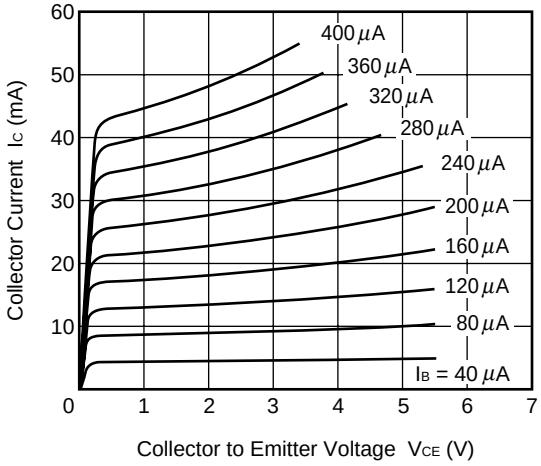
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



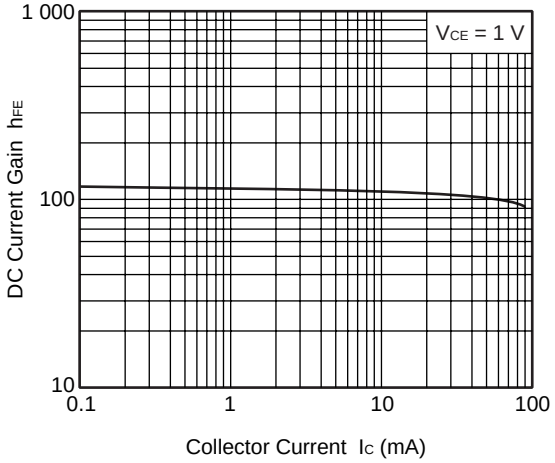
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



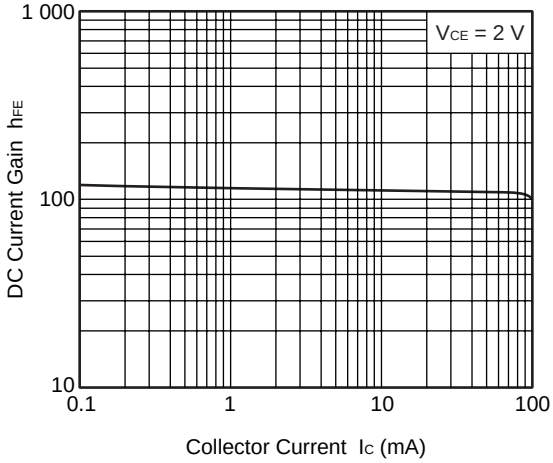
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



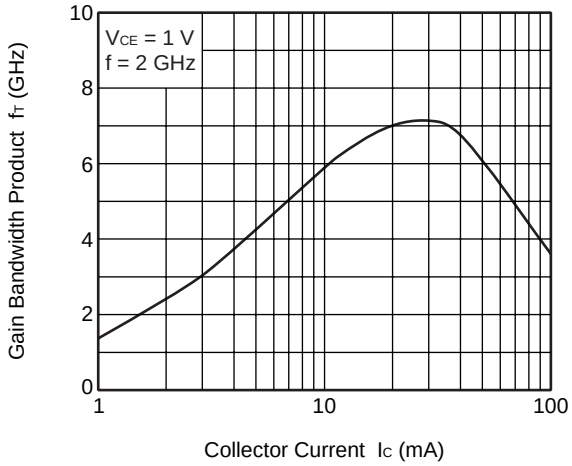
DC CURRENT GAIN vs.
COLLECTOR CURRENT



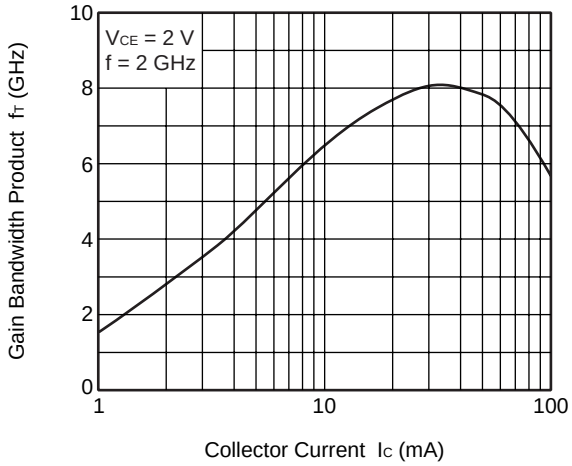
DC CURRENT GAIN vs.
COLLECTOR CURRENT



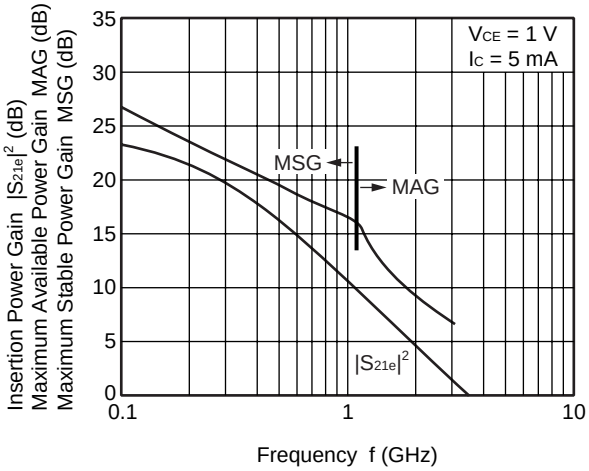
GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT
vs. COLLECTOR CURRENT



INSERTION POWER GAIN,
MAG, MSG vs. FREQUENCY



INSERTION POWER GAIN,
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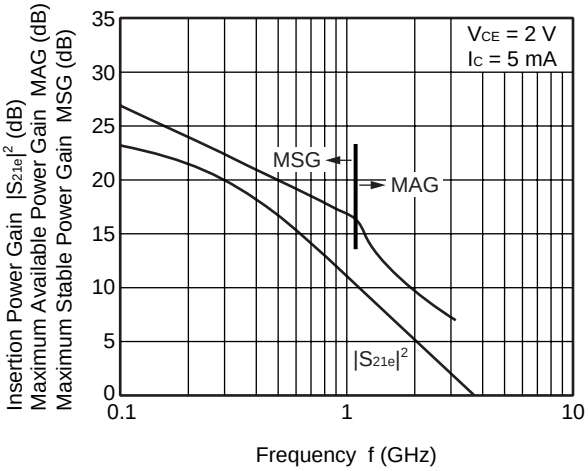

INSERTION POWER GAIN,
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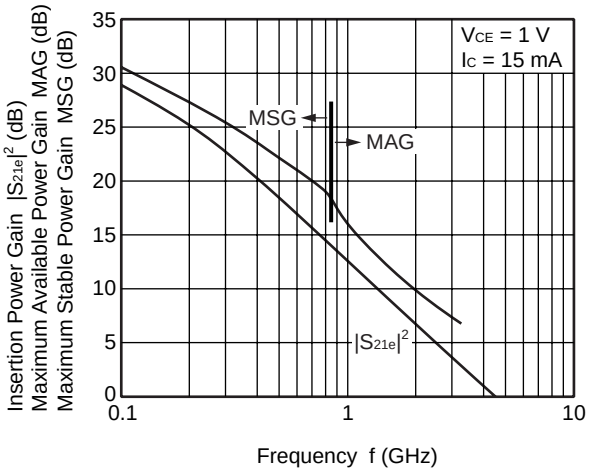
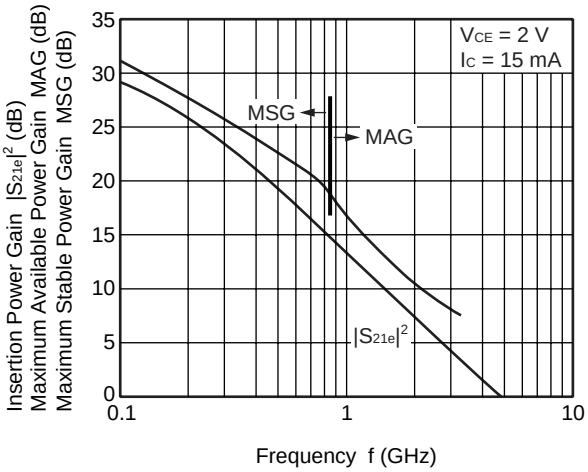
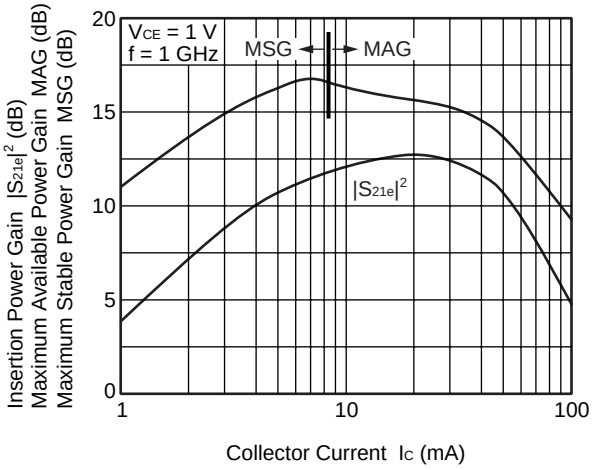


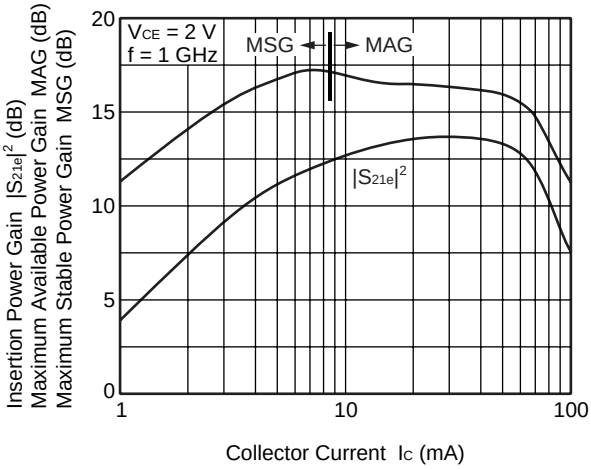
INSERTION POWER GAIN,
MAG, MSG vs. FREQUENCY



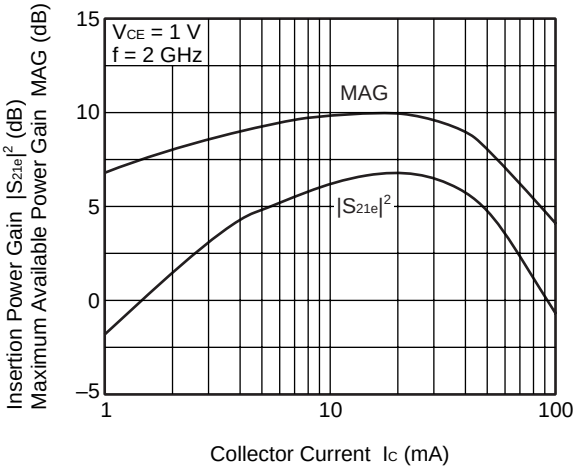
INSERTION POWER GAIN, MAG, MSG vs. COLLECTOR CURRENT



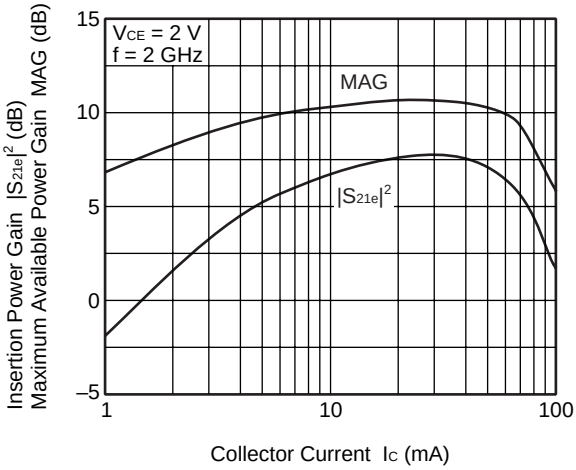
INSERTION POWER GAIN, MAG, MSG vs. COLLECTOR CURRENT



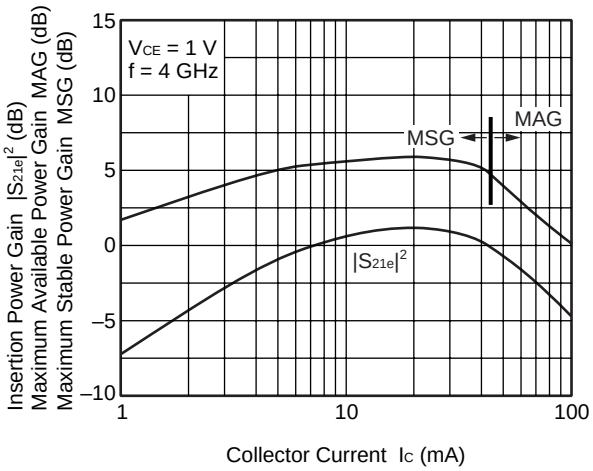
INSERTION POWER GAIN, MAG vs. COLLECTOR CURRENT



INSERTION POWER GAIN, MAG vs. COLLECTOR CURRENT



INSERTION POWER GAIN, MAG, MSG vs. COLLECTOR CURRENT



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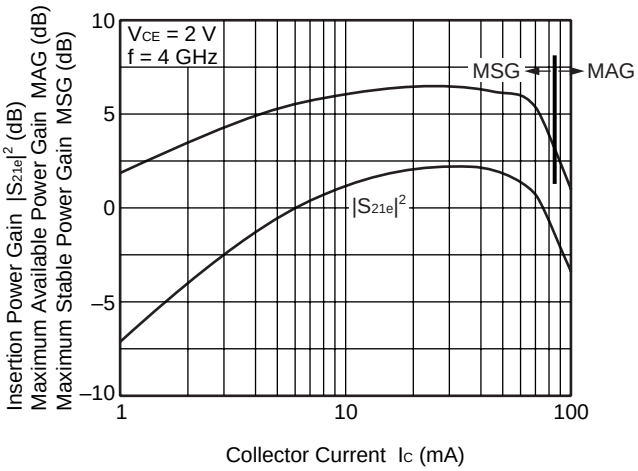
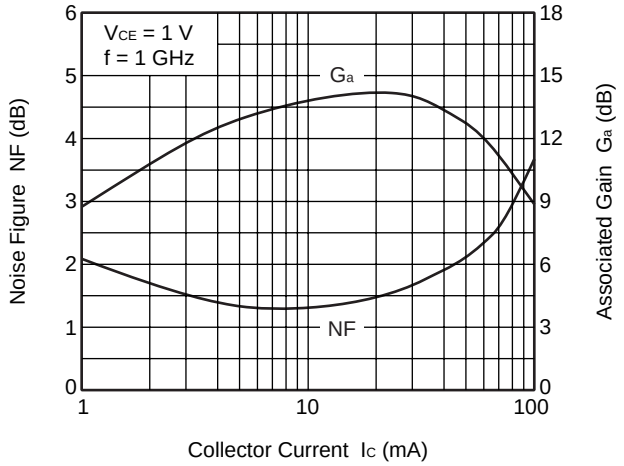


NOISE FIGURE, ASSOCIATED GAIN vs. COLLECTOR CURRENT



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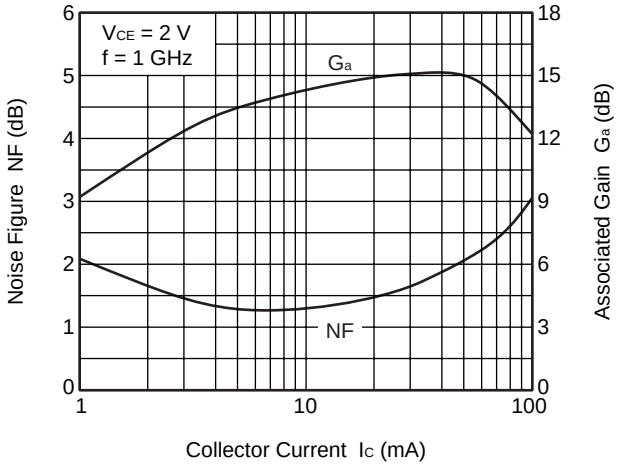

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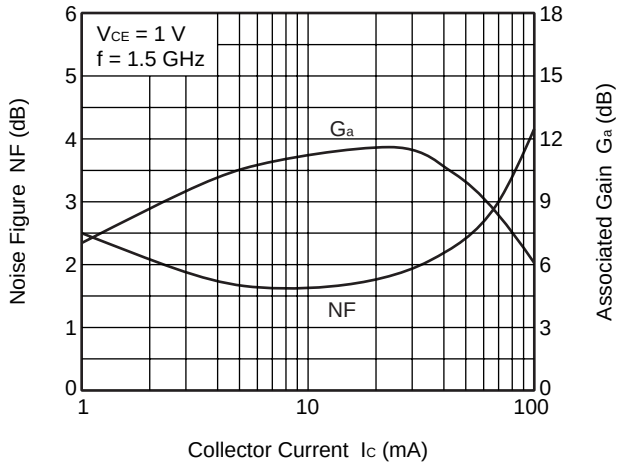

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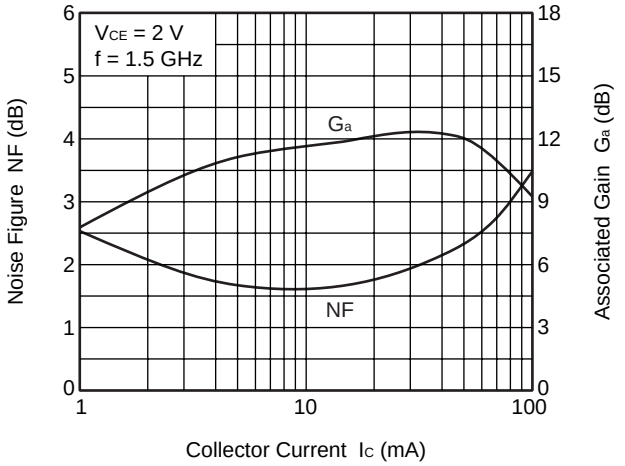

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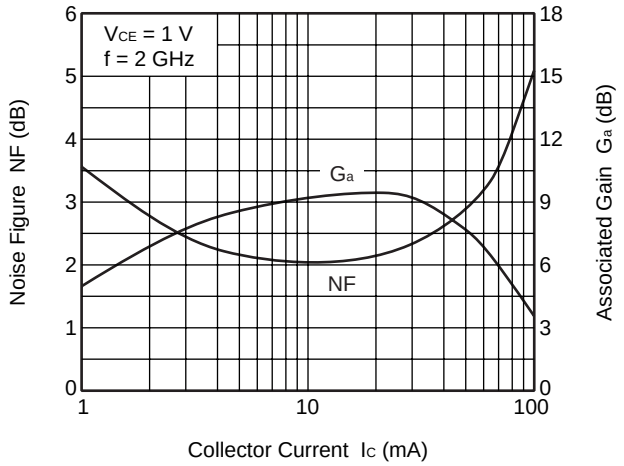

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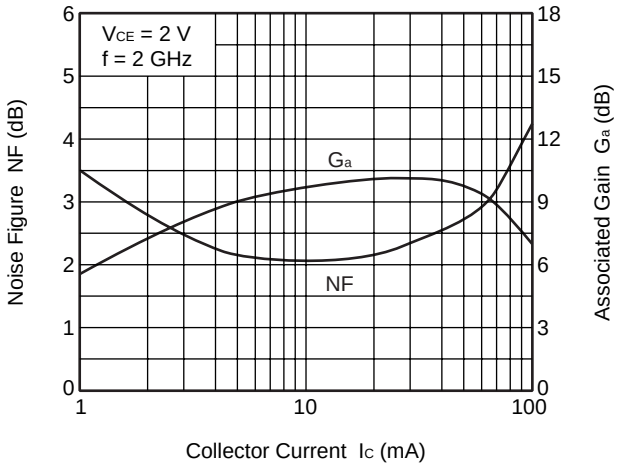


Remark The graphs indicate nominal characteristics.

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.

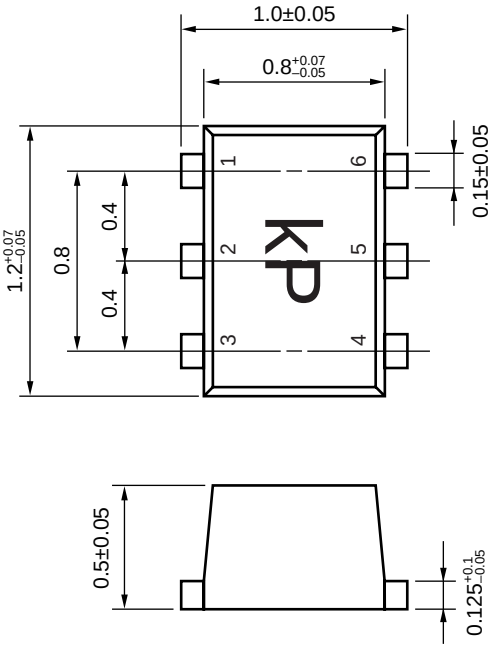
Click here to download S-parameters.

[RF and Microwave] → [Device Parameters]

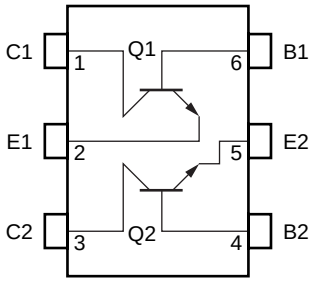
URL http://www.csd-nec.com/

PACKAGE DIMENSIONS

6-PIN LEAD-LESS MINIMOLD (M16, 1208 PACKAGE) (UNIT: mm)



(Top View)



PIN CONNECTIONS

1. Collector (Q1)
2. Emitter (Q1)
3. Collector (Q2)
4. Base (Q2)
5. Emitter (Q2)
6. Base (Q1)

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M8E 00.4-0110

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