

NPN SILICON GERMANIUM RF TRANSISTOR

NESG210719

NPN SIGE RF TRANSISTOR FOR LOW NOISE, HIGH-GAIN AMPLIFICATION 3-PIN ULTRA SUPER MINIMOLD (19, 1608 PKG)

FEATURES

- · The device is an ideal choice for OSC, low noise, high-gain amplification
- · High breakdown voltage technology for SiGe Tr.
- 3-pin ultra super minimold package (19, 1608 PKG)

ORDERING INFORMATION

Part Number	Order Number	Package	Quantity	Supplying Form
NESG210719	NESG210719-A	3-pin ultra super minimold package (19, 1608 PKG)	50 pcs (Non reel)	8 mm wide embossed taping Pin 3 (Collector) face the perforation side
NESG210719-T1	NESG210719-T1-A	(Pb-Free)	3 kpcs/reel	of the tape

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

ABSOLUTE MAXIMUM RATINGS (TA = +25°C)

Parameter	Symbol	Ratings	Unit
Collector to Base Voltage	Vсво	13.0	V
Collector to Emitter Voltage	VCEO	5.0	V
Emitter to Base Voltage	VEBO	1.5	V
Collector Current	lc	100	mA
Total Power Dissipation	P _{tot} Note	200	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-65 to +150	°C

Note Mounted on 1.08 cm² × 1.0 mm (t) glass epoxy PCB

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.

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ELECTRICAL CHARACTERISTICS (TA = +25°C)

Parameter	Symbol	Test Conditions	MIN.	TYP.	MAX.	Unit
DC Characteristics						
Collector Cut-off Current	Ісво	VcB = 5 V, IE = 0 mA	-	-	100	nA
Emitter Cut-off Current	ІЕВО	VEB = 0.5 V, Ic = 0 mA	-	-	100	nA
DC Current Gain	hfe Note 1	VcE = 1 V, Ic = 5 mA	140	180	220	-
RF Characteristics						
Gain Bandwidth Product (1)	f⊤	Vce = 1 V, Ic = 5 mA, f = 2 GHz	7	10	-	GHz
Gain Bandwidth Product (2)	f⊤	VcE = 1 V, Ic = 20 mA, f = 2 GHz	-	12	-	GHz
Insertion Power Gain (1)	S _{21e} ²	VcE = 1 V, Ic = 5 mA, f = 2 GHz	6.5	8	-	dB
Insertion Power Gain (2)	S _{21e} ²	VcE = 1 V, Ic = 20 mA, f = 2 GHz	_	9	-	dB
Noise Figure	NF	$V_{CE} = 1 \text{ V}, \text{ Ic} = 5 \text{ mA}, \text{ f} = 2 \text{ GHz},$ $Z_{S} = Z_{opt}$	_	0.9	1.5	dB
Associated Gain	Ga	$V_{CE} = 1 \text{ V}, \text{ Ic} = 5 \text{ mA}, \text{ f} = 2 \text{ GHz},$ $Z_{S} = Z_{opt}$	6	9	-	dB
Reverse Transfer Capacitance	Cre Note 2	Vcв = 1 V, IE = 0 mA, f = 1 MHz	_	0.5	0.7	pF

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

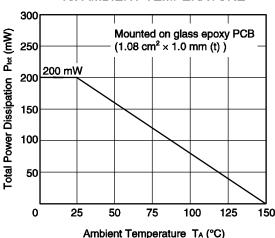
2. Collector to base capacitance when the emitter grounded

hfe CLASSIFICATION

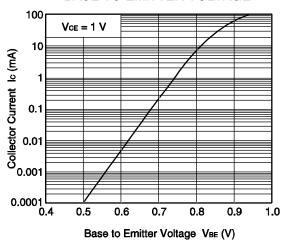
Rank	FB		
Marking	D7		
h _{FE} Value	140 to 220		

<R> TYPICAL CHARACTERISTICS (TA = +25°C, unless otherwise specified)

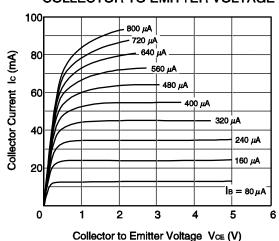




COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE

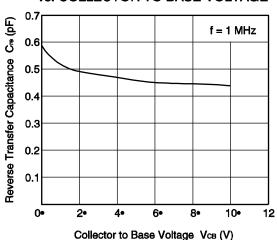


COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE

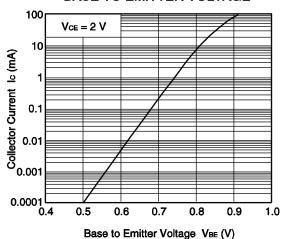


Remark The graphs indicate nominal characteristics.

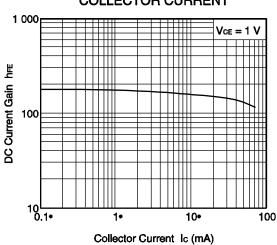
REVERSE TRANSFER CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



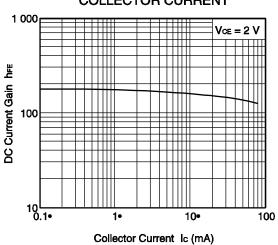
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



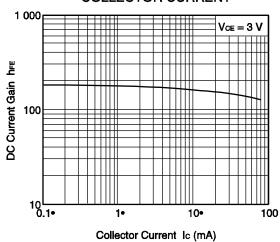




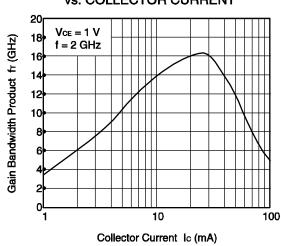
DC CURRENT GAIN vs. COLLECTOR CURRENT



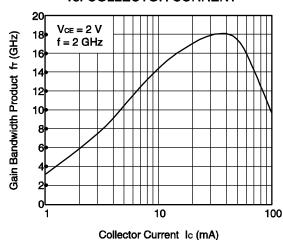
DC CURRENT GAIN vs. COLLECTOR CURRENT



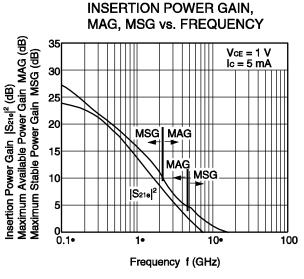
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT

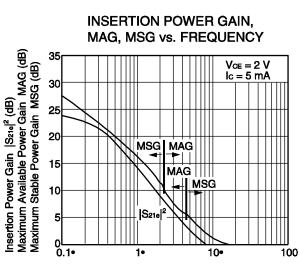


GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



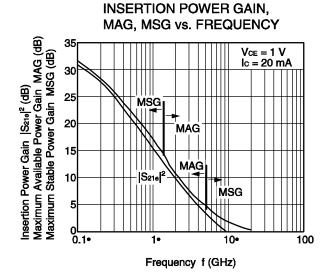
Remark The graphs indicate nominal characteristics.

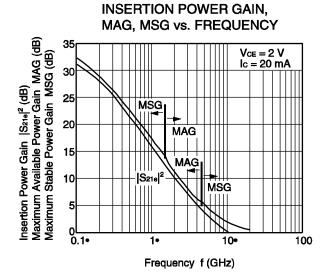




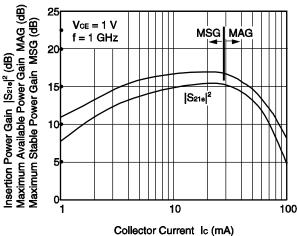
Remark The graphs indicate nominal characteristics.

Frequency f (GHz)

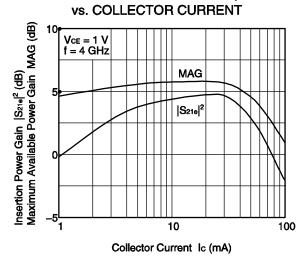




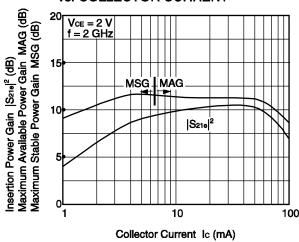




INSERTION POWER GAIN, MAG

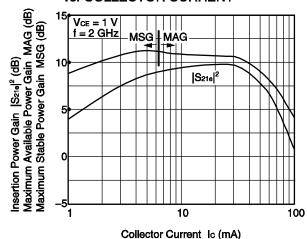


INSERTION POWER GAIN, MAG, MSG vs. COLLECTOR CURRENT

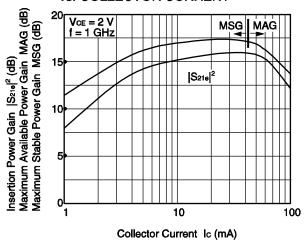


Remark The graphs indicate nominal characteristics.

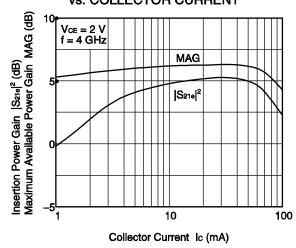
INSERTION POWER GAIN, MAG, MSG vs. COLLECTOR CURRENT



INSERTION POWER GAIN, MAG, MSG vs. COLLECTOR CURRENT



INSERTION POWER GAIN, MAG vs. COLLECTOR CURRENT

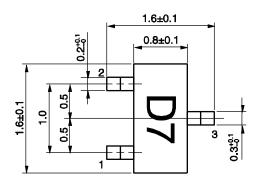


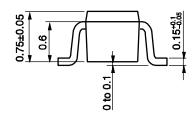
S-PARAMETERS

- 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 ULTRA SUPER MINIMOLD (19, 1608 PKG) (UNIT: mm)





PIN CONNECTIONS

- 1. Emitter
- 2. Base
- 3. Collector