

PRELIMINARY DATA SHEET



**NEC's NPN SiGe TRANSISTOR
FOR LOW NOISE, HIGH-GAIN AMPLIFICATION**

NESG204619

FEATURES

- **IDEAL FOR LOW NOISE, HIGH-GAIN AMPLIFICATION APPLICATIONS:**
NF = 0.8 dB TYP., $G_a = 11.0$ dB TYP. @ $V_{CE} = 1$ V, $I_c = 3$ mA, $F = 2$ GHz
- **HIGH BREAKDOWN VOLTAGE TECHNOLOGY FOR SiGe TRANSISTORS:**
 V_{CE0} (ABSOLUTE MAXIMUM RATINGS) = 5.0 V
- **3-PIN SUPER MINIMOLD (19) PACKAGE**

ORDERING INFORMATION

PART NUMBER	QUANTITY	SUPPLYING FORM
NESG204619-A	50 pcs (Non reel)	<ul style="list-style-type: none"> • 8 mm wide embossed taping • Pin 3 (Collector) face the perforation side of the tape
NESG204619-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}	13	V
Collector to Emitter Voltage	V_{CEO}	5	V
Emitter to Base Voltage	V_{EBO}	1.5	V
Collector Current	I_c	40	mA
Total Power Dissipation	P_{tot}^{Note}	200	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +150	$^\circ\text{C}$

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

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

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Characteristics						
Collector Cut-off Current	I_{CBO}	$V_{CB} = 5\text{ V}, I_E = 0\text{ mA}$	-	-	100	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 0.5\text{ V}, I_C = 0\text{ mA}$	-	-	100	nA
DC Current Gain	h_{FE} ^{Note 1}	$V_{CE} = 1\text{ V}, I_C = 2\text{ mA}$	140	180	220	-
RF Characteristics						
Gain Bandwidth Product	f_T	$V_{CE} = 1\text{ V}, I_C = 15\text{ mA}, f = 2\text{ GHz}$	15	18	-	GHz
Insertion Power Gain	$ S_{21e} ^2$	$V_{CE} = 1\text{ V}, I_C = 15\text{ mA}, f = 2\text{ GHz}$	10	12	-	dB
Noise Figure	NF	$V_{CE} = 1\text{ V}, I_C = 3\text{ mA}, f = 2\text{ GHz},$ $Z_S = Z_{Sopt}, Z_L = Z_{Lopt}$	-	0.8	1.5	dB
Associated Gain	G_a	$V_{CE} = 1\text{ V}, I_C = 3\text{ mA}, f = 2\text{ GHz},$ $Z_S = Z_{Sopt}, Z_L = Z_{Lopt}$	9.0	11.0	-	dB
Reverse Transfer Capacitance	C_{re} ^{Note 2}	$V_{CB} = 1\text{ V}, I_E = 0\text{ mA}, f = 1\text{ MHz}$	-	0.2	0.4	pF

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

2. Collector to base capacitance when the emitter is grounded.

h_{FE} CLASSIFICATION

RANK	FB
Marking	T7
h_{FE} Value	140 to 220

