

PRELIMINARY DATA SHEET

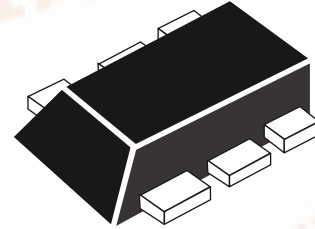
CEL

NEC's NPN SiGe HIGH FREQUENCY TRANSISTOR

NESG2101M16

FEATURES

- **HIGH BREAKDOWN VOLTAGE SiGe TECHNOLOGY**
VCE0 = 5 V (Absolute Maximum)
- **HIGH OUTPUT POWER:**
P1dB = 21 dBm at 2 GHz
- **LOW NOISE FIGURE:**
NF = 0.9 dB at 2 GHz
NF = 0.6 dB at 1 GHz
- **HIGH MAXIMUM STABLE POWER GAIN:**
MSG = 17 dB at 2 GHz
- **LOW PROFILE M16 PACKAGE:**
6-pin lead-less minimold



M16

DESCRIPTION

NEC's NESG2101M16 is fabricated using NEC's high voltage Silicon Germanium process (UHS2-HV), and is designed for a wide range of applications including low noise amplifiers, medium power amplifiers, and oscillators.

ELECTRICAL CHARACTERISTICS (TA = 25°C)

PART NUMBER PACKAGE OUTLINE			NESG2101M16 M16			
	SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
RF	P1dB	Output Power at 1 dB Compression Point VCE = 3.6 V, ICQ = 10 mA, f = 2 GHz, ZS = ZSOPT, ZL = ZLOPT	dBm		21	
	GL	Linear Gain, VCE = 3.6 V, ICQ = 10 mA, f = 2 GHz,	dB		15	
	NF	Noise Figure at VCE = 2 V, IC = 10 mA, f = 2 GHz, ZS = ZSOPT, ZL = ZLOPT	dB		0.9	1.2
	Ga	Associated Gain at VCE = 2 V, IC = 10 mA, f = 2 GHz, ZS = ZSOPT, ZL = ZLOPT	dB	11.0	13.0	
	NF	Noise Figure at VCE = 2 V, IC = 7mA, f = 1 GHz, ZS = ZSOPT, ZL = ZLOPT	dB		0.6	
	Ga	Associated Gain at VCE = 2 V, IC = 7 mA, f = 1 GHz, ZS = ZSOPT, ZL = ZLOPT	dB		19.0	
	MSG	Maximum Stable Gain ¹ at VCE = 3 V, IC = 50 mA, f = 2 GHz	dB	14.5	17.0	
	S21E ²	Insertion Power Gain at VCE = 3 V, IC = 50 mA, f = 2 GHz	dB	11.5	13.5	
	fT	Gain Bandwidth Product at VCE = 3 V, IC = 50 mA, f = 2 GHz	GHz	14	17	
	Cre	Reverse Transfer Capacitance ² at VCB = 2 V, IE = 0 mA, f = 1 MHz	pF		0.4	0.5
DC	ICBO	Collector Cutoff Current at VCB = 5V, IE = 0	nA			100
	IEBO	Emitter Cutoff Current at VEB = 1 V, IC = 0	nA			100
	hFE	DC Current Gain ³ at VCE = 2 V, IC = 15 mA		130	190	260

Notes:

$$1. \text{MSG} = \left| \frac{S_{21}}{S_{12}} \right|$$

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

3. Pulsed measurement, pulse width ≤ 350 μs, duty cycle ≤ 2 %.

