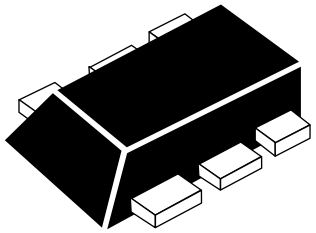
CEL

NEC's NPN SiGe HIGH FREQUENCY TRANSISTOR

NESG2101M16

FEATURES

- **HIGH BREAKDOWN VOLTAGE SiGe TECHNOLOGY**
  V_{CEO} = 5 V (Absolute Maximum)
- **HIGH OUTPUT POWER:**
  P_{1dB} = 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 (T_A = 25°C)

PART NUMBER PACKAGE OUTLINE			NESG2101M16 M16			
SYMBOLS		PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
RF	P_{1dB}	Output Power at 1 dB Compression Point V_{CE} = 3.6 V, I_{CQ} = 10 mA, f = 2 GHz, Z_S = Z_{SOPT}, ZL = Z_{LOPT}	dBm		21	
	G_L	Linear Gain, V_{CE} = 3.6 V, I_{CQ} = 10 mA, f = 2 GHz,	dB		15	
	NF	Noise Figure at V_{CE} = 2 V, I_C = 10 mA, f = 2 GHz, Z_S = Z_{SOPT}, ZL = Z_{LOPT}	dB		0.9	1.2
	G_a	Associated Gain at V_{CE} = 2 V, I_C = 10 mA, f = 2 GHz, Z_S = Z_{SOPT}, ZL = Z_{LOPT}	dB	11.0	13.0	
	NF	Noise Figure at V_{CE} = 2 V, I_C = 7mA, f = 1 GHz, Z_S = Z_{SOPT}, ZL = Z_{LOPT}	dB		0.6	
	G_a	Associated Gain at V_{CE} = 2 V, I_C = 7 mA, f = 1 GHz, Z_S = Z_{SOPT}, ZL = Z_{LOPT}	dB		19.0	
	MSG	Maximum Stable Gain[1] at V_{CE} = 3 V, I_C = 50 mA, f = 2 GHz	dB	14.5	17.0	
	$\|S_{21E}\|^2$	Insertion Power Gain at V_{CE} = 3 V, I_C = 50 mA, f = 2 GHz	dB	11.5	13.5	
	f_T	Gain Bandwidth Product at V_{CE} = 3 V, I_C = 50 mA, f = 2 GHz	GHz	14	17	
	C_{re}	Reverse Transfer Capacitance[2] at V_{CB} = 2 V, I_E = 0 mA, f = 1 MHz	pF		0.4	0.5
DC	I_{CBO}	Collector Cutoff Current at V_{CB} = 5V, I_E = 0	nA			100
	I_{EBO}	Emitter Cutoff Current at V_{EB} = 1 V, I_C = 0	nA			100
	h_{FE}	DC Current Gain[3] at V_{CE} = 2 V, I_C = 15 mA		130	190	260

Notes:

1. 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 %.

ABSOLUTE MAXIMUM RATINGS[1] (T_A = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{CBO}	Collector to Base Voltage	V	13.0
V_{CEO}	Collector to Emitter Voltage	V	5.0
V_{EBO}	Emitter to Base Voltage	V	1.5
I_C	Collector Current	mA	100
P_T[2]	Total Power Dissipation	mW	190
T_J	Junction Temperature	°C	150
T_{STG}	Storage Temperature	°C	-65 to +150

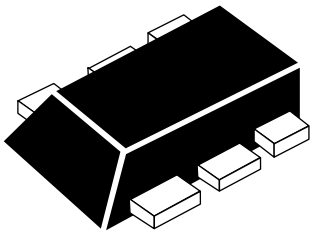
Note:
1. Operation in excess of any one of these parameters may result in permanent damage.
2. Mounted on 1.08 cm² x 1.0 mm (t) glass epoxy PCB.

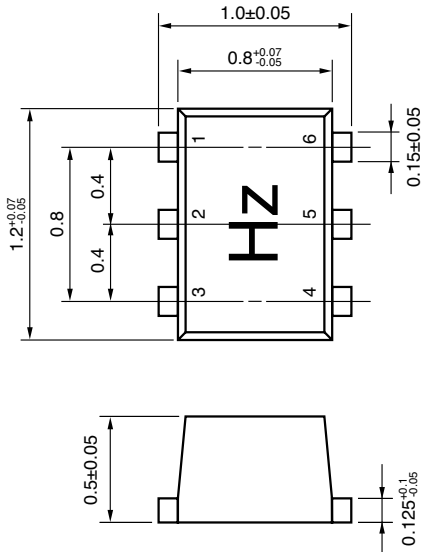
ORDERING INFORMATION

PART NUMBER	QUANTITY	SUPPLYING FORM
NESG2101M16-T3-A	10 K pcs reel	Pin 1 (Collector), Pin 6 (Emitter) face the perforation side of the tape

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE M16
6-PIN LEAD-LESS MINIMOLD





PIN CONNECTIONS
1. Collector 4. Base
2. Emitter 5. Emitter
3. Emitter 6. Emitter

Life Support Applications
These NEC products are not intended for use in life support devices, appliances, or systems where the malfunction of these products can reasonably be expected to result in personal injury. The customers of CEL using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CEL for all damages resulting from such improper use or sale.

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Subject: Compliance with EU Directives

CEL certifies, to its knowledge, that semiconductor and laser products detailed below are compliant with the requirements of European Union (EU) Directive 2002/95/EC Restriction on Use of Hazardous Substances in electrical and electronic equipment (RoHS) and the requirements of EU Directive 2003/11/EC Restriction on Penta and Octa BDE.

CEL Pb-free products have the same base part number with a suffix added. The suffix –A indicates that the device is Pb-free. The –AZ suffix is used to designate devices containing Pb which are exempted from the requirement of RoHS directive (*). In all cases the devices have Pb-free terminals. All devices with these suffixes meet the requirements of the RoHS directive.

This status is based on CEL's understanding of the EU Directives and knowledge of the materials that go into its products as of the date of disclosure of this information.

Restricted Substance per RoHS	Concentration Limit per RoHS (values are not yet fixed)	Concentration contained in CEL devices	
Lead (Pb)	< 1000 PPM	-A	-AZ
		Not Detected	(*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
PBB	< 1000 PPM	Not Detected	
PBDE	< 1000 PPM	Not Detected	

If you should have any additional questions regarding our devices and compliance to environmental standards, please do not hesitate to contact your local representative.

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In no event shall CEL's liability arising out of such information exceed the total purchase price of the CEL part(s) at issue sold by CEL to customer on an annual basis.
See CEL Terms and Conditions for additional clarification of warranties and liability.