CEL NEC'S NPN SILICON TRANSISTOR NE687M33

FEATURES

LOW NOISE: NF = 1.5 dB TYP. @ Vce = 1 V, lc = 3 mA, f = 2 GHz

• 3-PIN SUPER LEAD-LESS MINIMOLD (M33) PACKAGE

ORDERING INFORMATION

PART NUMBER	QUANTITY	SUPPLYING FORM	
NE687M33-A	50 pcs (Non reel)	• 8 mm wide embossed taping	
NE687M33-T3-A	10 kpcs/reel	Pin 2 (Base) face the perforation side of the tape	

 $\label{eq:result} \textbf{Remark} \quad \mbox{To order evaluation samples, contact your nearby sales office.}$

The unit sample quantity is 50 pcs.

ABSOLUTE MAXIMUM RATINGS (TA=+25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector to Base Voltage	Vсво	5.0	V
Collector to Emitter Voltage	VCEO	3.0	V
Emitter to Base Voltage	Vebo	2.0	V
Collector Current	lc	30	mA
Total Power Dissipation	Ptot Note	90	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-65 to +150	°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.

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ELECTRICAL CHARACTERISTICS (TA = +25°C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Characteristics						
Collector Cut-off Current	Ісво	V _{CB} = 5 V, I _E = 0 mA	-	-	100	nA
Emitter Cut-off Current	Іево	V _{ЕВ} = 1 V, Ic = 0 mA	-	-	100	nA
DC Current Gain	hFE Note 1	Vce = 1 V, lc = 10 mA	70	110	140	_
RF Characteristics						
Gain Bandwidth Product	f⊤	Vce = 1 V, Ic = 10 mA, f = 2 GHz	10	12	-	GHz
Insertion Power Gain	IS _{21e} l ²	Vce = 1 V, Ic = 10 mA, f = 2 GHz	7	9	-	dB
Noise Figure	NF	$\label{eq:Vce} \begin{array}{l} V_{CE} = 1 \ V, \ I_C = 3 \ mA, \ f = 2 \ GHz, \\ Z_S = Z_{opt} \end{array}$	-	1.5	2.0	dB
Reverse Transfer Capacitance	Cre Note 2	Vсв = 0.5 V, lc = 0 mA, f = 1 MHz	-	0.4	0.7	pF

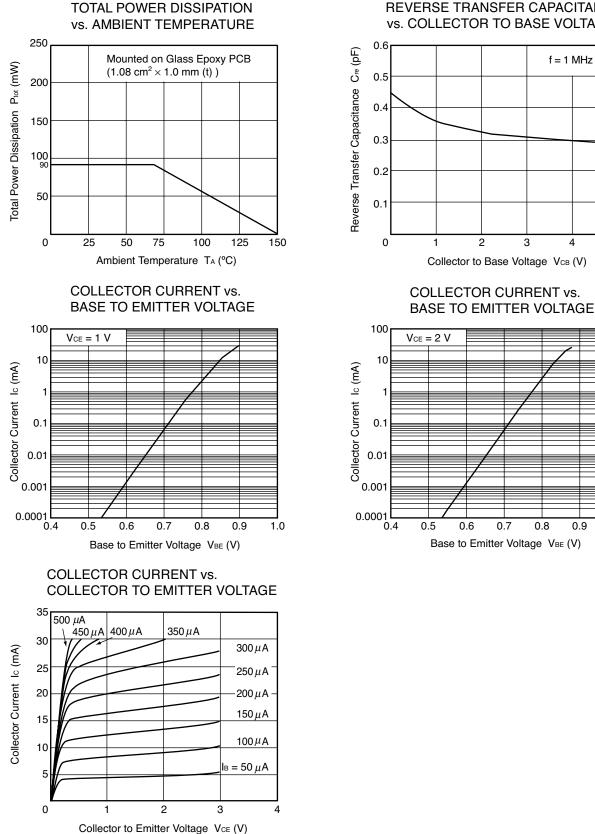
Notes 1. Pulse measurement: PW \leq 350 µs, Duty Cycle \leq 2%

2. Collector to base capacitance when the emitter grounded

hFE CLASSIFICATION

RANK	FB	
Marking	W2	
hfe Value	70 to 140	





Remark The graphs indicate nominal characteristics.

REVERSE TRANSFER CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE

3

0.8

0.9

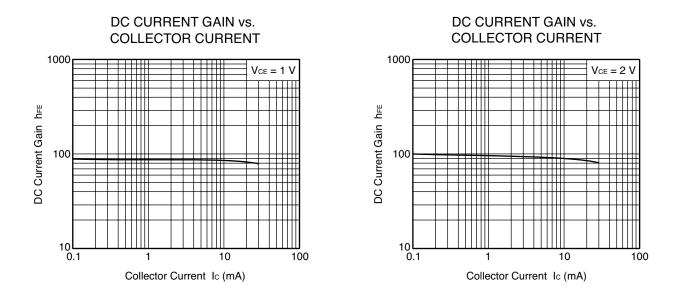
1.0

f = 1 MHz

4

5

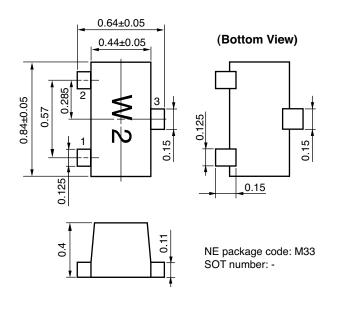
TYPICAL CHARACTERISTICS (TA = +25°C, unless otherwise specified)



Remark The graphs indicate nominal characteristics.

PACKAGE DIMENSIONS

3-PIN SUPER LEAD-LESS MINIMOLD (M33) (UNIT: mm)



PIN CONNECTIONS

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

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 Not Detected	-AZ (*)
Mercury	< 1000 PPM	Not Detected	
Cadmium	< 100 PPM	Not Detected	
Hexavalent Chromium	< 1000 PPM	Not Detected	
РВВ	< 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.

See CEL Terms and Conditions for additional clarification of warranties and liability.

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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.