

## NTC Thermistor, Epoxy Coated Mini Sensor


**RoHS**  
COMPLIANT

### FEATURES

- Advanced NTC technology
- Temperature range from -55 °C to +150 °C
- Highly resistant to thermal shocks
- Small body diameter of max. 2.5 mm
- Fast response time
- High sensitivity
- Delivery in bulk or in tape with extra long leads (for automatic mounting)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### APPLICATIONS

Temperature sensing, control and compensation. E.g. inlet air temperature sensing thermistors or ECT in automotive applications, sensor elements in industrial and commercial applications, heating systems and industrial systems.

### MOUNTING

The thermistors are suitable for all standard assembly processes like crimping, soldering, welding. The parameters of the assembly process should be chosen in accordance with the lead-wire material (tinned nickel) and validated in application.

The mounting process should be in compliance with the following guidelines and recommendations:

- Peeling forces on the leads should be reduced to a minimum and should never exceed 3 N
- Avoid large temperature gradients between the welding region and the sensor

### PACKAGING

- Bulk components are delivered in boxes of 500 components
- Taped components are delivered on a reel of 1500 components (according to IEC 60286-2 but with extra long leads: H0 = 32 mm)

### DESIGN IN SUPPORT

R(T) tables spreadsheet available on request at [nlr@vishay.com](mailto:nlr@vishay.com) or to download at:

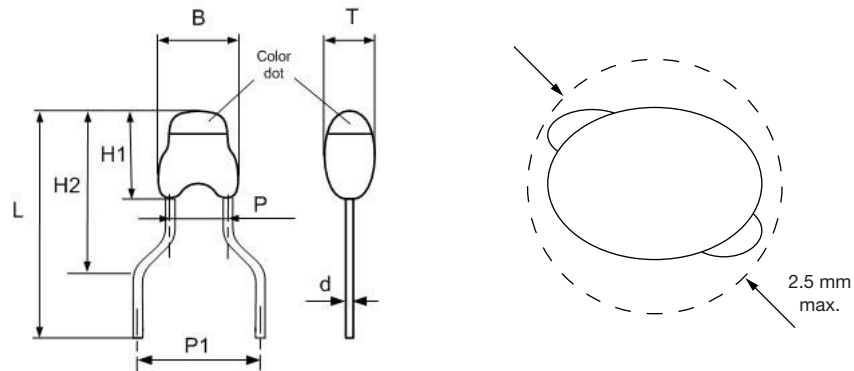
[www.vishay.com/resistors-non-linear/curve-computation-list](http://www.vishay.com/resistors-non-linear/curve-computation-list)

QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	2.1K to 100K	Ω
Tolerance on $R_{25}$ -value	± 1 to ± 5	%
$B_{25/85}$ -value	3511 to 4190	K
Tolerance on $B_{25/85}$ -value	± 0.5 to ± 1.5	%
Operating temperature range	-55 to +150	°C
Response time (63.2 %) 25 °C to 85 °C still air (for info)	5	s
Dissipation factor $\delta$ in still air (for info)	1.8	mW
Maximum power dissipation	100	mW
Min. dielectric withstanding voltage between terminals and coated body	500	V <sub>AC</sub>
Insulation resistance at 100 V <sub>DC</sub>	> 10M	Ω
Weight	approx. 100	mg

ELECTRICAL DATA AND ORDERING INFORMATION					
VISHAY SAP ORDERING NUMBER (1)	$R_{25}$ -VALUE (kΩ)	$R_{25}$ -TOL. (%)	$B_{25/85}$ -VALUE (K)	$B_{25/85}$ -TOL. (%)	COLOR DOT (see next page)
NTCLE213E3212xMyy	2.1	1, 2, 3, 5	3511	1	Orange
NTCLE213E3103xLyy	10	1, 2, 3, 5	3435	1	Red
NTCLE213E3103xHyy	10	1, 2, 3, 5	3984	0.5	Blue
NTCLE213E3123xMyy	12	1, 2, 3, 5	3740	1	Black
NTCLE213E3303xHyy	30	1, 2, 3, 5	3935	0.75	Green
NTCLE213E3104xXyy	100	1, 2, 3, 5	4190	1.5	Brown

#### Note

- (1) Replace the x-digit by J for  $R_{25}$ -tolerance of 5 %, H for 3 %, G for 2 %, and F for 1 %.  
Replace the y-digits by B0 for bulk delivery and by T1 for tape and reel delivery.

**DIMENSIONS** in millimeters


PARAMETER	VALUE
B	2.5 max.
T	2.5 max.
P	1.1 nominal
P1	2.54
d	0.4 ± 10 %
H1	5.5 max.
H2	10 max.
L	41 ± 1

**Note**

- Non-dimensioned details do not affect the performance of the thermistors.



## Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

## Material Category Policy

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.**

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А