

## SMD 0402 Multilayer Varistor



### FEATURES

- Surface mount multilayer surge suppressor
- Inherent bidirectional clamping
- Excellent energy/volume ratio
- Suitable for reflow soldering
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### APPLICATIONS

Over-voltage and transient voltage protection:

- Data lines and I/O port protection
- Protection against ESD transients
- On-board protection of IC's and transistors
- Modem protection
- LCD protection

### DESCRIPTION

Size 0402 (1005M) multilayer chip varistor with NiSn terminations.

### PACKAGING

Available in 8 mm paper tape, component pitch 4 mm on 180 mm reels containing 10 000 pieces.

QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Maximum continuous voltage DC	5.6 to 18.0	V
AC	4.0 to 14.0	V
Maximum clamping voltage at 1 A	15.5 to 40	V
Capacitance range (at 1 MHz)	90 to 360	pF
Maximum energy (10/1000 $\mu$ s)	0.05	J
Maximum peak current	20	A
Operating temperature range	-55 to 125	$^{\circ}$ C
Weight	$\pm$ 0.0015	g

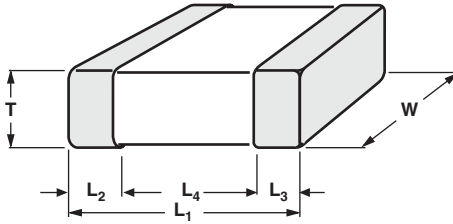
ELECTRICAL DATA AND ORDERING INFORMATION					
WORKING VOLTAGE		BREAKDOWN VOLTAGE	MAXIMUM CLAMPING VOLTAGE	TYPICAL CAPACITANCE	PART NUMBER
$V_{RMS}$	$V_{DC}$	$V_b$	$V_c$	C	SAP
V	V	V	V	pF	MLV0402E3
	< 10 $\mu$ A	1 mA	1 A, 8/20 $\mu$ s	1 MHz	
4.0	5.6	7.1 to 9.3	15.5	360	0403T
7.0	9.0	11.0 to 14.0	20.0	230	0703T
11.0	14.0	16.0 to 20.0	30.0	120	1103T
14.0	18.0	23.0 to 28.0	40.0	90	1403T

### Notes

- Sinusoidal voltage assumed as normal operating condition.  
If a non-sinusoidal voltage is present, the crest voltage x 0.707 should be used for type selection.
- Breakdown voltage at a current of 1 mA, measured according to 4.5 of IEC 61051-1.
- Parts are not recommended for automotive applications.



**DIMENSIONS** in millimeters



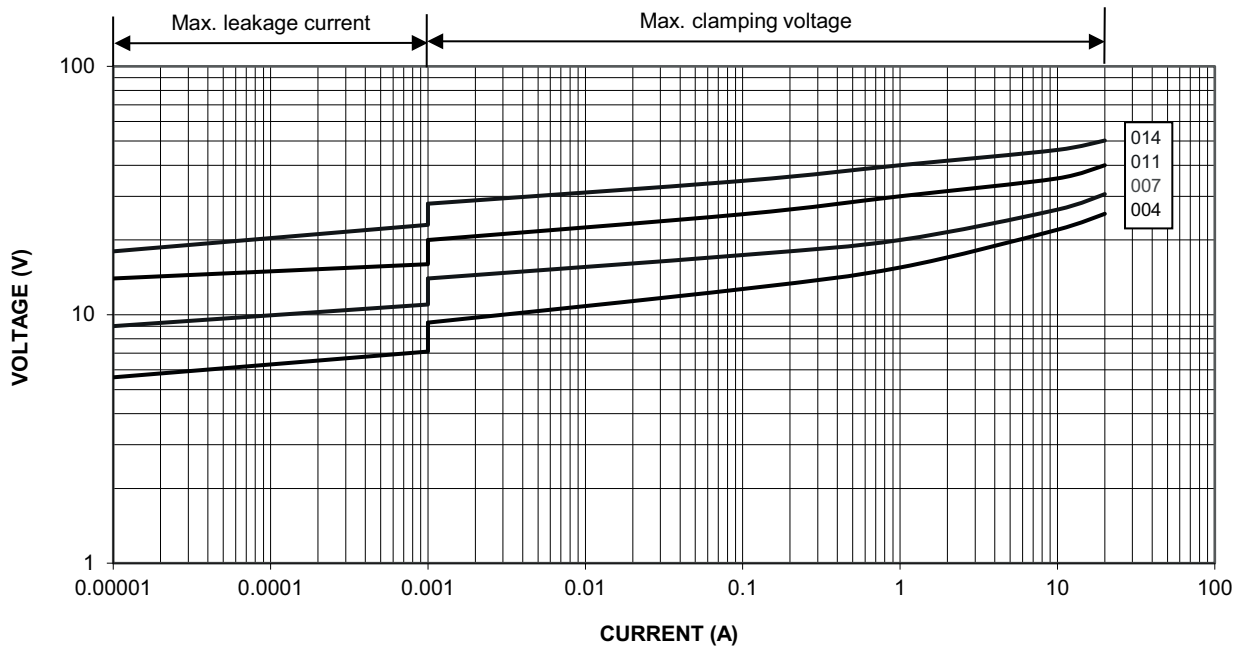
L <sub>1</sub>	W	T	L <sub>2</sub> and L <sub>3</sub>
1.0 ± 0.1	0.5 ± 0.1	0.6 max.	0.25 ± 0.15

**RECOMMENDED FOOTPRINT** in millimeters



A	B	C
0.7	0.7	2.0

**V/I CHARACTERISTICS**





## 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.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

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.