

## SMD 1210 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 1210 (M3225) multilayer chip varistor with NiSn terminations.

### PACKAGING

Available in 8 mm embossed carrier tape, component pitch 4 mm on 180 mm reels containing 2000 pieces.

### QUICK REFERENCE DATA

PARAMETER	VALUE	UNIT
Maximum continuous voltage		
DC	5.6 to 45.0	V
AC	4.0 to 35.0	V
Maximum clamping voltage at 2.5 A	22.0 to 95.0	V
Capacitance range (at 1 kHz)	650 to 5000	pF
Maximum energy (10/1000 $\mu$ s)	0.4 to 2.2	J
Maximum peak current (8/20 $\mu$ s)	250 to 400	A
Operating temperature range	-55 to 85	$^{\circ}$ C
Weight	$\pm$ 0.030	g

### ELECTRICAL DATA AND ORDERING INFORMATION

WORKING VOLTAGE		BREAKDOWN VOLTAGE	CLAMPING VOLTAGE	MAX. PEAK CURRENT	MAXIMUM ENERGY	CAPACITANCE	PART NUMBER
$V_{RMS}$	$V_{DC}$	$V_b$	$V_c$	$I_p$	$E_t$	C	SAP
V	V	V	V	A	J	pF	MLV1210E3
	< 50 $\mu$ A	1 mA	2.5 A, 8/20 $\mu$ s	8/20 $\mu$ s	10/1000 $\mu$ s	1 kHz	
4.0	5.6	7.0 to 10.0	22.0	250	0.4	5000	0403T
14.0	18.0	21.6 to 26.0	48.0	400	1.5	2000	1403T
20.0	26.0	31.0 to 38.0	62.0	400	1.9	1500	2003T
25.0	30.0	37.0 to 46.0	77.0	400	1.9	1200	2503T
35.0	45.0	50.4 to 61.6	95.0	250	2.2	950	3503T

### Notes

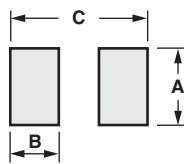
- Sinusoidal voltage assumed as normal operating condition.  
If a non-sinusoidal voltage is present, the crest voltage x 0.707 should be used for type selection.
- Breakdown voltage at a current of 1 mA, measured according to 4.5 of IEC 61051-1.
- Parts are not recommended for automotive applications.

**DIIMENSIONS** in millimeters



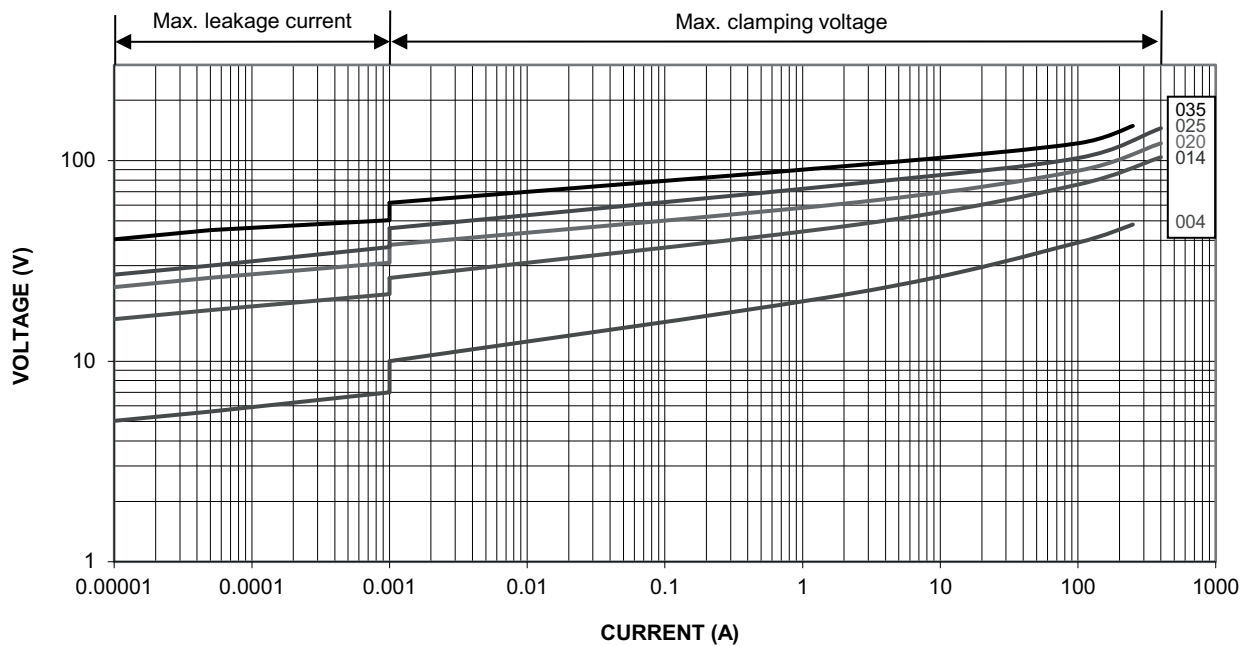
L <sub>1</sub>	W	T	L <sub>2</sub> and L <sub>3</sub>
3.2 ± 0.2	2.5 ± 0.25	1.8 max.	0.71 max.

**RECOMMENDED FOOTPRINT** in millimeters



A	B	C
2.7	1.2	3.9

**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.

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.