Description:

The ZVL Series of low voltage leaded multilayer varistors (MLVs) is designed to protect sensitive electronic devices operating in the low voltage region against high voltage/current surges. They offer excellent transient energy absorption due to improved energy volume distribution and power dissipation. Low voltage MLVs cover a wide DC operating voltage range from 14V to 56V.

Features:

- AC operating voltage (Vrms) from 11V to 40V
- DC operating voltage (Vdc) from 14V to 56V
- 5 model sizes available 5, 7, 10, 14, 20
- Available with straight or crimped leads
- Broad range of current and energy handling capabilities
- +125ºC continuous operating temperature (+150ºC for ZVYL)
- Dimensional and weight savings on PC board
- Bi-directional, lower clamping voltages than disc type varistors
- ZVYL high temperature product will have performance characteristics different from the ZVL. Contact Stackpole for specific details.
- 100% RoHS compliant and lead free without exemption
- Halogen free
- REACH compliant
- AEC-Q200 qualified Grade 3

Applications:

- Suppression of inductive switching or other transient events at the circuit board level
- Provides on-board transient voltage protection for ICs and transistors
- Used to help achieve electromagnetic compliance of end products
- Replace larger TVS Zener diodes in many applications

General Technical Data	
Operating Temperature - ZVL	-55ºC to +125ºC
Operating Temperature - ZVYL	-55ºC to +150ºC
Storage Temperature Range	-55ºC to +150ºC
Threshold Voltage Temperature Coefficient	< -0.05% /ºC
Insulation Resistance	> 1Gohm
Isolation Voltage Capability	>1.25kV
Response Time	< 25nS

Standard Packaging Options / Quantities				
Series	Voltage Range (Vrms)	Model Size	Packaging options 7 mm, 10 mm, 14 mm, 20 mm and 23 mm	
			B (Bulk)	T (Tape and Reel)
ZVL, ZVYL	11 - 40	05	1500	1500
	11 - 40	07	1500	1500
	11 - 40	10	1500	1500
	11 - 40	14	1000	1500
	11 - 40	20	1000	1500

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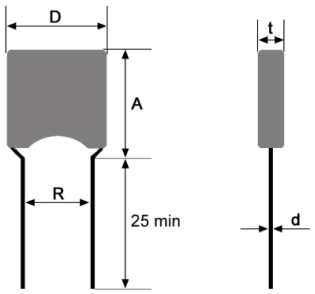
Device Ratings and Dimensions



Part Number	V_{RMS} (volts)	V_{DC} (volts)	V_N (1 mA) (volts)	V_C (volts)	I_C (8/20 uSec) (amps)	W_{MAX} (10/1000 uSec) (joules)	P_{MAX} (watts)	I_{MAX} (8/20 uSec) (amps)	C_{TYP} (@ 1 kHz) (pF)	D_{MAX} (mm)	t_{MAX} (mm)	R (mm)	d (mm)	h/A_{MAX} (mm)
ZVL11K05	11	14	18	33	1	0.30	0.005	100	480	6.00	3.50	5.00	0.60	7.00
ZVL11K07	11	14	18	33	2.5	0.80	0.008	250	1,400	7.00	3.50	5.00	0.60	8.00
ZVL11K10	11	14	18	33	5	1.70	0.010	500	2,420	7.00	3.50	5.00	0.60	9.00
ZVL11K14	11	14	18	33	10	3.30	0.015	1,000	5,000	8.00	3.50	5.00	0.60	12.00
ZVL11K20	11	14	18	33	20	10.50	0.020	2,000	9,270	9.00	3.50	5.00	0.60	12.00
ZVL14K05	14	18	22	38	1	0.40	0.005	100	377	6.00	3.50	5.00	0.60	7.00
ZVL14K07	14	18	22	38	2.5	0.90	0.008	250	1,050	7.00	3.50	5.00	0.60	8.00
ZVL14K10	14	18	22	38	5	2.20	0.010	500	1,770	7.00	3.50	5.00	0.60	9.00
ZVL14K14	14	18	22	38	10	4.20	0.015	1,000	3,850	8.00	3.50	5.00	0.60	12.00
ZVL14K20	14	18	22	38	20	12.00	0.020	2,000	7,670	9.00	3.50	5.00	0.60	12.00
ZVL17K05	17	22	27	44	1	0.50	0.005	100	335	6.00	3.50	5.00	0.60	7.00
ZVL17K07	17	22	27	44	2.5	1.20	0.008	250	850	7.00	3.50	5.00	0.60	8.00
ZVL17K10	17	22	27	44	5	2.60	0.010	500	1,370	7.00	3.50	5.00	0.60	9.00
ZVL17K14	17	22	27	44	10	5.20	0.015	1,000	3,050	8.00	3.50	5.00	0.60	12.00
ZVL17K20	17	22	27	44	20	14.20	0.020	2,000	6,600	9.00	3.50	5.00	0.60	12.00
ZVL20K05	20	26	33	54	1	0.60	0.005	100	325	6.00	4.50	5.00	0.60	7.00
ZVL20K07	20	26	33	54	2.5	1.40	0.008	250	790	7.00	4.50	5.00	0.60	8.00
ZVL20K10	20	26	33	54	5	3.20	0.010	500	1,090	7.00	4.50	5.00	0.60	9.00
ZVL20K14	20	26	33	54	10	6.40	0.015	1,000	2,490	8.00	4.50	5.00	0.60	12.00
ZVL20K20	20	26	33	54	20	18.20	0.020	2,000	5,670	9.00	4.50	5.00	0.60	12.00
ZVL25K05	25	31	39	65	1	0.70	0.005	100	315	6.00	4.50	5.00	0.60	7.00
ZVL25K07	25	31	39	65	2.5	1.60	0.008	250	790	7.00	4.50	5.00	0.60	8.00
ZVL25K10	25	31	39	65	5	3.80	0.010	500	870	7.00	4.50	5.00	0.60	9.00
ZVL25K14	25	31	39	65	10	7.20	0.015	1,000	1,890	8.00	4.50	5.00	0.60	12.00
ZVL25K20	25	31	39	65	20	22.40	0.020	2,000	4,670	9.00	4.50	5.00	0.60	12.00
ZVL30K05	30	38	47	77	1	0.90	0.005	100	315	6.00	4.50	5.00	0.60	7.00
ZVL30K07	30	38	47	77	2.5	2.20	0.008	250	790	7.00	4.50	5.00	0.60	8.00
ZVL30K10	30	38	47	77	5	4.40	0.010	500	770	7.00	4.50	5.00	0.60	9.00
ZVL30K14	30	38	47	77	10	9.40	0.015	1,000	1,530	8.00	4.50	5.00	0.60	12.00
ZVL30K20	30	38	47	77	20	25.80	0.020	2,000	3,870	9.00	4.50	5.00	0.60	12.00
ZVL35K05	35	45	56	90	1	1.20	0.005	100	315	6.00	4.50	5.00	0.60	7.00
ZVL35K07	35	45	56	90	2.5	2.60	0.008	250	790	7.00	4.50	5.00	0.60	8.00
ZVL35K10	35	45	56	90	5	5.40	0.010	500	680	7.00	4.50	5.00	0.60	9.00
ZVL35K14	35	45	56	90	10	10.20	0.015	1,000	1,260	8.00	4.50	5.00	0.60	12.00
ZVL35K20	35	45	56	90	20	33.40	0.020	2,000	3,470	9.00	4.50	5.00	0.60	12.00
ZVL40K05	40	56	68	110	1	1.40	0.005	100	315	6.00	4.50	5.00	0.60	7.00
ZVL40K07	40	56	68	110	2.5	3.20	0.008	250	790	7.00	4.50	5.00	0.60	8.00
ZVL40K10	40	56	68	110	5	6.40	0.010	500	660	7.00	4.50	5.00	0.60	9.00
ZVL40K14	40	56	68	110	10	13.40	0.015	1,000	1,070	8.00	4.50	5.00	0.60	12.00
ZVL40K20	40	56	68	110	20	37.80	0.020	2,000	3,130	9.00	4.50	5.00	0.60	12.00

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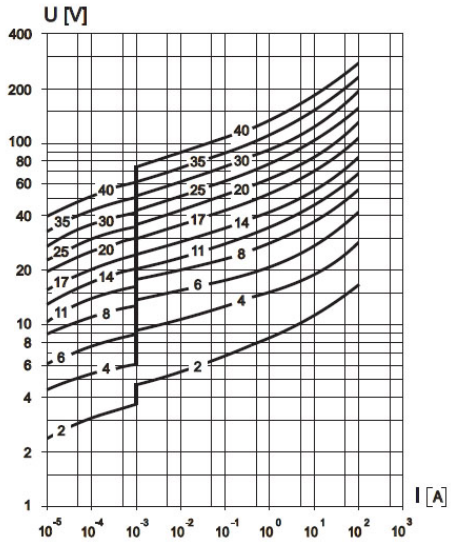
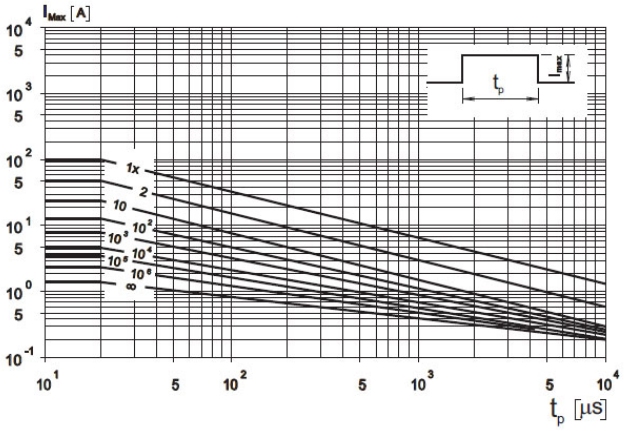
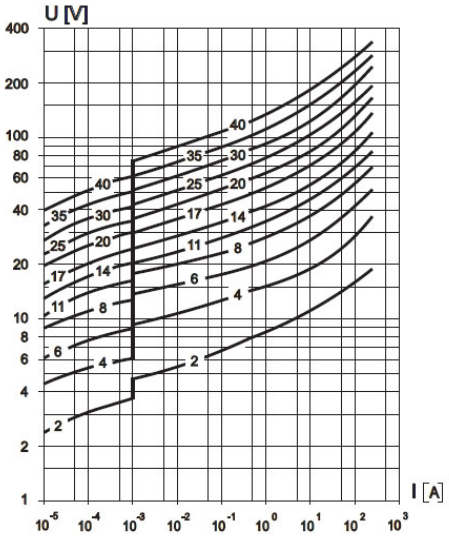
Protection Level

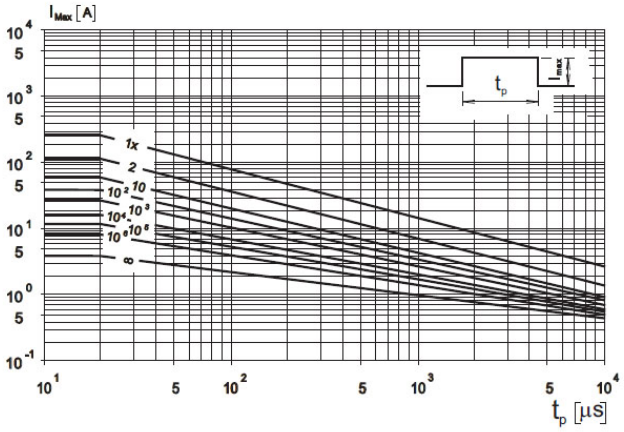


Disc Diameter 5
ZVL11...40





Disc Diameter 7
ZVL11...40



(With the worst-case condition in the tolerance region)

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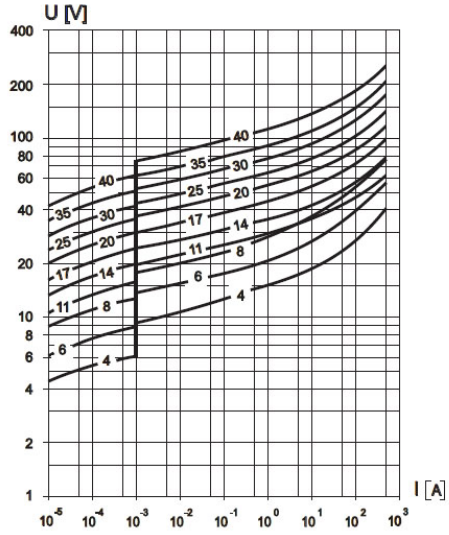
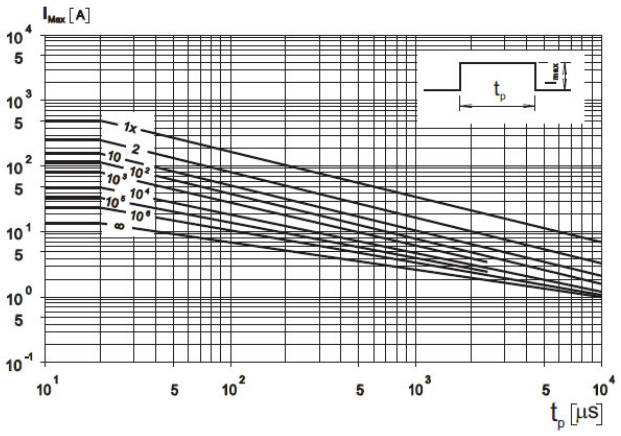
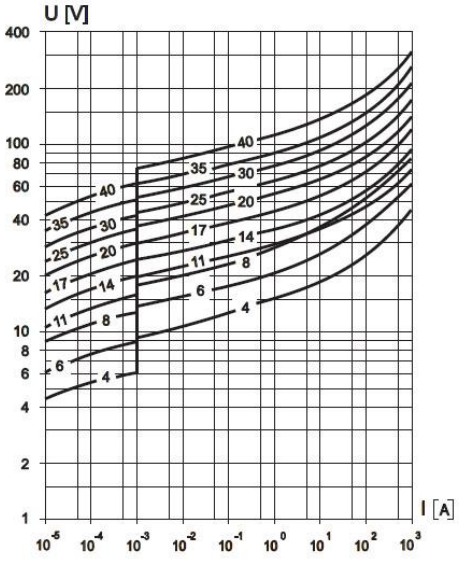
Protection Level



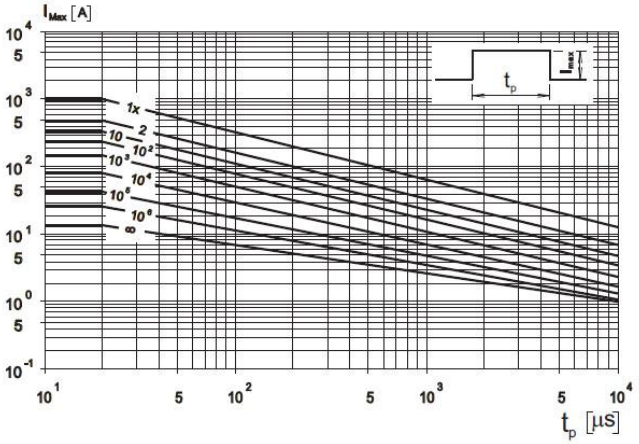
Disc Diameter 10
ZVL11...40



(With the worst-case condition in the tolerance region)



Disc Diameter 14
ZVL11...40



(With the worst-case condition in the tolerance region)

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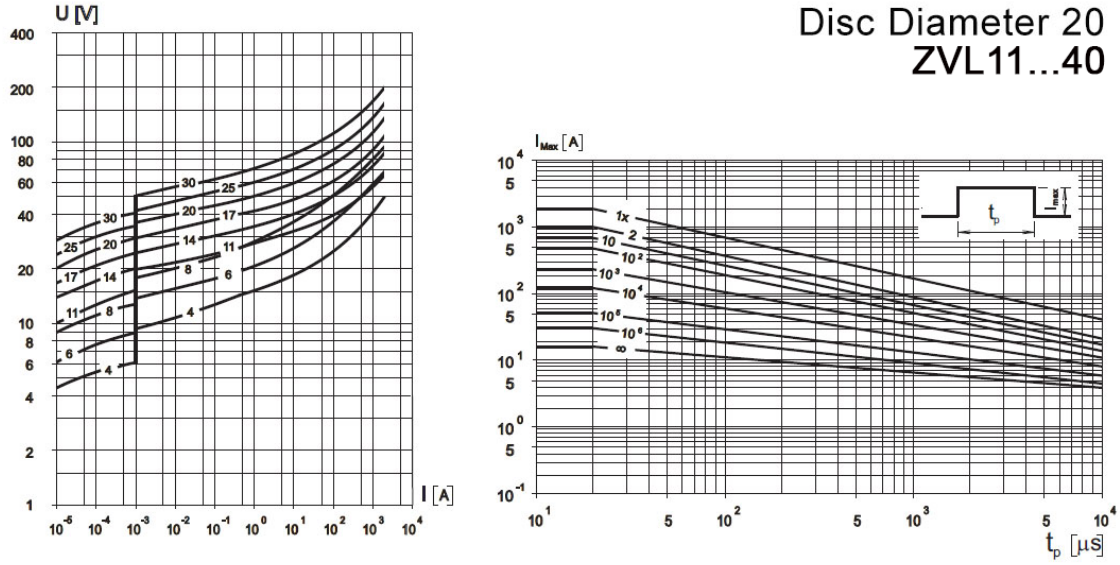
Protection Level



(With the worst-case condition in the tolerance region)

RoHS Compliance

Stackpole Electronics has joined the worldwide effort to reduce the amount of lead in electronic components and to meet the various regulatory requirements now prevalent, such as the European Union's directive regarding "Restrictions on Hazardous Substances" (RoHS 3). As part of this ongoing program, we periodically update this document with the status regarding the availability of our compliant components. All our standard part numbers are compliant to EU Directive 2011/65/EU of the European Parliament as amended by Directive (EU) 2015/863/EU as regards the list of restricted substances.

RoHS Compliance Status

Standard Product Series	Description	Package / Termination Type	Standard Series RoHS Compliant	Lead-Free Termination Composition	Lead-Free Mfg. Effective Date (Std Product Series)	Lead-Free Effective Date Code (YY/WW)
ZVL	Low Voltage Radial Leaded MLV Varistor	Leaded	YES	100% Matte Sn	Jul-05	05/27

"Conflict Metals" Commitment

We at Stackpole Electronics, Inc. are joined with our industry in opposing the use of metals mined in the "conflict region" of the eastern Democratic Republic of the Congo (DRC) in our products. Recognizing that the supply chain for metals used in the electronics industry is very complex, we work closely with our own suppliers to verify to the extent possible that the materials and products we supply do not contain metals sourced from this conflict region. As such, we are in compliance with the requirements of Dodd-Frank Act regarding Conflict Minerals.

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Compliance to "REACH"

We certify that all passive components supplied by Stackpole Electronics, Inc. are SVHC (Substances of Very High Concern) free and compliant with the requirements of EU Directive 1907/2006/EC, "The Registration, Evaluation, Authorization and Restriction of Chemicals", otherwise referred to as REACH. Contact us for complete list of REACH Substance Candidate List.

Environmental Policy

It is the policy of Stackpole Electronics, Inc. (SEI) to protect the environment in all localities in which we operate. We continually strive to improve our effect on the environment. We observe all applicable laws and regulations regarding the protection of our environment and all requests related to the environment to which we have agreed. We are committed to the prevention of all forms of pollution.

How to Order

Z	V	L	1	4	K	1	0	T

Product Series	
ZVL	Standard
ZVYL	High Temp

Vrms
Voltage
11
14
17
20
25
30
35
40

Tolerance	
Code	Tol
K	10%
L	15%
M	20%

Disc Diameter
Size (mm)
05
07
10
14
20

Packaging	
Code	Description
B	Bulk
T	Tape and Reel

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