

### Description:

Almost all electronic systems in internal-combustion powered vehicles, e.g., anti-lock brakes, direct ignition, airbag control, wiper motors, etc. are susceptible to damage from destructive voltage transients.

Stackpole AVL Series of leaded automotive varistors includes both multilayer and single layer components, defined by  $W_{LD}$  capability. Multilayer devices are intended  $W_{LD}$  applications requiring up to 50 joules of energy, and single layer discs are for  $W_{LD}$  applications requiring above 50 joules of energy.

Automotive multilayer varistors offer excellent transient energy absorption due to improved internal energy distribution. Compared to an equivalent automotive disc varistor, they offer better electrical characteristic in much smaller size. Automotive disc varistors are specifically designed and used in applications requiring higher levels of  $W_{LD}$  energy absorption, which MLV devices are incapable of handling.



### Features:

- AC operating voltage range ( $V_{rms}$ ) from 14V to 40V
- DC operating voltage ( $V_{dc}$ ) from 16V to 56V  
Higher operating voltages are available upon request
- Power supply voltages ( $V_{dc}$ ) 12V, 24V and 42V
- Broad range of current and energy handling capabilities realized with either type of construction
- AVYL high temperature product will have performance characteristics different from the AVL listed here.  
Contact Stackpole for specific details.
- In-line leads on automotive MLV varistors
- MLV varistors: +125°C continuous operating temperature is available upon request (+150°C for AVYL)
- $W_{LD}$  up to 50J
- Available in tape and reel for automatic insertion equipment
- 100% RoHS compliant and lead free without exemption
- Halogen free
- REACH compliant
- AEC-Q200 qualified Grade

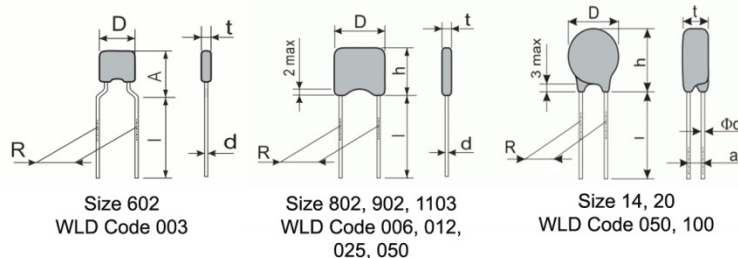
General Technical Data		
Specification	MLV	SLV
Operating Ambient Temperature for $W_{LD}$ above 50J - AVL	-40°C to +125°C	-40°C to +85°C
Operating Ambient Temperature for $W_{LD}$ above 50J - AVYL	-40°C to +150°C	-40°C to +150°C
Storage Temperature Range for $W_{LD}$ above 50J	-40°C to +85°C	-40°C to +125°C
Threshold Voltage Temperature Coefficient	$\leq 0.05\% / ^\circ\text{C}$	
Insulation Resistance	$> 1\text{Gohm}$	
Response Time	$< 25\text{ns}$	
Climatic Category for $W_{LD} \leq 50\text{J}$ - MLV	40/125/56	40/85/56

Higher operating voltages are available upon request.

### Standard Packaging Options / Quantity

Series	Voltage Range (Vrms)	Model Size	Packaging Options: 7mm, 10mm, 14mm, 20mm and 23mm		
			Bulk	Tape and Reel	Ammo Pack
AVL, AVYL	14 - 40	60 2	1500	2000	2000
	14 - 40	80 2	1000	1500	1500
	14 - 40	90 2	1000	1500	1500
	14 - 20	110 3	700	1000	1000
	25 - 40	20	400	700	800
	25 - 40	40	400	700	800

### Device Ratings and Dimensions

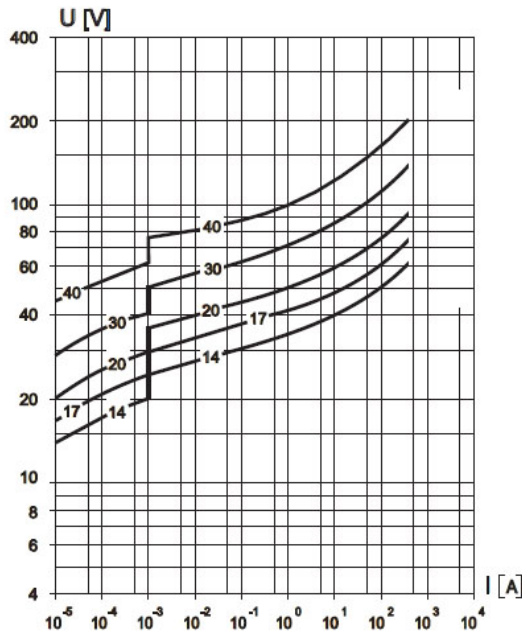


Power Supply	Part Number	V <sub>RMS</sub> (volts)	V <sub>DC</sub> (volts)	V <sub>N</sub> (1 mA) (volts)	V <sub>JUMP</sub> (volts)	V <sub>C</sub> (volts)	I <sub>C</sub> (8/20 uSec) (amps)	I <sub>MAX</sub> (8/20 uSec) (amps)	W <sub>MAX</sub> (10/1000 uSec) (joules)	WLD (joules)	P max (watts)	C <sub>TYP</sub> (@ 1 kHz) (nF)	D max (mm)	t max (mm)	h max (mm)	R (mm)	d (mm)
12V	14K602003	14	16	24	24.5	40	2.5	400	1.6	3	0.01	2.5	7	4.5	7	5	0.6
	14K802006	14	16	24	24.5	40	5	800	2.4	6	0.015	4.6	8	4.5	9	5	0.6
	14K902012	14	16	24	24.5	40	5	1200	4.4	12	0.03	10.5	9	4.5	12	5	0.6
	14K902025	14	16	24	24.5	40	10	2000	6	25	0.08	22	9	5.5	12	5	0.6
	14K1103050	14	16	24	24.5	40	10	2000	13.2	50	0.1	29	11	6.5	12	7.5	0.6
	17K602003	17	20	27	30	44	2.5	400	1.8	3	0.01	2	7	4.5	7	5	0.6
	17K802006	17	20	27	30	44	5	800	2.9	6	0.015	4	8	4.5	9	5	0.6
	17K902025	17	20	27	30	44	10	2000	7.2	25	0.08	18	9	5.5	12	5	0.6
24V	17K1103050	17	20	27	30	44	10	2000	15.8	50	0.1	24	11	6.5	12	7.5	0.6
	20K602003	20	26	33	30	54	2.5	400	1.9	3	0.01	1.8	7	4.5	7	5	0.6
	20K802006	20	26	33	30	54	5	800	3	6	0.015	3.5	8	4.5	9	5	0.6
	20K902025	20	26	33	30	54	10	2000	9	25	0.08	13	9	4.5	12	5	0.6
	20K1103050	20	26	33	30	54	10	2000	17	50	0.1	18	11	6.5	12	7.5	0.6
	25K14050	25	28	39	40	77	20	2000	28	50	0.2	14	22.5	4.6	24	10	1
	25K20100	25	28	39	40	77	20	2000	50	100	0.3	28	22.5	5.6	24	10	1
	30K602003	30	34	47	50	77	2.5	400	2.3	3	0.01	1.3	7	4.5	7	5	0.6
	30K802006	30	34	47	50	77	5	800	3.8	6	0.015	2	8	4.5	9	5	0.6
	30K902025	30	34	47	50	77	10	2000	18	25	0.08	12	9	4.5	12	5	0.6
42V	30K14050	30	34	47	50	93	20	2000	34	50	0.2	13.5	22.5	4.6	24	10	1
	30K20100	30	34	47	50	93	20	2000	60	100	0.3	26	22.5	5.6	24	10	1
	40K602003	40	56	68	65	110	2.5	400	2.6	3	0.01	1.1	7	4.5	7	5	0.6
	40K802006	40	56	68	65	110	5	800	4.8	6	0.015	1.8	8	4.5	9	5	0.6
	40K902025	40	56	68	65	110	10	2000	18	25	0.08	6.6	9	4.5	12	5	0.6
	40K14050	40	56	68	65	135	20	2000	37	50	0.2	12.5	22.5	4.6	24	10	1
	40K20100	40	56	68	65	135	20	2000	76	100	0.3	24	22.5	5.6	24	10	1

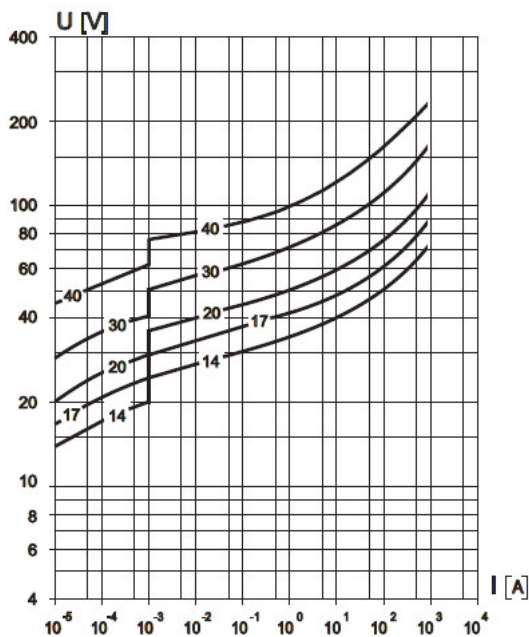
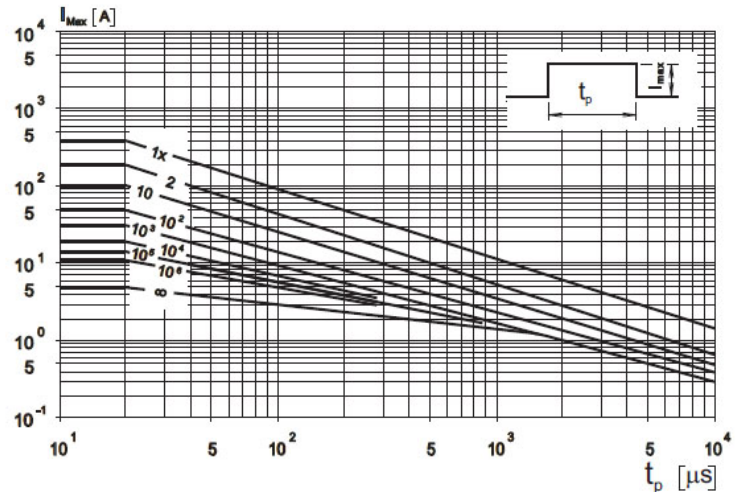
Types AVL/AVYL35 are available upon request

## Protection Levels

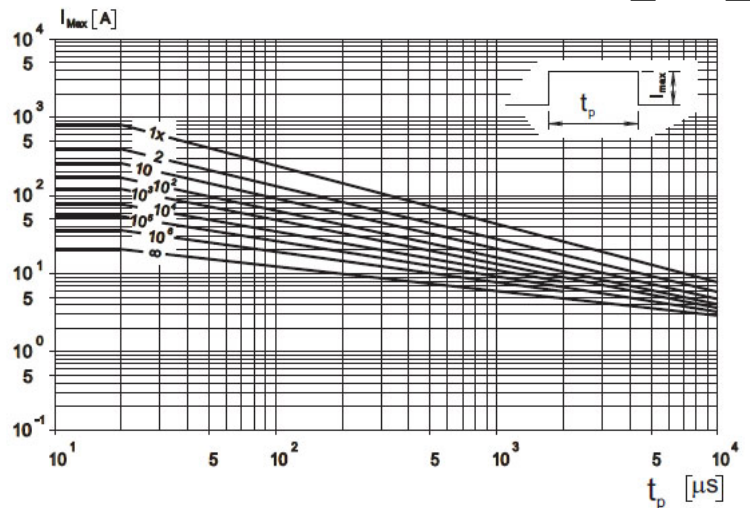
(With the worst-case condition in the tolerance region)



AVL 14-40K60\_003\_

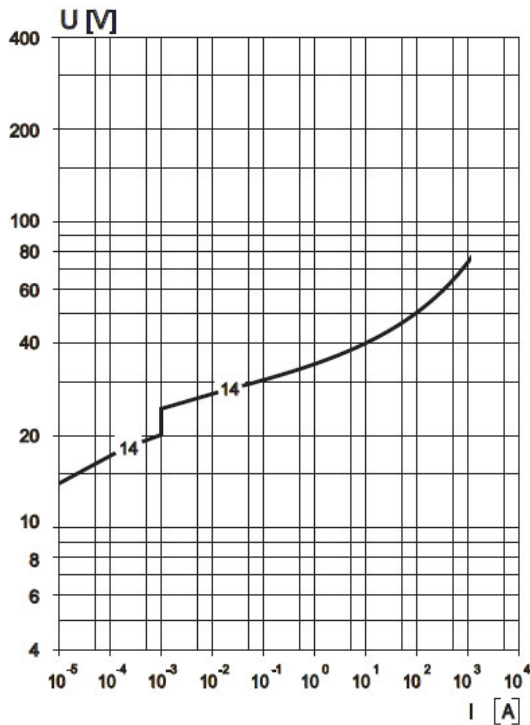


AVL 14-40K80\_006\_

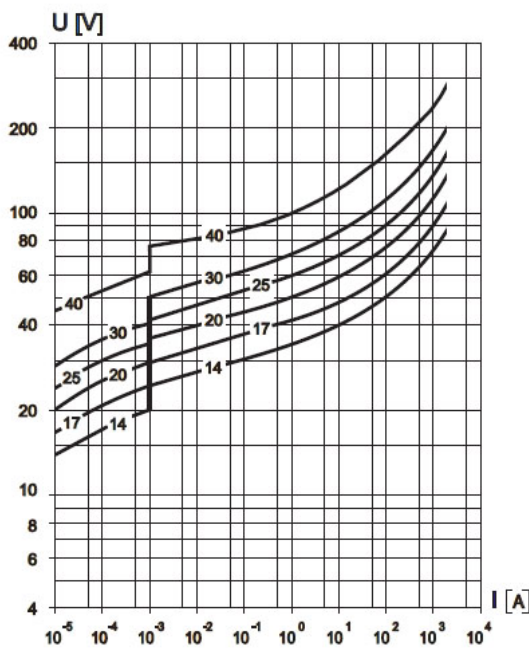
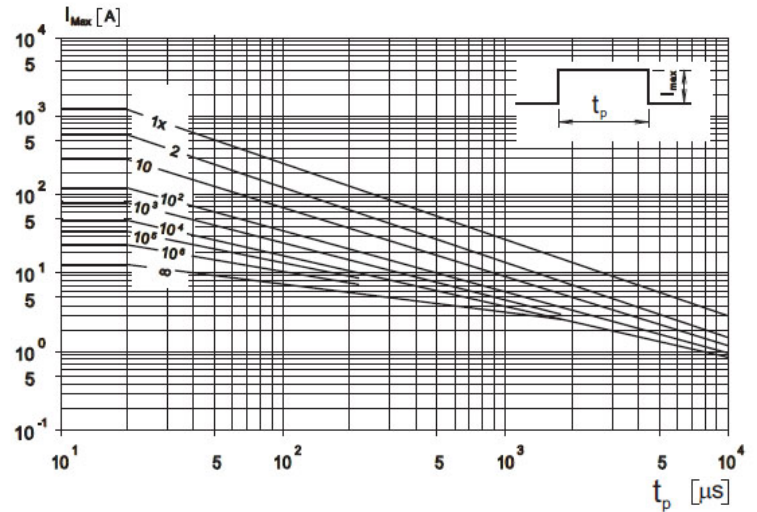


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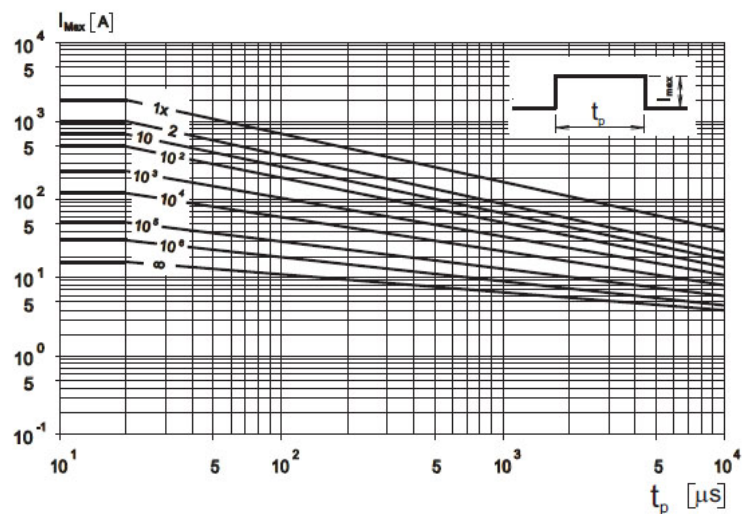
(With the worst-case condition in the tolerance region)



AV14K902012\_



AVL14-20K90-110\_025-050\_  
AVL25-40K90-110\_050-100\_



## 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)
AVL_AVYL	Automotive Leaded Varistor Straight Leads	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.

## 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

1	2	3	4	5	6	7	8	9	10	11	12	13	
A	V	L	2	0	K	8	0	2	0	5	0	T	
Product Series		Vrms		Tolerance		Disc Size (mm)		Lead Spacing		W <sub>L</sub> D		Packaging	
Code	Description	See Device Ratings & Dimensions Table		Code	Tol	Code	Size	Code	Spacing	Code	Size	Code	Description
AVL	Standard			K	10%	60	6 mm	2	5 mm	003	3	B	Bulk
AVYL	High Temp					80	8 mm	3	7.5 mm	006	6	T	Tape and Reel
						90	9 mm			012	12	A	Ammo
						110	11 mm			025	25		
						20	20 mm			050	50		
						40	40 mm			100	100		