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.

AV varistors are TVS chips that have suppression characteristics enabling protection from -55 to +125ºC (+150ºC for AVY). These multilayer varistors offer excellent transient energy absorption in a small package due to improved internal energy distribution. AV series parts require significantly smaller space and pad area than silicon TVS diodes, offering greater circuit board layout flexibility for designers.

Features:

- AC operating voltage range (Vrms) from 14 V to 40 V
- DC operating voltage (Vdc) from 16 V to 56 V
- Broad range of current and energy handling capabilities
- 6 model sizes available: 0805, 1206, 1210, 1812, 2220 and 3225
- AVY high temperature product will have performance characteristics different from the AV listed here. Contact Stackpole for specific details.
- No plastic coating guarantees better flammability rating
- Dimensional and weight savings on PC board
- Ultra-low inductance, leadless chips guarantee the fastest response time to transient surges
- Contact Stackpole for larger reel inquiries
- RoHS compliant by means of exemption 7c-I, REACH compliant, halogen free
- AEC-Q200 qualified Grade 1

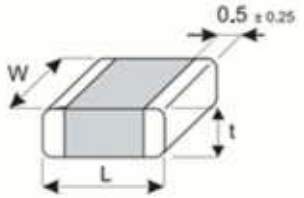
General Technical Data	
Operating Temperature Range - AV	-55 to +125ºC
Operating Temperature Range - AVY	-55 to +150ºC
Storage Temperature Range	-55 to +150ºC
Threshold Voltage Temperature Coefficient	<+0.05 % /ºC
Response Time	< 2 ns
Nickel Barrier Terminations	Recommended and suitable for Pb-containing and Pb-free soldering

Standard Packaging Options/Quantities

Series	Voltage Range (Vrms)	Chip Size								
		0805			1206			1210		
		180 mm 7"		330 mm 13"	180 mm 7"		330 mm 13"	180 mm 7"		330 mm 13"
		K	T	G	K	T	G	K	T	G
AV/AVY	14	1000	3500	15000	1000	2500	15000	1000	2500	15000
	17			14000			14000			14000
	20, 30, 40	N/A	N/A				10000			9000
	Voltage Range (Vrms)	Chip Size								
		1812			2220			3225		
		180 mm 7"		330 mm 13"	180 mm 7"		330 mm 13"	180 mm 7"		330 mm 13"
		K	T	G	K	T	G	K	T	G
	14	N/A	1000	6000	N/A	1000	4000	N/A	1000	2500
	17									
	20, 30, 40			4000						

This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.

Device Ratings and Dimensions



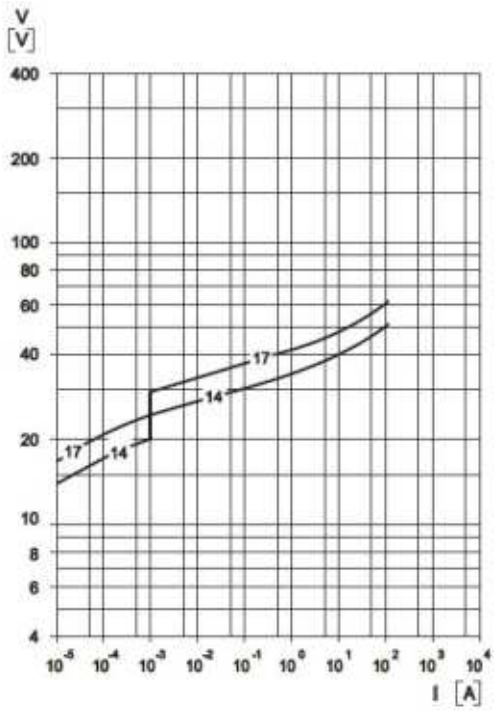
Part Number	V_{RMS} (volts)	V_{DC} (volts)	V_N (1 mA) (volts)	V_{JUMP} (5 min) (volts)	V_C (volts)	I_C (8/20 µSec) (amps)	I_{MAX} (8/20 µSec) (amps)	W_{MAX} (10/1000 µSec) (joules)	W_{LD} 10 x (joules)	P_{MAX} (watts)	C_{TYP} (@ 1kHz) (nF)	L (mm)	W (mm)	t_{MAX} (mm)
12V Power Supply														
AV14K0805...121	14	16	24	24.5	40	1	120	0.3	1	0.008	0.44	2.0 ± 0.25	1.25 ± 0.20	1
AV14K1206...201	14	16	24	24.5	40	1	200	0.6	1.5	0.008	1	3.2 ± 0.30	1.60 ± 0.20	1.2
AV14K1210...401	14	16	24	24.5	40	2.5	400	1.6	3	0.01	2.35	3.2 ± 0.30	2.50 ± 0.25	1.3
AV14K1812...801	14	16	24	24.5	40	5	800	2.4	6	0.015	4.5	4.7 ± 0.40	3.20 ± 0.30	1.3
AV14K2220...122	14	16	24	24.5	40	10	1200	5.8	12	0.03	10	5.7 ± 0.50	5.00 ± 0.40	1.4
AV14K3225...202	14	16	24	24.5	40	20	2000	12.5	25	0.04	16	8.0 ± 0.50	6.30 ± 0.40	1.5
AV17K0805...121	17	20	27	30	44	1	120	0.5	1	0.008	0.37	2.0 ± 0.25	1.25 ± 0.20	1
AV17K1206...201	17	20	27	30	44	1	200	1.1	1.5	0.008	0.81	3.2 ± 0.30	1.60 ± 0.20	1.2
AV17K1210...401	17	20	27	30	44	2.5	400	1.8	3	0.01	2	3.2 ± 0.30	2.50 ± 0.25	1.3
AV17K1812...801	17	20	27	30	44	5	800	2.9	6	0.015	3.8	4.7 ± 0.40	3.20 ± 0.30	1.3
AV17K2220...202	17	20	27	30	44	10	1200	7.2	12	0.03	8	5.7 ± 0.50	5.00 ± 0.40	1.4
AV17K3225...202	17	20	27	30	44	20	2000	13.8	25	0.04	13.2	8.0 ± 0.50	6.30 ± 0.40	1.5
24V Power Supply														
AV20K1206...201	20	26	33	30	54	1	200	1.6	1.5	0.008	0.78	3.2 ± 0.30	1.60 ± 0.20	1.2
AV20K1210...401	20	26	33	30	54	2.5	400	1.9	3	0.01	1.65	3.2 ± 0.30	2.50 ± 0.25	1.3
AV20K1812...801	20	26	33	30	54	5	800	3	6	0.015	3.3	4.7 ± 0.40	3.20 ± 0.30	1.3
AV20K2220...202	20	26	33	30	54	10	1200	8	12	0.03	7	5.7 ± 0.50	5.00 ± 0.40	1.4
AV20K3225...202	20	26	33	30	54	20	2000	15	25	0.04	11	8.0 ± 0.50	6.30 ± 0.40	1.5
AV30K1206...201	30	34	47	50	77	1	200	2	1.5	0.008	0.53	3.2 ± 0.30	1.60 ± 0.20	1.2
AV30K1210...401	30	34	47	50	77	2.5	400	2.3	3	0.01	1.1	3.2 ± 0.30	2.50 ± 0.25	1.3
AV30K1812...801	30	34	47	50	77	5	800	3.8	6	0.015	2.2	4.7 ± 0.40	3.20 ± 0.30	1.3
AV30K2220...122	30	34	47	50	77	10	1200	10	12	0.03	6.5	5.7 ± 0.50	5.00 ± 0.40	1.4
AV30K3225...202	30	34	47	50	77	20	2000	17	25	0.04	6.6	8.0 ± 0.50	6.30 ± 0.40	1.5
42V Power Supply														
AV40K1206...201	40	56	68	65	110	1	200	2.2	1.5	0.008	0.4	3.2 ± 0.30	1.60 ± 0.20	1.2
AV40K1210...401	40	56	68	65	110	2.5	400	2.6	3	0.01	0.9	3.2 ± 0.30	2.50 ± 0.25	1.3
AV40K1812...801	40	56	68	65	110	5	800	4.8	6	0.015	1.8	4.7 ± 0.40	3.20 ± 0.30	1.3
AV40K2220...122	40	56	68	65	110	10	1200	10.5	12	0.03	5.5	5.7 ± 0.50	5.00 ± 0.40	1.4
AV40K3225...202	40	56	68	65	110	20	2000	21	25	0.04	6.2	8.0 ± 0.50	6.30 ± 0.40	1.5

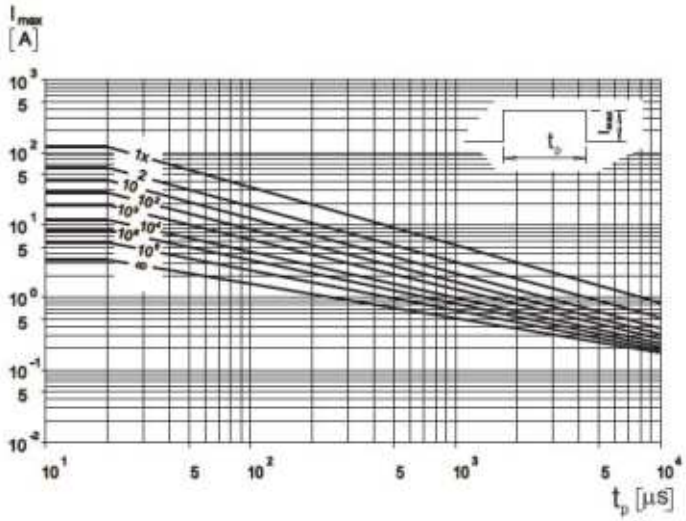
This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.

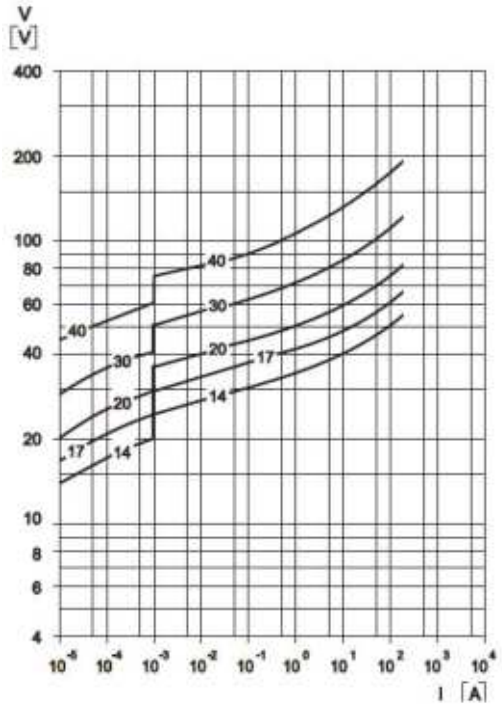
Protection Levels

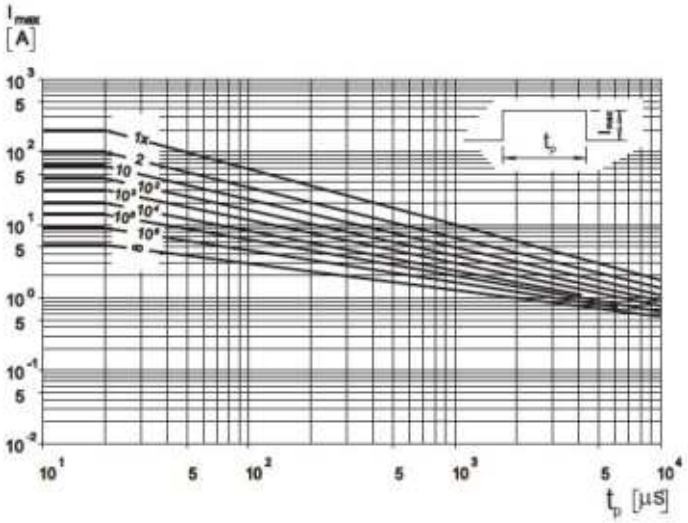
(With the worst-case condition in the tolerance region)

AV14-17K0805_121_





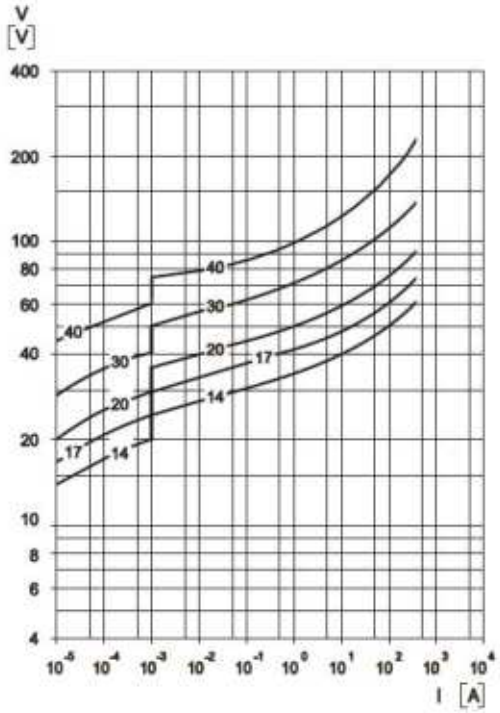




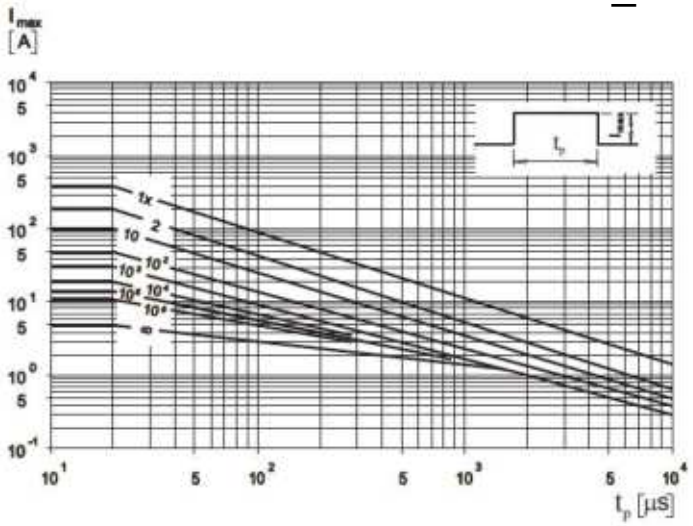
This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.

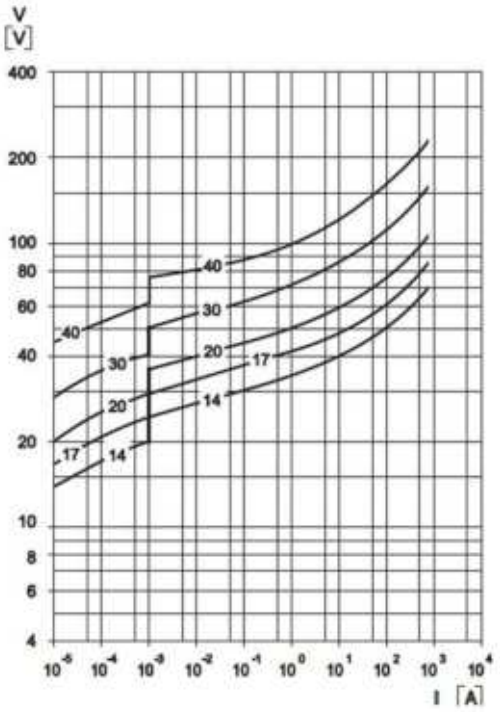
Protection Levels

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

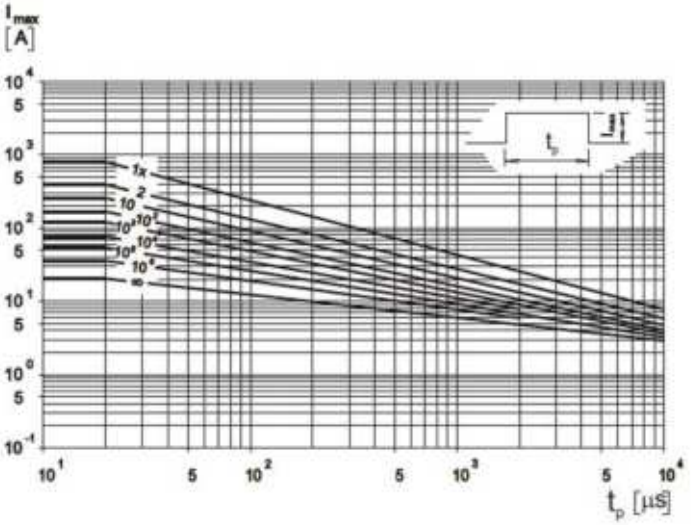


AV14-40K1210_401_





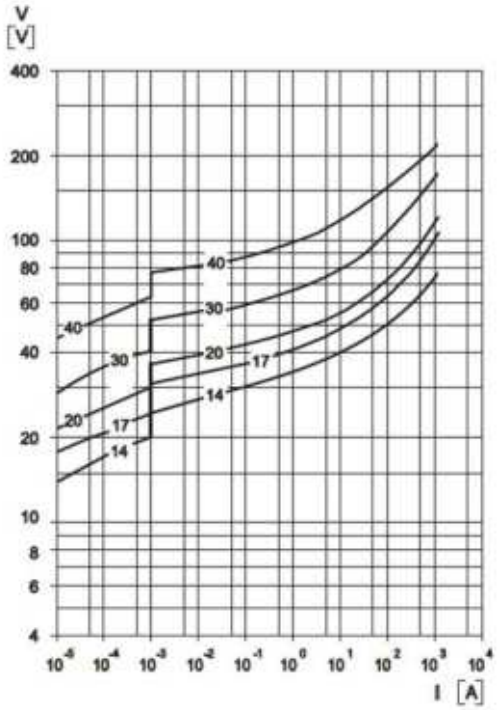
AV14-40K1812_801_



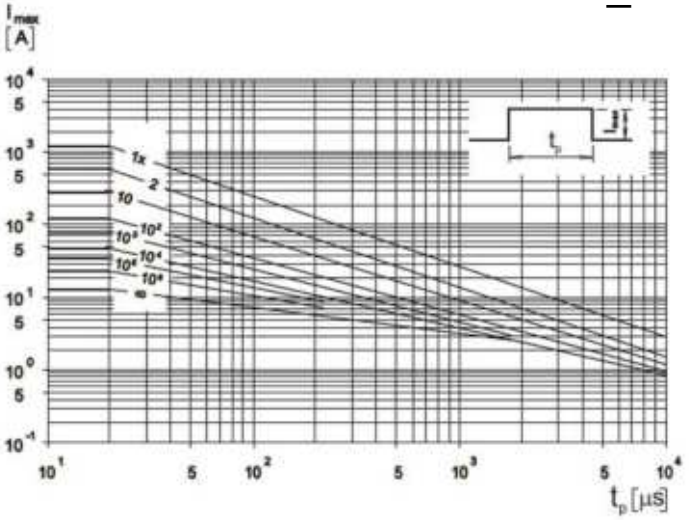
This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.

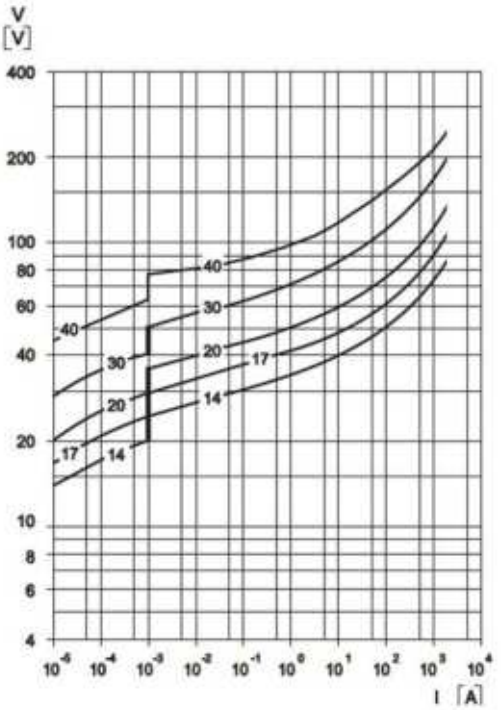
Protection Levels

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

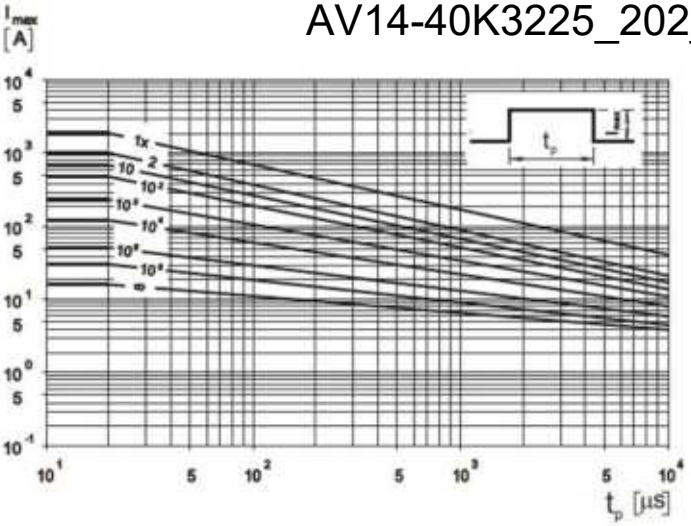


AV-40K2220_122_



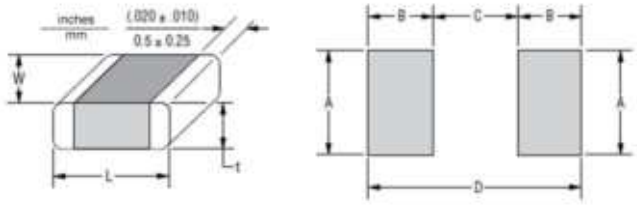


AV14-40K3225_202_



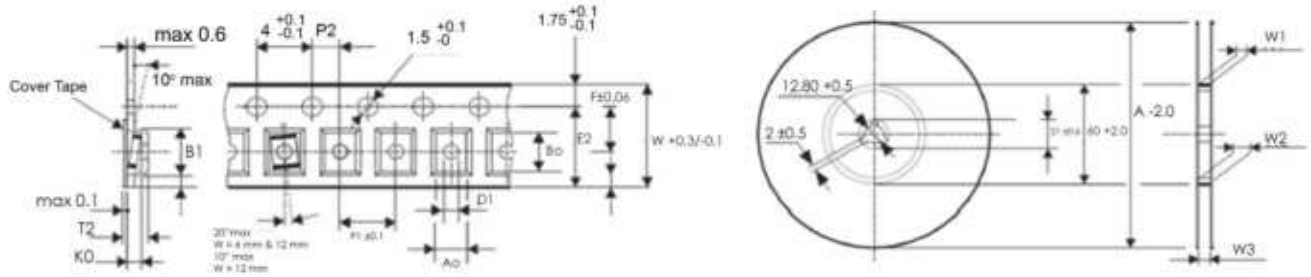
This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.

Recommended Solder Pad



Size	L	W	t(Max)	A(Max)	B	C	D	Unit
0805	0.079 ± 0.010 2.00 ± 0.25	0.049 ± 0.008 1.25 ± 0.20	0.043 1.10	0.055 1.40	0.047 1.20	0.039 1.00	0.134 3.40	inches mm
1206	0.126 ± 0.012 3.20 ± 0.30	0.063 ± 0.008 1.60 ± 0.20	0.063 1.60	0.071 1.80	0.047 1.20	0.083 2.10	0.177 4.50	inches mm
1210	0.126 ± 0.012 3.20 ± 0.30	0.098 ± 0.010 2.50 ± 0.25	0.071 1.80	0.110 2.80	0.047 1.20	0.083 2.10	0.177 4.50	inches mm
1812	0.185 ± 0.016 4.70 ± 0.40	0.126 ± 0.012 3.20 ± 0.30	0.075 1.90	0.142 3.60	0.059 1.50	0.126 3.20	0.244 6.20	inches mm
2220	0.224 ± 0.020 5.70 ± 0.50	0.197 ± 0.016 5.00 ± 0.40	0.075 1.90	0.217 5.50	0.059 1.50	0.165 4.20	0.283 7.20	inches mm

Reel Specifications



Size	Tape Size	Ao	Bo	Ko Max	B1 Max	D1 Min	E2 Min	P1	F	W	T2 Max	W1	W2 Max	W3	Unit
0805	8 mm	0.063 1.60	0.094 2.40	0.043 1.10	0.171 4.35	0.012 0.30	0.246 6.25	0.157 4.00	0.138 3.50	0.315 8.00	0.138 3.50	0.331 ± 0.059 8.40 ± 1.50	0.567 14.40	0.311 … 0.429 7.90 … 10.90	inches mm
1206	8 mm	0.075 1.90	0.148 3.75	0.071 1.80	0.171 4.35	0.012 0.30	0.246 6.25	0.157 4.00	0.138 3.50	0.315 8.00	0.138 3.50	0.331 ± 0.059 8.40 ± 1.50	0.567 14.40	0.311 … 0.429 7.90 … 10.90	inches mm
1210	8 mm	0.114 2.90	0.146 3.70	0.079 2.00	0.171 4.35	0.012 0.30	0.246 6.25	0.157 4.00	0.138 3.50	0.315 8.00	0.138 3.50	0.331 ± 0.059 8.40 ± 1.50	0.567 14.40	0.311 … 0.429 7.90 … 10.90	inches mm
1812	12 mm	0.148 3.75	0.197 5.00	0.079 2.00	0.323 8.20	0.059 1.50	0.404 10.25	0.315 8.00	0.217 5.50	0.472 12.00	0.256 6.50	0.488 ± 0.079 12.40 ± 2.00	0.724 18.40	0.469 … 0.606 11.90 … 15.40	inches mm
2220	12 mm	0.220 5.60	0.246 6.25	0.079 2.00	0.323 8.20	0.059 1.50	0.404 10.25	0.315 8.00	0.217 5.50	0.472 12.00	0.256 6.50	0.488 ± 0.079 12.40 ± 2.00	0.724 18.40	0.469 … 0.606 11.90 … 15.40	inches mm
3225	16 mm	0.276 7.00	0.343 8.70	0.146 3.70	0.476 12.10	0.059 1.50	0.561 14.25	0.472 12.00	0.295 7.50	0.630 16.00	0.374 9.50	0.646 ± 0.079 16.40 ± 2.00	0.882 22.40	0.626 … 0.764 15.90 … 19.40	inches mm

Dimension "A" is 7"/180 mm for "K" and "T" packaging.
Dimension "A" is 13"/330 mm for "G" packaging.

This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.

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
AV_AVY	Automotive SMD Varistor (12 & 24 Volt Power Supply)	SMD	YES(1)	Proprietary Barrier Termination (special designation "N") for lead-free assembly

Note (1): RoHS Compliant by means of exemption 7c-I

"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

A	V	1	4	K	1	2	0	6	T	2	0	1	N

Product Series

Code	Description
AV	Standard
AVY	High Temp

Voltage Range

Code	Vrms
14	14
17	17
20	20
30	30
40	40

Tolerance

Code	Tol
K	10%

Size

Code
0805
1206
1210
1812
2220
3225

Packaging

Code	Description	Size	Quantity
K	7" Plastic Reel	180 mm	See Standard Packaging Options
T			
G	13" Plastic Reel	330 mm	

Surge Current

Code	Amps
201	200

Termination

Code	Description
N	Nickel Barrier Termination

This specification may be changed at any time without prior notice.
Please confirm technical specifications before use.