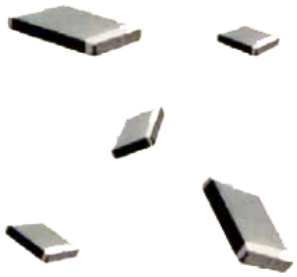
Description:



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.

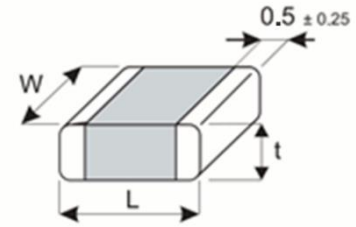
AV varistors are TVS chips that have suppression characteristics enabling protection from -55ºC to +125ºC (+150ºC for AVY). These multilayer varistors offer excellent transient energy absorption in a small package due to improved internal energy distribution. AV series parts require significantly smaller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

Features:

- AC operating voltage range (Vrms) from 14V to 40V
- DC operating voltage (Vdc) from 16V to 56V
- 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.
- AEC-Q200 qualified Grade 1
- No plastic coating guarantees better flammability rating
- Dimensional and weight savings on PC board
- AgPd end terminations
- Ultra-low inductance, leadless chip guarantees the fastest response time to transient surges
- Contact Stackpole for larger reel inquiries
- RoHS compliant by means of exemption 7c-I
- Halogen-free
- REACH compliant

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

Device Ratings and Dimensions

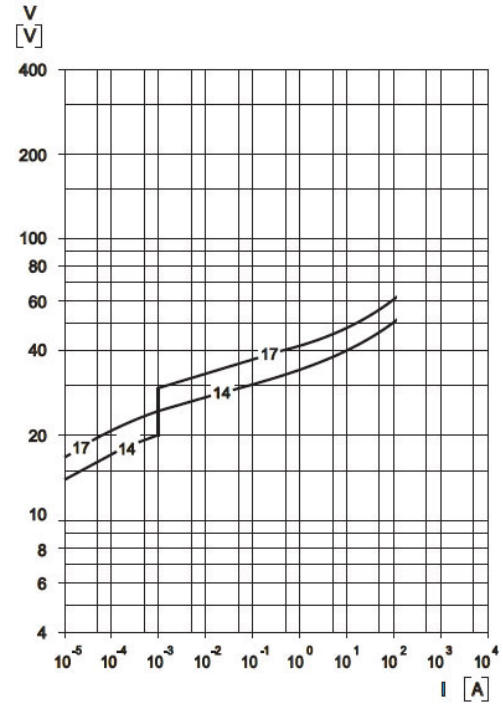


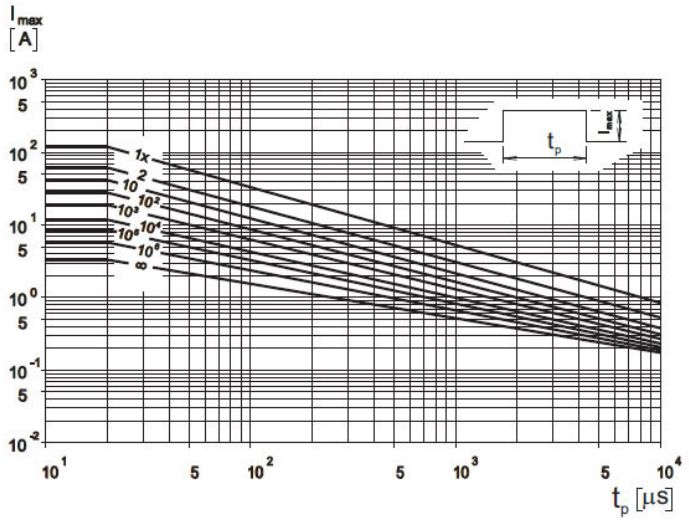
Part Number	V_{RMS} (volts)	V_{DC} (volts)	V_N (1 mA) (volts)	V_{JUMP} (5 min) (volts)	V_C (volts)	I_C (8/20 µSec) (amps)	I_{MAX} (8/20 µSec) (amps)	W_{MAX} (10/1000 µSec) (joules)	W_{LD} 10 x (joules)	P_{MAX} (watts)	C_{TYP} (@ 1kHz) (nF)	L (mm)	W (mm)	t_{MAX} (mm)
12V Power Supply														
AV14K0805...121	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

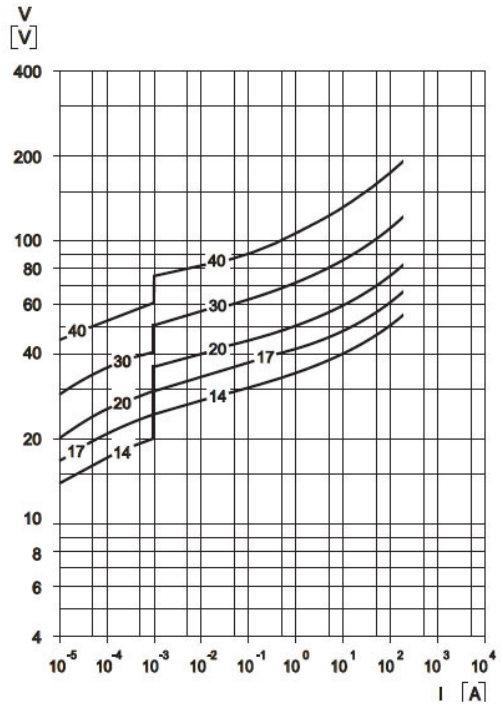
Protection Levels

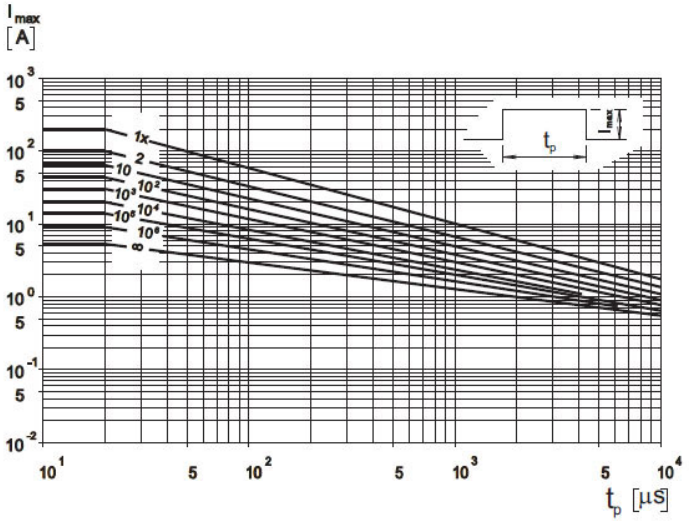
(With the worst-case condition in the tolerance region)

AV14-17K0805_121_



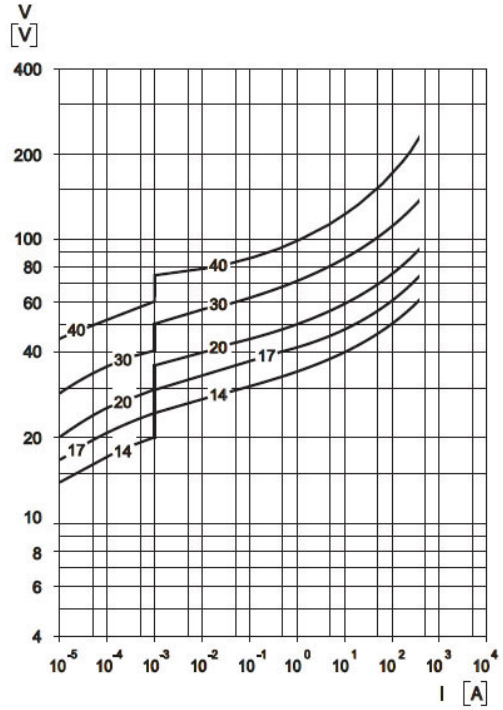




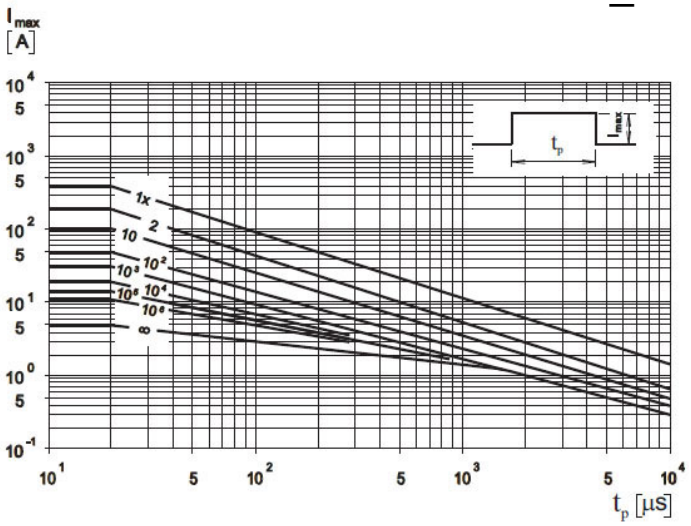


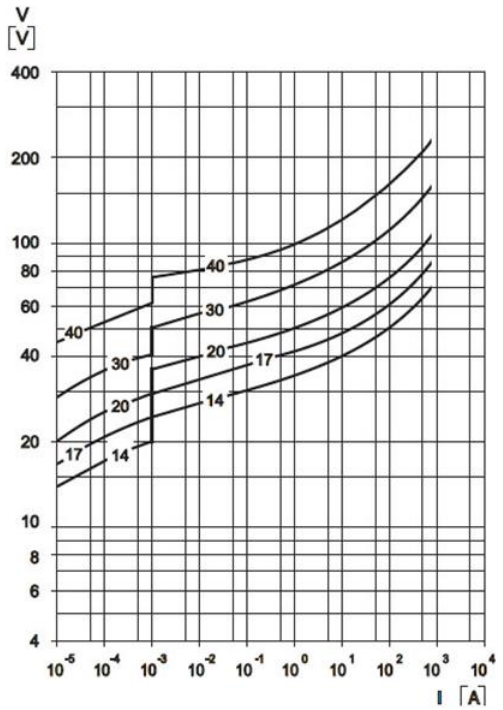
Protection Levels

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

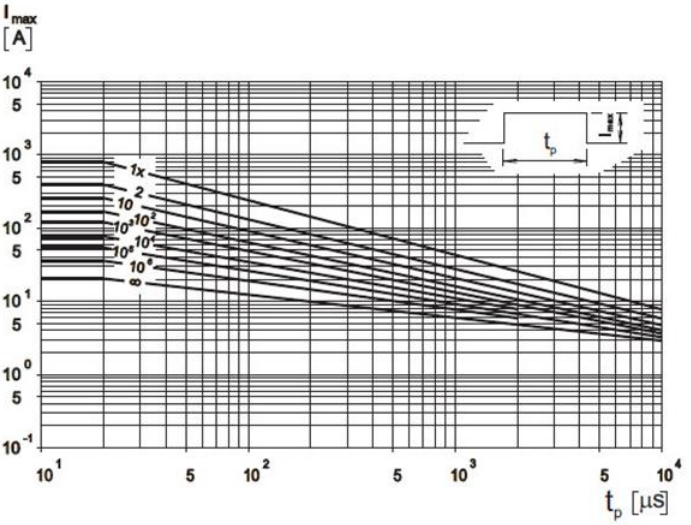


AV14-40K1210_401_



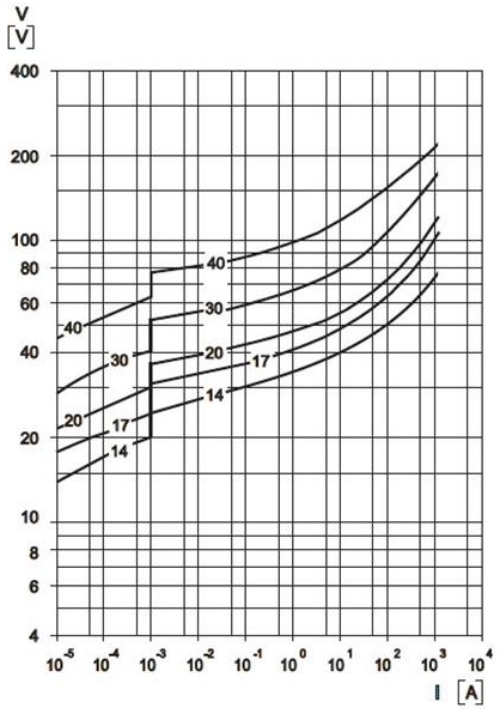


AV14-40K1812_801_

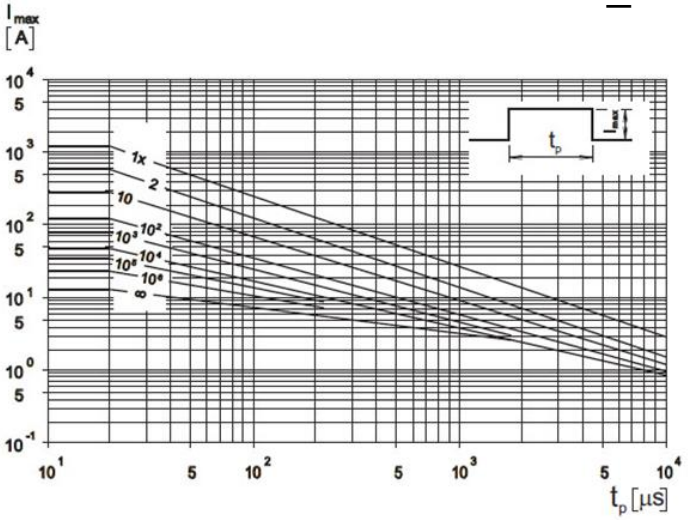


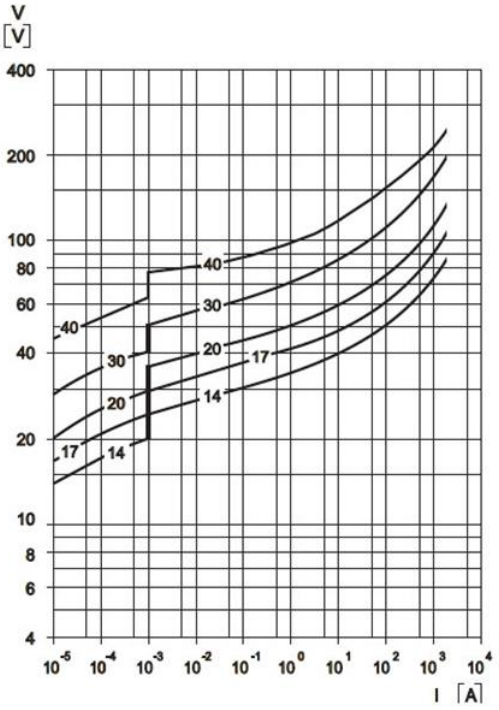
Protection Levels

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

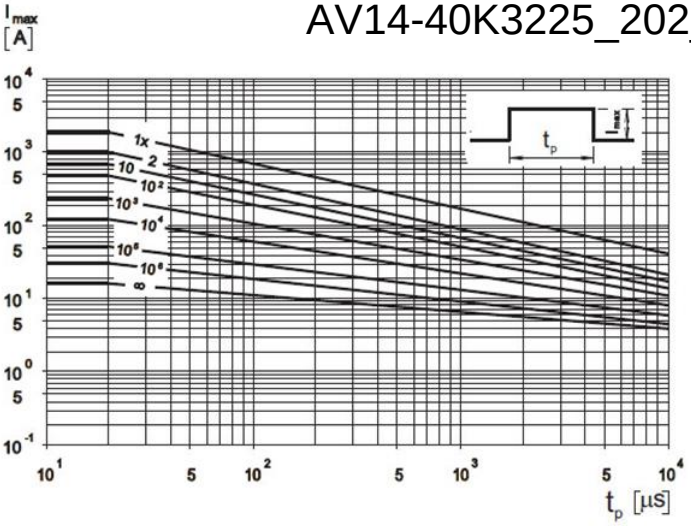


AV-40K2220_122_

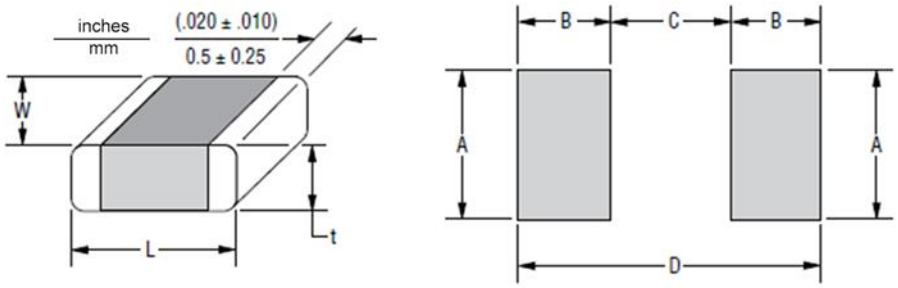




AV14-40K3225_202_



Recommended Pad Layout



Size	L	W	t(Max)	A	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

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)
AV_AVY	Automotive SMD Varistor (12 & 24 Volt Power Supply)	SMD	YES Compliant by means of exemption 7c-I	Proprietary Barrier Termination (special designation "N") for lead-free assembly; AgPd for Pb-containing assembly	Always	Always

"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	Size	Vrms	Quantity	Description
K	0805	14, 17	1000	7" Plastic Reel
	1206, 1210	14 - 40		
T	0805	14, 17	3500	
	1206, 1210	14 - 40	2500	
	1812, 2220, 3225	14 - 40	1000	

Surge Current	
Code	Amps
201	200

Termination	
Code	Description
(blank)	Ag/Pd Termination
N	Nickel Barrier Termination