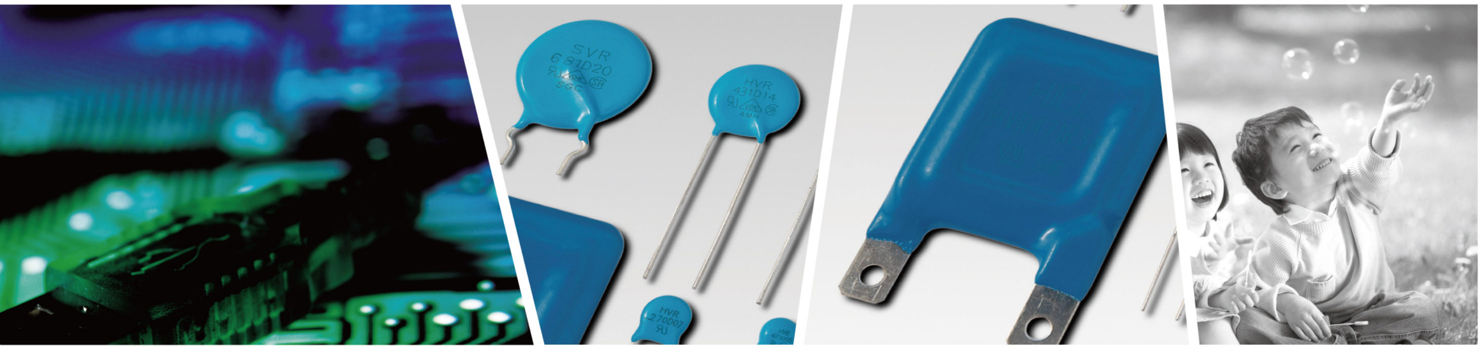
HVR VARISTOR

Zinc Oxide
Nonlinear Resistor



Http://www.hiel.co.kr

CHRONOLOGY

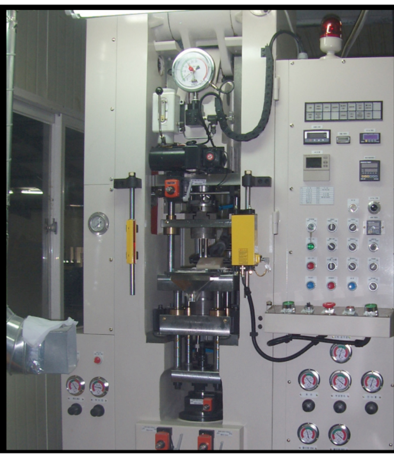
2000's

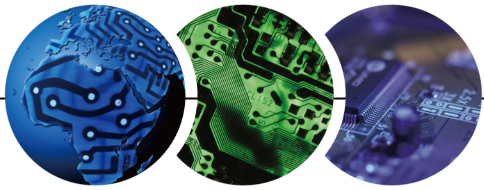
- 2015
  - Selected as "Venture business" by SBC
  - Selected as "Global excellent enterprise" by Jeonbuk
- 2014
  - Selected as "The leading company of the strategic industry " in Jeonbuk
  - Established Hiel's second factory
  - Selected as "Inno-Biz" by SMBA
- 2011
  - Selected as "Export promising firm" by Jeonbuk SME Export center
- 2010
  - Acquired a Patent for Pb Free Ceramic composite of PTC Thermistor and PTC Thermistor manufactured by the composites
  - Awarded "1 Million Dollars Exporter Tower" by The Korea International Trade Association
  - Selected as "New Exporter 300" by The Korea International Trade Association
- 2006
  - Acquired certification of ISO 14001
- 2005
  - Selected as Export oriented business (Jeonbuk SMBA)
- 2004
  - Selected as parts material expertise company (Ministry of Industry and Resource)
- 2003
  - Renamed to Hiel Co., Ltd.
- 2002
  - Selected as Clean Workplace (Ministry of Labor)
  - Selected as "Inno-Biz" by SMBA
- 2001
  - Attained approval of PTC THERMISTOR UL (FILE NO. E213419)
  - Acquired certification of VARISTOR VDE
- 2000
  - Selected as Promising SME in Jeollabukdo
  - Awarded Prime minister prize in good SME in the 2nd National SME Rally

1990's

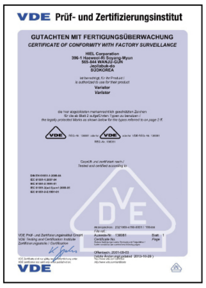
- 1999
  - Established Corporate affiliated Laboratory
  - Awarded prize of Minister of Industry (Management and productivity improvement of venture business)
  - Selected as Export promising Firm by Small and Medium Business Corporation
- 1998
  - Acquired certification of ISO 9001
  - Selected as Venture Enterprise designated by SMBA
  - Acquired certification of VARISTOR UL (FILE NO. E188093)
- 1996
  - Performed technology development for PTC Thermistors Heater
- 1995
  - Acquired certification of VARISTOR UL 1449 (FILE NO 182771)
  - Acquired certification of VARISTOR CSA (FILE NO LR 103860-1)
  - Selected as Promising Small & Medium Sized Company
- 1994
  - Established Samyang Electronic Ceramics Co., Ltd
  - Varistors and PTC Thermistor produced

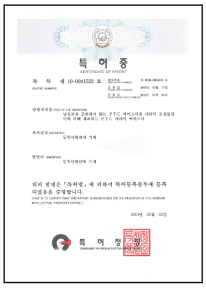
Be a partner with HIEL CORPORATION, and your products will be stronger!

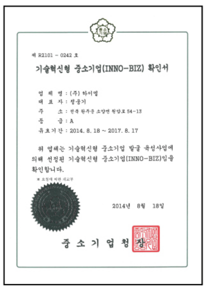


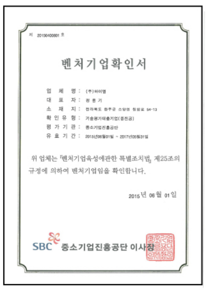


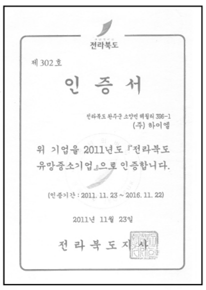
Certificate

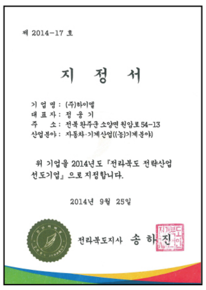


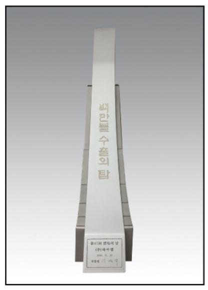




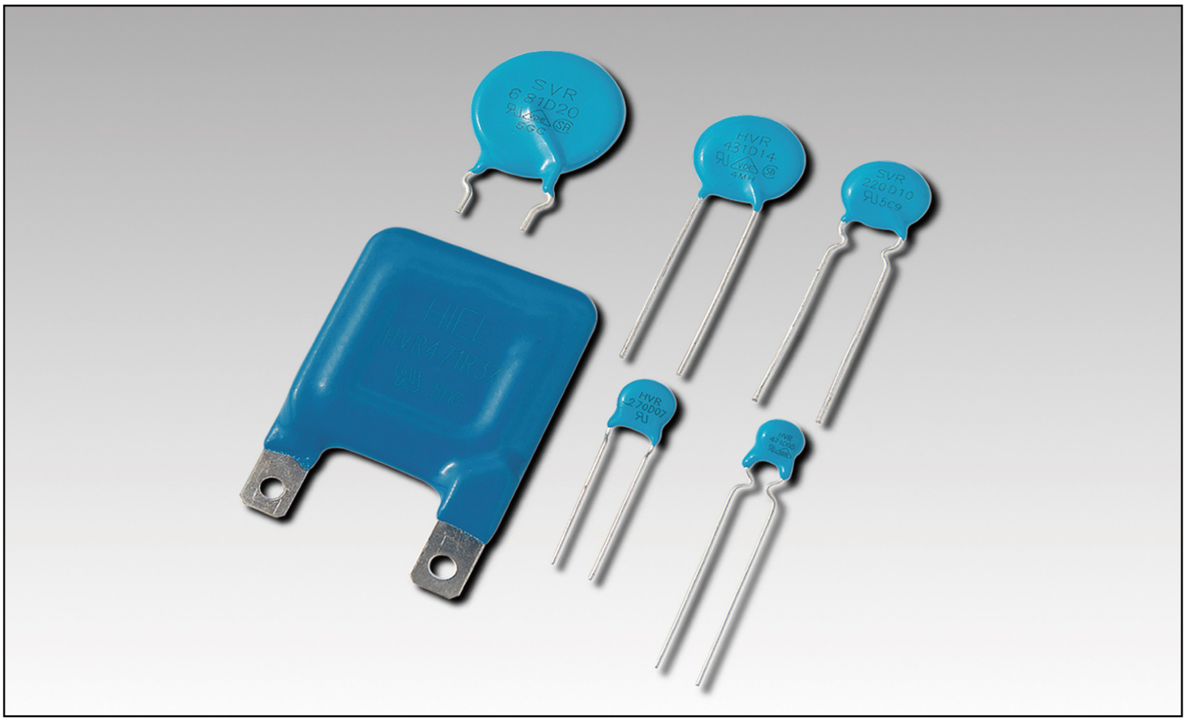








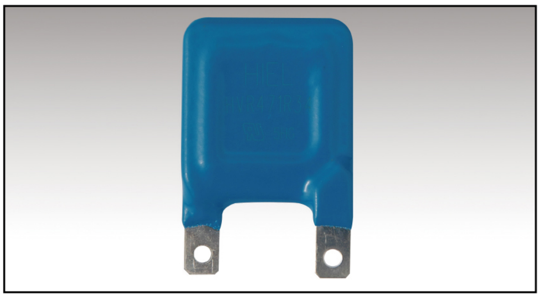
HVR VARISTOR



I. Definition

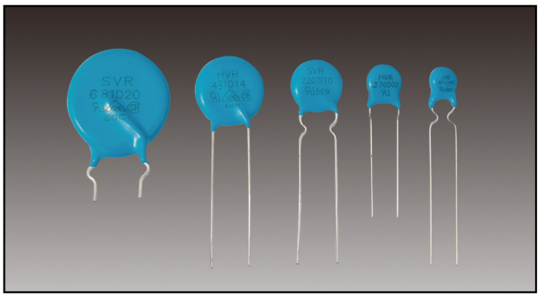
"HVR Varistor" is released through our continued research in ceramic material composition of ZnO varistors and manufacturing process, featuring large surge current handling capability and energy handling capability for absorbing transient overvoltage in compact size.

1. High energy series



- Varistor Voltage : 200～1,100V
- Max. Peak Current : 40KA

2. General series



- Varistor Demention : Φ5～20
- Varistor Voltage : 18～1,800V
- Max. Peak Current S-series : 100～6,500A
U-series : 400～10,000A

3. Application Notes

- "UL 1449" specified application category of "HVR" varistor by their peak current ratings. therefore, its selection shall be followed below.

Application category of "HVR"s	Applicable "HVR"
Cord connected and direct plug-in type equipment	10 - series 14 - series 20 - series

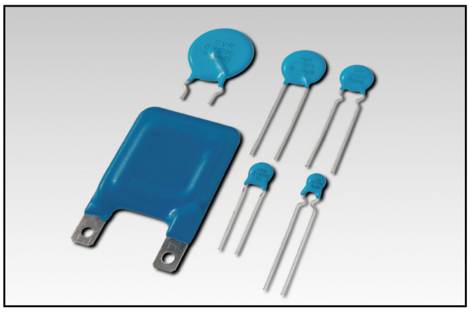
- "Rated voltage" are specified for UL / CSA recognized components besides max. continuous voltage, because of conforming to the standby current specified in safety standards. in case of making an application to UL / CSA approval for equipment with "HVR", the max. ac operating voltage of equipment shall belower than the "HVR" rated voltage.

- In case of making an application to CSA for equipment with "HVR", following caution are needed.
  - only across-the-line use is admitted. varistors shall not be connected between parts involving a shock hazard and exposed metal parts.
  - the hvr varistor shall be protected by the fusing specified below.

Max. peak current (8/28us)	Max. rating of fuse (A)
Up to 500	3
501 to 2,000	5
2,001 to 6,000	10
Over 6,000	not specified

Ⅱ. Products & Application

HVR VARISTOR ▸ Over Voltage Protection



Advantages

- Quick Response Time
- Lower Clamping Voltage
- Lower Leakage Current
- Safety Approvals

Applications

Car Head Lamp

Car Sunroof Motor

Refrigerator

Vacuum Cleaner

Ⅲ. Type Designation

H	V	R	5	6	1	D	2	0	N	B	0	4	B
1	2	3	4	5	6	7	8	9	10	11	12	13	14

Common code
Hiel Varistor

Element type	
D	Disk -Type
R	Rectangle -Type

Series	
N	S-Series
U	U-Series

Lead Dimension & Taping	
04	4 mm
10	10 mm
25	25 mm
T P	Taping

classifi cation

Varistor Voltage	
The first two digits are significant figures, the third one denotes the number of Zeros following	
560	V_{1mA} : 56 V
561	V_{1mA} : 560 V
112	V_{1mA} : 1,200 V

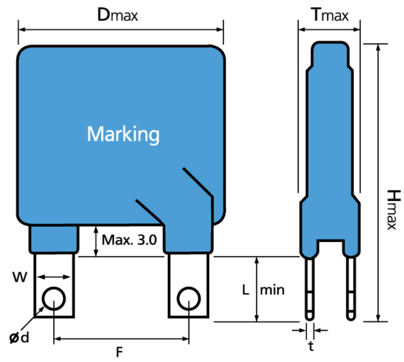
Disk dia.	
05	Φ 05mm
07	Φ 07mm
10	Φ 10mm
14	Φ 14mm
20	Φ 20mm
32	Φ 32mm
34	34 × 34

Forming Type	
S	Straight - Kink
B	Out Forming- Kink
E	IN Forming- Kink
Y	Y Forming - Kink

Rectangular Varistor Series, R34 series

Construction

- Rectangular varistor element, leaded
- Coating : epoxy resin



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Features

- UL and VDE safety approvals.
- Medium & High voltage range 200V to 1,100V.
- Lower clamping voltage for better surge protection.

Dimension Table

Dmax	Hmax	W	F	d	t	Lmin	Tmax
42.0	60.0	7.0 ± 0.5	25.4 ± 0.5	3.3 ± 0.1	0.5 ± 0.1	9.0	Please refer to electrical characteristics table

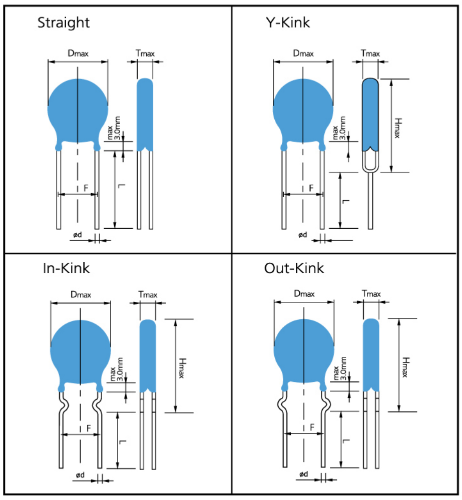
Medium & High voltage(Power dissipation : 1.4W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(2ms)J	Peak Current (8/20μs) Itm(A)	Dimen-sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	Wtm(2ms)J	S-series	Tmax(mm)
HVR201R34	180	200	220	130	170	340	300	310	40,000	9.0
HVR241R34	216	240	264	150	200	395	300	360	40,000	9.0
HVR271R34	247	270	297	175	225	455	300	410	40,000	9.5
HVR361R34	324	360	396	230	300	595	300	460	40,000	9.7
HVR391R34	351	390	429	250	320	650	300	490	40,000	10.3
HVR431R34	387	430	473	275	350	710	300	550	40,000	10.6
HVR471R34	423	470	517	300	385	775	300	590	40,000	10.6
HVR511R34	459	510	561	320	415	845	300	640	40,000	11.2
HVR561R34	504	560	616	350	455	925	300	720	40,000	11.2
HVR621R34	558	620	682	385	505	1,025	300	800	40,000	11.6
HVR681R34	612	680	748	420	560	1,120	300	910	40,000	11.6
HVR751R34	675	750	825	460	615	1,240	300	960	40,000	11.8
HVR781R34	702	780	858	485	640	1,290	300	960	40,000	11.8
HVR821R34	738	820	902	510	670	1,355	300	960	40,000	11.8
HVR911R34	819	910	1,001	550	745	1,500	300	960	40,000	12.0
HVR102R34	900	1,000	1,100	625	825	1,650	300	1,100	40,000	12.6
HVR112R34	990	1,100	1,210	680	895	1,815	300	1,100	40,000	13.2

Radial Varistor Series, D 05 series

Construction

- Round varistor element, leaded
- Coating : epoxy resin



Features

- UL and VDE safety approvals.
- Low voltage range 18V to 68V.
- Medium & High voltage range 82V to 470V.
- Lower clamping voltage for better surge protection.

Dimension Table

Kink	Symbols	D max.	H max.	L	F	d	Tmax
Straight	S	7.5	-	Min. 4.0 ~ Max. 25.0	5.0 ± 1.0	0.6 ± 0.1	Please refer to electrical characteristics table
Out - Kink	B		17.0				
In - Kink	E						
Y - Kink	Y						

Low voltage(Power dissipation : 0.01W) Electrical Characteristics

Part No.	Varistor Voltage (V) 0.1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR180D05	16	18	20	11	14	40	1	0.3	0.6	100	250	3.3
HVR220D05	20	22	24	14	18	48	1	0.4	0.7	100	250	3.6
HVR270D05	24	27	30	17	22	60	1	0.5	0.9	100	250	3.8
HVR330D05	30	33	36	20	26	73	1	0.6	1.1	100	250	3.3
HVR390D05	35	39	43	25	31	86	1	0.8	1.2	100	250	3.5
HVR470D05	42	47	52	30	38	104	1	1.0	1.5	100	250	3.7
HVR560D05	50	56	62	35	45	123	1	1.0	1.8	100	250	4.0
HVR680D05	61	68	75	40	56	150	1	1.2	2.2	100	250	4.3

Radial Varistor Series, D 05 series

■ Medium & high voltage(Power dissipation : 0.1W) Electrical Characteristics

Part No.	Varistor Voltage (V) 0.1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR820D05	74	82	90	50	65	145	5	1.7	3.5	400	800	3.3
HVR101D05	90	100	110	60	85	175	5	2.0	4.0	400	800	3.6
HVR121D05	108	120	132	75	100	210	5	2.5	5.0	400	800	3.8
HVR151D05	135	150	165	95	125	260	5	3.0	6.5	400	800	4.1
HVR181D05	162	180	198	115	150	315	5	3.5	7.5	400	800	3.2
HVR201D05	180	200	220	130	170	355	5	4.0	8.5	400	800	3.3
HVR221D05	198	220	242	140	180	380	5	4.5	9.0	400	800	3.4
HVR241D05	216	240	264	150	200	415	5	5.0	10.5	400	800	3.5
HVR271D05	243	270	297	175	225	475	5	6.0	11.0	400	800	3.7
HVR331D05	297	330	363	210	275	580	5	6.5	13.0	400	800	4.0
HVR361D05	324	360	396	230	300	620	5	7.5	16.0	400	800	4.1
HVR391D05	351	390	429	250	320	675	5	8.0	17.0	400	800	4.2
HVR431D05	387	430	473	275	350	745	5	9.0	20.0	400	800	4.4
HVR471D05	423	470	517	300	385	810	5	10.0	21.0	400	800	4.6

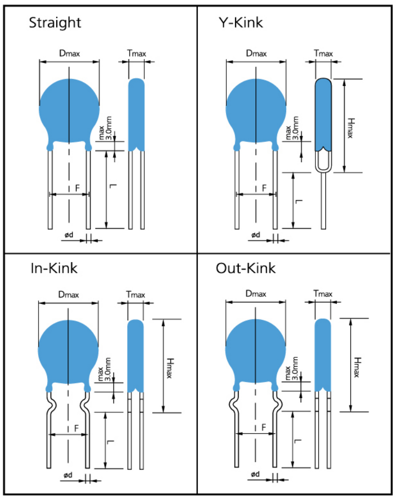
Radial Varistor Series, D 07 series

Construction

- Round varistor element, leaded
- Coating : epoxy resin

Features

- UL and VDE safety approvals.
- Low voltage range 18V to 68V.
- Medium & High voltage range 82V to 470V.
- Lower clamping voltage for better surge protection.



Dimension Table

Kink	Symbols	D max.	H max.	L	F	d	Tmax
Straight	S	9.0	-	Min. 4.0 ~ Max. 25.0	5.0 ± 1.0	0.6 ± 0.1	Please refer to electrical characteristics table
Out - Kink	B		20.0				
In - Kink	E						
Y - Kink	Y						

Low voltage(Power dissipation : 0.02W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR180D07	16	18	20	11	14	36	2.5	0.8	1.1	250	500	3.5
HVR220D07	20	22	24	14	18	43	2.5	0.9	1.3	250	500	3.8
HVR270D07	24	27	30	17	22	53	2.5	1.0	1.6	250	500	4.0
HVR330D07	30	33	36	20	26	65	2.5	1.2	2.0	250	500	3.5
HVR390D07	35	39	43	25	31	77	2.5	1.5	2.4	250	500	3.7
HVR470D07	42	47	52	30	38	93	2.5	1.8	2.8	250	500	3.9
HVR560D07	50	56	62	35	45	100	2.5	2.2	3.4	250	500	4.2
HVR680D07	61	68	75	40	56	135	2.5	2.5	4.1	250	500	4.5

Radial Varistor Series, D 07 series

■ Medium & high voltage(Power dissipation : 0.25W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen-sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR820D07	74	82	90	50	65	135	10	3.5	7.0	1,200	1,750	3.5
HVR101D07	90	100	110	60	85	165	10	4.0	8.5	1,200	1,750	3.8
HVR121D07	108	120	132	75	100	200	10	5.0	10.0	1,200	1,750	4.0
HVR151D07	135	150	165	95	125	250	10	6.0	13.0	1,200	1,750	5.3
HVR181D07	162	180	198	115	150	300	10	8.0	16.0	1,200	1,750	3.4
HVR201D07	180	200	220	130	170	340	10	10.0	17.5	1,200	1,750	3.5
HVR221D07	198	220	242	140	180	360	10	10.0	19.0	1,200	1,750	3.6
HVR241D07	216	240	264	150	200	395	10	10.0	21.0	1,200	1,750	3.7
HVR271D07	243	270	297	175	225	455	10	12.0	24.0	1,200	1,750	3.9
HVR331D07	297	330	363	210	275	550	10	14.0	28.0	1,200	1,750	4.2
HVR361D07	324	360	396	230	300	595	10	15.0	32.0	1,200	1,750	4.3
HVR391D07	351	390	429	250	320	650	10	17.0	35.0	1,200	1,750	4.4
HVR431D07	387	430	473	275	350	710	10	20.0	40.0	1,200	1,750	4.6
HVR471D07	423	470	517	300	385	775	10	20.0	42.0	1,200	1,750	4.8

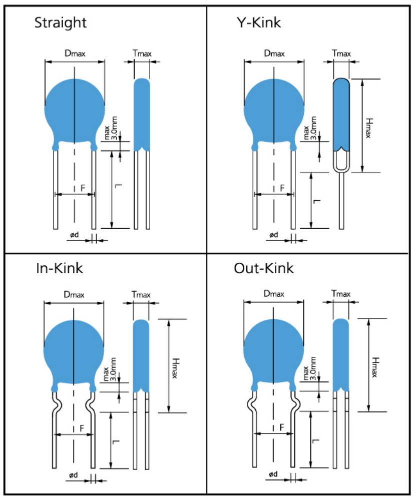
Radial Varistor Series, D 10 series

Construction

- Round varistor element, leaded
- Coating : epoxy resin

Features

- UL and VDE safety approvals.
- Low voltage range 18V to 68V.
- Medium & High voltage range 82V to 1,200V.
- Lower clamping voltage for better surge protection.



Dimension Table

Kink	Symbols	D max.	H max.	L	F	d	Tmax
Straight	S	14.0	-	Min. 4.0 ~ Max. 25.0	5.0 ± 1.0 7.5 ± 1.0	0.6 ± 0.1 0.8 ± 0.1	Please refer to electrical characteristics table
Out - Kink	B		24.0				
In - Kink	E						
Y - Kink	Y						

Low voltage(Power dissipation : 0.05W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR180D10	16	18	20	11	14	36	5	1.5	2.6	500	1,000	3.9
HVR220D10	20	22	24	14	18	43	5	2.0	3.2	500	1,000	4.2
HVR270D10	24	27	30	17	22	53	5	2.5	3.9	500	1,000	4.4
HVR330D10	30	33	36	20	26	65	5	3.0	4.8	500	1,000	3.9
HVR390D10	35	39	43	25	31	77	5	3.5	5.6	500	1,000	4.1
HVR470D10	42	47	52	30	38	93	5	4.5	6.8	500	1,000	4.3
HVR560D10	50	56	62	35	45	100	5	5.5	8.1	500	1,000	4.6
HVR680D10	61	68	75	40	56	135	5	6.5	9.8	500	1,000	4.9

Radial Varistor Series, D 10 series

■ Medium & high voltage(Power dissipation : 0.4W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR820D10	74	82	90	50	65	135	25	8	14	2,500	3,500	3.9
HVR101D10	90	100	110	60	85	165	25	10	17	2,500	3,500	4.2
HVR121D10	108	120	132	75	100	200	25	12	20	2,500	3,500	4.4
HVR151D10	135	150	165	95	125	250	25	16	25	2,500	3,500	4.7
HVR181D10	162	180	198	115	150	300	25	18	30	2,500	3,500	3.8
HVR201D10	180	200	220	130	170	340	25	20	35	2,500	3,500	3.9
HVR221D10	198	220	242	140	180	360	25	23	39	2,500	3,500	4.0
HVR241D10	216	240	264	150	200	395	25	25	42	2,500	3,500	4.1
HVR271D10	243	270	297	175	225	455	25	30	49	2,500	3,500	4.2
HVR331D10	297	330	363	210	275	550	25	30	58	2,500	3,500	4.5
HVR361D10	324	360	396	230	300	595	25	35	65	2,500	3,500	4.7
HVR391D10	351	390	429	250	320	650	25	40	70	2,500	3,500	4.8
HVR431D10	387	430	473	275	350	710	25	45	80	2,500	3,500	5.0
HVR471D10	423	470	517	300	385	775	25	45	85	2,500	3,500	5.2
HVR561D10	504	560	616	350	455	925	25	45	92	2,500	3,500	5.5
HVR621D10	558	620	682	385	505	1,025	25	45	92	2,500	3,500	5.7
HVR681D10	612	680	748	420	560	1,120	25	45	92	2,500	3,500	5.8
HVR751D10	675	750	825	460	615	1,240	25	50	100	2,500	3,500	6.0
HVR781D10	702	780	858	485	640	1,290	25	50	104	2,500	3,500	6.3
HVR821D10	738	820	902	510	670	1,355	25	55	110	2,500	3,500	6.5
HVR911D10	819	910	1,001	550	745	1,500	25	60	130	2,500	3,500	6.6
HVR102D10	900	1,000	1,100	625	825	1,650	25	65	140	2,500	3,500	7.0
HVR112D10	990	1,100	1,210	680	895	1,815	25	70	155	2,500	3,500	7.4

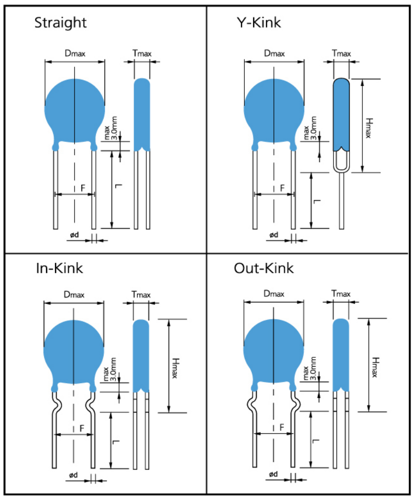
Radial Varistor Series, D 14 series

Construction

- Round varistor element, leaded
- Coating : epoxy resin

Features

- UL and VDE safety approvals.
- Low voltage range 18V to 68V.
- Medium & High voltage range 82V to 1,800V.
- Lower clamping voltage for better surge protection.



Dimension Table

Kink	Symbols	D max.	H max.	L	F	d	Tmax
Straight	S	18.0	-	Min. 4.0 ~ Max. 25.0	7.5 ± 1.0	0.6 ± 0.1 0.8 ± 0.1	Please refer to electrical characteristics table
Out - Kink	B		27.0				
In - Kink	E						
Y - Kink	Y						

Low voltage(Power dissipation : 0.1W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR180D14	16	18	20	11	14	36	10	3.5	5.2	1,000	2,000	4.0
HVR220D14	20	22	24	14	18	43	10	4.0	6.3	1,000	2,000	4.3
HVR270D14	24	27	30	17	22	53	10	5.0	7.8	1,000	2,000	4.5
HVR330D14	30	33	36	20	26	65	10	6.0	9.5	1,000	2,000	4.0
HVR390D14	35	39	43	25	31	77	10	7.0	11.0	1,000	2,000	4.2
HVR470D14	42	47	52	30	38	93	10	8.5	14.0	1,000	2,000	4.4
HVR560D14	50	56	62	35	45	100	10	10.0	16.0	1,000	2,000	4.7
HVR680D14	61	68	75	40	56	135	10	12.0	20.0	1,000	2,000	5.0

Radial Varistor Series, D 14 series

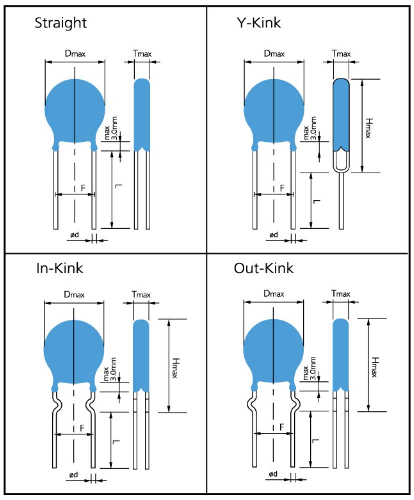
■ Medium & high voltage(Power dissipation : 0.6W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR820D14	74	82	90	50	65	135	50	14	28	4,500	6,000	4.0
HVR101D14	90	100	110	60	85	165	50	18	35	4,500	6,000	4.3
HVR121D14	108	120	132	75	100	200	50	20	42	4,500	6,000	4.5
HVR151D14	135	150	165	95	125	250	50	25	53	4,500	6,000	4.8
HVR181D14	162	180	198	115	150	300	50	30	62	4,500	6,000	3.9
HVR201D14	180	200	220	130	170	340	50	35	70	4,500	6,000	4.0
HVR221D14	198	220	242	140	180	360	50	40	78	4,500	6,000	4.1
HVR241D14	216	240	264	150	200	395	50	40	84	4,500	6,000	4.2
HVR271D14	243	270	297	175	225	455	50	50	99	4,500	6,000	4.3
HVR331D14	297	330	363	210	275	550	50	60	115	4,500	6,000	4.6
HVR361D14	324	360	396	230	300	595	50	65	130	4,500	6,000	4.8
HVR391D14	351	390	429	250	320	650	50	70	140	4,500	6,000	4.9
HVR431D14	387	430	473	275	350	710	50	75	155	4,500	6,000	5.1
HVR471D14	423	470	517	300	385	775	50	80	175	4,500	6,000	5.3
HVR561D14	504	560	616	350	455	925	50	80	190	4,500	6,000	5.6
HVR621D14	558	620	682	385	505	1,025	50	85	190	4,500	6,000	5.8
HVR681D14	612	680	748	420	560	1,120	50	90	190	4,500	6,000	5.9
HVR751D14	675	750	825	460	615	1,240	50	100	210	4,500	6,000	6.1
HVR781D14	702	780	858	485	640	1,290	50	105	220	4,500	6,000	6.4
HVR821D14	738	820	902	510	670	1,355	50	110	235	4,500	6,000	6.6
HVR911D14	819	910	1,001	550	745	1,500	50	120	255	4,500	6,000	6.7
HVR102D14	900	1,000	1,100	625	825	1,650	50	130	280	4,500	6,000	7.1
HVR112D14	990	1,100	1,210	680	895	1,815	50	140	310	4,500	6,000	7.5
HVR182D14	1,620	1,800	1,980	1,000	1,465	2,970	50	240	-	4,500	-	11.5

Radial Varistor Series, D 20 series

Construction

- Round varistor element, leaded
- Coating : epoxy resin



Features

- UL and VDE safety approvals.
- Low voltage range 18V to 68V.
- Medium & High voltage range 82V to 1,800V.
- Lower clamping voltage for better surge protection.

Dimension Table

Kink	Symbols	D max.	H max.	L	F	d	Tmax
Straight	S	24.0	-	Min. 4.0 ~ Max. 25.0	10.0 ± 1.0	0.8 ± 0.1	Please refer to electrical characteristics table
Out - Kink	B		32.0				
In - Kink	E						
Y - Kink	Y						

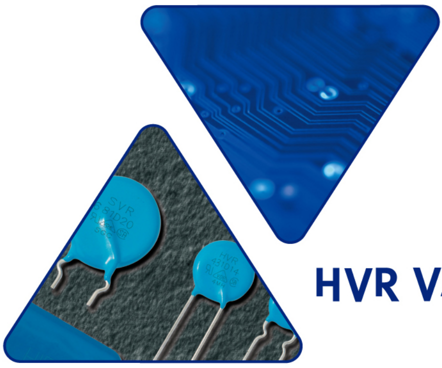
Low voltage(Power dissipation : 0.2W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen -sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR180D20	16	18	20	11	14	36	20	10	13	2,000	3,000	4.3
HVR220D20	20	22	24	14	18	43	20	13	16	2,000	3,000	4.6
HVR270D20	24	27	30	17	22	53	20	15	19	2,000	3,000	4.8
HVR330D20	30	33	36	20	26	65	20	20	24	2,000	3,000	4.3
HVR390D20	35	39	43	25	31	77	20	24	28	2,000	3,000	4.5
HVR470D20	42	47	52	30	38	93	20	30	34	2,000	3,000	4.7
HVR560D20	50	56	62	35	45	100	20	35	41	2,000	3,000	5.0
HVR680D20	61	68	75	40	56	135	20	40	49	2,000	3,000	5.3

Radial Varistor Series, D 20 series

■ Medium & high voltage(Power dissipation : 1.0W) Electrical Characteristics

Part No.	Varistor Voltage (V) 1mA			Max. Continuous Voltage(V)		Max. Clamping Voltage(V)		Energy (10/1000μs) Wtm(J)		Peak Current (8/20μs) Itm(A)		Dimen-sion
	Min	$V_{N(DC)}$	Max.	Vm(ac)	Vm(dc)	Vc(V)	Ip(A)	S-series	U-serise	S-series	U-serise	Tmax(mm)
HVR820D20	74	82	90	50	65	135	100	27	56	6,500	10,000	4.3
HVR101D20	90	100	110	60	85	165	100	30	70	6,500	10,000	4.6
HVR121D20	108	120	132	75	100	200	100	40	85	6,500	10,000	4.8
HVR151D20	135	150	165	95	125	250	100	50	106	6,500	10,000	5.1
HVR181D20	162	180	198	115	150	300	100	60	126	6,500	10,000	4.2
HVR201D20	180	200	220	130	170	340	100	70	140	6,500	10,000	4.3
HVR221D20	198	220	242	140	180	360	100	75	155	6,500	10,000	4.4
HVR241D20	216	240	264	150	200	395	100	80	168	6,500	10,000	4.5
HVR271D20	243	270	297	175	225	455	100	90	190	6,500	10,000	4.6
HVR331D20	297	330	363	210	275	550	100	105	228	6,500	10,000	4.9
HVR361D20	324	360	396	230	300	595	100	120	255	6,500	10,000	5.1
HVR391D20	351	390	429	250	320	650	100	130	275	6,500	10,000	5.2
HVR431D20	387	430	473	275	350	710	100	140	303	6,500	10,000	5.4
HVR471D20	423	470	517	300	385	775	100	150	350	6,500	10,000	5.6
HVR561D20	504	560	616	350	455	925	100	150	382	6,500	10,000	5.9
HVR621D20	558	620	682	385	505	1,025	100	150	382	6,500	10,000	6.1
HVR681D20	612	680	748	420	560	1,120	100	160	382	6,500	10,000	6.2
HVR751D20	675	750	825	460	615	1,240	100	175	420	6,500	10,000	6.4
HVR781D20	702	780	858	485	640	1,290	100	180	435	6,500	10,000	6.7
HVR821D20	738	820	902	510	670	1,355	100	190	460	6,500	10,000	6.9
HVR911D20	819	910	1,001	550	745	1,500	100	215	510	6,500	10,000	7.0
HVR102D20	900	1,000	1,100	625	825	1,650	100	230	565	6,500	10,000	7.4
HVR112D20	990	1,100	1,210	680	895	1,815	100	250	620	6,500	10,000	7.9
HVR182D20	1,620	1,800	1,980	1,000	1,465	2,970	100	400	-	6,500	-	11.9



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