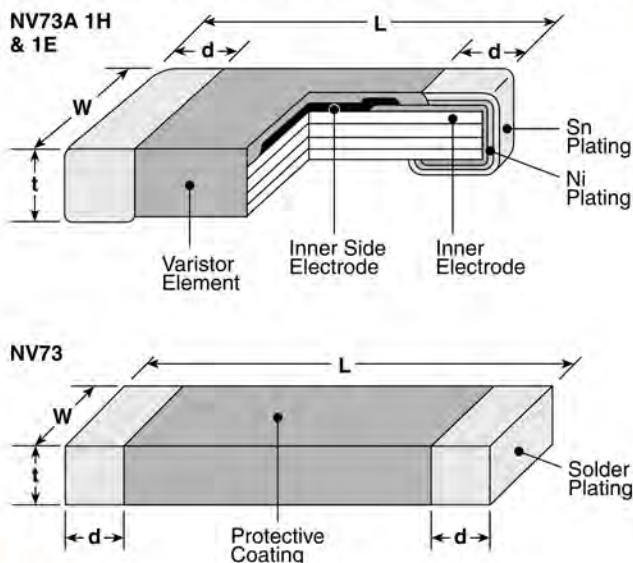




features

- Multilayer structure
- High surge current
- Protector against static electricity, switching and incoming surges
- Suitable for both flow and reflow soldering
- Products with lead-free terminations meet EU RoHS requirements. Pb located in glass material, electrode and varistor element is exempt per Annex 1, exemption 5 of EU directive 2005/95/EC

dimensions and construction



Type (Inch Size Code)	Dimensions inches (mm)			
	L	W	t	d
1H (0201)	.024±.001 (0.6±0.03)	.012±.001 (0.3±0.03)	.012±.001 (0.3±0.03)	.004 min. (0.1 min.)
1E (0402)	.023±.004 (1.0±0.1)	.02±.004 (0.5±0.1)	.023 max. (0.6 max.)	.01±.006 (0.25±0.15)
1J (0603)	.063±.006 (1.6±0.15)	.031±.006 (0.8±0.15)	.031±.006 (0.8±0.15)	.016 ^{+0.06} _{-0.08} (0.4 ^{+0.15} _{-0.2})
2A (0805)	.079±.008 (2.0±0.2)	.049±.008 (1.25±0.2)	.051 max. (1.3 max.)	.02±.010 (0.5±0.25)
2B (1206)	.126±.008 (3.2±0.2)	.063±.008 (1.6±0.2)	.065 max. (1.65 max.)	.02 ^{+0.14} _{-0.10} (0.5 ^{+0.35} _{-0.25})
2E ‡ (1210)	.126±.008 (3.2±0.2)	.098±.008 (2.5±0.2)	.059 max. (1.5 max.)	.020±.008 (0.5±0.2)
2J ‡ (1812)	.177±.008 (4.5±0.2)	.126±.008 (3.2±0.2)	.079 max. (2.0 max.)	.020 ^{+0.12} _{-0.04} (0.5 ^{+0.3} _{-0.1})
2L ‡ (2220)	.224±.008 (5.7±0.2)	.197±.008 (5.0±0.2)	.098 max. (2.5 max.)	.020 ^{+0.01} _{-0.04} (0.5 ^{+0.3} _{-0.1})
C2L ‡ (2220)	.232±.008 (5.9±0.2)	.201±.008 (5.1±0.2)	.106 max. (2.7 max.)	.028 ^{+0.16} _{-0.12} (0.7 ^{+0.4} _{-0.3})

ordering information

NV73	A		1J	T	TE	12
Type	Energy Code	Capacitance Type	Size	Termination Material	Packaging	Varistor Voltage
	A B C	Blank: Standard L: Low Capacitance (1E only)	1H: 0201 1E: 0402 1J: 0603 2A: 0805 2B: 1206 ‡ 2E: 1210 ‡ 2J: 1812 ‡ 2L: 2220	T: Sn	TBM: 2mm press paper (1H: 15,000 pieces/reel) TP: 2mm pitch paper (1E: 10,000 pieces/reel) TE: 7" embossed plastic (1J, 2A, 2B: 2,500 pieces/reel; 2J, 2L: 1,000 pieces/reel; 2E: 2,000 pieces/reel)	8: 8V 12: 12V 120: 120V

For further information on packaging, please refer to Appendix A.

‡ NV732E/2J/2L/C2L End of life- last time to buy June 1, 2025
Recommended replacement NV73S

applications and ratings

Part Designation	Varistor Voltage V _{1mA} (V)	Varistor Voltage Tolerance (V)	Maximum Allowable Voltage d.c. (V)	Clamping Voltage I _c =1A (V) 8/20μs	Maximum Energy (J) 10/1000μs	Maximum Peak Current (A) 2 times 8/20μs	Capacitance (Typ) 1kHz (pF)	Operating Temp. (°C)	Storage Temp. (°C)
NV73A1HTTB12	12	10 - 15.6	6.5	35	0.01	1	33	-40°C to +85°C	-40°C to +125°C
NV73A1ETTP8	8	6.4 - 9.6	5.5	20	0.05	20	480		
NV73A1ETTP18	18	16.2 - 19.8	14.0	35			160		
NV73AL1ETTP12	12	10 - 14	5.5	30	0.03	5	50		
NV73AL1ETTP21	21	18 - 24	14.0	50			50		
NV73AL1ETTP28	28	24 - 32	18.0	65	0.005	2	15		
NV73AL1ETTP120	120	90 - 150		350 (1C=0.5A)			3 (1MHz)		

Part Designation	Varistor Voltage Vc	Maximum Allowable Voltage		Clamping Voltage		Maximum Energy E (J)	Maximum Peak Current IP (A) (2 times)	Operating Temp. Topt (°C)	Storage Temp. Tstg (°C)		
	Ic = 1mA (V)	a.c rms (V)	d.c (V)	V1A	V2A						
NV73A1JTTE8.2	6.8 - 9.8	4.2	6.0	—	21	0.1	30	-40°C to +85°C	-40°C to +125°C		
NV73A1JTTE12	10 - 14.4	6.1	8.6	—	29						
NV73A1JTTE15	12.5 - 18	7.6	10.8	—	35						
NV73A1JTTE18	16 - 20	9.1	12.8	—	37						
NV73A1JTTE20	18 - 22	10.6	15.0	—	40						
NV73A1JTTE22	19 - 24	12.0	16.5	—	42						
NV73A1JTTE24	21.8 - 26.5	14.0	18.0	—	46						
NV73A1JTTE27	25 - 32	17.0	22.0	—	49	0.01	10				
NV73A2ATTE8.2	6.8 - 9.8	4.2	6.0	18	—	0.03	20				
NV73A2ATTE12	10 - 14.4	6.1	8.6	24	—	0.04					
NV73A2ATTE15	12.5 - 18	7.6	10.8	29	—						
NV73A2ATTE18	16 - 20	9.1	12.8	29	—						
NV73A2ATTE20	18 - 22	10.6	15.0	33	—	0.05					
NV73A2ATTE22	19 - 24	12.0	16.5	39	—	0.06					
NV73A2ATTE24	21.8 - 26.5	14.0	18.0	42	—						
NV73A2ATTE27	25 - 32	17.0	22.0	50	—		0.07				
NV73A2ATTE33	30 - 39	20.0	26.0	60	—	0.12	25				
NV73A2ATTE39	37 - 47	25.0	31.0	72	—	0.14					
NV73A2ATTE47	45 - 54	30.0	38.0	86	—	0.16					
NV73B2ATTE8.2	6.8 - 9.8	4.2	6.0	—	18	0.03	20			35	
NV73B2ATTE12	10 - 14.4	6.1	8.6	—	24	0.05					
NV73B2ATTE15	12.5 - 18	7.6	10.8	—	30	0.07					
NV73B2ATTE18	16 - 20	9.1	12.8	—	32	0.08					
NV73B2ATTE20	18 - 22	10.6	15.0	—	36	0.09					
NV73B2ATTE22	19 - 24	12.0	16.5	—	40	0.11					
NV73B2ATTE24	21.8 - 26.5	14.0	18.0	—	42	0.12					
NV73B2ATTE27	25 - 32	17.0	22.0	—	58	0.24					
NV73B2ATTE33	30 - 39	20.0	26.0	—	66	0.25	50				
NV73C2ATTE8.2	6.8 - 9.8	4.2	6.0	—	18	0.04	25				50
NV73C2ATTE12	10 - 14.4	6.1	8.6	—	24	0.09					
NV73C2ATTE15	12.5 - 18	7.6	10.8	—	29	0.11					
NV73C2ATTE18	16 - 20	9.1	12.8	—	32	0.13					
NV73C2ATTE20	18 - 22	10.6	15.0	—	35	0.14					
NV73C2ATTE22	19 - 24	12.0	16.5	—	40	0.17					
NV73C2ATTE24	21.8 - 26.5	14.0	18.0	—	42	0.18					
NV73A2BTTE27	25 - 32	17.0	22.0	—	55	0.13	40				
NV73A2BTTE33	30 - 39	20.0	26.0	—	60	0.15					
NV73A2BTTE39	37 - 47	25.0	31.0	—	72	0.18					
NV73A2BTTE47	45 - 54	30.0	38.0	—	85	0.22					
NV73A2BTTE56	52 - 62	35.0	45.0	—	100	0.26					

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11/24/14



KOA SPEER ELECTRONICS, INC.

Only for 2E/2J/2L/C2L sizes
End of life- last time to buy June 1, 2025
Recommended replacement NV73S

NV73

metal oxide varistor

applications and ratings (continued)

Part Designation	Varistor Voltage Vc	Maximum Allowable Voltage		Clamping Voltage		Maximum Energy E (J)	Maximum Peak Current I _P (A) (2 times)	Operating Temp. T _{opt} (°C)	Storage Temp. T _{stg} (°C)
	I _c = 1mA (V)	a.c rms (V)	d.c (V)	V _{1A}	V _{2A}				
NV73B2BTTE8.2	6.8 - 9.8	4.2	6.0	—	18	0.03	30	-40°C to +85°C	-40°C to +125°C
NV73B2BTTE12	10 - 14.4	6.1	8.6	—	24	0.07	50		
NV73B2BTTE15	12.5 - 18	7.6	10.8	—	29	0.09			
NV73B2BTTE18	16 - 20	9.1	12.8	—	32	0.1			
NV73B2BTTE20	18 - 22	10.6	15.0	—	35	0.11			
NV73B2BTTE22	19 - 24	12.0	16.5	—	40	0.12			
NV73B2BTTE24	21.8 - 26.5	14.0	18.0	—	42	0.14			
NV73B2BTTE27	25 - 32	17.0	22.0	—	52	0.16			
NV73C2BTTE8.2	6.8 - 9.8	4.2	6.0	—	18	0.06	40		
NV73C2BTTE12	10 - 14.4	6.1	8.6	—	24	0.1	70		
NV73C2BTTE15	12.5 - 18	7.6	10.8	—	29	0.13			
NV73C2BTTE18	16 - 20	9.1	12.8	—	29	0.15			
NV73C2BTTE20	18 - 22	10.6	15.0	—	31	0.17			
NV73C2BTTE22	19 - 24	12.0	16.5	—	35	0.19			
NV73C2BTTE24	21.8 - 26.5	14.0	18.0	—	38	0.2			
NV73C2BTTE27	25 - 32	17.0	22.0	—	48	0.24			

† NV732E/2J/2L/C2L End of life- last time to buy June 1, 2025

Recommended replacement NV73S

Part Designation	Varistor Voltage Vc	Maximum Allowable Voltage		Clamping Voltage			Maximum Energy E (J) (100 times)	Maximum Peak Current Ip (A) (100 times)	Operating Temp. T _{opt} (°C)	Storage Temp. T _{stg} (°C)
	Ic = 1mA (V)	a.c rms (V)	d.c (V)	V _{2.5A}	V _{5A}	V _{10A}				
NV73A2ETTE15	12.8 - 17.3	8.0	11.0	30	—	—	1.0	400	-50°C to +125°C	-50°C to +150°C
NV73A2ETTE18	15.3 - 20.7	11.0	14.0	34	—	—	1.2			
NV73A2ETTE22	19.8 - 24.2	12.0	16.5	39	—	—	1.4			
NV73A2ETTE24	21.6 - 26.4	14.0	18.0	39	—	—	1.4			
NV73A2ETTE27	24.3 - 29.7	17.0	22.0	44	—	—	1.7			
NV73A2ETTE33	29.7 - 36.3	20.0	26.0	54	—	—	1.9			
NV73A2ETTE39	35.1 - 42.9	25.0	30.0	65	—	—	1.7			
NV73A2ETTE47	42.3 - 51.7	30.0	38.0	77	—	—	2.0			
NV73A2ETTE56	50.4 - 61.6	35.0	45.0	90	—	—	2.0	250		
NV73A2ETTE82	73.8 - 90.2	50.0	65.0	135	—	—	1.2	200		
NV73A2ETTE100	90.0 - 110.0	60.0	85.0	165	—	—	1.4			
NV73A2ETTE110	99.0 - 121.0	70.0	90.0	180	—	—	1.4	500		
NV73A2JTTE12	10.2 - 13.8	6.0	9.0	—	27	—	0.9			
NV73A2JTTE15	12.8 - 17.3	8.0	11.0	—	32	—	1.2			
NV73A2JTTE18	16.2 - 19.8	11.0	14.0	—	35	—	1.4			
NV73A2JTTE22	19.8 - 24.2	12.0	16.5	—	41	—	1.6			
NV73A2JTTE24	21.6 - 26.4	14.0	18.0	—	44	—	1.7			
NV73A2JTTE27	24.3 - 29.7	17.0	22.0	—	49	—	2.0			
NV73A2JTTE33	29.7 - 36.3	20.0	26.0	—	54	—	2.5			
NV73A2JTTE39	35.1 - 42.9	25.0	30.0	—	65	—	2.9			
NV73A2JTTE47	42.3 - 51.7	30.0	38.0	—	77	—	3.5			
NV73A2JTTE56	50.4 - 61.6	35.0	45.0	—	90	—	4.2			
NV73A2JTTE68	61.2 - 74.8	40.0	56.0	—	110	—	4.8			
NV73A2JTTE82	73.8 - 90.2	50.0	65.0	—	135	—	4.5	400		
NV73A2JTTE100	90 - 110	60.0	85.0	—	165	—	5.8			
NV73A2JTTE110	99 - 121	70.0	90.0	—	180	—	5.8			
NV73A2JTTE150	135 - 165	95.0	127.0	—	248	—	5.8	300		
NV73B2JTTE15	12.8 - 17.3	8.0	11.0	—	32	—	1.8	800		
NV73B2JTTE18	15.3 - 20.7	11.0	14.0	—	35	—	1.9			
NV73B2JTTE22	19.8 - 24.2	12.0	16.5	—	41	—	2.3			
NV73B2JTTE24	21.6 - 26.4	14.0	18.0	—	44	—	2.3			
NV73B2JTTE27	24.3 - 29.7	17.0	22.0	—	49	—	2.7			
NV73B2JTTE33	29.7 - 36.3	20.0	26.0	—	54	—	3.0			

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9/15/23



KOA SPEER ELECTRONICS, INC.

Only for 2E/2J/2L/C2L sizes
End of life- last time to buy June 1, 2025
Recommended replacement NV73S

NV73

metal oxide varistor

applications and ratings (continued)

‡ NV732E/2J/2L/C2L

Part Designation	Varistor Voltage Vc	Maximum Allowable Voltage		Clamping Voltage			Maximum Energy E (J) (100 times)	Maximum Peak Current Ip (A) (100 times)	Operating Temp. T _{opt} (°C)	Storage Temp. T _{stg} (°C)	
	Ic = 1mA (V)	a.c rms (V)	d.c (V)	V _{2.5A}	V _{5A}	V _{10A}					
NV73B2JTTE39	35.1 - 42.9	25.0	30.0	—	65	—	3.7	800	-50°C to +125°C	-50°C to +150°C	
NV73B2JTTE47	42.3 - 51.7	30.0	38.0	—	77	—	4.2				
NV73B2JTTE56	50.4 - 61.6	35.0	45.0	—	90	—	4.2				
NV73A2LTTE12	10.2 - 13.8	6.0	9.0	—	—	28	1.9	1000			
NV73A2LTTE15	12.8 - 17.3	8.0	11.0	—	—	33	2.3				
NV73A2LTTE18	16.2 - 19.8	11.0	14.0	—	—	36	2.7				
NV73A2LTTE22	19.8 - 24.2	12.0	16.5	—	—	41	2.9				
NV73A2LTTE24	21.6 - 26.4	14.0	18.0	—	—	45	3.1				
NV73A2LTTE27	24.3 - 29.7	17.0	22.0	—	—	48	3.8				
NV73A2LTTE33	29.7 - 36.3	20.0	26.0	—	—	57	4.3				
NV73A2LTTE39	35.1 - 42.9	25.0	30.0	—	—	65	5.5				
NV73A2LTTE47	42.3 - 51.7	30.0	38.0	—	—	77	6.3				
NV73A2LTTE56	50.4 - 61.6	35.0	45.0	—	—	90	7.7				
NV73A2LTTE68	61.2 - 74.8	40.0	56.0	—	—	110	8.8				
NV73A2LTTE100	90 - 110	60.0	85.0	—	—	165	6.8				
NV73A2LTTE110	99 - 121	70.0	90.0	—	—	180	6.8				
NV73B2LTTE15	12.8 - 17.3	8.0	11.0	—	—	33	4.2				1200
NV73B2LTTE18	15.3 - 20.7	11.0	14.0	—	—	36	5.4				
NV73B2LTTE22	19.8 - 24.2	12.0	16.5	—	—	41	5.8				
NV73B2LTTE24	21.6 - 26.4	14.0	18.0	—	—	45	5.8				
NV73B2LTTE27	24.3 - 29.7	17.0	22.0	—	—	48	7.2				
NV73B2LTTE33	29.7 - 36.3	20.0	26.0	—	—	57	7.8				
NV73B2LTTE39	35.1 - 42.9	25.0	30.0	—	—	65	9.6				
NV73B2LTTE47	42.3 - 51.7	30.0	38.0	—	—	77	12.0				
NV73B2LTTE56	50.4 - 61.6	35.0	45.0	—	—	90	7.7				
NV73B2LTTE82	73.8 - 90.2	50.0	65.0	—	—	135	5.6	1000			
NV73C2LTTE39	35.1 - 42.9	25.0	30.0	—	—	65	5.6 (1 time)	2500 (1 time)			
NV73C2LTTE82	73.8 - 90.2	50.0	65.0	—	—	135	14 (1 time)	4500 (1 time)			

Maximum allowable voltage - the maximum sinusoidal RMS voltage or maximum DC voltage which can be applied continuously

E: Maximum energy - the maximum energy within the varistor voltage change of ±10% when a single impulse of 2m sec. is applied

Ip: Maximum peak current - the maximum peak current within the varistor voltage change of ±10% when a single standard impulse of 8/20μ sec. is applied two times with an interval of 5 min.

T_{opt}: Operating temperature - Ambient temperature range when the device is operating

T_{stg}: Storage temperature - Temperature range without causing the device any failure

environmental applications

Performance Characteristics

Parameter	Requirement Δ V±%	Test Method
Varistor Voltage	Within specified tolerance	Voltage between terminals when 1mA is flowed
Solderability	95% coverage minimum	230°C ± 5°C, 4 seconds ± 1 second; 235°C ± 5°C, 4 seconds ± 1 second***
Resistance to Solder Heat	±10%	260°C ± 5°C, 10 seconds ± 0.5 second*; 270°C ± 5°C, 3 seconds ± 0.5 second**;
Rapid Change of Temperature	±10%	260°C ± 5°C, 4 seconds ± 1 second***
Maximum Peak Current	±10%	-40°C (30 minutes), +125°C (30 minutes), 30 cycles; 5 cycles***
Maximum Energy	±10%	A single standard impulse of 8/20μ seconds, positive/negative applied once each;
High Temperature Life with d.c. Bias	±10%	A single standard impulse of 8/20μ seconds, 100 pulse, 30 second interval***
Low Temperature Life with d.c. Bias***	±10%	A single standard impulse of 10/1000μs, once*; A single standard impulse of 2ms, once**;
High Temperature Life with a.c. Bias**	±10%	A single standard impulse of 10/1000μs, 100pulse, 90 second interval***
High Temperature & High Humidity Life with d.c. Bias	±10%	85°C ± 5°C, 1000h, Load: Maximum allowable circuit voltage (d.c.);
Capacitance*	Typical	125°C ± 5°C, 1000h, Load: Maximum allowable circuit voltage (d.c.)***
High Temperature Storage Life	±10%	-50°C ± 5°C, 1000h, Load: Maximum allowable circuit voltage (d.c.)
Low Temperature Storage Life	±10%	85°C ± 5°C, 1000h, Load: Maximum allowable circuit voltage (Va.c.r.m.s.)
		40°C ± 5°C, 95% RH, 500h, Load: Maximum allowable voltage (d.c.)
		1kHz: Others, 1MHz: Varistor voltage 120V
		125°C ± 5°C, 1000h; 150°C ± 5°C, 1000h***
		-40°C ± 5°C, 1000h; -50°C ± 5°C, 1000h***

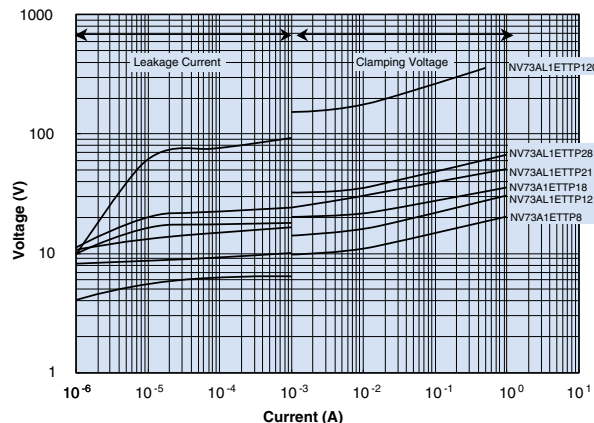
* 1H, 1E ** 1J, 2A, 2B *** 2E/2J/2L

For Voltage Current Curves Graphs see Environmental Applications. Additional environmental applications can also be found at www.koaspeer.com
Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use. 9/15/23

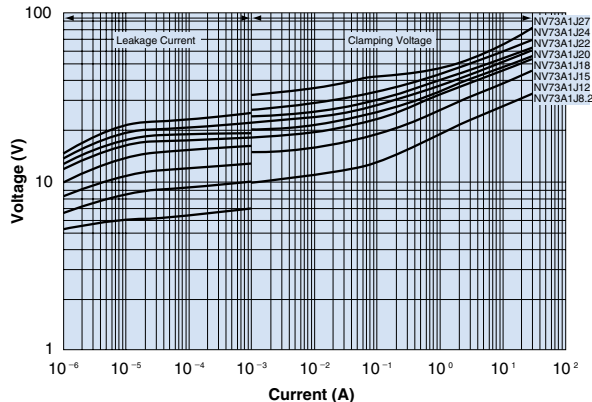
environmental applications (continued)

Voltage-Current Curves ($T_a = 25^\circ\text{C}$)

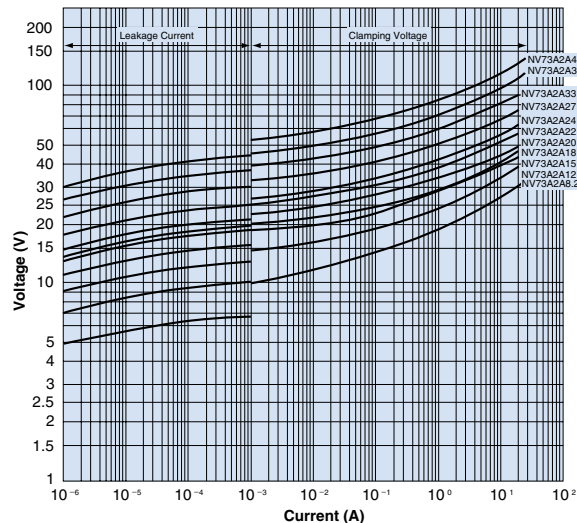
NV73A 1E



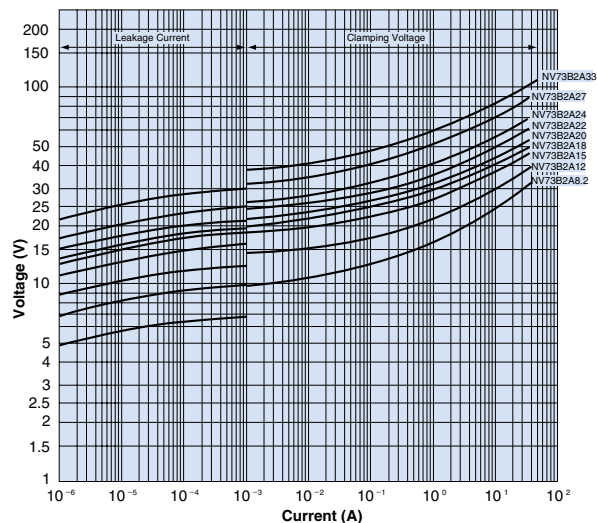
NV73A 1J



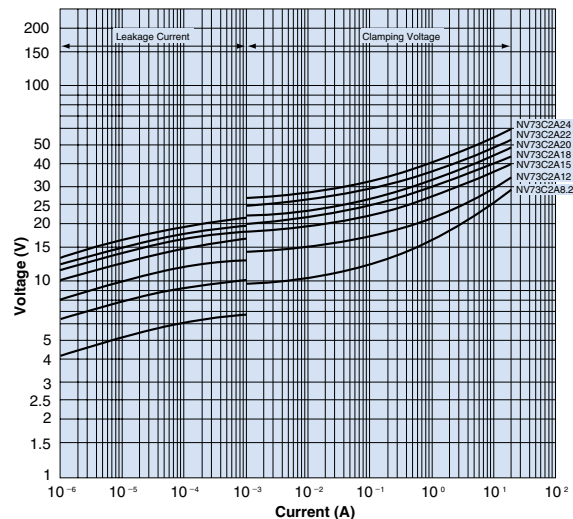
NV73A 2A



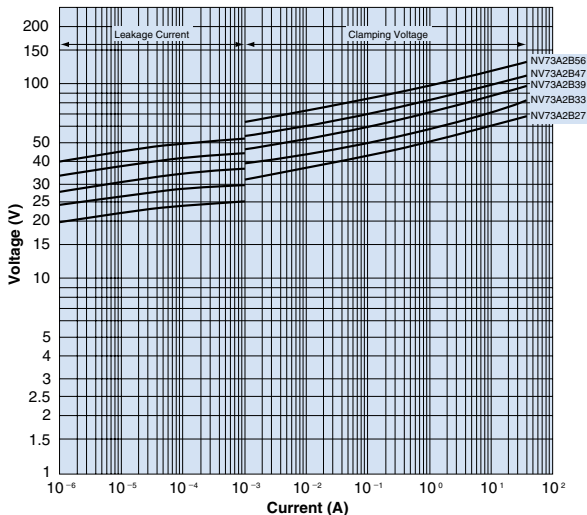
NV73B 2A



NV73C 2A



NV73A 2B



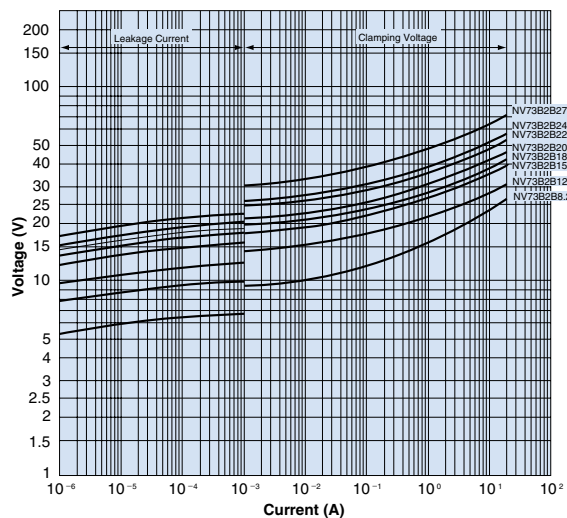
Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

12/08/16

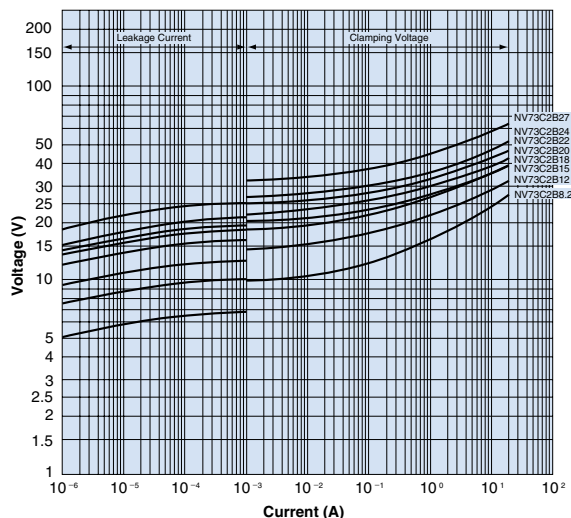
environmental applications (continued)

Voltage-Current Curves (Ta = 25°C)

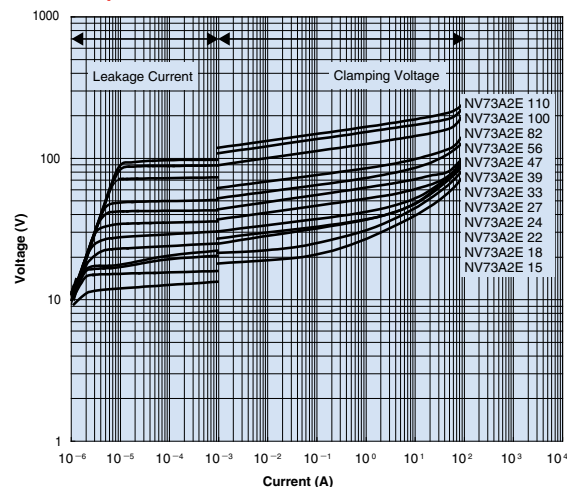
NV73B 2B



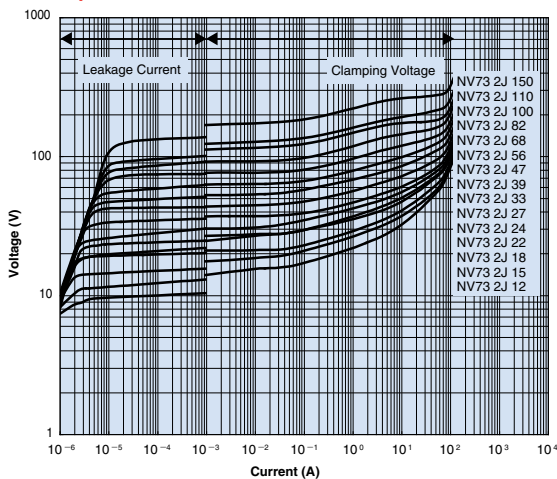
NV73C 2B



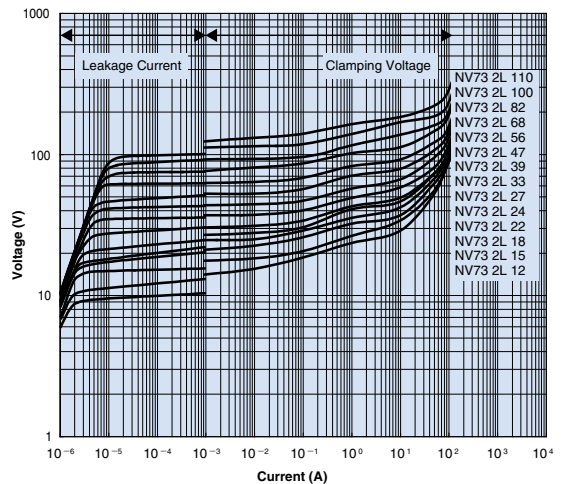
NV73 2E ‡



NV73 2J ‡



NV73 2L ‡



‡ NV732E/2J/2L/C2L End of life- last time to buy June 1, 2025
Recommended replacement NV73S

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

9/15/23