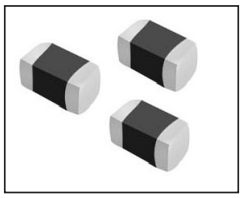
NVH Series
Surface Mount Varistors

ROHS/REACH COMPLIANT HALOGEN FREE

NIC COMPONENTS Performance Passives By Design

FEATURES
- HIGH CURRENT RATINGS (UP TO 1,200A 8/20μS)
- WORK VOLTAGE 5.5VDC ~ 100VDC
- EIA SIZES 1206, 1210, 1812 AND 2220
- TEMPERATURE RANGE -55°C ~ +125°C (1206 ~ 1812)
  -55°C ~ +85°C (2220)
- REFLOW SOLDERING COMPATIBLE



NVH1206 SPECIFICATIONS (STANDARD PACKAGE)

Part Number	Max. Working Voltage <20mA		Varistor Voltage @1mA DC Volts	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance* @1.0Vrms, 1KHz (pF)
	VDC	VAC RMS		8/20μs Volts *1	ESD Volts *2	Energy 10/1000μs (Joules)	Peak Current 8/20μs (Amps)	
NVH1206D5R5C242TRF	5.5	4.0	10.0 ~ 14.0	18	5.0	0.5	250	2400
NVH1206D090C220TRF	9.0	6.4	12.0 ~ 16.0	20	5.0	0.5	250	2000
NVH1206D120C162TRF	12.0	8.5	13.0 ~ 19.0	25	5.0	0.5	250	1600
NVH1206D140C112TRF	14.0	10.0	16.0 ~ 22.0	30	5.0	0.5	250	1100
NVH1206D180C801TRF	18.0	12.7	22.0 ~ 28.0	40	5.0	0.5	250	800
NVH1206D220C751TRF	22.0	15.6	26.0 ~ 34.0	45	5.0	0.6	250	750
NVH1206D260C681TRF	26.0	18.4	31.0 ~ 38.0	58	5.0	0.7	200	680
NVH1206D300C551TRF	30.0	21.3	37.0 ~ 46.0	65	5.0	0.7	200	550
NVH1206D330C501TRF	33.0	23.4	39.0 ~ 49.0	72	5.0	0.7	200	500
NVH1206D380C401TRF	38.0	30.0	46.0 ~ 54.0	75	5.0	0.7	200	400
NVH1206D420C351TRF	42.0	32.0	48.0 ~ 58.0	86	5.0	0.5	150	350
NVH1206D480C281TRF	48.0	34.1	54.0 ~ 67.0	100	5.0	0.5	150	280
NVH1206D560C201TRF	56.0	40.0	61.0 ~ 75.0	120	5.0	0.5	150	200
NVH1206D600C161TRF	60.0	46.0	69.0 ~ 83.0	130	5.0	0.5	150	160
NVH1206D650C141TRF	65.0	50.0	73.0 ~ 91.0	140	5.0	0.6	150	140
NVH1206D750C131TRF	75.0	55.0	85.0 ~ 103.0	160	5.0	0.6	150	130
NVH1206D850C121TRF	85.0	60.0	90.0 ~ 110.0	170	5.0	0.7	150	120
NVH1206D101C101TRF	100	75.0	108.0 ~ 132.0	200	5.0	0.7	150	100

***Capacitance Tolerance ±30%**

PART NUMBERING SYSTEM

NVH 1206 D 600 TR C161 F

- F — RoHS Compliant
- C161 — Typical Capacitance (pF): 1st & 2nd characters are significant figures, 3rd character is multiplier
- TR — Tape & Reel
- 600 — Working Voltage: VDC rating for standard type, VAC rating for molded type, 1st & 2nd characters are significant figures, 3rd character is multiplier, R = decimal point, 5R5 = 5.5, 600 = 60, 131 = 130
- D — Construction: D = Multilayer
- 1206 — Case Size: 1206, 1210, 1812 & 2220
- NVH — Series

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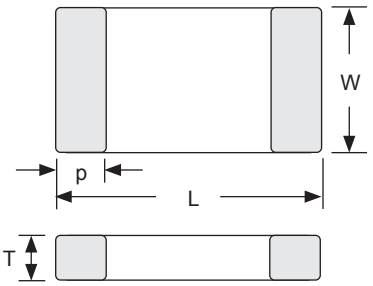
NVH1210 SPECIFICATIONS (STANDARD PACKAGE)

Part Number	Max. Working Voltage <20mA		Varistor Voltage @1mA DC Volts	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance* @1.0Vrms, 1KHz (pF)
	VDC	VAC RMS		8/20µs Volts -1	ESD Volts -2	Energy 10/1000µs (Joules)	Peak Current 8/20µs (Amps)	
NVH1210D5R5C402TRF	5.5	4.0	10.0 ~ 14.0	18	5.0	0.7	400	4000
NVH1210D090C382TRF	9.0	6.4	12.0 ~ 16.0	20	5.0	0.9	400	3800
NVH1210D120C322TRF	12.0	8.5	13.0 ~ 19.0	25	5.0	10	400	3200
NVH1210D140C272TRF	14.0	10.0	16.0 ~ 22.0	30	5.0	1.2	400	2700
NVH1210D180C202TRF	18.0	12.7	22.0 ~ 28.0	40	5.0	1.5	400	2000
NVH1210D220C162TRF	22.0	15.6	26.0 ~ 34.0	45	5.0	1.7	400	1600
NVH1210D260C142TRF	26.0	18.4	31.0 ~ 38.0	58	5.0	1.9	400	1400
NVH1210D300C122TRF	30.0	21.3	37.0 ~ 46.0	65	5.0	1.7	300	1200
NVH1210D330C112TRF	33.0	23.4	39.0 ~ 49.0	72	5.0	1.7	300	1100
NVH1210D380C102TRF	38.0	30.0	46.0 ~ 54.0	75	5.0	2.0	300	1000
NVH1210D420C801TRF	42.0	32.0	48.0 ~ 58.0	86	5.0	2.0	300	800
NVH1210D480C701TRF	48.0	34.1	54.0 ~ 67.0	100	5.0	2.0	300	700
NVH1210D560C601TRF	56.0	40.0	61.0 ~ 75.0	120	5.0	2.3	300	600
NVH1210D600C451TRF	60.0	46.0	69.0 ~ 83.0	130	5.0	2.0	300	450
NVH1210D650C251TRF	65.0	50.0	73.0 ~ 91.0	140	5.0	1.6	300	250
NVH1210D750C301TRF	75.0	55.0	85.0 ~ 103.0	160	5.0	1.6	200	300
NVH1210D850C201TRF	85.0	60.0	90.0 ~ 110.0	170	5.0	2.0	200	200
NVH1210D101C181TRF	100	75.0	108.0 ~ 132.0	200	5.0	1.6	200	180

***Capacitance Tolerance ±30%**

STANDARD CASE DIMENSIONS (mm)

Type	L	W	T	p
NVH1206	3.2 ± 0.20	1.6 ± 0.20	1.6 max	0.20 ~ 0.80
NVH1210	3.2 ± 0.30	2.5 ± 0.25	1.7 max.	0.25 ~ 0.75
NVH1812	4.5 ± 0.40	3.2 ± 0.30	2.5 max.	0.25 ~ 1.00
NVH2220	5.7 ± 0.40	5.0 ± 0.40	2.5 max.	0.25 ~ 1.00



Terminations Materials:
1. Silver Base
2. Nickel Barrier
3. 100% Sn Finish

NVH1812 SPECIFICATIONS (STANDARD PACKAGE)

Part Number	Max. Working Voltage <20mA		Varistor Voltage @1mA DC Volts	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance* @1.0Vrms, 1KHz (pF)
	VDC	VAC RMS		8/20µs Volts *1	ESD Volts *2	Energy 10/1000µs (Joules)	Peak Current 8/20µs (Amps)	
NVH1812D5R5C712TRF	5.5	4.0	10.0 ~ 14.0	18	5.0	1.0	800	7100
NVH1812D090C602TRF	9.0	6.4	12.0 ~ 16.0	20	5.0	1.2	800	6000
NVH1812D120C512TRF	12.0	8.5	13.0 ~ 19.0	25	5.0	1.5	800	5100
NVH1812D140C432TRF	14.0	10.0	16.0 ~ 22.0	30	5.0	1.9	800	4300
NVH1812D180C362TRF	18.0	12.7	22.0 ~ 28.0	40	5.0	2.3	800	3600
NVH1812D220C262TRF	22.0	15.6	26.0 ~ 34.0	45	5.0	2.5	800	2600
NVH1812D260C242TRF	26.0	18.4	31.0 ~ 38.0	58	5.0	3.0	800	2400
NVH1812D300C202TRF	30.0	21.3	37.0 ~ 46.0	65	5.0	3.7	800	2000
NVH1812D330C182TRF	33.0	23.4	39.0 ~ 49.0	72	5.0	3.7	800	1800
NVH1812D380C162TRF	38.0	30.0	46.0 ~ 54.0	75	5.0	4.2	800	1600
NVH1812D420C142TRF	42.0	32.0	48.0 ~ 58.0	86	5.0	4.0	600	1400
NVH1812D480C122TRF	48.0	34.1	54.0 ~ 67.0	100	5.0	4.0	600	1200
NVH1812D560C102TRF	56.0	40.0	61.0 ~ 75.0	120	5.0	4.3	600	1000
NVH1812D600C901TRF	60.0	46.0	69.0 ~ 83.0	130	5.0	4.3	600	900
NVH1812D650C781TRF	65.0	50.0	73.0 ~ 91.0	140	5.0	4.0	600	780
NVH1812D750C601TRF	75.0	55.0	85.0 ~ 103.0	160	5.0	4.0	500	600
NVH1812D850C451TRF	85.0	60.0	90.0 ~ 110.0	170	5.0	4.0	500	450
NVH1812D101C401TRF	100	75.0	108.0 ~ 132.0	200	5.0	4.0	500	400

***Capacitance Tolerance ±30%**

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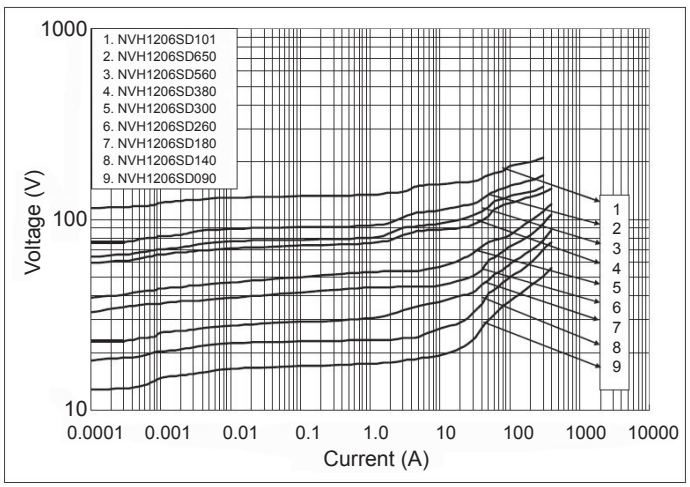
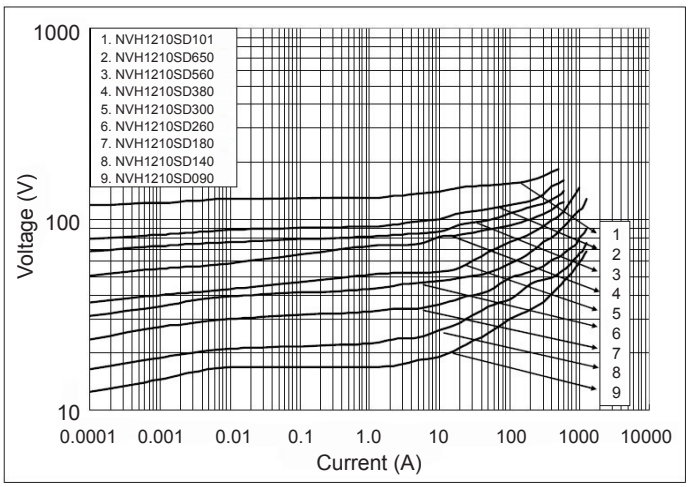
NVH2220 SPECIFICATIONS (STANDARD PACKAGE)

Part Number	Max. Working Voltage <20mA		Varistor Voltage @1mA DC Volts	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance* @1.0Vrms, 1KHz (pF)
	VDC	VAC RMS		8/20µs Volts *1	ESD Volts *2	Energy 10/1000µs (Joules)	Peak Current 8/20µs (Amps)	
NVH2220D5R5C153TRF	5.5	4.0	10.0 ~ 14.0	18	10	1.4	1200	15000
NVH2220D090C123TRF	9.0	6.4	12.0 ~ 16.0	20	10	2.7	1200	12000
NVH2220D120C103TRF	12.0	8.5	13.0 ~ 19.0	25	10	3.2	1200	10000
NVH2220D140C802TRF	14.0	10.0	16.0 ~ 22.0	30	10	5.4	1200	8000
NVH2220D180C722TRF	18.0	12.7	22.0 ~ 28.0	40	10	5.8	1200	7200
NVH2220D220C532TRF	22.0	15.6	26.0 ~ 34.0	45	10	6.5	1200	5300
NVH2220D260C402TRF	26.0	18.4	31.0 ~ 38.0	58	10	7.8	1200	4000
NVH2220D300C362TRF	30.0	21.3	37.0 ~ 46.0	65	10	9.6	1200	3600
NVH2220D330C342TRF	33.0	23.4	39.0 ~ 49.0	72	10	9.6	1200	3400
NVH2220D380C322TRF	38.0	30.0	46.0 ~ 54.0	75	10	12.0	1200	3200
NVH2220D420C312TRF	42.0	32.0	48.0 ~ 58.0	86	10	9.0	900	3100
NVH2220D480C302TRF	48.0	34.1	54.0 ~ 67.0	100	10	7.7	900	3000
NVH2220D560C182TRF	56.0	40.0	61.0 ~ 75.0	120	10	9.0	900	1800
NVH2220D600C152TRF	60.0	46.0	69.0 ~ 83.0	130	10	6.5	900	1500
NVH2220D650C142TRF	65.0	50.0	73.0 ~ 91.0	140	10	5.6	900	1400
NVH2220D750C102TRF	75.0	55.0	85.0 ~ 103.0	160	10	6.0	800	1000
NVH2220D850C801TRF	85.0	60.0	90.0 ~ 110.0	170	10	6.8	800	800
NVH2220D101C651TRF	100	75.0	108.0 ~ 132.0	200	10	6.0	800	650

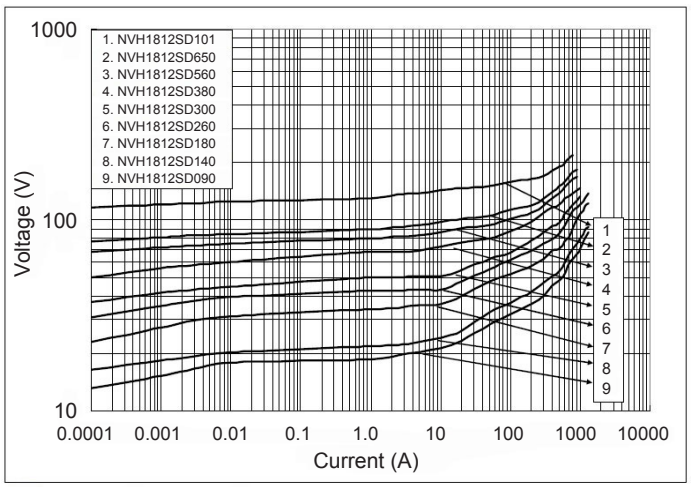
***Capacitance Tolerance ±30%**

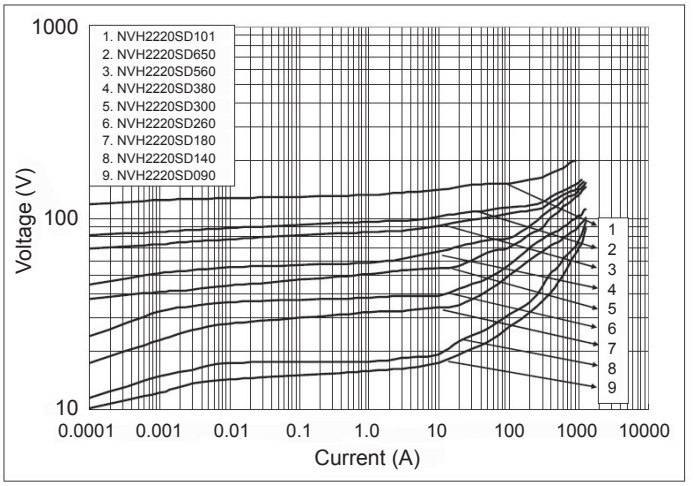
TYPICAL PERFORMANCE CHARACTERISTICS





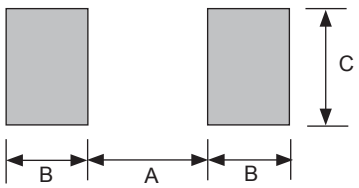
TYPICAL PERFORMANCE CHARACTERISTICS



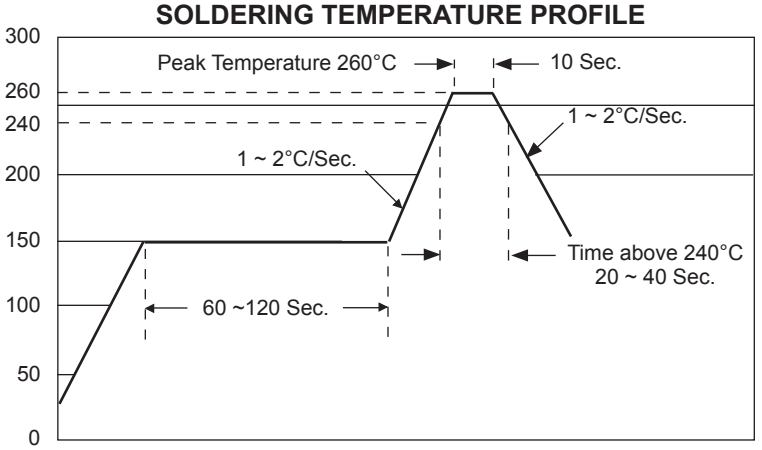


RECOMMENDED LAND PATTERN DIMENSIONS (mm)

Type	A	B	C
NVH1206	1.8 ~ 2.5	1.0 ~ 1.5	1.2 ~ 2.0
NVH1210	1.9 ~ 2.1	1.2 ~ 1.5	2.6 ~ 2.8
NVH1812	2.8 ~ 3.0	1.5 ~ 1.8	3.3 ~ 3.6
NVH2220	4.0 ~ 4.2	1.8 ~ 2.0	5.2 ~ 5.5



RECOMMENDED REFLOW SOLDERING TEMPERATURE PROFILE

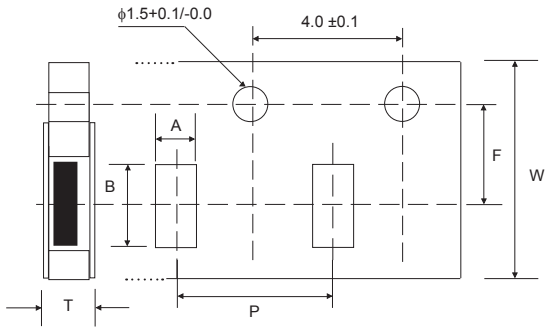


Note: 2 times maximum reflow

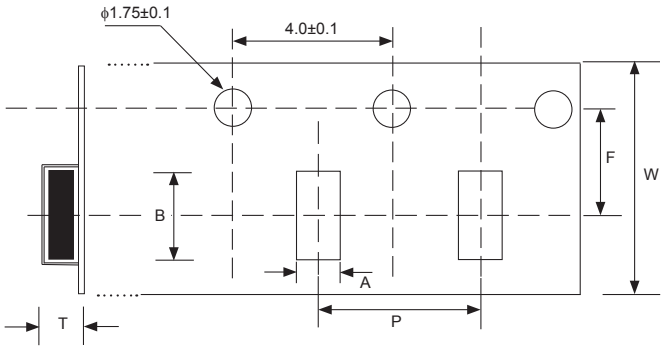
CARRIER DIMENSIONS (mm) AND REEL QUANTITY

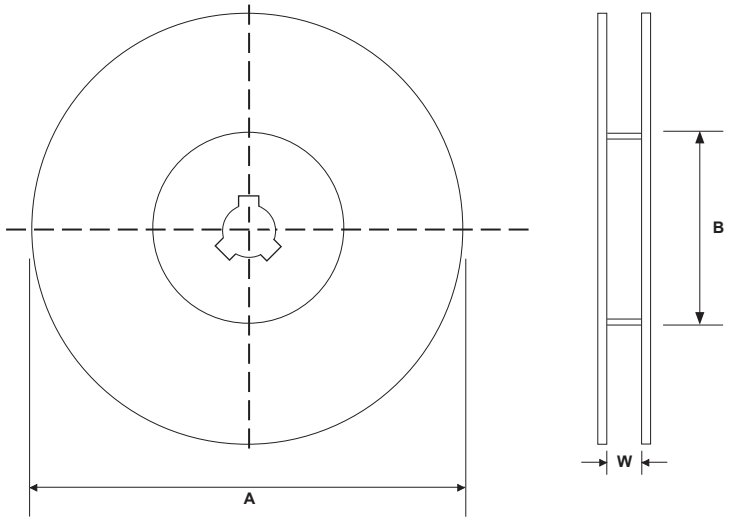
Type	Carrier Material	A nom.	B nom.	P ± 0.1	T max.	F ± 0.05	W ± 0.3	Reel Quantity
NVH1206	Paper	1.90	3.50	4.0	1.10	3.50	8.0	3,000
NVH1210	Plastic	2.75	3.45	4.0	1.80	3.50	8.0	2,000
NVH1812		3.50	4.80	8.0	2.70	5.50	12.0	2,000
NVH2220		5.10	6.00	8.0	2.7	5.50	12.0	2,000

PAPER CARRIER



EMBOSSED PLASTIC CARRIER



REEL DIMENSIONS (mm)

A	B	W
178 ± 2.0	58 ± 2.0	12.5