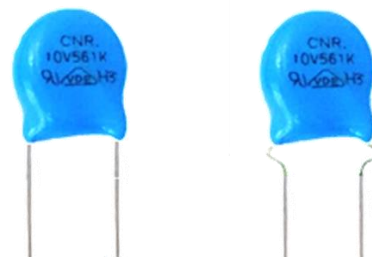


Description

CNR D/V/P/H series metal oxide varistor are nonlinear resistors, consisting main of zinc oxide and several kinds of metal oxide additive. They are bilateral and symmetrical V-I characteristics curve and unparalleled large peak current capability are used for absorption of transient voltage, suppression of pulse noise and circuit voltage stabilization.



Agency Approvals		
Agency	Agency Approval	Certificate No.
	UL 1449 4 th & cUL	VZCA2.E316325 VZCA8.E316325
	IEC 61051-1:2007-04	127092
	IEC 61051-2:2009-05	
	IEC 61051-2-2:1991-01	
	IEC 60950-1:2013 for 10 mm,14mm,18mm and 20mm only	
	CLASS 2221 01	1235901
	GB/T 10193-1997	CQC13001091907
	GB/T 10194-1997	CQC13001091908
	GB 4943.1-2011	CQC13001091909
	GB 8898-2011	CQC13001091910 CQC13001091911

Features

1. RoHS compliant
2. Halogen-free series are available
3. Body size: $\varnothing 05 \sim \varnothing 20\text{mm}$
4. CNR-10V181K~10V112K,CNR-14V181K~14V112K, CNR-18V180K~18V112K,CNR-20V181K~20V112K meet IEC 60950-1:2013 Annex Q requirement.

Applications

1. Power supply
2. Home appliance
3. Industrial equipment
4. Telecommunication or telephone system
5. Smart meter
6. Lighting products
7. Photovoltaic industry

Max. Rating		
	V-Seires	Units
AC Voltage Range (Vac)	130 to 680	V
DC Voltage Range(Vdc)	170 to 895	V
Peak Current for 8/20 μ S Current Wave	800 to 10000	A
Energy Range For 10/1000 μ S Current Wave	17.5 to 620	J
Operation Ambient Temperature Range	-40 to +105	°C
Storage Tempersture Range	-40 to +125	°C
Varistor Voltage Range Vn(Vdc)	200 to 1100	V
Insulation Resistance	>1000	M Ω
Typical Response Time	<25	ns

Device Ratings and Characteristics														
Part No.	Device Marking	Maximum Allowable Voltage		Varistor Voltage (@1mA)			Clamping Voltage @ Test Current (@8/20µs)		Maximum Energy (@10/1000µs)	Maximum Peak Current (@8/20µs)	Rated Power	Typical Capacitance (@1KHz)	UL 1449 4th ,In @8/20us	Related Standards Symbol
		ACrms(V)	DC(V)	Vn(Vdc)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	(KA)	
CNR-05V201K	05V201K	130	170	200	180	220	355	5	17.5	800	0.25	70	0.25	◇
CNR-05V221K	05V221K	140	180	220	198	242	380	5	19	800	0.25	60		◇
CNR-05V241K	05V241K	150	200	240	216	264	415	5	21	800	0.25	60		◇
CNR-05V271K	05V271K	175	225	270	243	297	475	5	24	800	0.25	50		◇
CNR-05V301K	05V301K	195	250	300	270	330	505	5	26	800	0.25	50		◇
CNR-05V331K	05V331K	215	275	330	297	363	585	5	28	800	0.25	45		◇
CNR-05V361K	05V361K	230	300	360	324	396	620	5	32	800	0.25	40		◇
CNR-05V391K	05V391K	250	320	390	351	429	675	5	35	800	0.25	40		◇
CNR-05V431K	05V431K	275	350	430	387	473	745	5	40	800	0.25	35		◇
CNR-05V471K	05V471K	300	385	470	423	517	810	5	42	800	0.25	30		◇
CNR-05V511K	05V511K	320	410	510	459	561	878	5	45	800	0.25	30		◇
CNR-05V561K	05V561K	350	460	560	504	616	940	5	45	800	0.25	30		□
CNR-05V621K	05V621K	395	510	620	558	682	1050	5	45	800	0.25	26		□
CNR-05V681K	05V681K	420	560	680	612	748	1120	5	48	800	0.25	20		□
CNR-05V751K	05V751K	465	615	750	675	825	1240	5	48	800	0.25	20		□

Related Standards

Symbols	◇				□		
Approval							

Device Ratings and Characteristics														
Part No.	Device Marking	Maximum Allowable Voltage		Varistor Voltage (@1mA)			Clamping Voltage @ Test Current (@8/20µs)		Maximum Energy (@10/1000µs)	Maximum Peak Current (@8/20µs)	Rated Power	Typical Capacitance (@1KHz)	UL 1449 4th ,In @8/20us	Related Standards Symbol
		ACrms(V)	DC(V)	Vn(Vdc)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	(KA)	
CNR-07V201K	07V201K	130	170	200	180	220	340	10	17.5	1750	0.25	200	0.5	◇
CNR-07V221K	07V221K	140	180	220	198	242	360	10	19	1750	0.25	190		◇
CNR-07V241K	07V241K	150	200	240	216	264	395	10	21	1750	0.25	170		◇
CNR-07V271K	07V271K	175	225	270	243	297	455	10	24	1750	0.25	150		◇
CNR-07V301K	07V301K	195	250	300	270	330	500	10	26	1750	0.25	140		◇
CNR-07V331K	07V331K	215	275	330	297	363	550	10	28	1750	0.25	130		◇
CNR-07V361K	07V361K	230	300	360	324	396	595	10	32	1750	0.25	130		◇
CNR-07V391K	07V391K	250	320	390	351	429	650	10	35	1750	0.25	130		◇
CNR-07V431K	07V431K	275	350	430	387	473	710	10	40	1750	0.25	120		◇
CNR-07V471K	07V471K	300	385	470	423	517	775	10	42	1750	0.25	100		◇
CNR-07V511K	07V511K	320	410	510	459	561	845	10	45	1750	0.25	90		◇
CNR-07V561K	07V561K	350	460	560	504	616	915	10	45	1750	0.25	90		□
CNR-07V621K	07V621K	395	510	620	558	682	1020	10	45	1750	0.25	90		□
CNR-07V681K	07V681K	420	560	680	612	748	1120	10	48	1750	0.25	80		□
CNR-07V751K	07V751K	465	615	750	675	825	1235	10	48	1750	0.25	80		□
CNR-07V781K	07V781K	485	540	780	702	858	1290	10	50	1750	0.25	80		□
CNR-07V821K	07V821K	510	670	820	738	902	1355	10	50	1750	0.25	70		□

Related Standards

Symbols	◇				□		
Approval							

Device Ratings and Characteristics														
Part No.	Device Marking	Maximum Allowable Voltage		Varistor Voltage (@1mA)			Clamping Voltage @ Test Current (@8/20µs)		Maximum Energy (@10/1000µs)	Maximum Peak Current (@8/20µs)	Rated Power	Typical Capacitance (@1KHz)	UL 1449 4th ,In @8/20us	Related Standards Symbol
		ACrms(V)	DC(V)	Vn(Vdc)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	(KA)	
CNR-10V201K	10V201K	130	170	200	180	220	340	25	35	3500	0.4	430	2	◇
CNR-10V221K	10V221K	140	180	220	198	242	360	25	39	3500	0.4	410		◇
CNR-10V241K	10V241K	150	200	240	216	264	395	25	42	3500	0.4	380		◇
CNR-10V271K	10V271K	175	225	270	243	297	455	25	49	3500	0.4	350		◇
CNR-10V301K	10V301K	195	250	300	270	330	500	25	55	3500	0.4	330		◇
CNR-10V331K	10V331K	215	275	330	297	363	550	25	58	3500	0.4	300		◇
CNR-10V361K	10V361K	230	300	360	324	396	595	25	65	3500	0.4	300		◇
CNR-10V391K	10V391K	250	320	390	351	429	650	25	70	3500	0.4	300		◇
CNR-10V431K	10V431K	275	350	430	387	473	710	25	80	3500	0.4	270		◇
CNR-10V471K	10V471K	300	385	470	423	517	775	25	85	3500	0.4	230		◇
CNR-10V511K	10V511K	320	410	510	459	561	845	25	92	3500	0.4	210		◇
CNR-10V561K	10V561K	350	460	560	504	616	915	25	92	3500	0.4	200		□
CNR-10V621K	10V621K	395	510	620	558	682	1020	25	95	3500	0.4	180		□
CNR-10V681K	10V681K	420	560	680	612	748	1120	25	98	3500	0.4	150		□
CNR-10V751K	10V751K	465	615	750	675	825	1235	25	100	3500	0.4	140		□
CNR-10V781K	10V781K	485	540	780	702	858	1290	25	100	3500	0.4	140		□
CNR-10V821K	10V821K	510	670	820	738	902	1355	25	110	3500	0.4	140		□
CNR-10V911K	10V911K	550	745	910	819	1001	1500	25	130	3500	0.4	130		□
CNR-10V102K	10V102K	625	825	1000	900	1100	1650	25	140	3500	0.4	130		□
CNR-10V112K	10V112K	680	895	1100	990	1210	1815	25	155	3500	0.4	120		□

Related Standards

Symbols	◇				□		
Approval							

Device Ratings and Characteristics														
Part No.	Device Marking	Maximum Allowable Voltage		Varistor Voltage (@1mA)			Clamping Voltage @ Test Current (@8/20μs)		Maximum Energy (@10/1000μs)	Maximum Peak Current (@8/20μs)	Rated Power	Typical Capacitance (@1KHz)	UL 1449 4th ,In @8/20us	Related Standards Symbol
		ACrms(V)	DC(V)	Vn(Vdc)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	(KA)	
CNR-14V201K	14V201K	130	170	200	180	220	340	50	84	6000	0.6	770	3	◇
CNR-14V221K	14V221K	140	180	220	198	242	360	50	91	6000	0.6	740		◇
CNR-14V241K	14V241K	150	200	240	216	264	395	50	98	6000	0.6	700		◇
CNR-14V271K	14V271K	175	225	270	243	297	455	50	112	6000	0.6	640		◇
CNR-14V301K	14V301K	195	250	300	270	330	500	50	123	6000	0.6	600		◇
CNR-14V331K	14V331K	215	275	330	297	363	550	50	133	6000	0.6	580		◇
CNR-14V361K	14V361K	230	300	360	324	396	595	50	147	6000	0.6	540		◇
CNR-14V391K	14V391K	250	320	390	351	429	650	50	161	6000	0.6	500		◇
CNR-14V431K	14V431K	275	350	430	387	473	710	50	182	6000	0.6	450		◇
CNR-14V471K	14V471K	300	385	470	423	517	775	50	196	6000	0.6	400		◇
CNR-14V511K	14V511K	320	410	510	459	561	845	50	210	6000	0.6	350		◇
CNR-14V561K	14V561K	350	460	560	504	616	915	50	231	6000	0.6	350		□
CNR-14V621K	14V621K	395	510	620	558	682	1020	50	252	6000	0.6	330		□
CNR-14V681K	14V681K	420	560	680	612	748	1120	50	266	6000	0.6	310		□
CNR-14V751K	14V751K	465	615	750	675	825	1235	50	280	6000	0.6	300		□
CNR-14V781K	14V781K	485	640	780	702	858	1290	50	280	6000	0.6	300		□
CNR-14V821K	14V821K	510	670	820	738	902	1355	50	280	6000	0.6	270		□
CNR-14V911K	14V911K	550	745	910	819	1001	1500	50	308	6000	0.6	260		□
CNR-14V102K	14V102K	625	825	1000	900	1100	1650	50	336	6000	0.6	250		□
CNR-14V112K	14V112K	680	895	1100	990	1210	1815	50	364	6000	0.6	240		□

Related Standards

Symbols	◇				□		
Approval							

Device Ratings and Characteristics														
Part No.	Device Marking	Maximum Allowable Voltage		Varistor Voltage (@1mA)			Clamping Voltage @ Test Current (@8/20µs)		Maximum Energy (@10/1000µs)	Maximum Peak Current (@8/20µs)	Rated Power	Typical Capacitance (@1KHz)	UL 1449 4th ,In @8/20us	Related Standards Symbol
		ACrms(V)	DC(V)	Vn(Vdc)	Min.	Max.	Vc(V)	Ip(A)	(J)	(A)	(W)	(pF)	(KA)	
CNR-20V201K	20V201K	130	170	200	180	220	340	100	140	10000	1	1700	5	◇
CNR-20V221K	20V221K	140	180	220	198	242	360	100	155	10000	1	1600		◇
CNR-20V241K	20V241K	150	200	240	216	264	395	100	170	10000	1	1500		◇
CNR-20V271K	20V271K	175	225	270	243	297	455	100	190	10000	1	1300		◇
CNR-20V301K	20V301K	195	250	300	270	330	500	100	215	10000	1	1200		◇
CNR-20V331K	20V331K	215	275	330	297	363	550	100	228	10000	1	1100		◇
CNR-20V361K	20V361K	230	300	360	324	396	595	100	255	10000	1	1100		◇
CNR-20V391K	20V391K	250	320	390	351	429	650	100	275	10000	1	1100		◇
CNR-20V431K	20V431K	275	350	430	387	473	710	100	303	10000	1	1000		◇
CNR-20V471K	20V471K	300	385	470	423	517	775	100	350	10000	1	900		◇
CNR-20V511K	20V511K	320	410	510	459	561	845	100	382	10000	1	800		◇
CNR-20V561K	20V561K	350	460	560	504	616	915	100	382	10000	1	750		□
CNR-20V621K	20V621K	395	510	620	558	682	1020	100	400	10000	1	570		□
CNR-20V681K	20V681K	420	560	680	612	748	1120	100	420	10000	1	550		□
CNR-20V751K	20V751K	465	615	750	675	825	1235	100	420	10000	1	530		□
CNR-20V781K	20V781K	485	640	780	702	858	1290	100	440	10000	1	500		□
CNR-20V821K	20V821K	510	670	820	738	902	1355	100	460	10000	1	500		□
CNR-20V911K	20V911K	550	745	910	819	1001	1500	100	510	10000	1	480		□
CNR-20V102K	20V102K	625	825	1000	900	1100	1650	100	565	10000	1	460		□
CNR-20V112K	20V112K	680	895	1100	990	1210	1815	100	620	10000	1	400		□

Related Standards

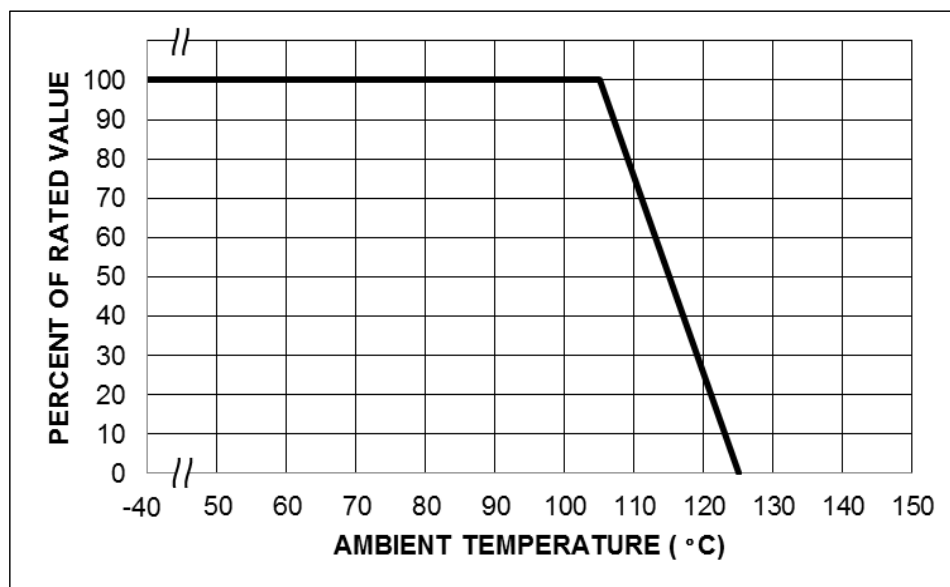
Symbols	◇				□		
Approval							

Reliability

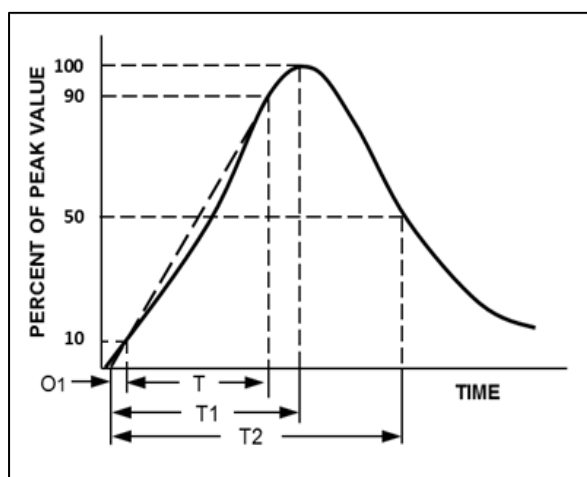
Characteristics	Standard	Test condition / Methods	Specifications															
Single peak current	IEC 61051-1	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20μs) applied one times.	$\triangle V_{1mA}/V_{1mA} \leq \pm 10\%$															
Nominal discharge current test	UL 1449 4th	Refer to UL 1449 4th item 41.1, the test condition is 8/20μs surge current waveform for 15 times.	$\triangle V_{1mA}/V_{1mA} \leq \pm 10\%$ No visible damage															
Multiple pulse capability	IEC 61051-1	Refer to Impulse life rating curve 100 times current.	$\triangle V_{1mA}/V_{1mA} \leq \pm 10\%$ No visible damage															
Energy	IEC 61051-1	The maximum energy within the varistor voltage change of±10% when one impulse of 2 ms or 10/1000 μs is applied.	$\triangle V_{1mA}/V_{1mA} \leq \pm 10\%$															
Robustness of Terminations (Tensile)	IEC 60068-2-21	After Gradually applying the specified force and keep the unit fixed for 10±1 sec. <table><tr><td>Terminal diameter</td><td>Force</td></tr><tr><td>Ø 0.6 mm</td><td>9.8 N (1.0Kgf)</td></tr><tr><td>Ø 0.8 mm</td><td>9.8 N (1.0Kgf)</td></tr><tr><td>Ø 1.0 mm</td><td>19.6 N (2.0Kgf)</td></tr></table>	Terminal diameter	Force	Ø 0.6 mm	9.8 N (1.0Kgf)	Ø 0.8 mm	9.8 N (1.0Kgf)	Ø 1.0 mm	19.6 N (2.0Kgf)	No visible damage							
Terminal diameter	Force																	
Ø 0.6 mm	9.8 N (1.0Kgf)																	
Ø 0.8 mm	9.8 N (1.0Kgf)																	
Ø 1.0 mm	19.6 N (2.0Kgf)																	
Robustness of Terminations (Bending)	IEC 60068-2-21	Hold specimen and apply the force specified below to each lead. Bendthe specimen to 90°, then return to the original position. Repeat theprocedure in the opposite direction. <table><tr><td>Terminal diameter</td><td>Force</td></tr><tr><td>Ø 0.6 mm</td><td>9.8 N (0.5Kgf)</td></tr><tr><td>Ø 0.8 mm</td><td>9.8 N (0.5Kgf)</td></tr><tr><td>Ø 1.0 mm</td><td>19.6 N (1.0Kgf)</td></tr></table>	Terminal diameter	Force	Ø 0.6 mm	9.8 N (0.5Kgf)	Ø 0.8 mm	9.8 N (0.5Kgf)	Ø 1.0 mm	19.6 N (1.0Kgf)	No visible damage							
Terminal diameter	Force																	
Ø 0.6 mm	9.8 N (0.5Kgf)																	
Ø 0.8 mm	9.8 N (0.5Kgf)																	
Ø 1.0 mm	19.6 N (1.0Kgf)																	
Solderability	IEC 60068-2-20	After dipping the terminals to a depth of approximately 3mm from the body in a soldering bath of 260±5℃ for 2±0.5 seconds, the terminal shall be visually examined.	Approximately 95% of the terminal shall be covered with solder uniformly															
Resistance to Soldering Heat	IEC 60068-2-20	260±5℃, 10±1 sec.	$\triangle V_{1mA}/V_{1mA} \leq \pm 5\%$, No visible damage															
Vibration	IEC 60068-2-6	Frequency range: 10-55Hz Amplitude: 0.75mm or 98 m/s ² Direction: 3 mutually perpendicular directions, 2 hrs each.	$\triangle V_{1mA}/V_{1mA} \leq 5\%$ No visible damage															
High Temperature Storage	IEC 60068-2-2	125±2 ℃ x 1000 ±24hrs	$\triangle V_{mA}/V_{mA} \leq \pm 5\%$															
High Humidity Storage	IEC 60068-2-2	40±2 ℃, 90 to 95% RH 1000 hrs	$\triangle V_{1mA}/\triangle V_{1mA} \leq \pm 5\%$															
Temperature Cycle	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles. <table><tr><td>Step</td><td>Temperature (℃)</td><td>Period (minutes)</td></tr><tr><td>1.</td><td>-40±3</td><td>30±3</td></tr><tr><td>2.</td><td>Room temperature</td><td>15±3</td></tr><tr><td>3.</td><td>125±2</td><td>30±3</td></tr><tr><td>4.</td><td>Room temperature</td><td>15±3</td></tr></table>	Step	Temperature (℃)	Period (minutes)	1.	-40±3	30±3	2.	Room temperature	15±3	3.	125±2	30±3	4.	Room temperature	15±3	$\triangle V_{1mA}/V_{1mA} \leq \pm 5\%$ No visible damage
Step	Temperature (℃)	Period (minutes)																
1.	-40±3	30±3																
2.	Room temperature	15±3																
3.	125±2	30±3																
4.	Room temperature	15±3																
High Temp Load	IEC 61051-1	85±2 ℃ , 1000±24hrs. At Vdc or Vrms (MAX. Allowable Voltage)	$\triangle V_{1mA}/V_{1mA} \leq \pm 10\%$															
Withstanding Voltage (Body Insulation)		The specified voltage shall be applied both terminals of the specimen connected together and metal foil closely wrapped round its body for 1 minute.Electrical breakdown shall be examined. <table><tr><td>Classification</td><td>Test Voltage</td></tr><tr><td>V_{1mA} ≤ 68V</td><td>1000Vrms</td></tr><tr><td>V_{1mA} > 68V</td><td>2500Vrms</td></tr></table>	Classification	Test Voltage	V _{1mA} ≤ 68V	1000Vrms	V _{1mA} > 68V	2500Vrms	No visible damage									
Classification	Test Voltage																	
V _{1mA} ≤ 68V	1000Vrms																	
V _{1mA} > 68V	2500Vrms																	

Power Derating Curve

Should transients occur in rapid succession, the average power dissipation is the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be with the specifications shown on the Device Ratings and Specifications Table for the specific device. The operating values of a MOV need to be derated at high temperatures as shown above. Because varistors only dissipate a relatively small amount of average power they are not suitable for repetitive applications that involve substantial amounts of average power dissipation.



Surge Current Standard Waveform



O1 = Virtual Origin of Wave

T = Time from 10% to 90% of Peak

T1 = Rise Time = 1.25 x T

T2 = Decay Time

Example - For an 8/20 μ s Current Waveform:

8 μ s = T1 = Rise Time

20 μ s = T2 = Decay Time

Product Dimensions

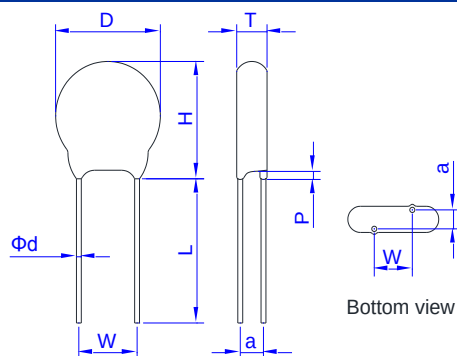


Fig 1. Straight Lead

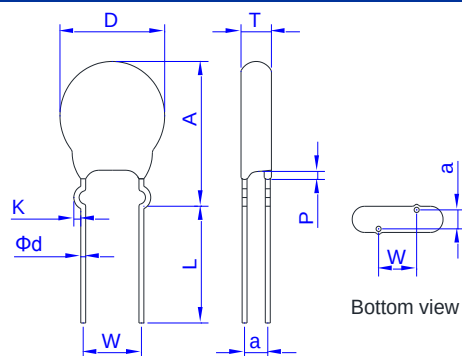


Fig 2. Outside Kink Lead

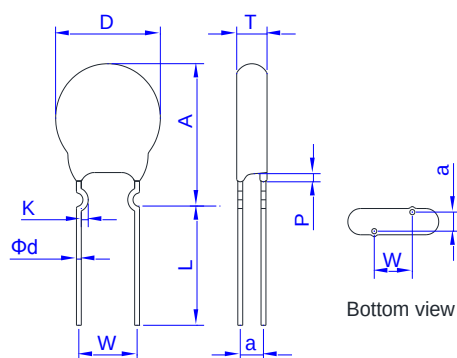


Fig 3. Inside Kink Lead

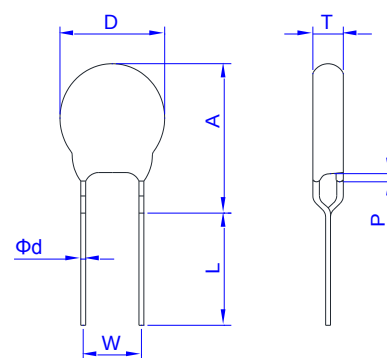


Fig 4. In Line Kink Lead

Dimension Table

Unit:mm

Model size		05V		07V		10V		14V		18V		20V	
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Symbol													
D		5.5	7.5	7.5	9.0	10.5	14.0	13.5	17.5	18.5	23.0	19.5	25.0
H		-	10.0	-	12.0	-	17.0	-	20.5	-	26.0	-	28.0
W		4.0	6.0	4.0	6.0	6.5	8.5	6.5	8.5	6.5	8.5	9.0	11.0
Ø d		0.58	0.62	0.58	0.62	0.78	0.82	0.78	0.82	0.78	0.98	0.98	1.02
P(max.)		3.0											
L(min)		25.0											
K(Kink Lead)		0.8	1.6	0.8	1.6	1.0	1.8	1.0	1.8	1.0	1.8	1.0	1.8
A(max.)	180K-271K	-	13.0	-	15.0	-	19.5	-	22.5	-	26.5	-	30.0
	>271K	-	13.0	-	15.0	-	20.5	-	23.5	-	27.0	-	31.0
T		See Tmax table											

* Short Cut Lead type TTXX the lead length (L) can 3.0~15mm (except 20V<10mm), see Ordering Note.

* * a value see T max. table

T max. Table																Unit:mm
Model	05V	07V	10V	14V	18V	20V	a(±1.0)		Model	05V	07V	10V	14V	18V	20V	a(±1.0)
201K	3.3	3.5	3.9	4.0	4.2	4.3	1.5		511K	4.8	5.0	5.3	5.4	5.6	5.7	2.6
221K	3.4	3.6	4.0	4.1	4.3	4.4	1.6		561K	5	5.2	5.5	5.6	5.8	5.9	2.8
241K	3.5	3.7	4.1	4.2	4.4	4.5	1.7		621K	5.3	5.5	5.7	5.8	6.0	6.1	3.1
271K	3.7	3.9	4.2	4.3	4.5	4.6	1.8		681K	5.4	5.6	5.8	5.9	6.1	6.2	3.3
301K	3.9	4.1	4.3	4.4	4.6	4.7	1.9		751K	5.6	5.8	6.0	6.1	6.3	6.4	3.6
331K	4	4.2	4.5	4.6	4.8	4.9	2.0		781K	-	6.0	6.3	6.4	6.6	6.7	3.8
361K	4.1	4.3	4.7	4.8	5.0	5.1	2.1		821K	-	6.3	6.5	6.6	6.8	6.9	4.0
391K	4.2	4.4	4.8	4.9	5.1	5.2	2.3		911K	-	-	6.6	6.7	6.9	7.0	4.3
431K	4.4	4.6	5.0	5.1	5.3	5.4	2.4		102K	-	-	7.0	7.1	7.3	7.4	4.6
471K	4.6	4.8	5.2	5.3	5.5	5.6	2.5		112K	-	-	7.4	7.5	7.7	7.9	5.2

Tape and Reel Specifications

- Radial devices on tape are supplied with straight leads, kinked leads or in -line leads

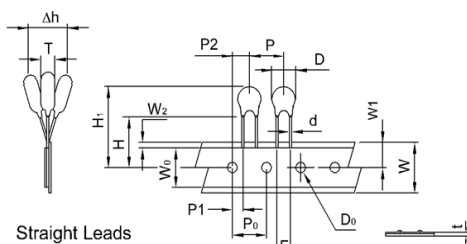


Figure: A

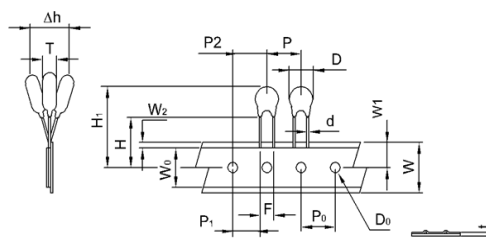


Figure: B

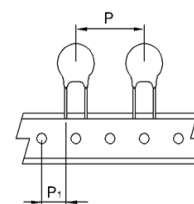


Figure: C

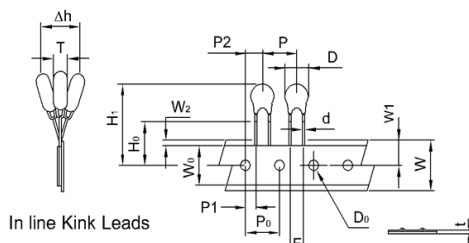


Figure: D

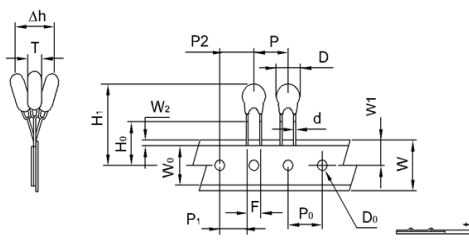


Figure: E

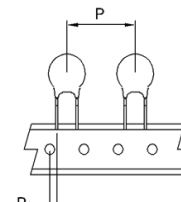


Figure: F

Symbol	Description	Model Size					
		05V	07V	10V	10V	14V	14V
P	Pitch of Component	12.7±1.0	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	30.0±1.0
P ₀	Feed Hole Pitch	12.7±0.2	12.7±0.2	12.7±0.2	15.0±0.2	12.7±0.2	15.0±0.2
P ₁	Feed Hole Center to Pitch	3.85±0.7	3.85±0.7	3.85±0.7	3.75±0.7	8.95±0.7	3.75±0.7
P ₂	Hole Center to Component Center	6.35±0.7	6.35±0.7	6.35±0.7	7.5±0.7	12.7±0.7	7.5±0.7
F	Lead to Lead Distance	5.0±0.8	5.0±0.8	7.5±0.8	7.5±0.8	7.5±0.8	7.5±0.8
△h	Component Alignment	2.0max	2.0max	2.0max	2.0max	2.0max	2.0max
W	Tape Width	18.0+1.0	18.0+1.0	18.0+1.0	18.0+1.0	18.0+1.0	18.0+1.0
		18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5
W ₀	Hold Down Tape Width	5.0 Min.	5.0 Min.	5.0 Min.	5.0 Min.	5.0 Min.	5.0 Min.
W ₁	Hole Position	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75
		9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5
W ₂	Hold Down Tape Position	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max
H	Height from Tape Center to Component Base	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0
		18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0
H ₀	Seating Plane Height	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5
H ₁	Component Height	32.0 Max.	32.0 Max.	36.0 Max.	36.0 Max.	40.0 Max.	40.0 Max.
D ₀	Feed Hole Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2
L	Leaght Clipped Lead	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max
Figure		A, D	A, D	B, E	A, D	C	F

Tape and Reel Specifications

- Radial devices on tape are supplied with straight leads,kinked leads or in -line leads

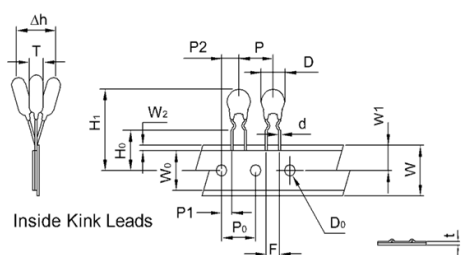


Figure: A

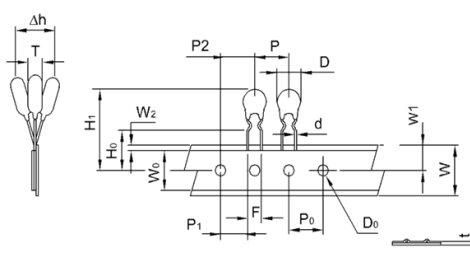


Figure: B

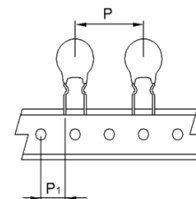


Figure: C

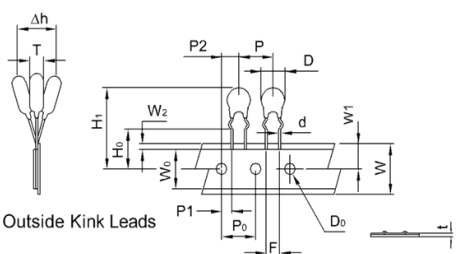


Figure: D

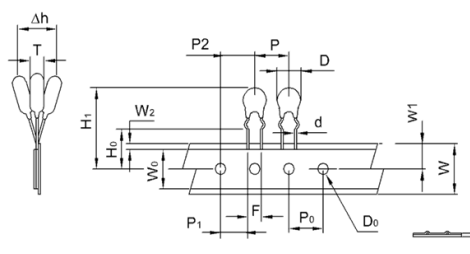


Figure: E

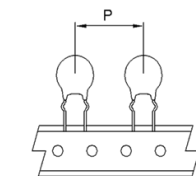


Figure: F

Symbol	Description	Model Size					
		05V	07V	10V	10V	14V	14V
P	Pitch of Component	12.7±1.0	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	30.0±1.0
P ₀	Feed Hole Pitch	12.7±0.2	12.7±0.2	12.7±0.2	15.0±0.2	12.7±0.2	15.0±0.2
P ₁	Feed Hole Center to Pitch	3.85±0.7	3.85±0.7	3.85±0.7	3.75±0.7	8.95±0.7	3.75±0.7
P ₂	Hole Center to Component Center	6.35±0.7	6.35±0.7	6.35±0.7	7.5±0.7	12.7±0.7	7.5±0.7
F	Lead to Lead Distance	5.0±0.8	5.0±0.8	7.5±0.8	7.5±0.8	7.5±0.8	7.5±0.8
△h	Component Alignment	2.0max	2.0max	2.0max	2.0max	2.0max	2.0max
W	Tape Width	18.0+1.0	18.0+1.0	18.0+1.0	18.0+1.0	18.0+1.0	18.0+1.0
		18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5	18.0-0.5
W ₀	Hold Down Tape Width	5.0 Min.	5.0 Min.	5.0 Min.	5.0 Min.	5.0 Min.	5.0 Min.
W ₁	Hole Position	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75	9.0+0.75
		9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5	9.0-0.5
W ₂	Hold Down Tape Position	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max	3.0 Max
H	Height from Tape Center to Component Base	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0	18.0+2.0
		18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0	18.0-0.0
H ₀	Seating Plane Height	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5	16.0±0.5
H ₁	Component Height	32.0 Max.	32.0 Max.	36.0 Max.	36.0 Max.	40.0 Max.	40.0 Max.
D ₀	Feed Hole Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2	0.7±0.2
L	Leagth Clipped Lead	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max	11.0 Max
Figure		A, D	A, D	B, E	A, D	C	F

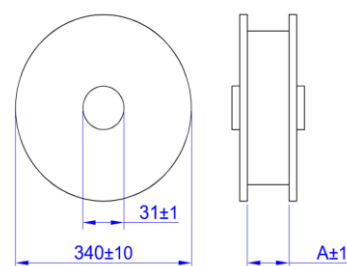
Packing information

Bulk packing

Series	Straight Lead Type Quantity(pcs/bag)	Cut Lead Type Quantity(pcs/bag)	Kink Type Quantity(pcs/bag)
CNR-05V	1000	1000	1000
CNR-07V	1000	1000	1000
CNR-10V	500	500	500
CNR-14V	500	500	500
CNR-18V	500	500	500
CNR-20V	250	250	250

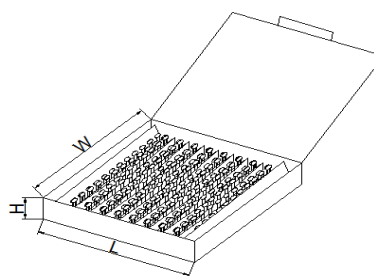
Tape & Reel product packing

Series	A (mm)	Quantity (pcs/reel)
CNR-05V(180K~391K)-TRXX	43	2000
CNR-05V(431K~751K)-TRXX		1500
CNR-07V(180K~391K)-TRXX		2000
CNR-07V(431K~821K)-TRXX		1500
CNR-10V(180K~621K)-TRXX		1000
CNR-10V(681K~112K)-TRXX		800
CNR-14V(180K~391K)-TRXX	56	800
CNR-14V(431K~621K)-TRXX		700
CNR-14V(681K~112K)-TRXX		600



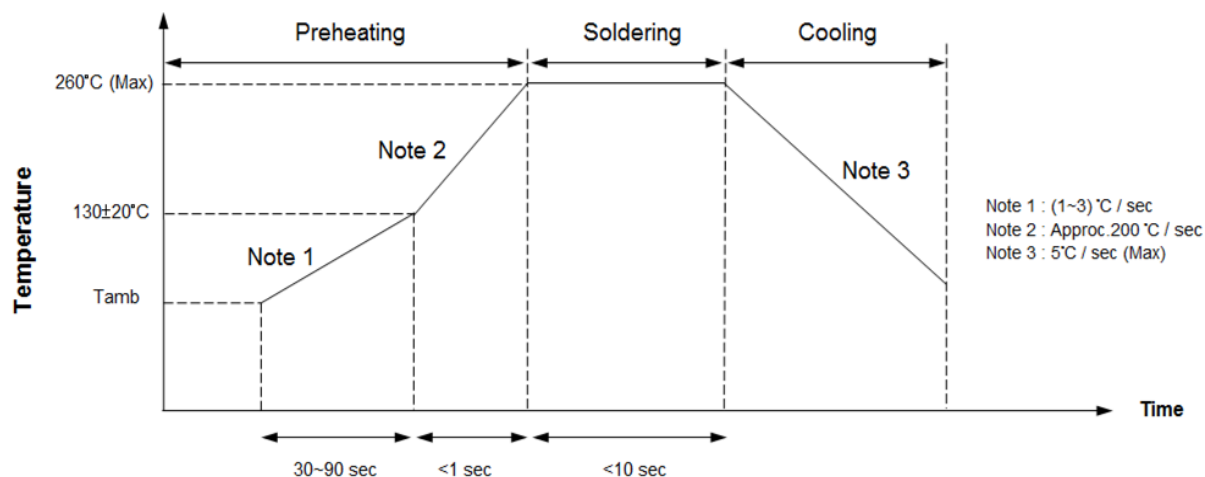
Box product packing

Series	Quantity (pcs/box)
CNR-05V(180K~621K)-BTXX	1000
CNR-05V(681K~751K)-BTXX	800
CNR-07V(180K~621K)-BTXX	1000
CNR-07V(681K~821K)-BTXX	800
CNR-10V(180K~621K)-BTXX	1000
CNR-10V(681K~112K)-BTXX	800
CNR-14V(180K~621K)-BTXX	500
CNR-14V(681K~112K)-BTXX	400



Series	L±5	W±5	H±5
CNR-05~07	340	245	45
CNR-10~14	340	245	50

Solder Recommendation



Recommendation Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of soldering Iron-tip	360 $^{\circ}\text{C}$ (Max)
Soldering Time	3 sec(Max)
Distance from Varistor	2mm(Min)

RoHS Compliant Declaration

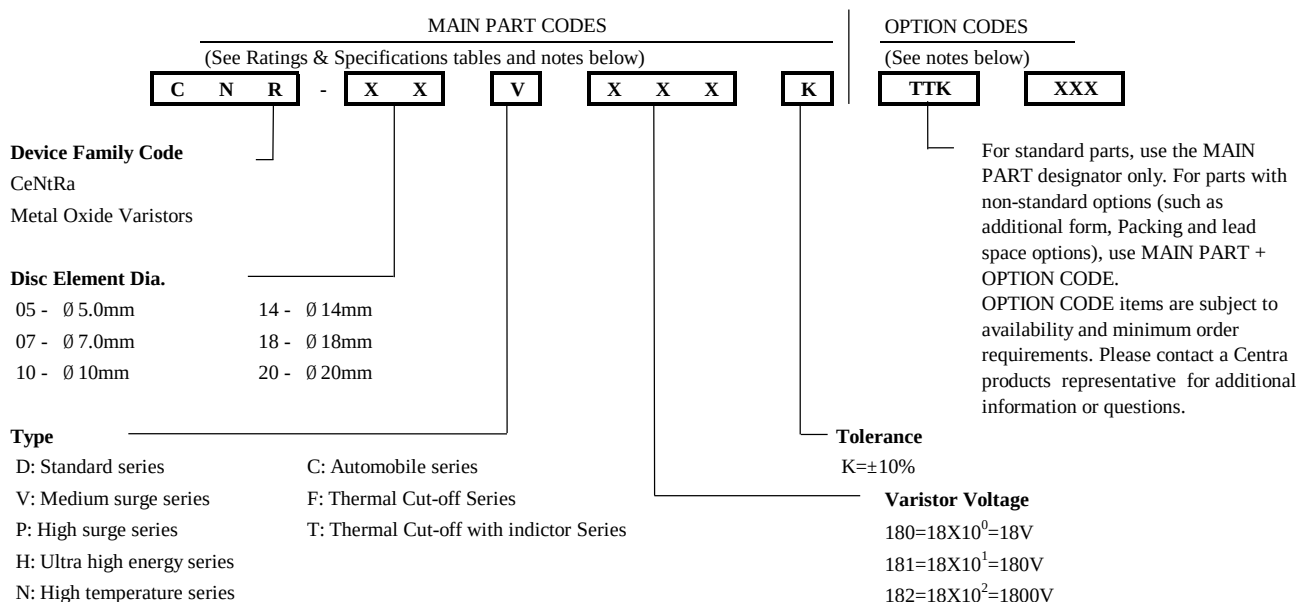
We hereby declare that the components delivered to your company are compliant with RoHS Directive 2002/95/EC

Storage Conditions of Products

(I) Storage Conditions:

- 1.Storage Temperature: -10 $^{\circ}\text{C}$ ~+40 $^{\circ}\text{C}$
- 2.Relative Humidity: $\leq 75\% \text{RH}$
- 3.Keep away from corrosive atmosphere and sunlight
- 4.Solvent Resistance: MIL-STD-202, Method 215F
- 5.Moisture Sensitivity: Level 1, J-STD-020

(II) Period of Storage: 1 year

Explanation of Part Numbers

Ordering Notes:
MAIN PART CODES
Series + /Packaging/ Lead Style / Designators:

Ordering examples:

Straight Lead Bulk Pack (Standard)	Straight Lead (Short Cut) Bulk Pack	Straight Lead Tape & Reel Pack	Straight Lead Flat Box Pack
CNR-10V471K	CNR-10V471KTTSXXX	CNR-10V471KTRSX	CNR-10V471KBT SX

Outside Kink Lead Bulk Pack	Outside Kink Lead (Short Cut) Bulk Pack	Outside Kink Lead Tape & Reel Pack	Outside Kink Lead Flat Box Pack
CNR-10V471SOK	CNR-10V471KTTKXXX	CNR-10V471KTRKX	CNR-10V471KBT KX

Inside Kink Lead Bulk Pack	Inside Kink Lead (Short Cut) Bulk Pack	Inside Kink Lead Tape & Reel Pack	Inside Kink Lead Flat Box Pack
CNR-10V471KSIK	CNR-10V471KT TIXXX	CNR-10V471KTRIX	CNR-10V471KBT I X

In Line Kink Lead Bulk Pack	In Line Kink Lead (Short Cut) Bulk Pack	In Line Kink Lead Tape & Reel Pack	In Line Kink Lead Flat Box Pack
CNR-10V471KSHK	CNR-10V471KT THXXX	CNR-10V471KTRHX	CNR-10V471KBT HX

Option Code

+ XXX

Short Cut Lead Length 10mm±1.0mm
CNR-10V471KT TS10

Tape & Reel Pack Feed Hole Pitch
CNR-10V471KTRSA
CNR-10V471KTRSB

A: P₀ → 12.7mm±0.2mm
B: P₀ → 15.0mm±0.2mm

CeNtRa V Series varistors are shipped standard in bulk pack with straight leads or Kink lead and lead spacing outlined in the Package Dimensions section of this data sheet. Contact your CeNtRa sales representative to discuss non-standard options.