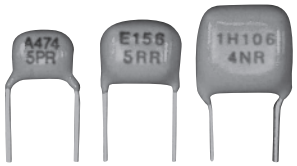
DIPPED RADIAL LEAD MULTILAYER CERAMIC CAPACITORS

NTD Series

RoHS2 Compliant



◆FEATURES

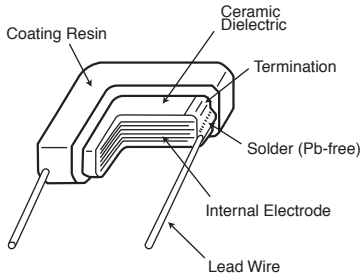
1. Small in size and wide capacitance range.
   Max. 470μF is available.
2. Temperature characteristic is X7R in EIA code.
3. Superior humidity characteristic and long life.
4. Excellent high frequency characteristic due to low ESR.
5. High rated ripple current.
6. 500Vdc items are available.
7. Resin(UL94 V-0) used for coating.
8. Pb-free design(also ceramic dielectric)

◆APPLICATIONS

1. Smoothing circuit of switching mode AC-DC or DC-DC converter.
2. Noise suppressor for various kinds of equipments.
3. By-pass or decoupling circuits.
4. Automotive equipments.

* Please contact us for more information about AEC-Q200.

◆CONSTRUCTION



◆RATINGS

1. Category Temperature Range	-55 to +125℃
2. Rated Voltage Range	25, 35, 50, 100, 250, 500Vdc
3. Rated Capacitance Range	0.1 to 470μF
4. Rated Capacitance Tolerance	M(±20%), K(±10%)
5. Temperature Characteristics	X7R
6. Rated Ripple Current	See No.5 on the following table

◆SPECIFICATIONS

<table>
<tr><th>No.</th><th colspan="2">Items</th><th>Specification</th><th>Test Condition</th></tr>
<tr><td>1</td><td rowspan="2">Withstand Voltage</td><td>Between Terminals</td><td rowspan="2">No abnormality.</td><td rowspan="2"><table><tr><td>Rated voltage</td><td>Withstand voltage</td></tr><tr><td>Less than 250V</td><td>250% of rated voltage</td></tr><tr><td>More than 250V
Less than 500V</td><td>100V +
150% of rated voltage</td></tr><tr><td>More than 500V</td><td>130% of rated voltage</td></tr></table>Shall be applied for 5 seconds.</td></tr>
<tr><td></td><td>Terminals to Coating Resin</td></tr>
<tr><td>2</td><td colspan="2">Insulation Resistance</td><td>100/CR(MΩ) or 4000(MΩ) whichever is less.</td><td>Rated voltage shall be applied for 60±5 seconds at temperature 25±2℃.</td></tr>
<tr><td>3</td><td colspan="2">Rated Capacitance</td><td>Within specified tolerance.</td><td rowspan="2"><table><tr><td></td><td>CR≦10μF</td><td>CR>10μF</td></tr><tr><td>Temperature</td><td colspan="2">25±2℃</td></tr><tr><td>Frequency</td><td>1±0.1kHz</td><td>120±12Hz</td></tr><tr><td>Voltage</td><td>1±0.2Vrms</td><td>0.5±0.2Vrms</td></tr></table></td></tr>
<tr><td>4</td><td colspan="2">Dissipation Factor</td><td>5.0% maximum.</td></tr>
</table>

NTD Series

◆SPECIFICATIONS

<table>
<tr><th>No.</th><th colspan="2">Items</th><th>Specification</th><th>Test Condition</th></tr>
<tr><td>5</td><td colspan="2">Rated Ripple Current</td><td>See STANDARD RATINGS</td><td>10kHz to 1MHz (sine curve)
Ripple voltage Vp shall be less than the rated voltage.</td></tr>
<tr><td rowspan="2">6</td><td rowspan="2">Robustness of Terminations</td><td>Tension</td><td rowspan="2">No visible damage.</td><td>The force applied shall be :
<table><tr><th>Lead ϕ (mm)</th><th>Tensile(N)</th><th>(sec.)</th></tr><tr><td>0.5 max.</td><td>5</td><td>10±1</td></tr><tr><td>0.6 min.</td><td>10</td><td>10±1</td></tr></table></td></tr>
<tr><td>Bending</td><td><table><tr><th>Lead ϕ (mm)</th><th>Bending(N)</th><th>(kg)</th></tr><tr><td>0.5 max.</td><td>2.5</td><td>0.25</td></tr><tr><td>0.6 min.</td><td>5</td><td>0.51</td></tr></table>Time : 2times.</td></tr>
<tr><td>7</td><td colspan="2">Vibration</td><td>Appearance : No abnormality.
Capacitance : To meet the initial specification.
D.F. : To meet the initial specification.</td><td>Amplitude : 1.5mm
Frequency range : 10-55-10Hz (1 min)
Direction and time :
2 hours each to X, Y, Z axis. Total 6 hours.</td></tr>
<tr><td>8</td><td colspan="2">Solderability</td><td>Min. 75% of surface of the termination shall be covered with new solder.</td><td><table><tr><th>Solder</th><th>Pb Free</th></tr><tr><td>Solder Temperature</td><td>245±5℃</td></tr><tr><td>Dipping Time</td><td>2±0.5sec.</td></tr></table></td></tr>
<tr><td>9</td><td colspan="2">Resistance to Soldering Heat</td><td>Appearance : No abnormality.
ΔC/C : ±15%
D.F. : To meet the initial specification.
I.R. : To meet the initial specification.</td><td>Solder Temperature : 350±10℃
Dipping Time : 3±0.5 sec.
Depth : 1.5 to 2mm</td></tr>
<tr><td>10</td><td colspan="2">Temperature Cycle</td><td>Appearance : No abnormality.
ΔC/C : ±15%
D.F. : To meet the initial specification.
I.R. : To meet the initial specification.</td><td><table><tr><th>Step</th><th>Temperature (℃)</th><th>(min.)</th></tr><tr><td>1</td><td>Min. Category temperature ±3</td><td>30±3</td></tr><tr><td>2</td><td>Room temperature</td><td>3 max.</td></tr><tr><td>3</td><td>Max. Category temperature ±3</td><td>30±3</td></tr><tr><td>4</td><td>Room temperature</td><td>3 max.</td></tr></table>For 5 cycles for above temperature cycle.</td></tr>
<tr><td>11</td><td colspan="2">Humidity Load Life</td><td>Appearance : No abnormality.
ΔC/C : ±20%
D.F. : 10% maximum
I.R. : 25/C_R(MΩ) or 1000(MΩ) whichever is less.</td><td>Temperature : 40±2℃
Humidity : 90 to 95%RH
Voltage : Rated voltage
Time : 500$^{+24}_{0}$ hours</td></tr>
<tr><td>12</td><td colspan="2">Endurance</td><td>Appearance : No abnormality.
ΔC/C : ±20%
D.F. : 10% maximum
I.R. : 50/C_R(MΩ) or 1000(MΩ) whichever is less.</td><td>Temperature : 125±3℃
Voltage : Rated voltage
Time : 1000$^{+48}_{0}$ hours</td></tr>
</table>

*C_R : Rated Capacitance(μF)

NTD Series

◆STANDARD RATINGS

Rated voltage (Vdc)	Rated Capacitance (μF)	Electrostatic Capacitance Temperature Characteristics	Dimensions(mm)					Maximum ripple current (Arms)	Part Number	Taping Quantity per reel (pcs. / reel)
			L max.	W max.	T max.	F±0.8	φd±0.05			
25	3.3	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD250B335□32A0T00	2,000
	4.7	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD250B475□32A0T00	2,000
	6.8	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD250B685□43A0T00	2,000
	10	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD250B106□43A0T00	2,000
	15	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD250B156□43A0T00	2,000
	15	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD250B156□55A0T00	2,000
	22	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD250B226□55A0T00	2,000
	33	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD250B336□55A0T00	1,500
	47	X7R	10.0	11.5	5.5	5.0	0.5	1.5	KTD250B476□76A0T00	1,000
	68	X7R	13.5	15.0	6.0	10.0	0.6	2.0	KTD250B686M80A0B00	–
	100	X7R	13.5	15.0	8.0	10.0	0.6	2.0	KTD250B107M80A0B00	–
	150	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD250B157M90A0B00	–
	220	X7R	22.5	20.0	8.0	20.0	0.8	3.0	KTD250B227M90A0B00	–
	330	X7R	28.5	20.0	8.0	25.0	0.8	4.0	KTD250B337M99A0B00	–
	470	X7R	28.5	20.0	11.5	25.0	0.8	4.0	KTD250B477M99A0B00	–
35	3.3	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD350B335□32A0T00	2,000
	4.7	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD350B475□32A0T00	2,000
	6.8	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD350B685□43A0T00	2,000
	10	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD350B106□43A0T00	2,000
	15	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD350B156□55A0T00	2,000
	22	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD350B226□55A0T00	2,000
	33	X7R	10.0	11.5	5.0	5.0	0.5	1.5	KTD350B336□76A0T00	1,000
	47	X7R	10.0	11.5	5.5	5.0	0.5	1.5	KTD350B476□76A0T00	1,000
50	1.0	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD500B105□32A0T00	2,000
	1.5	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD500B155□32A0T00	2,000
	2.2	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD500B225□32A0T00	2,000
	3.3	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD500B335□32A0T00	2,000
	4.7	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD500B475□43A0T00	2,000
	6.8	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD500B685□43A0T00	2,000
	10	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD500B106□55A0T00	2,000
	15	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD500B156□55A0T00	2,000
	22	X7R	10.0	11.5	5.0	5.0	0.5	1.5	KTD500B226□76A0T00	1,500
	33	X7R	13.5	15.0	5.5	10.0	0.6	2.0	KTD500B336M80A0B00	–
	47	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD500B476M90A0B00	–
	68	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD500B686M90A0B00	–
	100	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD500B107M90A0B00	–
	150	X7R	28.5	20.0	7.5	25.0	0.8	4.0	KTD500B157M99A0B00	–
	220	X7R	28.5	20.0	10.0	25.0	0.8	4.0	KTD500B227M99A0B00	–
100	0.33	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD101B334□32A0T00	2,000
	0.47	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD101B474□32A0T00	2,000
	0.68	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD101B684□32A0T00	2,000
	1.0	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD101B105□32A0T00	2,000
	1.5	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD101B155□32A0T00	2,000
	2.2	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD101B225□32A0T00	2,000
	1.5	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD101B155□43A0T00	2,000
	2.2	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD101B225□43A0T00	2,000
	3.3	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD101B335□43A0T00	2,000
	4.7	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD101B475□43A0T00	2,000
	3.3	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD101B335□55A0T00	2,000
	4.7	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD101B475□55A0T00	2,000
	6.8	X7R	7.5	9.0	4.7	5.0	0.5	1.0	KTD101B685□55A0T00	1,500
	6.8	X7R	10.0	11.5	5.0	5.0	0.5	1.5	KTD101B685□76A0T00	1,500
	10	X7R	13.5	15.0	5.0	10.0	0.6	2.0	KTD101B106M80A0B00	–
	15	X7R	13.5	15.0	6.0	10.0	0.6	2.0	KTD101B156M80A0B00	–
	22	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD101B226M90A0B00	–
	33	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD101B336M90A0B00	–
	47	X7R	28.5	20.0	7.5	25.0	0.8	4.0	KTD101B476M99A0B00	–
	68	X7R	28.5	20.0	7.5	25.0	0.8	4.0	KTD101B686M99A0B00	–
	100	X7R	28.5	20.0	9.0	25.0	0.8	4.0	KTD101B107M99A0B00	–

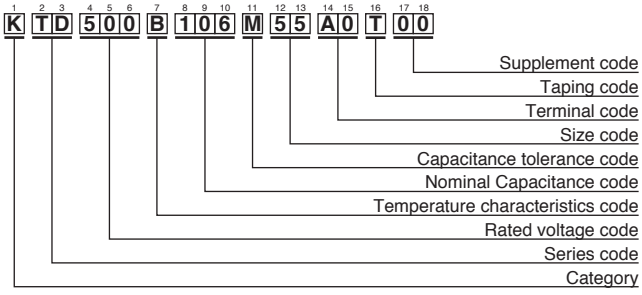
NTD Series

◆STANDARD RATINGS

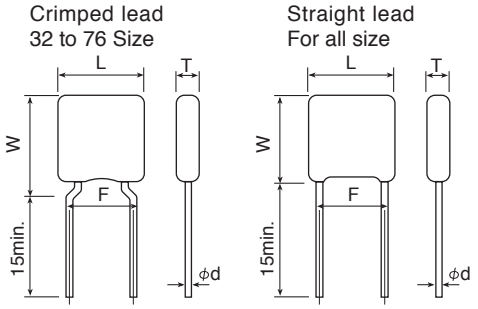
Rated voltage (Vdc)	Rated Capacitance (μF)	Electrostatic Capacitance Temperature Characteristics	Dimensions(mm)					Maximum ripple current (Arms)	Part Number	Taping Quantity per reel (pcs. / reel)
			L max.	W max.	T max.	F±0.8	φd±0.05			
250	0.1	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD251B104□32A0T00	2,000
	0.15	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD251B154□32A0T00	2,000
	0.22	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD251B224□32A0T00	2,000
	0.33	X7R	5.0	6.0	3.5	5.0	0.5	0.3	KTD251B334□32A0T00	2,000
	0.47	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD251B474□43A0T00	2,000
	0.68	X7R	6.5	6.5	4.0	5.0	0.5	0.8	KTD251B684□43A0T00	2,000
	1.0	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD251B105□55A0T00	2,000
	1.5	X7R	7.5	9.0	4.5	5.0	0.5	1.0	KTD251B155□55A0T00	2,000
	2.2	X7R	10.0	11.5	6.0	5.0	0.5	1.5	KTD251B225□76A0T00	1,000
	2.2	X7R	13.5	15.0	5.0	10.0	0.6	2.0	KTD251B225M80A0B00	–
	3.3	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD251B335M90A0B00	–
	4.7	X7R	22.5	20.0	6.0	20.0	0.8	3.0	KTD251B475M90A0B00	–
	6.8	X7R	28.5	20.0	7.5	25.0	0.8	4.0	KTD251B685M99A0B00	–
	10	X7R	28.5	20.0	7.5	25.0	0.8	4.0	KTD251B106M99A0B00	–
	15	X7R	28.5	20.0	7.5	25.0	0.8	4.0	KTD251B156M99A0B00	–
500	0.47	X7R	7.5	9.0	3.5	5.0	0.5	0.8	KTD501B474□55A0T00	2,000
	0.56	X7R	7.5	9.0	3.5	5.0	0.5	0.8	KTD501B564□55A0T00	2,000
	0.68	X7R	10.0	11.5	3.4	5.0	0.5	1.0	KTD501B684□76A0T00	1,500
	1.0	X7R	10.0	11.5	3.8	5.0	0.5	1.0	KTD501B105□76A0T00	1,500
	1.2	X7R	10.0	11.5	4.2	5.0	0.5	1.0	KTD501B125□76A0T00	1,500

※ The square (□) in part numbers is replaced by a capacitance tolerance code: 'K' when ±10%, or 'M' when ±20%
※ Please consult with us when you consider the rating other than a standard table.

◆PART NUMBERING SYSTEM



◆DIMENSIONS



Please refer to"Part Numbering System" of the beginning of a catalog for the details.

■ Always read "Notes on Use" before using the product in order to enable you to use the product correctly and prevent any faults and accidents from occurring.

■ Request the Product Specification on the product of NIPPON CHEMI-CON CORPORATION to refer to it as well as this brochure prior to the order of the products. Some specific notes on use of the ordered product may be described in the specifications.

■ The products listed in this catalog are designed and manufactured for general electronics equipment use and are not intended for use in applications that can adversely affect human life; where the malfunction of equipment may cause damage to life or property. In addition, our products are not intended to be used in specific applications that may cause a major social impact. Please consult with us in advance of usage of our products in the following listed applications. ① Aerospace equipment ② Power generation equipment such as thermal power, nuclear power etc. ③ Medical equipment ④ Transport equipment (automobiles, trains, ships, etc.) ⑤ Transportation control equipment ⑥ Disaster prevention / crime prevention equipment ⑦ Highly publicized information processing equipment ⑧ Submarine equipment ⑨ Other applications that are not considered general-purpose applications.

■ The circuits described as examples in this catalog and the "delivery specifications" are featured in order to show the operations and usage of our products, however, this fact does not guarantee that the circuits are available to function in your equipment systems. We are not in any case responsible for any failures or damage caused by the use of information contained herein. You should examine our products, of which the characteristics are described in the "delivery specifications" and other documents, and determine whether or not our products suit your requirements according to the specifications of your equipment systems. Therefore, you bear final responsibility regarding the use of our products.
Please make sure that you take appropriate safety measures such as use of redundant design and malfunction prevention measures in order to prevent fatal accidents and/or fires in the event any of our products malfunction.

■ We strongly recommend our customers to purchase Nippon Chemi-Con products only through our official sales channels. We assume no responsibility for any defects or damages caused by using products purchased from outside our official sales channel or of counterfeit goods. In addition, we will ask the customer to pay the investigation cost for products purchased outside our official sales channel.

■ We reserve the right to discontinue production and delivery of products. We do not guarantee that all the products included in this catalog will be available in the future.
The aforementioned does not apply in the case of individual agreements deviating from the foregoing for customer-specific products

■ We continually strive to improve the quality and reliability of our products, but in any case that our product does not meet our published specifications, please stop using it promptly and contact us immediately. As for compensation for non-conforming goods delivered by Chemi-Con, we will limit it only to goods found in non-compliance of our published specifications. This may be accomplished by a no cost replacement of non-conforming individual products, a credit of the piece price paid per each individual non-conforming product, or in other ways deemed necessary.
In addition, we have an established system with enhanced traceability, therefore we will limit the applicable lot items for any potential compensation.

CAT. No. E1002E 2025