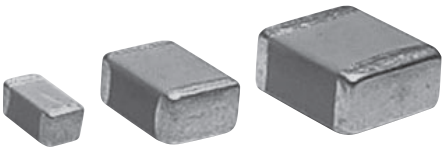
NTS Series

RoHS2 Compliant



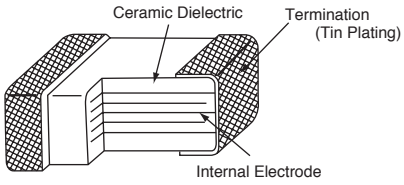
◆FEATURES

1. Large capacitance by small size.
2. X7R and X7S temperature characteristics.
3. High permissible ripple current capability.

◆APPLICATIONS

1. Smoothing circuit of DC-DC converters.
2. On-board power supplies.
3. Voltage regulators for computers.
3. Noise suppressor for various kinds of equipments.
4. High reliability equipments.

◆CONSTRUCTION



◆RATINGS

1. Category Temperature Range	-55 to +125℃
2. Rated Voltage Range	25, 35, 50, 100, 250, 500Vdc
3. Rated Capacitance Range	0.010 to 47μF
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>Items</th><th>Specification</th><th>Test Condition</th></tr>
<tr><td>1</td><td>Withstand Voltage</td><td>No abnormality.</td><td>
<table>
<tr><th>Rated voltage</th><th>Withstand voltage</th></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>2</td><td>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>Rated Capacitance</td><td>Within specified tolerance.</td><td rowspan="2">
<table>
<tr><th></th><th>CR≦10μF</th><th>CR>10μF</th></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>Dissipation Factor</td><td>X7R temperature characteristics
of 5.0% or less
X7S temperature characteristics
of 7.5% or less</td></tr>
<tr><td>5</td><td>Rated Ripple Current</td><td>See STANDARD RATINGS</td><td>10kHz～1MHz (sine curve)
Ripple voltage Vp shall be less than
the rated voltage.</td></tr>
</table>

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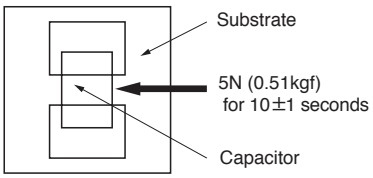
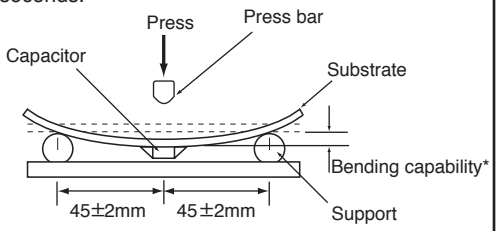
NTS Series

◆SPECIFICATIONS

No.	Items	Specification	Test Condition
6	Adhesion	No visible damage.	
7	Bend strength of the face plating	Appearance : No visible damage. ΔC/C : ±15%	The substrate shall be bend at a rate of 1mm/s for 5 seconds.  *Bending capability : 1mm
8	Solderability	Min. 75% of surface of the termination shall be covered with new solder	Solder: Pb Free Solder Temperature: 245±5℃ Dipping Time: 2±0.5sec.
9	Resistance to Soldering Heat	Appearance : No visible damage. ΔC/C : ±15% D.F. : To meet the initial specification. I.R. : To meet the initial specification.	Preheating Condition : Step 1: 100±10℃, 2min. Step 2: 200±10℃, 2min. Solder Temperature : 260±5℃ Dipping Time : 2±0.5 seconds
10	Temperature Cycle	Appearance : No visible damage. ΔC/C : ±15% D.F. : To meet the initial specification. I.R. : To meet the initial specification.	Step 1: Min. Category temperature ±3, 30±3 Step 2: Room temperature, 3 max. Step 3: Max. Category temperature ±3, 30±3 Step 4: Room temperature, 3 max. <Cycle> 5 cycles (Glass epoxy substrates 1.6t)
11	Humidity Load Life	Appearance : No abnormality. ΔC/C : ±15% I.R. : 25/C_R(MΩ) or 1000(MΩ) whichever is less. Dissipation Factor X7R temperature characteristics D.F: 10% or less X7S temperature characteristics D.F: 15% or less	Temperature : 40±2℃ Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500^{+24}_{0}hours
12	Endurance	Appearance : No abnormality. ΔC/C : ±15% I.R. : 50/C_R(MΩ) or 1000(MΩ) whichever is less. Dissipation Factor X7R temperature characteristics D.F: 10% or less X7S temperature characteristics D.F: 15% or less	Temperature : 125±3℃ Voltage : Rated voltage Time : 1000^{+48}_{0}hours

*C_R : Rated Capacitance(μF)

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NTS Series

◆STANDARD RATINGS

Rated voltage (Vdc)	Rated Capacitance (μF)	Electrostatic Capacitance Temperature Characteristics	Case Code	Dimensions(mm)				Maximum ripple current (Arms)	Part Number	Taping Quantity per reel (pcs. / reel)
			inch / mm	L	W	T max.	a			
25	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS250B105□31N0T00	3,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS250B155□31N0T00	3,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS250B225□31N0T00	3,000
	3.3	X7S	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS250S335□31N0T00	2,000
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS250B335□32N0T00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS250B475□32N0T00	1,600
	6.8	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS250B685□32N0T00	1,600
	10	X7S	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS250S106□32N0T00	1,600
	10	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS250B106□43N0T00	800
	15	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS250B156□43N0T00	800
	22	X7S	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS250S226□43N0T00	800
	22	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS250B226□55N0T00	800
	33	X7R	2220 / 5750	5.7±0.4	5.0±0.4	3.0	0.8±0.5	2.0	KTS250B336□55N0T00	800
	47	X7R	3025 / 7563	7.5±0.5	6.3±0.5	4.0	1.0±0.5	3.0	KTS250B476□76N0T00	300
35	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS350B105□31N0T00	3,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS350B155□31N0T00	3,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS350B225□31N0T00	3,000
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS350B335□32N0T00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS350B475□32N0T00	1,600
	6.8	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS350B685□43N0T00	800
	10	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS350B106□43N0T00	800
	15	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS350B156□55N0T00	800
	22	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS350B226□55N0T00	800
	33	X7R	3025 / 7563	7.5±0.5	6.3±0.5	4.0	1.0±0.5	3.0	KTS350B336□76N0T00	300
	47	X7R	3025 / 7563	7.5±0.5	6.3±0.5	4.0	1.0±0.5	3.0	KTS350B476□76N0T00	300
50	0.33	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B334□31N0T00	3,000
	0.47	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B474□31N0T00	3,000
	0.68	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B684□31N0T00	3,000
	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B105□31N0T00	3,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B155□31N0T00	2,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B225□31N0T00	2,000
	1.5	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS500B155□32N0T00	1,600
	2.2	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS500B225□32N0T00	1,600
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS500B335□32N0T00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS500B475□32N0T00	1,600
	4.7	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS500B475□43N0T00	800
	6.8	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS500B685□43N0T00	800
	10	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS500B106□43N0T00	800
	10	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS500B106□55N0T00	800
	15	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS500B156□55N0T00	800
	22	X7R	3025 / 7563	7.5±0.5	6.3±0.5	4.0	1.0±0.5	3.0	KTS500B226□76N0T00	300
100	0.1	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B104□31N0T00	3,000
	0.15	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B154□31N0T00	3,000
	0.22	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B224□31N0T00	3,000
	0.33	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B334□31N0T00	3,000
	0.47	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B474□31N0T00	3,000
	0.68	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B684□31N0T00	3,000
	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B105□31N0T00	2,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B155□31N0T00	2,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B225□31N0T00	2,000
	1.0	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS101B105□32N0T00	1,600
	1.5	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS101B155□32N0T00	1,600
	2.2	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS101B225□32N0T00	1,600
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS101B335□32N0T00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS101B475□32N0T00	1,600
	1.5	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS101B155□43N0T00	800
	2.2	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS101B225□43N0T00	800
	3.3	X7R	1812 / 4532	4.5±0.4	3.2±0.5	2.8	0.6±0.3	1.0	KTS101B335□43J0T00	800
	4.7	X7R	1812 / 4532	4.5±0.4	3.2±0.5	3.2	0.6±0.3	1.0	KTS101B475□43E0T00	800
	6.8	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS101B685□43N0T00	800
	3.3	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS101B335□55N0T00	800
	4.7	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS101B475□55N0T00	800
	6.8	X7R	2220 / 5750	5.7±0.4	5.0±0.4	3.2	0.8±0.5	2.0	KTS101B685□55F0T00	800
	10	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS101B106□55N0T00	800
	6.8	X7R	3025 / 7563	7.5±0.5	6.3±0.5	3.5	1.0±0.5	3.0	KTS101B685□76N0T00	300

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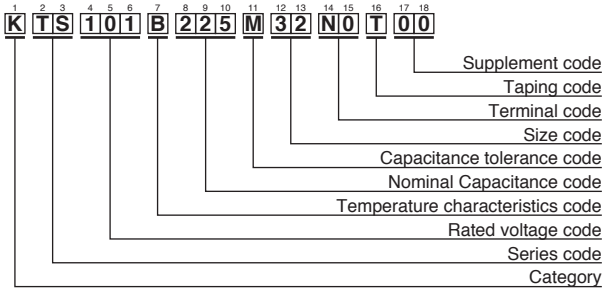
◆STANDARD RATINGS

Rated voltage (Vdc)	Rated Capacitance (μF)	Electrostatic Capacitance Temperature Characteristics	Case Code inch / mm	Dimensions(mm) L	W	T max.	a	Maximum ripple current (Arms)	Part Number	Taping Quantity per reel (pcs. / reel)
250	0.01	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B103□31N0T00	3,000
	0.022	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B223□31N0T00	3,000
	0.033	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B333□31N0T00	3,000
	0.047	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B473□31N0T00	3,000
	0.068	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B683□31N0T00	3,000
	0.1	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B104□31N0T00	3,000
	0.15	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS251B154□32N0T00	1,600
	0.22	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS251B224□32N0T00	1,600
	0.33	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS251B334□32N0T00	1,600
	0.47	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS251B474□43N0T00	800
	0.68	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS251B684□43N0T00	800
	1.0	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS251B105□55N0T00	800
	1.5	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS251B155□55N0T00	800
	1.5	X7R	3025 / 7563	7.5±0.5	6.3±0.5	3.5	1.0±0.5	3.0	KTS251B155□76N0T00	300
	2.2	X7R	3025 / 7563	7.5±0.5	6.3±0.5	5.0	1.0±0.5	3.0	KTS251B225□76N0T00	300
500	0.47	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.7	0.8±0.5	1.5	KTS501B474□55N0T00	800
	0.56	X7R	2220 / 5750	5.7±0.4	5.0±0.4	3.0	0.8±0.5	1.5	KTS501B564□55N0T00	800
	0.68	X7R	3025 / 7563	7.5±0.5	6.3±0.5	2.5	1.0±0.5	2.0	KTS501B684□76N0T00	500
	1.0	X7R	3025 / 7563	7.5±0.5	6.3±0.5	3.2	1.0±0.5	2.0	KTS501B105□76N0T00	300
	1.2	X7R	3025 / 7563	7.5±0.5	6.3±0.5	3.5	1.0±0.5	2.0	KTS501B125□76N0T00	300

※ 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.

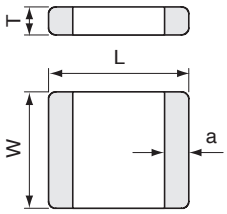
◆PART NUMBERING SYSTEM



Size Code

Size Code	L × W (mm)
31	3.2 × 1.6
32	3.2 × 2.5
43	4.5 × 3.2
55	5.7 × 5.0
76	7.5 × 6.3

◆DIMENSIONS



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

Product specifications in this catalog are subject to change without notice.Request our product specifications before purchase and/or use. Please use our products based on the information contained in this catalog and product specifications.

■ 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.

Precautions and Guidelines・Recommended Soldering Conditions
Part Numbering System
List of Standardization and Obsoleted Products
TAPING SPECIFICATION
Characteristics Data
Minimum Packaging Quantity

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