

## NTS Series / NTF Series

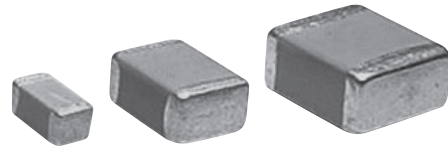
(General product)

Temperature cycle : 1000 cycles



### ◆FEATURES

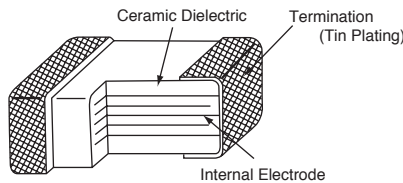
1. Large capacitance by small size.
2. X7R and X7S temperature characteristics.
3. High permissible ripple current capability.
4. NTF: Temperature cycle : 1000 cycles.



### ◆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°C
2. Rated Voltage Range	25, 35, 50, 100, 250, 500V <sub>dc</sub>
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

No.	Items	Specification	Test Condition		
1	Withstand Voltage	No abnormality.	Rated voltage	Withstand voltage	
			Less than 250V	250% of rated voltage	
			More than 250V Less than 500V	100V + 150% of rated voltage	
			More than 500V	130% of rated voltage	
Shall be applied for 5 seconds.					
2	Insulation Resistance	100/C <sub>R</sub> (MΩ) or 4000(MΩ) whichever is less.	Rated voltage shall be applied for 60±5 seconds at temperature 25±2°C.		
3	Rated Capacitance	Within specified tolerance.	C <sub>R</sub> ≤10μF	C <sub>R</sub> >10μF	
			Temperature	25±2°C	
4	Dissipation Factor	X7R temperature characteristics of 5.0% or less X7S temperature characteristics of 7.5% or less	Frequency	1±0.1kHz	120±12Hz
			Voltage	1±0.2Vrms	0.5±0.2Vrms
			10kHz~1MHz (sine curve) Ripple voltage V <sub>p</sub> shall be less than the rated voltage.		
5	Rated Ripple Current	See STANDARD RATINGS			

As customer requirement, Chemi-Con has submits the test results according to AEC-Q200 for Multilayer ceramic capacitors. Please contact us for more information.

## NTS Series / NTF Series

### ◆SPECIFICATIONS

No.	Items	Specification	Test Condition															
6	Adhesion	No visible damage.	<p>Substrate Capacitor 5N (0.51kgf) for 10±1 seconds</p>															
7	Bend strength of the face plating	Appearance : No visible damage. $\Delta C/C : \pm 15\%$	<p>The substrate shall be bend at a rate of 1mm/s for 5 seconds.</p> <p>Press, Press bar, Capacitor, Substrate, Support, Bending capability*</p> <p>*Bending capability NTS : 1mm NTF : 1mm or 2mm</p>															
8	Solderability	Min. 75% of surface of the termination shall be covered with new solder	<table border="1"> <thead> <tr> <th>Solder</th> <th>Pb Free</th> </tr> </thead> <tbody> <tr> <td>Solder Temperature</td> <td>245±5°C</td> </tr> <tr> <td>Dipping Time</td> <td>2±0.5sec.</td> </tr> </tbody> </table>	Solder	Pb Free	Solder Temperature	245±5°C	Dipping Time	2±0.5sec.									
Solder	Pb Free																	
Solder Temperature	245±5°C																	
Dipping Time	2±0.5sec.																	
9	Resistance to Soldering Heat	Appearance : No visible damage. $\Delta C/C : \pm 15\%$ D.F. : To meet the initial specification. I.R. : To meet the initial specification.	<p>Preheating Condition :</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>100±10°C</td> <td>2min.</td> </tr> <tr> <td>2</td> <td>200±10°C</td> <td>2min.</td> </tr> </tbody> </table> <p>Solder Temperature : 260±5°C Dipping Time : 2±0.5 seconds</p>	Step	Temperature	Time	1	100±10°C	2min.	2	200±10°C	2min.						
Step	Temperature	Time																
1	100±10°C	2min.																
2	200±10°C	2min.																
10	Temperature Cycle	Appearance : No visible damage. $\Delta C/C : \pm 15\%$ D.F. : To meet the initial specification. I.R. : To meet the initial specification.	<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>(min.)</th> </tr> </thead> <tbody> <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> </tbody> </table> <p>For above temperature cycle. NTS : For 5 cycles NTF : For 1000 cycles</p>	Step	Temperature (°C)	(min.)	1	Min. Category temperature ±3	30±3	2	Room temperature	3 max.	3	Max. Category temperature ±3	30±3	4	Room temperature	3 max.
Step	Temperature (°C)	(min.)																
1	Min. Category temperature ±3	30±3																
2	Room temperature	3 max.																
3	Max. Category temperature ±3	30±3																
4	Room temperature	3 max.																
11	Humidity Load Life	Appearance : No abnormality. $\Delta C/C : \pm 15\%$ I.R. : 25/C <sub>R</sub> (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	<p>Temperature : 40±2°C Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500±<sup>24</sup><sub>0</sub>hours</p>															
12	Endurance	Appearance : No abnormality. $\Delta C/C : \pm 15\%$ I.R. : 50/C <sub>R</sub> (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	<p>Temperature : 125±3°C Voltage : Rated voltage Time : 1000±<sup>48</sup><sub>0</sub>hours</p>															

\*C<sub>R</sub> : Rated Capacitance(μF)

### ◆STANDARD RATINGS

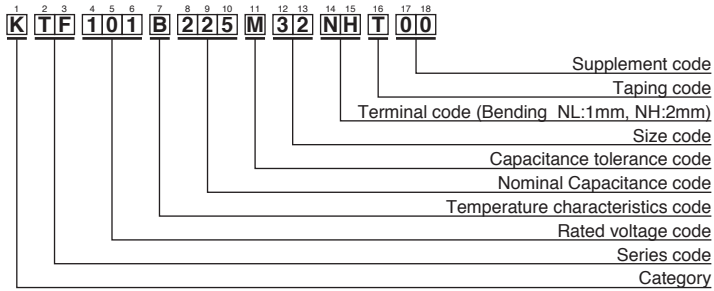
Rated voltage (Vdc)	Rated Capacitance (μF)	Electrostatic Capacitance Temperature Characteristics	Case Code	Dimensions(mm)				Maximum ripple current (Arms)	Part Number	Taping Quantity per reel (pcs./reel)
				inch / mm	L	W	T max.			
25	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF250B105□31NLT00	3,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF250B155□31NLT00	3,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF250B225□31NLT00	3,000
	3.3	X7S	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF250S335□31NLT00	2,000
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF250B335□32NHT00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF250B475□32NHT00	1,600
	6.8	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF250B685□32NHT00	1,600
	10	X7S	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF250S106□32NHT00	1,600
	10	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF250B106□43NHT00	800
	15	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF250B156□43NHT00	800
	22	X7S	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF250S226□43NHT00	800
	22	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF250B226□55NHT00	800
33	X7R	2220 / 5750	5.7±0.4	5.0±0.4	3.0	1.0±0.4	2.0	KTF250B336□55NHT00	800	
35	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF350B105□31NLT00	3,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF350B155□31NLT00	3,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF350B225□31NLT00	3,000
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF350B335□32NHT00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF350B475□32NHT00	1,600
	6.8	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF350B685□43NHT00	800
	10	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF350B106□43NHT00	800
	15	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF350B156□55NHT00	800
22	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF350B226□55NHT00	800	
50	0.33	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B334□31NLT00	3,000
	0.47	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B474□31NLT00	3,000
	0.68	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B684□31NLT00	3,000
	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B105□31NLT00	3,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B155□31NLT00	2,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B225□31NLT00	2,000
	1.5	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF500B155□32NHT00	1,600
	2.2	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF500B225□32NHT00	1,600
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF500B335□32NHT00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF500B475□32NHT00	1,600
	4.7	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF500B475□43NHT00	800
	6.8	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF500B685□43NHT00	800
	10	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF500B106□43NHT00	800
	10	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF500B106□55NHT00	800
	15	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF500B156□55NHT00	800
100	0.1	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B104□31NLT00	3,000
	0.15	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B154□31NLT00	3,000
	0.22	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B224□31NLT00	3,000
	0.33	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B334□31NLT00	3,000
	0.47	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B474□31NLT00	3,000
	0.68	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B684□31NLT00	3,000
	1.0	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B105□31NLT00	2,000
	1.5	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B155□31NLT00	2,000
	2.2	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B225□31NLT00	2,000
	1.0	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF101B105□32NHT00	1,600
	1.5	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF101B155□32NHT00	1,600
	2.2	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF101B225□32NHT00	1,600
	3.3	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF101B335□32NHT00	1,600
	4.7	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF101B475□32NHT00	1,600
	1.5	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF101B155□43NHT00	800
	2.2	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF101B225□43NHT00	800
	3.3	X7R	1812 / 4532	4.5±0.4	3.2±0.5	2.8	0.7±0.2	1.0	KTF101B335□43JHT00	800
	4.7	X7R	1812 / 4532	4.5±0.4	3.2±0.5	3.2	0.7±0.2	1.0	KTF101B475□43EHT00	800
	6.8	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF101B685□43NHT00	800
	4.7	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF101B475□55NHT00	800
	6.8	X7R	2220 / 5750	5.7±0.4	5.0±0.4	3.2	1.0±0.4	2.0	KTF101B685□55FHT00	800
	10	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF101B106□55NHT00	800

### ◆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			
250	0.033	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF251B333□31NLT00	3,000
	0.047	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF251B473□31NLT00	3,000
	0.068	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF251B683□31NLT00	3,000
	0.1	X7R	1206 / 3216	3.2±0.2	1.6±0.2	1.8	0.7±0.2	0.3	KTF251B104□31NLT00	3,000
	0.15	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF251B154□32NLT00	1,600
	0.22	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF251B224□32NLT00	1,600
	0.33	X7R	1210 / 3225	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF251B334□32NLT00	1,600
	0.47	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF251B474□43NLT00	800
	0.68	X7R	1812 / 4532	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF251B684□43NLT00	800
	1.0	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF251B105□55NLT00	800
500	1.5	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF251B155□55NLT00	800
	0.47	X7R	2220 / 5750	5.7±0.4	5.0±0.4	2.7	1.0±0.4	1.5	KTF501B474□55NLT00	800
	0.56	X7R	2220 / 5750	5.7±0.4	5.0±0.4	3.0	1.0±0.4	1.5	KTF501B564□55NLT00	800

※ 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.

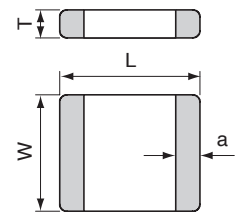
### ◆PART NUMBERING SYSTEM



### Size Code

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

### ◆DIMENSIONS



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