

NTS_{Series} / NTF_{Series}

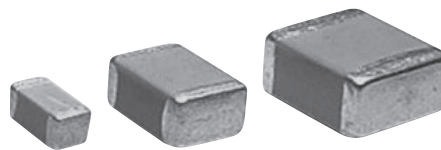
(General product)

Temperature cycle : 1000 cycles



◆FEATURES

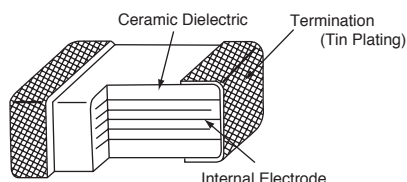
1. Large capacitance by small size.
2. X7R and X7S temperature characteristics.
3. High permissible ripple current capability.
4. NTF: Temperature cycle : 1000 cycles.



◆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

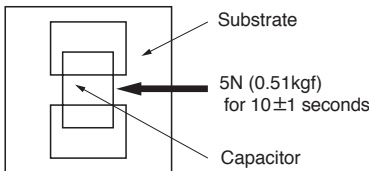
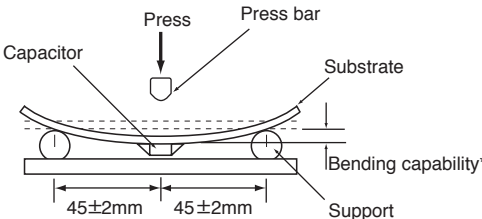
1. Category Temperature Range	-55 to +125°C
2. Rated Voltage Range	25, 35, 50, 100, 250, 500V _{dc}
3. Rated Capacitance Range	0.010 to 47μF
4. Rated Capacitance Tolerance	M (±20%), K (±10%)
5. Temperature Characteristics	X7R
6. Rated Ripple Current	See No.5 on the following table

◆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 _R (MΩ) or 4000(MΩ) whichever is less.	Rated voltage shall be applied for 60±5 seconds at temperature 25±2℃.		
3	Rated Capacitance	Within specified tolerance.		C _R ≤10μF	C _R >10μF
			Temperature	25± 2℃	
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
5	Rated Ripple Current	See STANDARD RATINGS	10kHz~1MHz (sine curve) Ripple voltage V _p shall be less than the rated voltage.		

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

◆ SPECIFICATIONS

No.	Items	Specification	Test Condition															
6	Adhesion	No visible damage.	 Substrate 5N (0.51kgf) for 10±1 seconds Capacitor															
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.  Press Press bar Capacitor Substrate Bending capability* Support 45±2mm 45±2mm *Bending capability NTS : 1mm NTF : 1mm or 2mm															
8	Solderability	Min. 75% of surface of the termination shall be covered with new solder	<table><tr><th>Solder</th><th>Pb Free</th></tr><tr><td>Solder Temperature</td><td>245±5°C</td></tr><tr><td>Dipping Time</td><td>2±0.5sec.</td></tr></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. ΔC/C : ±15% D.F. : To meet the initial specification. I.R. : To meet the initial specification.	Preheating Condition : <table><tr><th>Step</th><th>Temperature</th><th>Time</th></tr><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></table> Solder Temperature : 260±5°C Dipping Time : 2±0.5 seconds	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. ΔC/C : ±15% D.F. : To meet the initial specification. I.R. : To meet the initial specification.	<table><tr><th>Step</th><th>Temperature (°C)</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 above temperature cycle. NTS : For 5 cycles NTF : For 1000 cycles	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. 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°C 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°C Voltage : Rated voltage Time : 1000± ⁴⁸ ₀ hours															

*C_R : 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.	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
35	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
	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
50	47	X7R	3025 / 7563	7.5±0.5	6.3±0.5	4.0	1.0±0.5	3.0	KTS350B476□76N0T00	300
	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
100	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
	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
100	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
100	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	1.0±0.4	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

NTS Series

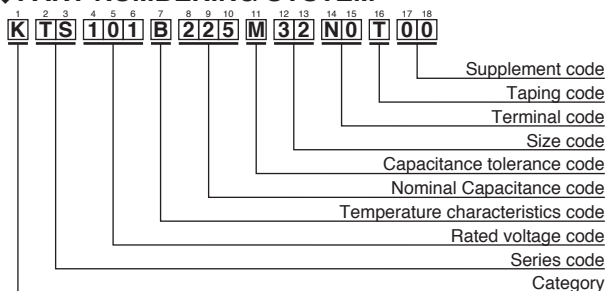
◆STANDARD RATINGS

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			
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	800
500	2.2	X7R	3025 / 7563	7.5±0.5	6.3±0.5	5.0	1.0±0.5	3.0	KTS251B225□76N0T00	800
	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	800
	1.0	X7R	3025 / 7563	7.5±0.5	6.3±0.5	3.2	1.0±0.5	2.0	KTS501B105□76N0T00	800
	1.2	X7R	3025 / 7563	7.5±0.5	6.3±0.5	3.5	1.0±0.5	2.0	KTS501B125□76N0T00	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.

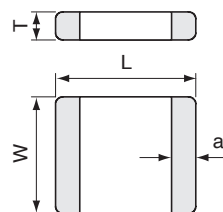
◆PART NUMBERING SYSTEM



Size Code

Size Code	L × 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.