



MULTILAYER CERAMIC CHIP CAPACITORS

Upgrade!

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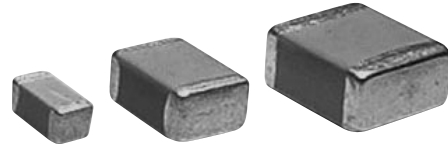
NTS Series / NTF Series



Temperature cycle : 1000 cycles

◆FEATURES

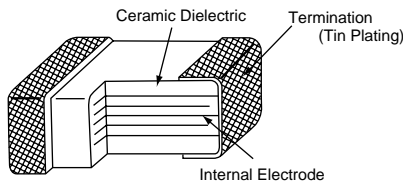
1. Large capacitance by small size.
2. Excellent noise absorption.
3. High permissible ripple current capability.
4. NTF: Temperature cycle : 1,000 cycles.



◆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, 50, 100, 250V _{dc}
3. Rated Capacitance Range	0.033 to 33μF
4. Rated Capacitance Tolerance	K (±10%), M (±20%)
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.	250% of rated voltage shall be applied for 5 seconds. (Only 250V _{dc} product : 475V)												
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°C.												
3	Rated Capacitance	Within specified tolerance.	<table border="1"> <tr> <td></td> <td>C_R≤10μF</td> <td>C_R>10μF</td> </tr> <tr> <td>Temperature</td> <td colspan="2">25±2°C</td> </tr> <tr> <td>Frequency</td> <td>1±0.1kHz</td> <td>120±12Hz</td> </tr> <tr> <td>Voltage</td> <td>1±0.2V_{rms}</td> <td>0.5±0.2V_{rms}</td> </tr> </table>		C _R ≤10μF	C _R >10μF	Temperature	25±2°C		Frequency	1±0.1kHz	120±12Hz	Voltage	1±0.2V _{rms}	0.5±0.2V _{rms}
	C _R ≤10μF	C _R >10μF													
Temperature	25±2°C														
Frequency	1±0.1kHz	120±12Hz													
Voltage	1±0.2V _{rms}	0.5±0.2V _{rms}													
4	Dissipation Factor	5.0% maximum.													
5	Rated Ripple Current	<table border="1"> <tr> <td>Size code</td> <td>31</td> <td>32</td> <td>43</td> <td>55</td> </tr> <tr> <td>Arms</td> <td>0.3</td> <td>0.5</td> <td>1.0</td> <td>2.0</td> </tr> </table>	Size code	31	32	43	55	Arms	0.3	0.5	1.0	2.0	10kHz~1MHz (sine curve) Ripple voltage V _p shall be less than the rated voltage.		
Size code	31	32	43	55											
Arms	0.3	0.5	1.0	2.0											

◆SPECIFICATIONS

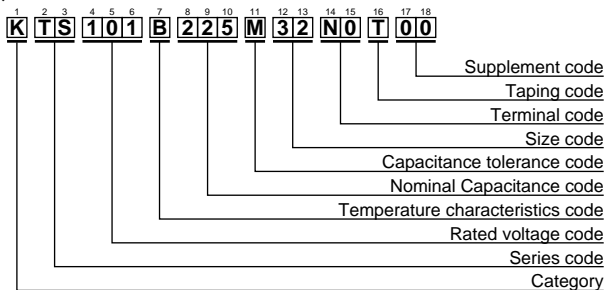
No.	Items	Specification	Test Condition															
6	Adhesion	No visible damage.	<p>Substrate 5N (0.51kgf) for 10±1 seconds Capacitor</p>															
7	Bend strength of the face plating	Appearance : No visible damage. $\Delta C/C : \pm 15\%$	<p>The substrate shall be bend at a rate of 1mm/s for 5 seconds.</p> <p>Press Press bar Substrate Capacitor 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> <th>Eutectic</th> </tr> </thead> <tbody> <tr> <td>Solder Temperature</td> <td>245±5°C</td> <td>235±5°C</td> </tr> <tr> <td>Dipping Time</td> <td colspan="2">2±0.5sec.</td> </tr> </tbody> </table>	Solder	Pb Free	Eutectic	Solder Temperature	245±5°C	235±5°C	Dipping Time	2±0.5sec.							
Solder	Pb Free	Eutectic																
Solder Temperature	245±5°C	235±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>Solder Temperature : 260±5°C Dipping Time : 2±0.5 seconds</p>															
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. $\Delta C/C : \pm 15\%$ D.F. : 10% maximum I.R. : 25/C _R (MΩ) or 1000(MΩ) whichever is less.	<p>Temperature : 40±2°C Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500±²⁴₀hours</p>															
12	Endurance	Appearance : No abnormality. $\Delta C/C : \pm 15\%$ D.F. : 10% maximum I.R. : 50/C _R (MΩ) or 1000(MΩ) whichever is less.	<p>Temperature : 85±2°C Voltage : 200% of rated voltage. Time : 1000±⁴⁸₀hours</p> <p>Temperature : 125±3°C Voltage : Rated voltage Time : 1000±⁴⁸₀hours</p>															

*C_R : Rated Capacitance(μF)

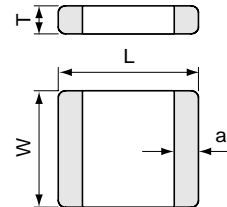
◆STANDARD RATINGS

Rated voltage (Vdc)	Rated Capacitance (μF)	Dimensions(mm)				Maximum ripple current (Arms)	Part Number	Previous Part Number (Just for your reference)
		L	W	Tmax.	a			
25	1.0	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS250B105M31N0T00	NTS30X7R1E105MT
	1.5						KTS250B155M31N0T00	NTS30X7R1E155MT
	2.2						KTS250B225M31N0T00	NTS30X7R1E225MT
	3.3						KTS250B335M32N0T00	NTS40X7R1E335MT
	4.7	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS250B475M32N0T00	NTS40X7R1E475MT
	6.8						KTS250B685M32N0T00	NTS40X7R1E685MT
	10	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS250B106M43N0T00	NTS50X7R1E106MT
	15						KTS250B156M43N0T00	NTS50X7R1E156MT
	22	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS250B226M55N0T00	NTS60X7R1E226MT
	33						KTS250B336M55N0T00	NTS60X7R1E336MT
50	0.33	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS500B334M31N0T00	NTS30X7R1H334MT
	0.47						KTS500B474M31N0T00	NTS30X7R1H474MT
	0.68						KTS500B684M31N0T00	NTS30X7R1H684MT
	1.0						KTS500B105M31N0T00	NTS30X7R1H105MT
	1.5	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS500B155M32N0T00	NTS40X7R1H155MT
	2.2						KTS500B225M32N0T00	NTS40X7R1H225MT
	3.3	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS500B335M32N0T00	NTS40X7R1H335MT
	4.7						KTS500B475M43N0T00	NTS50X7R1H475MT
	6.8	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS500B685M43N0T00	NTS50X7R1H685MT
	10						KTS500B106M55N0T00	NTS60X7R1H106MT
15	KTS500B156M55N0T00						NTS60X7R1H156MT	
100	0.1	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS101B104M31N0T00	NTS30X7R2A104MT
	0.15						KTS101B154M31N0T00	NTS30X7R2A154MT
	0.22						KTS101B224M31N0T00	NTS30X7R2A224MT
	0.33						KTS101B334M31N0T00	NTS30X7R2A334MT
	0.47						KTS101B474M31N0T00	NTS30X7R2A474MT
	0.68						KTS101B684M31N0T00	NTS30X7R2A684MT
	1.0	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS101B105M32N0T00	NTS40X7R2A105MT
	1.5						KTS101B155M32N0T00	NTS40X7R2A155MT
	2.2						KTS101B225M32N0T00	NTS40X7R2A225MT
	3.3						KTS101B334M32N0T00	NTS40X7R2A334MT
	4.7	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS101B155M43N0T00	NTS50X7R2A155MT
	6.8						KTS101B225M43N0T00	NTS50X7R2A225MT
		5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS101B335M43N0T00	—
							KTS101B475M43N0T00	—
							KTS101B475M55N0T00	—
							KTS101B685M55N0T00	—
250	0.033	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS251B333M31N0T00	NTS30X7R2E333MT
	0.047						KTS251B473M31N0T00	NTS30X7R2E473MT
	0.068						KTS251B683M31N0T00	NTS30X7R2E683MT
	0.1						KTS251B104M31N0T00	NTS30X7R2E104MT
	0.15	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS251B154M32N0T00	NTS40X7R2E154MT
	0.22						KTS251B224M32N0T00	NTS40X7R2E224MT
	0.33	4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS251B334M32N0T00	NTS40X7R2E334MT
	0.47						KTS251B474M43N0T00	NTS50X7R2E474MT
	0.68	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS251B684M43N0T00	NTS50X7R2E684MT
	1.0						KTS251B105M55N0T00	NTS60X7R2E105MT
	1.5						KTS251B155M55N0T00	NTS60X7R2E155MT

◆PART NUMBERING SYSTEM



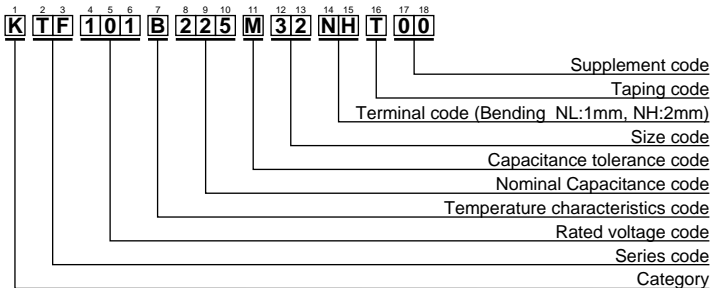
◆DIMENSIONS



◆STANDARD RATINGS

Rated voltage (Vdc)	Rated Capacitance (μF)	Dimensions(mm)				Maximum ripple current (Arms)	Part Number
		L	W	Tmax.	a		
25	1.0	3.2±0.3	1.6±0.2	1.8	0.7±0.2	0.3	KTF250B105M31NLT00
	1.5						KTF250B155M31NLT00
	2.2						KTF250B225M31NLT00
	3.3	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF250B335M32NHT00
	4.7						KTF250B475M32NHT00
	6.8						KTF250B685M32NHT00
	10	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF250B106M43NHT00
	15						KTF250B156M43NHT00
	22						5.7±0.4
	33	3.0	KTF250B336M55NHT00				
50	0.33	3.2±0.3	1.6±0.2	1.8	0.7±0.2	0.3	KTF500B334M31NLT00
	0.47						KTF500B474M31NLT00
	0.68						KTF500B684M31NLT00
	1.0						KTF500B105M31NLT00
	1.5	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF500B155M32NHT00
	2.2						KTF500B225M32NHT00
	3.3						KTF500B335M32NHT00
	4.7	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF500B475M43NHT00
	6.8						KTF500B685M43NHT00
	10						5.7±0.4
15	KTF500B156M55NHT00						
100	0.1	3.2±0.3	1.6±0.2	1.8	0.7±0.2	0.3	KTF101B104M31NLT00
	0.15						KTF101B154M31NLT00
	0.22						KTF101B224M31NLT00
	0.33						KTF101B334M31NLT00
	0.47						KTF101B474M31NLT00
	0.68						KTF101B684M31NLT00
	1.0	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF101B105M32NHT00
	1.5						KTF101B155M32NHT00
	2.2						KTF101B225M32NHT00
	1.5	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF101B155M43NHT00
	2.2						KTF101B225M43NHT00
	3.3						KTF101B335M43NHT00
	4.7	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF101B475M43NHT00
	4.7						KTF101B475M55NHT00
	6.8						KTF101B685M55NHT00
	250	0.033	3.2±0.3	1.6±0.2	1.8	0.7±0.2	0.3
0.047		KTF251B473M31NLT00					
0.068		KTF251B683M31NLT00					
0.1		3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF251B104M31NLT00
0.15							KTF251B154M32NLT00
0.22							KTF251B224M32NLT00
0.33		4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF251B334M32NLT00
0.47							KTF251B474M32NLT00
0.68							KTF251B684M32NLT00
1.0		5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF251B105M55NLT00
1.5							KTF251B155M55NLT00

◆PART NUMBERING SYSTEM



◆DIMENSIONS

