

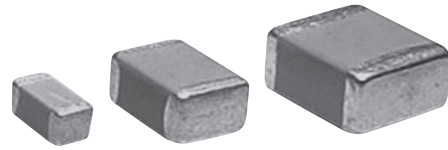
## NTS Series / NTF Series



Temperature cycle : 1000 cycles

### ◆FEATURES

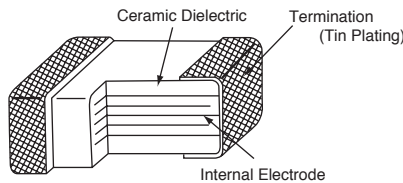
1. Large capacitance by small size.
2. Excellent noise absorption.
3. High permissible ripple current capability.
4. NTF: Temperature cycle : 1000 cycles.



### ◆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, 50, 100, 250V <sub>dc</sub>
3. Rated Capacitance Range	0.010 to 47μF
4. Rated Capacitance Tolerance	M (±20%) : Standard, 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.	250% of rated voltage shall be applied for 5 seconds. (Only 250V <sub>dc</sub> product : 475V)												
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.	<table border="1"> <tr> <td></td> <td>C<sub>R</sub>≤10μF</td> <td>C<sub>R</sub>&gt;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<sub>rms</sub></td> <td>0.5±0.2V<sub>rms</sub></td> </tr> </table>		C <sub>R</sub> ≤10μF	C <sub>R</sub> >10μF	Temperature	25±2°C		Frequency	1±0.1kHz	120±12Hz	Voltage	1±0.2V <sub>rms</sub>	0.5±0.2V <sub>rms</sub>
	C <sub>R</sub> ≤10μF	C <sub>R</sub> >10μF													
Temperature	25±2°C														
Frequency	1±0.1kHz	120±12Hz													
Voltage	1±0.2V <sub>rms</sub>	0.5±0.2V <sub>rms</sub>													
4	Dissipation Factor	5.0% maximum.	<table border="1"> <tr> <td>Frequency</td> <td>1±0.1kHz</td> <td>120±12Hz</td> </tr> <tr> <td>Voltage</td> <td>1±0.2V<sub>rms</sub></td> <td>0.5±0.2V<sub>rms</sub></td> </tr> </table>	Frequency	1±0.1kHz	120±12Hz	Voltage	1±0.2V <sub>rms</sub>	0.5±0.2V <sub>rms</sub>						
Frequency	1±0.1kHz	120±12Hz													
Voltage	1±0.2V <sub>rms</sub>	0.5±0.2V <sub>rms</sub>													
5	Rated Ripple Current	<table border="1"> <tr> <td>Size code</td> <td>31</td> <td>32</td> <td>43</td> <td>55</td> <td>76</td> </tr> <tr> <td>Arms</td> <td>0.3</td> <td>0.5</td> <td>1.0</td> <td>2.0</td> <td>3.0</td> </tr> </table>	Size code	31	32	43	55	76	Arms	0.3	0.5	1.0	2.0	3.0	10kHz~1MHz (sine curve) Ripple voltage V <sub>p</sub> shall be less than the rated voltage.
Size code	31	32	43	55	76										
Arms	0.3	0.5	1.0	2.0	3.0										

## 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* 45±2mm 45±2mm</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. $\Delta C/C : \pm 15\%$ D.F. : 10% maximum I.R. : 25/C <sub>R</sub> (MΩ) or 1000(MΩ) whichever is 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. $\Delta C/C : \pm 15\%$ D.F. : 10% maximum I.R. : 50/C <sub>R</sub> (MΩ) or 1000(MΩ) whichever is less.	<p>Temperature : 125±3°C Voltage : Rated voltage Time : 1000±<sup>48</sup><sub>0</sub>hours</p>															

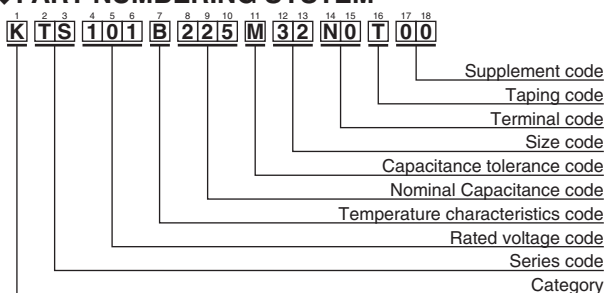
\*C<sub>R</sub> : Rated Capacitance(μF)

### ◆STANDARD RATINGS

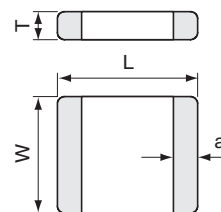
Rated voltage (Vdc)	Rated Capacitance (μF)	Dimensions(mm)				Maximum ripple current (Arms)	Part Number	Previous Part Number (Just for your reference)					
		L	W	Tmax.	a								
25	1.0	3.2±0.2	1.6±0.2	1.8	0.5±0.3	0.3	KTS250B105M31N0T00	NTS30X7R1E105MT					
	1.5						KTS250B155M31N0T00	NTS30X7R1E155MT					
	2.2						KTS250B225M31N0T00	NTS30X7R1E225MT					
	3.3	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS250B335M32N0T00	NTS40X7R1E335MT					
	4.7						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			3.0			KTS250B336M55N0T00	NTS60X7R1E336MT					
47	4.0			KTS250B476M76N0T00			—						
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	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS500B105M31N0T00	NTS40X7R1H105MT					
	1.5						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						KTS500B685M43N0T00	NTS50X7R1H685MT					
	10	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS500B106M55N0T00	NTS60X7R1H106MT					
	15						KTS500B156M55N0T00	NTS60X7R1H156MT					
	22	7.5±0.5	6.3±0.5	4.0	1.0±0.5	3.0	KTS500B226M76N0T00	—					
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						KTS101B684M32N0T00	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						4.5±0.4	3.2±0.4	2.8	0.6±0.3	1.0	KTS101B225M32N0T00	NTS40X7R2A225MT
	1.5											KTS101B155M43N0T00	NTS50X7R2A155MT
	2.2											KTS101B225M43N0T00	NTS50X7R2A225MT
	3.3						3.2±0.5	3.2	3.2	0.8±0.5	2.0	KTS101B335M43J0T00	—
	4.7	KTS101B475M43E0T00	—										
	3.3	KTS101B335M55N0T00	—										
	4.7	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS101B475M55N0T00	—					
	6.8						KTS101B685M55F0T00	—					
	6.8						KTS101B685M76N0T00	—					
	6.8	7.5±0.5	6.3±0.5	3.5	1.0±0.5	3.0	KTS101B685M76N0T00	—					
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	3.2±0.4	2.5±0.3	2.6	0.6±0.3	0.5	KTS251B104M31N0T00	NTS30X7R2E104MT					
	0.15						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						KTS251B684M43N0T00	NTS50X7R2E684MT					
	1.0	5.7±0.4	5.0±0.4	2.8	0.8±0.5	2.0	KTS251B105M55N0T00	NTS60X7R2E105MT					
	1.5						KTS251B155M55N0T00	NTS60X7R2E155MT					
	1.5	7.5±0.5	6.3±0.5	3.5	1.0±0.5	3.0	KTS251B155M76N0T00	—					
	2.2						KTS251B225M76N0T00	—					

※Please consult with us when you consider the rating other than a standard table.

### ◆PART NUMBERING SYSTEM



### ◆DIMENSIONS



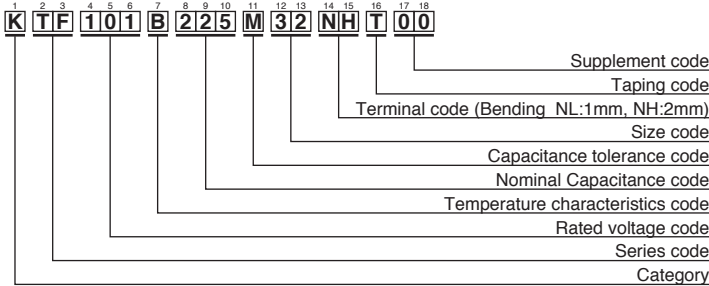
Please refer to "Part Numbering System" of the beginning of a catalog for the details.

### ◆STANDARD RATINGS

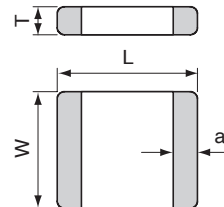
Rated voltage (Vdc)	Rated Capacitance (μF)	Dimensions(mm)				Maximum ripple current (Arms)	Part Number				
		L	W	Tmax.	a						
25	1.0	3.2±0.3	1.6±0.2	1.8	0.7±0.2	0.3	KTF250B105M31NLT00				
	1.5						KTF250B155M31NLT00				
	2.2						KTF250B225M31NLT00				
	3.3						KTF250B335M32NHT00				
	4.7	3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF250B475M32NHT00				
	6.8						KTF250B685M32NHT00				
	10						KTF250B106M43NHT00				
	15	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF250B156M43NHT00				
	22						5.7±0.4	5.0±0.4	2.8	1.0±0.4	KTF250B226M55NHT00
	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						KTF500B106M55NHT00				
15	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	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				
	3.3						KTF101B335M32NHT00				
	4.7	4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF101B475M43NHT00				
	6.8						KTF101B685M43NHT00				
	10						KTF101B106M55NHT00				
	15	5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF101B156M55NHT00				
	250	0.033	3.2±0.3	1.6±0.2	1.8	0.7±0.2	0.3	KTF251B333M31NLT00			
0.047		KTF251B473M31NLT00									
0.068		KTF251B683M31NLT00									
0.1		KTF251B104M31NLT00									
0.15		3.2±0.4	2.5±0.3	2.6	0.7±0.2	0.5	KTF251B154M32NLT00				
0.22							KTF251B224M32NLT00				
0.33							KTF251B334M32NLT00				
0.47		4.5±0.4	3.2±0.4	2.8	0.7±0.2	1.0	KTF251B474M43NLT00				
0.68							KTF251B684M43NLT00				
1.0							KTF251B105M55NLT00				
1.5		5.7±0.4	5.0±0.4	2.8	1.0±0.4	2.0	KTF251B155M55NLT00				

※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.

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