

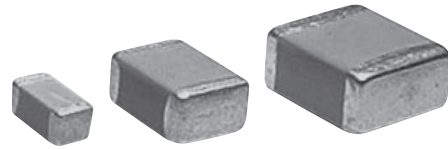
NTS Series / NTF Series



Temperature cycle : 1000 cycles

◆FEATURES

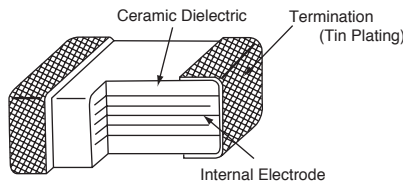
1. Large capacitance by small size.
2. Excellent noise absorption.
3. High permissible ripple current capability.
4. NTF: Temperature cycle : 1000 cycles.



◆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 _{dc} |
| 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 _{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. | <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_{rms}</td> <td>0.5±0.2V_{rms}</td> </tr> </table> | Frequency | 1±0.1kHz | 120±12Hz | Voltage | 1±0.2V _{rms} | 0.5±0.2V _{rms} | | | | | | |
| Frequency | 1±0.1kHz | 120±12Hz | | | | | | | | | | | | | |
| Voltage | 1±0.2V _{rms} | 0.5±0.2V _{rms} | | | | | | | | | | | | | |
| 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 _p 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 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 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. $\Delta C/C : \pm 15\%$ 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 : 125±3°C Voltage : Rated voltage Time : 1000±⁴⁸₀hours</p> | | | | | | | | | | | | | | | |

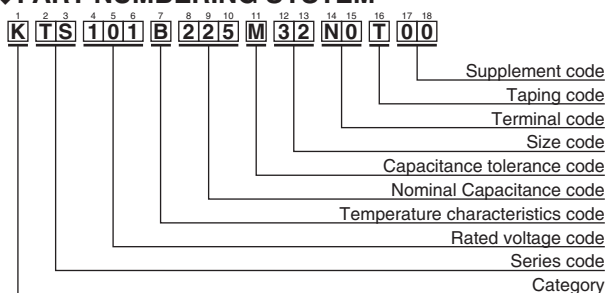
*C_R : Rated Capacitance(μF)

◆STANDARD RATINGS

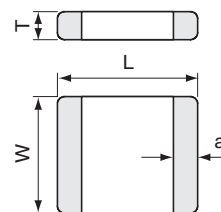
| Rated voltage (Vdc) | Rated Capacitance (μF) | Dimensions(mm) | | | | Maximum ripple current (Arms) | Part Number | Previous Part Number (Just for your reference) | | | | | |
|---------------------|------------------------|--------------------|---------|---------|---------|-------------------------------|--------------------|------------------------------------------------|-----------------|---------|-----|--------------------|-----------------|
| | | 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 | 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 | | | | | | KTS250B106M43N0T00 | NTS50X7R1E106MT | | | | | |
| | 15 | 4.5±0.4 | 3.2±0.4 | 2.8 | 0.6±0.3 | 1.0 | KTS250B156M43N0T00 | NTS50X7R1E156MT | | | | | |
| | 22 | | | | | | KTS250B226M55N0T00 | NTS60X7R1E226MT | | | | | |
| | 33 | | | | | | KTS250B336M55N0T00 | NTS60X7R1E336MT | | | | | |
| 47 | 7.5±0.5 | 6.3±0.5 | 4.0 | 1.0±0.5 | 3.0 | 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 | | | | | | KTS500B105M31N0T00 | NTS40X7R1H105MT | | | | | |
| | 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 | | | | | | KTS500B335M32N0T00 | NTS40X7R1H335MT | | | | | |
| | 4.7 | | | | | | KTS500B475M43N0T00 | NTS50X7R1H475MT | | | | | |
| | 6.8 | 4.5±0.4 | 3.2±0.4 | 2.8 | 0.6±0.3 | 1.0 | KTS500B685M43N0T00 | NTS50X7R1H685MT | | | | | |
| | 10 | | | | | | 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 | | | | | | | KTS101B225M32N0T00 | NTS40X7R2A225MT | | | | | |
| 1.5 | | | | | | | 4.5±0.4 | 3.2±0.4 | 2.8 | 0.6±0.3 | 1.0 | KTS101B155M43N0T00 | NTS50X7R2A155MT |
| 2.2 | | | | | | | | | | | | KTS101B225M43N0T00 | NTS50X7R2A225MT |
| 3.3 | | | | | | | | | | | | KTS101B335M43J0T00 | — |
| 4.7 | | 3.2±0.5 | 3.2 | 3.2 | 3.2 | 3.2 | KTS101B475M43E0T00 | — | | | | | |
| 3.3 | | | | | | | KTS101B335M55N0T00 | — | | | | | |
| 4.7 | | | | | | | KTS101B475M55N0T00 | — | | | | | |
| 6.8 | | 5.7±0.4 | 5.0±0.4 | 2.8 | 0.8±0.5 | 2.0 | 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 | | | | | | KTS251B334M32N0T00 | NTS40X7R2E334MT | | | | | |
| | 0.47 | 4.5±0.4 | 3.2±0.4 | 2.8 | 0.6±0.3 | 1.0 | KTS251B474M43N0T00 | NTS50X7R2E474MT | | | | | |
| | 0.68 | | | | | | KTS251B684M43N0T00 | NTS50X7R2E684MT | | | | | |
| | 1.0 | | | | | | KTS251B105M55N0T00 | NTS60X7R2E105MT | | | | | |
| | 1.5 | 5.7±0.4 | 5.0±0.4 | 2.8 | 0.8±0.5 | 2.0 | KTS251B155M55N0T00 | NTS60X7R2E155MT | | | | | |
| | 1.5 | | | | | | KTS251B155M76N0T00 | — | | | | | |
| | 2.2 | 7.5±0.5 | 6.3±0.5 | 5.0 | 1.0±0.5 | 3.0 | KTS251B225M76N0T00 | — | | | | | |

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

◆PART NUMBERING SYSTEM



◆DIMENSIONS



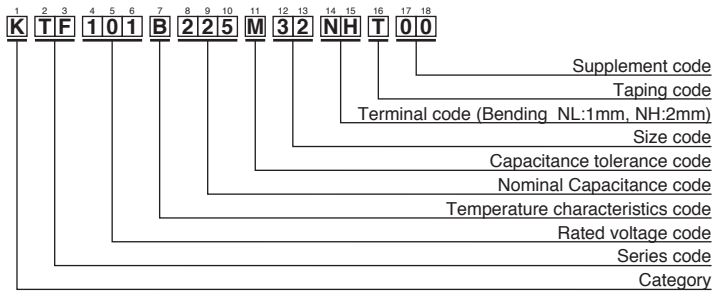
Please refer to "Part Numbering System" of the beginning of a catalog for the details.

◆STANDARD RATINGS

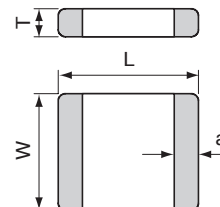
| Rated voltage (Vdc) | Rated Capacitance (μF) | Dimensions(mm) | | | | Maximum ripple current (Arms) | Part Number |
|---------------------|------------------------|--------------------|--------------------|---------|---------|-------------------------------|--------------------|
| | | L | W | Tmax. | 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 | 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 | | 3.2±0.5 | | | | KTF101B335M43JHT00 |
| | 4.7 | 5.7±0.4 | 5.0±0.4 | 3.2 | 1.0±0.4 | 2.0 | KTF101B475M43EHT00 |
| | 4.7 | | | 2.8 | | | KTF101B475M55NHT00 |
| | 6.8 | | | 3.2 | | | KTF101B685M55FHT00 |
| | 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 | | 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.