



◆FEATURES

1. Small in size and wide capacitance range.
Max. 470 μ F is available.
2. Temperature characteristic is X7R in EIA code.
3. Superior humidity characteristic and long life.
4. Excellent high frequency characteristic due to low ESR.
5. High rated ripple current.
6. 250V_{dc} items are available.
7. Resin(UL94 V-0) used for coating.
8. Pb-free design(also ceramic dielectric)

◆APPLICATIONS

1. Smoothing circuit of switching mode AC-DC or DC-DC converter.
2. Noise suppressor for various kinds of equipments.
3. By-pass or decoupling circuits.
4. Automotive 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 | 0.1 to 470 μ F |
| 4. Rated Capacitance Tolerance | M(\pm 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 | Between Terminals | No abnormality. | Rated voltage | Withstand voltage | |
| | | Terminals to Coating Resin | | 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 (M Ω) or 4000(M Ω) whichever is less. | Rated voltage shall be applied for 60 \pm 5 seconds at temperature 25 \pm 2°C. | | |
| 3 | Rated Capacitance | | Within specified tolerance. | | C _R \leq 10 μ F | C _R >10 μ F |
| | | | | Temperature | 25 \pm 2°C | |
| 4 | Dissipation Factor | | 5.0% maximum. | Frequency | 1 \pm 0.1kHz | 120 \pm 12Hz |
| | | | | Voltage | 1 \pm 0.2V _{rms} | 0.5 \pm 0.2V _{rms} |

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



DIPPED RADIAL LEAD MULTILAYER CERAMIC CAPACITORS

NTD Series

◆ SPECIFICATIONS

| No. | Items | Specification | Test Condition | | | | | | | | | | | | | | | |
|--------------------|------------------------------|--|---|------------------|------------------|--------------------|----------|------------------------------|-----------|----------|------------------|--------|---|------------------------------|------|---|------------------|--------|
| 5 | Rated Ripple Current | See STANDARD RATINGS | 10kHz to 1MHz (sine curve) Ripple voltage V_p shall be less than the rated voltage. | | | | | | | | | | | | | | | |
| 6 | Robustness of Terminations | No visible damage. | The force applied shall be : <table border="1"> <thead> <tr> <th>Lead ϕ (mm)</th> <th>Tensile(N)</th> <th>(sec.)</th> </tr> </thead> <tbody> <tr> <td>0.5 max.</td> <td>5</td> <td>10±1</td> </tr> <tr> <td>0.6 min.</td> <td>10</td> <td>10±1</td> </tr> </tbody> </table> | Lead ϕ (mm) | Tensile(N) | (sec.) | 0.5 max. | 5 | 10±1 | 0.6 min. | 10 | 10±1 | | | | | | |
| | Lead ϕ (mm) | | Tensile(N) | (sec.) | | | | | | | | | | | | | | |
| 0.5 max. | 5 | 10±1 | | | | | | | | | | | | | | | | |
| 0.6 min. | 10 | 10±1 | | | | | | | | | | | | | | | | |
| | Bending | | <table border="1"> <thead> <tr> <th>Lead ϕ (mm)</th> <th>Bending(N)</th> <th>(kg)</th> </tr> </thead> <tbody> <tr> <td>0.5 max.</td> <td>2.5</td> <td>0.25</td> </tr> <tr> <td>0.6 min.</td> <td>5</td> <td>0.51</td> </tr> </tbody> </table> Time : 2times. | Lead ϕ (mm) | Bending(N) | (kg) | 0.5 max. | 2.5 | 0.25 | 0.6 min. | 5 | 0.51 | | | | | | |
| Lead ϕ (mm) | Bending(N) | (kg) | | | | | | | | | | | | | | | | |
| 0.5 max. | 2.5 | 0.25 | | | | | | | | | | | | | | | | |
| 0.6 min. | 5 | 0.51 | | | | | | | | | | | | | | | | |
| 7 | Vibration | Appearance : No abnormality. Capacitance : To meet the initial specification. D.F. : To meet the initial specification. | Amplitude : 1.5mm Frequency range : 10-55-10Hz (1 min) Direction and time : 2 hours each to X, Y, Z axis. Total 6 hours. | | | | | | | | | | | | | | | |
| 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 abnormality. $\Delta C/C : \pm 15\%$ D.F. : To meet the initial specification. I.R. : To meet the initial specification. | Solder Temperature : 350±10°C Dipping Time : 3±0.5 sec. Depth : 1.5 to 2mm | | | | | | | | | | | | | | | |
| 10 | Temperature Cycle | Appearance : No abnormality. $\Delta C/C : \pm 15\%$ 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> For 5 cycles for above temperature cycle. | 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. $\Delta C/C : \pm 20\%$ D.F. : 10% maximum I.R. : 25/ C_R (M Ω) or 1000(M Ω) whichever is less. | Temperature : 40±2°C Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500± ₀ ²⁴ hours | | | | | | | | | | | | | | | |
| 12 | Endurance | Appearance : No abnormality. $\Delta C/C : \pm 20\%$ D.F. : 10% maximum I.R. : 50/ C_R (M Ω) or 1000(M Ω) whichever is less. | Temperature : 125±3°C Voltage : Rated voltage Time : 1000± ₀ ⁴⁸ hours | | | | | | | | | | | | | | | |

* C_R : Rated Capacitance(μ F)



DIPPED RADIAL LEAD MULTILAYER CERAMIC CAPACITORS

NTD Series

◆ **STANDARD RATINGS**

| Rated voltage (Vdc) | Rated Capacitance (μF) | Dimensions (mm) | | | | | Maximum ripple current (Arms) | Part Number | Taping Quantity per reel (pcs./box) | | | | | |
|---------------------|------------------------|--------------------|-------|--------------------|-------|---------|-------------------------------|--------------------|-------------------------------------|------|-----|--------------------|--------------------|---|
| | | Lmax. | Wmax. | Tmax. | F±0.8 | φd±0.05 | | | | | | | | |
| 25 | 3.3 | 5.0 | 6.0 | 3.5 | 5.0 | 0.5 | 0.3 | KTD250B335M32A0T00 | 2,000 | | | | | |
| | 4.7 | | | | | | | KTD250B475M32A0T00 | 2,000 | | | | | |
| | 6.8 | | | | | | | KTD250B685M43A0T00 | 2,000 | | | | | |
| | 10 | 6.5 | 6.5 | 4.0 | 5.0 | 0.5 | 0.8 | KTD250B106M43A0T00 | 2,000 | | | | | |
| | 15 | | | | | | | KTD250B156M43A0T00 | 2,000 | | | | | |
| | 15 | | | | | | | KTD250B156M55A0T00 | 2,000 | | | | | |
| | 22 | 7.5 | 9.0 | 4.5 | 5.0 | 0.5 | 1.0 | KTD250B226M55A0T00 | 2,000 | | | | | |
| | 33 | | | | | | | KTD250B336M55A0T00 | 2,000 | | | | | |
| | 47 | | | | | | | KTD250B476M76A0T00 | 1,000 | | | | | |
| | 68 | 13.5 | 15.0 | 6.0 | 10.0 | 0.6 | 2.0 | KTD250B686M80A0B00 | — | | | | | |
| | 100 | | | 8.0 | | | | KTD250B107M80A0B00 | — | | | | | |
| | 150 | | | 6.0 | | | | KTD250B157M90A0B00 | — | | | | | |
| | 220 | 22.5 | 20.0 | 8.0 | 20.0 | 0.8 | 3.0 | KTD250B227M90A0B00 | — | | | | | |
| | 330 | | | 8.0 | | | | KTD250B337M99A0B00 | — | | | | | |
| 470 | 11.5 | | | KTD250B477M99A0B00 | | | | — | | | | | | |
| 35 | 3.3 | 5.0 | 6.0 | 3.5 | 5.0 | 0.5 | 0.3 | KTD350B335M32A0T00 | 2,000 | | | | | |
| | 4.7 | | | | | | | KTD350B475M32A0T00 | 2,000 | | | | | |
| | 6.8 | | | | | | | KTD350B685M43A0T00 | 2,000 | | | | | |
| | 10 | 6.5 | 6.5 | 4.0 | 5.0 | 0.5 | 0.8 | KTD350B106M43A0T00 | 2,000 | | | | | |
| | 15 | | | | | | | KTD350B156M55A0T00 | 2,000 | | | | | |
| | 22 | | | | | | | KTD350B226M55A0T00 | 2,000 | | | | | |
| | 33 | 10.0 | 11.5 | 5.0 | 5.0 | 0.5 | 1.5 | KTD350B336M76A0T00 | 1,000 | | | | | |
| | 47 | | | 5.5 | | | | KTD350B476M76A0T00 | 1,000 | | | | | |
| 1.0 | 5.0 | | | 6.0 | | | | 3.5 | 5.0 | 0.5 | 0.3 | KTD500B105M32A0T00 | 2,000 | |
| 1.5 | | KTD500B155M32A0T00 | 2,000 | | | | | | | | | | | |
| 2.2 | | KTD500B225M32A0T00 | 2,000 | | | | | | | | | | | |
| 3.3 | 6.5 | 6.5 | 4.0 | 5.0 | 0.5 | 0.8 | KTD500B335M32A0T00 | 2,000 | | | | | | |
| 4.7 | | | | | | | KTD500B475M43A0T00 | 2,000 | | | | | | |
| 6.8 | | | | | | | KTD500B685M43A0T00 | 2,000 | | | | | | |
| 10 | 7.5 | 9.0 | 4.5 | 5.0 | 0.5 | 1.0 | KTD500B106M55A0T00 | 2,000 | | | | | | |
| 15 | | | | | | | KTD500B156M55A0T00 | 2,000 | | | | | | |
| 22 | | | | | | | KTD500B226M76A0T00 | 1,000 | | | | | | |
| 33 | 13.5 | 15.0 | 5.5 | 10.0 | 0.6 | 2.0 | KTD500B336M80A0B00 | — | | | | | | |
| 47 | | | 6.0 | | | | KTD500B476M90A0B00 | — | | | | | | |
| 68 | | | 22.5 | | | | 20.0 | 6.0 | 20.0 | 0.8 | 3.0 | KTD500B686M90A0B00 | — | |
| 100 | 28.5 | 20.0 | 7.0 | 25.0 | 0.8 | 4.0 | KTD500B107M90A0B00 | — | | | | | | |
| 150 | | | 7.5 | | | | KTD500B157M99A0B00 | — | | | | | | |
| 220 | | | 10.0 | | | | KTD500B227M99A0B00 | — | | | | | | |
| 100 | 0.33 | 5.0 | 6.0 | 3.5 | 5.0 | 0.5 | 0.3 | KTD101B334M32A0T00 | 2,000 | | | | | |
| | 0.47 | | | | | | | KTD101B474M32A0T00 | 2,000 | | | | | |
| | 0.68 | | | | | | | KTD101B684M32A0T00 | 2,000 | | | | | |
| | 1.0 | | | | | | | KTD101B105M32A0T00 | 2,000 | | | | | |
| | 1.5 | | | | | | | KTD101B155M32A0T00 | 2,000 | | | | | |
| | 2.2 | | | | | | | KTD101B225M32A0T00 | 2,000 | | | | | |
| | 1.5 | 6.5 | 6.5 | 4.0 | 5.0 | 0.5 | 0.8 | KTD101B155M43A0T00 | 2,000 | | | | | |
| | 2.2 | | | | | | | KTD101B225M43A0T00 | 2,000 | | | | | |
| | 3.3 | | | | | | | KTD101B335M43A0T00 | 2,000 | | | | | |
| | 4.7 | | | | | | | KTD101B475M43A0T00 | 2,000 | | | | | |
| | 3.3 | | | | | | | KTD101B335M55A0T00 | 2,000 | | | | | |
| | 4.7 | | | | | | | KTD101B475M55A0T00 | 2,000 | | | | | |
| | 6.8 | 10.0 | 11.5 | 4.7 | 5.0 | 0.5 | 1.5 | KTD101B685M55A0T00 | 2,000 | | | | | |
| | 6.8 | | | 5.0 | | | | KTD101B685M76A0T00 | 1,000 | | | | | |
| | 10 | | | 5.0 | | | | KTD101B106M80A0B00 | — | | | | | |
| | 15 | | | 6.0 | | | | KTD101B156M80A0B00 | — | | | | | |
| | 22 | | | 22.5 | | | | 20.0 | 6.0 | 20.0 | 0.8 | 3.0 | KTD101B226M90A0B00 | — |
| | 33 | | | KTD101B336M90A0B00 | | | | — | | | | | | |
| | 47 | 28.5 | 20.0 | 7.5 | 25.0 | 0.8 | 4.0 | KTD101B476M99A0B00 | — | | | | | |
| | 68 | | | 5.0 | | | | KTD101B686M99A0B00 | — | | | | | |
| | 100 | | | 6.0 | | | | KTD101B107M99A0B00 | — | | | | | |

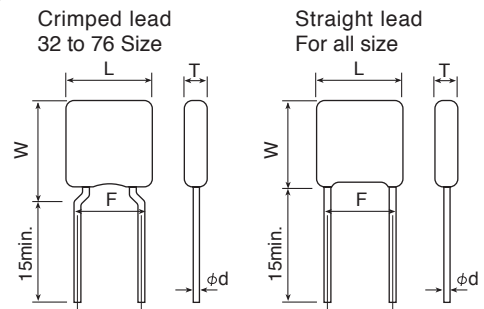
| | | | | | | | | | |
|-----|------|------|------|------|------|-----|--------------------|--------------------|-------|
| 250 | 0.1 | 5.0 | 6.0 | 3.5 | 5.0 | 0.5 | 0.3 | KTD251B104M32A0T00 | 2,000 |
| | 0.15 | | | | | | | KTD251B154M32A0T00 | 2,000 |
| | 0.22 | | | | | | | KTD251B224M32A0T00 | 2,000 |
| | 0.33 | | | | | | | KTD251B334M32A0T00 | 2,000 |
| | 0.47 | 6.5 | 6.5 | 4.0 | 5.0 | 0.5 | 0.8 | KTD251B474M43A0T00 | 2,000 |
| | 0.68 | | | | | | | KTD251B684M43A0T00 | 2,000 |
| | 1.0 | | | | | | | KTD251B105M55A0T00 | 2,000 |
| | 1.5 | 7.5 | 9.0 | 4.5 | 5.0 | 0.5 | 1.0 | KTD251B155M55A0T00 | 2,000 |
| | 2.2 | 10.0 | 11.5 | 6.0 | 5.0 | 0.5 | 1.5 | KTD251B225M76A0T00 | 1,000 |
| | 2.2 | 13.5 | 15.0 | 5.0 | 10.0 | 0.6 | 2.0 | KTD251B225M80A0B00 | — |
| | 3.3 | 22.5 | 20.0 | 6.0 | 20.0 | 0.8 | 3.0 | KTD251B335M90A0B00 | — |
| | 4.7 | | | | | | | KTD251B475M90A0B00 | — |
| | 6.8 | | | | | | | KTD251B685M99A0B00 | — |
| | 10 | | | | | | | KTD251B106M99A0B00 | — |
| 15 | 28.5 | 20.0 | 7.5 | 25.0 | 0.8 | 4.0 | KTD251B156M99A0B00 | — | |
| 500 | 0.47 | 7.5 | 9.0 | 3.5 | 5.0 | 0.5 | 0.8 | KTD501B474M55A0T00 | 2,000 |
| | 0.56 | | | | | | | KTD501B564M55A0T00 | 2,000 |
| | 0.68 | 10.0 | 11.5 | 3.4 | 5.0 | 0.5 | 1.0 | KTD501B684M76A0T00 | 1,500 |
| | 1.0 | | | 3.8 | | | | KTD501B105M76A0T00 | 1,500 |
| | 1.2 | | | 4.2 | | | | KTD501B125M76A0T00 | 1,500 |

※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.