



SPECIFICATIONS

PRODUCT : VARISTOR

TYPE : NFV10D□□□K

MODEL :

CITATION :

REVISION : B01

TOTAL PAGES : 5 PAGE : 1/5

RELEASED DATE : Oct. 15, 2001

REVISION HISTORY

| NO | REV. DATE | DCR NO. | DESCRIPTION OF CHANGE | REV. |
|----|----------------|---------|-----------------------|------|
| 1 | Oct. 15, 20015 | | NEW RELEASE | B01 |
| 2 | | | | |
| 3 | | | | |
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| Approved by | Checked by | Edited by |
|----------------|------------|-------------|
| Yu-Chang Huang | Cloud Chen | Andy Chiang |

| | | | | | | |
|-----------------|---------------------------------------|-------------------|-------|------|----------------------|-----|
| CERAMATE | TYPE | NFV10D□□□K | MODEL | | PAGE | 2/5 |
| CITATION | | | | DATE | Oct. 15, 2001 | |
| SUBJECT | QUALITY APPROVAL and STRUCTURE | | | REV. | B01 | |

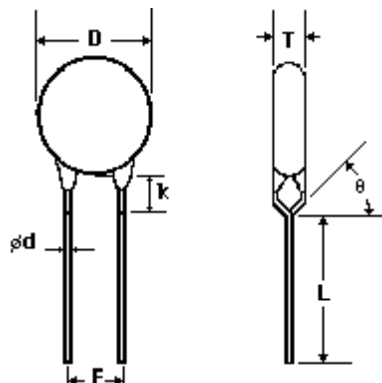
1. QUALITY SYSTEM APPROVAL

ISO9001 Certificate of approval No.97-HOU-AQ-1382

2. SAFETY STANDARDS APPROVAL

| Standard No. | UL 1414 | UL 1449 | UL 497B | CUL | CSA C22.2 No.1 | VDE 42000 |
|--------------|----------|----------|----------|----------|----------------|-----------|
| File No. | E181368 | E166389 | E187844 | E166389 | LR105317 | 5938 |
| 180K~680K | | | Approved | | | Approved |
| 820K~181K | | Approved | Approved | Approved | | Approved |
| 201K~471K | Approved | Approved | Approved | Approved | Approved | Approved |
| 511K | | Approved | Approved | Approved | | Approved |
| 561K~821K | Approved | Approved | Approved | Approved | | Approved |
| 911K~182K | | | | | | Approved |

3. STRUCTURE

| NO. | ITEM | DESCRIPTION | | |
|-----|------------------|---|----------|-------------|
| 3.1 | Main Material | Zinc Oxide | | |
| 3.2 | Coating Material | Silicone or Phenolic resin | | |
| 3.3 | Marking | NFV, Part number, UL, CSA(or CUL) and VDE recognized component mark, Date code | | |
| 3.4 | Appearance | Without dirt and crack, marking should be clear | | |
| 3.5 | Dimensions |  | D(max.) | 12.5 |
| | | | k(max.) | 5.0 |
| | | | T(max.) | *(1) |
| | | | F | 7.5± 1.0 |
| | | | φ d | 0.8± 0.1 |
| | | | θ (max.) | 75° |
| | | | L(min.) | 25.0 |
| | | | Unit: mm | |

***(1) See Page 3, Dimensions Table**

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SUBJECT


DIMENSIONS TABLE

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| Part No. | T_{max.} |
|-----------------|-------------------------|
| 10D180K | 3.8 |
| 10D220K | 4.0 |
| 10D270K | 4.3 |
| 10D330K | 3.6 |
| 10D390K | 3.8 |
| 10D470K | 4.0 |
| 10D560K | 4.2 |
| 10D680K | 4.0 |
| 10D820K | 3.6 |
| 10D101K | 3.8 |
| 10D121K | 4.0 |
| 10D151K | 4.3 |
| 10D181K | 3.7 |
| 10D201K | 3.8 |
| 10D221K | 3.9 |
| 10D241K | 4.0 |
| 10D271K | 4.1 |
| 10D301K | 4.3 |
| 10D331K | 4.4 |
| 10D361K | 4.6 |
| 10D391K | 4.7 |
| 10D431K | 4.9 |
| 10D471K | 5.1 |
| 10D511K | 5.2 |
| 10D561K | 5.3 |
| 10D621K | 5.6 |
| 10D681K | 5.9 |
| 10D751K | 6.2 |
| 10D781K | 6.3 |
| 10D821K | 6.5 |
| 10D911K | 6.6 |
| 10D102K | 6.8 |
| 10D112K | 7.2 |
| 10D182K | 11.2 |

Unit:mm

| | | | | | |
|--|----------------------------|------------|-------|------|---------------|
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| SUBJECT | ELECTRICAL CHARACTERISTICS | | | REV. | B01 |

4. ELECTRICAL CHARACTERISTICS

| NO. | ITEM | PERFORMANCE | TEST METHODS |
|-----|--|---|---|
| 4.0 | Standard Conditions | | Unless otherwise specified, all tests are made under environmental conditions as given below: Temperature: 5~35°C Relative humidity: 45~85 % RH |
| 4.1 | Maximum Allowable Voltage | AC : *(2) V _{rms} DC : *(2) V | Maximum continuous sine wave(RMS) or DC voltage which may be applied. |
| 4.2 | Varistor Voltage | V _{1mA} : *(2) V | Voltage across the varistor measured at C _{mA} DC. |
| 4.3 | Varistor Voltage Temperature Coefficient | 0 ~ -0.05 %/°C | $\frac{V_{CmA \text{ at } 85^{\circ}\text{C}} - V_{CmA \text{ at } 25^{\circ}\text{C}}}{V_{CmA \text{ at } 25^{\circ}\text{C}}} \times \frac{1}{60} \times 100$ |
| 4.4 | Max. Clamping Voltage | *(2) V at *(2) A | Peak voltage across the varistor with a specified peak impulse current of 8x 20 μs waveform. |
| 4.5 | Rated Power | *(2) W | Maximum 50~60Hz power which may be loaded for 1,000 hrs at 85± 2°C with $\Delta V_{CmA} / V_{CmA} \leq \pm 10\%$. |
| 4.6 | Withstanding Surge Current | *(2) A | The max. current within the varistor voltage change of less than ± 10% when one impulse current (8x 20 μs) applied. |
| | | | The max. current with a varistor voltage change of less than ± 10% when two times impulse current (8x 20 μs) are applied at intervals of 5 minutes. |
| 4.7 | Energy | *(2) Joule | The max. energy absorbed with a varistor voltage change of less than ± 10% when one impulse(10 x 1000 μs) is applied. |
| 4.8 | Surge Life | *(2) A | The max. current with a varistor voltage change of less than ± 10% when 10,000 times impulse current (8x 20 μs) are applied at intervals of 20 seconds at room temperature. |

* (2) See Page 5

| PART NUMBER | MAXIMUM ALLOWABLE VOLTAGE | | VARISTOR VOLTAGE (V) | CLAMPING VOLTAGE (MAX.) | | RATED WATTAGE (MAX.) (W) | SURGE CURRENT (8/20 μ s) | | MAXIMUM ENERGY (10/1000 μ s) W_{tm} (joule) | SURGE LIFE (A) |
|----------------|---------------------------------|-------|----------------------------|-------------------------------|-------|-----------------------------------|------------------------------------|------|--|----------------------|
| | AC _{rms} (V) | DC(V) | | (V) | Ip(A) | | I _{tm} (A) | | | |
| | | | 1 TIME | | | 2 TIMES | | | | |
| 10D180K | 11 | 14 | 16~20 | 36 | 5 | 0.05 | 1000 | 500 | 2.6 | 50 |
| 10D220K | 14 | 18 | 20~24 | 43 | | | | | 3.2 | |
| 10D270K | 17 | 22 | 24~30 | 53 | | | | | 3.9 | |
| 10D330K | 20 | 26 | 30~36 | 65 | | | | | 4.8 | |
| 10D390K | 25 | 31 | 35~43 | 77 | | | | | 5.6 | |
| 10D470K | 30 | 38 | 42~52 | 93 | | | | | 6.8 | |
| 10D560K | 35 | 45 | 50~62 | 110 | | | | | 8.1 | |
| 10D680K | 40 | 56 | 61~75 | 135 | | | | | 9.8 | |
| 10D820K | 50 | 65 | 74~90 | 135 | 25 | 0.4 | 3500 | 2500 | 14 | 150 |
| 10D101K | 60 | 85 | 90~110 | 165 | | | | | 17 | |
| 10D121K | 75 | 100 | 108~132 | 200 | | | | | 20 | |
| 10D151K | 95 | 125 | 135~165 | 250 | | | | | 25 | |
| 10D181K | 115 | 150 | 162~198 | 300 | | | | | 32 | |
| 10D201K | 130 | 170 | 185~225 | 340 | | | | | 35 | |
| 10D221K | 140 | 180 | 198~242 | 360 | | | | | 39 | |
| 10D241K | 150 | 200 | 216~264 | 395 | | | | | 42 | |
| 10D271K | 175 | 225 | 247~303 | 455 | | | | | 49 | |
| 10D301K | 190 | 250 | 270~330 | 505 | | | | | 54 | |
| 10D331K | 210 | 275 | 297~363 | 545 | | | | | 58 | |
| 10D361K | 230 | 300 | 324~396 | 595 | | | | | 65 | |
| 10D391K | 250 | 320 | 351~429 | 650 | | | | | 70 | |
| 10D431K | 275 | 350 | 387~473 | 710 | | | | | 80 | |
| 10D471K | 300 | 385 | 423~517 | 775 | | | | | 85 | |
| 10D511K | 320 | 410 | 459~561 | 845 | | | | | 92 | |
| 10D561K | 350 | 460 | 504~616 | 920 | | | | | 92 | |
| 10D621K | 385 | 505 | 558~682 | 1025 | | | | | 92 | |
| 10D681K | 420 | 560 | 612~748 | 1120 | | | | | 92 | |
| 10D751K | 460 | 615 | 675~825 | 1240 | | | | | 100 | |
| 10D781K | 485 | 640 | 702~858 | 1290 | 105 | | | | | |
| 10D821K | 510 | 670 | 738~902 | 1355 | 110 | | | | | |
| 10D911K | 550 | 745 | 819~1001 | 1500 | 130 | | | | | |
| 10D102K | 625 | 825 | 900~1100 | 1650 | 140 | | | | | |
| 10D112K | 680 | 895 | 990~1210 | 1815 | 155 | | | | | |
| 10D182K | 1000 | 1465 | 1700~1980 | 2970 | 247 | 120 | | | | |