# Ceramic Disc Capacitors

NCD Series Class II/III

## GENERAL PURPOSE, HI-K
## (DIELECTRIC CONSTANT Class II/III) TYPE

### FEATURES

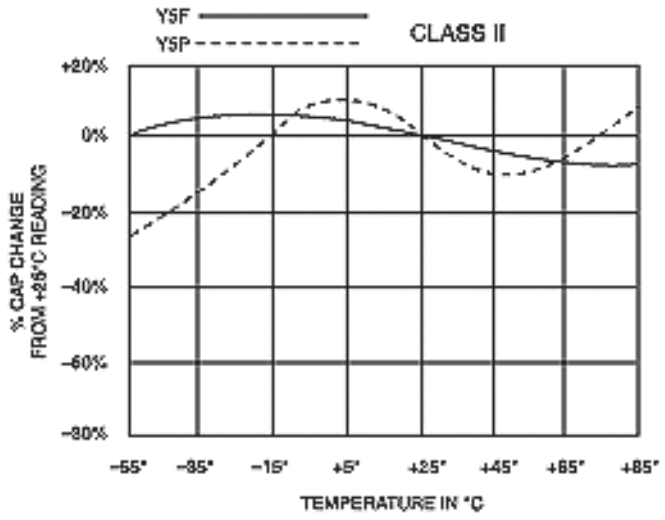
- WIDE SELECTION OF TEMPERATURE CHARACTERISTICS
- HIGH INSULATION RESISTANCE
- EXCELLENT HIGH FREQUENCY CHARACTERISTICS
- ECONOMICALLY PRICED
- AVAILABLE WITH FORMED LEADS AND ON TAPE FOR AUTOMATIC INSERTION

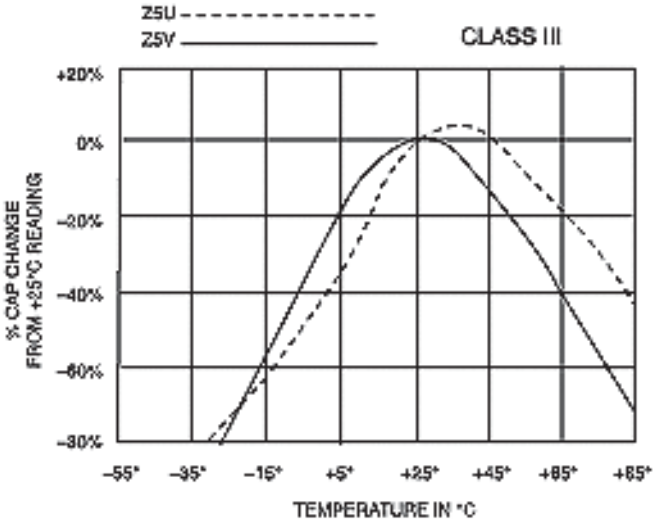
RoHS Compliant
Includes all homogeneous materials
*See Part Number System for Details

### SPECIFICATIONS

| Temperature Characteristics | | Y5F | Y5P | Z5U | Z5V |
|---|---|---|---|---|---|
| Operating Temperature Range | | -30°C ~ +85°C | -30°C ~ +85°C | +10°C ~ +85°C | +10°C ~ +85°C |
| Capacitance Range | | 100pF ~ 0.01µF | 100pF ~ 0.022µF | 0.001µF ~ 0.01µF | 0.001µF ~ 0.1µF |
| Standard Tolerance | | ±10% (K) | ±10% (K) | ±20% (M) | +80%/-20% (Z) |
| Capacitance Change Over Temperature Range | | ±7.5% | ±10% | -55% ~ +22 | -82% ~ +22% |
| Dissipation Factor | | 2.5%* | 2.5%* | 5% | 5% |
| Insulation Resistance | | Minimum 10,000 Megohms | | | |
| Working Voltage Range | | 50Vdc ~ 1KVdc | | | |
| Dielectric Withstanding Voltage (Test Voltage) | | 2.5 Times Rated Voltage For Not Less Than 1 Second, 50mA Maximum | | | |
| Load Life Test @ 85°C 1,000 Hours | Cap. Change | ±10% | ±10% | ±20% | ±30% |
| | D.F. (max.) | 4% | 4% | 7.5% | 7.5% |
| | I.R. (min.) | 1,000 Megohms | | | |
| Test Conditions | | 1KHz, 1.0V ±02Vrms | | 1KHz, 0.5V ± 0.1Vrms | |

* Special low dissipation factor (1.0% max.) Y5F and Y5P dielectrics are also available. Contact NIC for availability.



NCD 103 M 50 Z5U J .100LS TR F

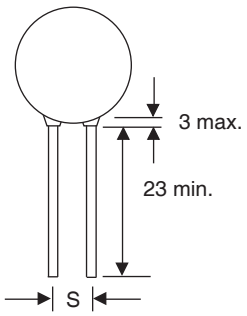
- F — RoHS compliant
- TR — Optional Packaging: TR = Taped and Reel; TB = Tape and Box (Ammo)
- .100LS — Optional Lead Space (LS) and/or Lead Length (LL) in inches
- J — Optional Lead Style: C = Cut Lead; D = Inside Kink (Short Leads); E = Outward Kink (Short Leads); J = Inside Kink (Long Leads); K = Outward Kink (Long Leads)
- Z5U — Temperature Coefficient
- 50 — Working Voltage DC
- M — Tolerance Code: C = ± 0.25pF; D = ± 0.5pF; J = ± 5%; K = ± 10%; M = ± 20%; Z = + 80% / - 20%
- 103 — Capacitance code, expressed in pfd, First two digits are significant, third digit is no. of zeros. "R" indicates decimal for under 10pfd.
- NCD — Series

| Lead Spacing (mm) - S | | | | |
|---|---|---|---|---|
| Body Diameter | Standard Bulk | Standard T&R | Optional Bulk mm (inches) | Optional T&R mm (inches) |
| 5 ~ 11 | 6.35 ± 0.8 | 5.0 ± 0.8 | 5.0 ± 0.8 (0.200LS) | 2.5 ± 0.8 (0.100LS) |
| ≥12 | 6.35 ± 0.8 | 5.0 ± 0.8 | 7.5 ± 0.8 (0.295LS) | 7.5 ± 0.8 (0.295LS) |
| | | | 10.0 ± 0.8 (0.395LS) | 10.0 ± 0.8 (0.395LS) |

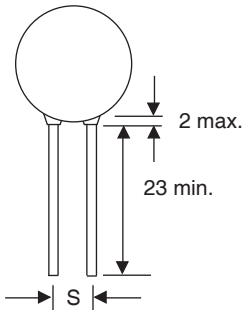
**LEAD DIAMETER**
0.6MM IS STANDARD

**BODY THICKNESS**
2 ~ 4MM DEPENDENT ON CV

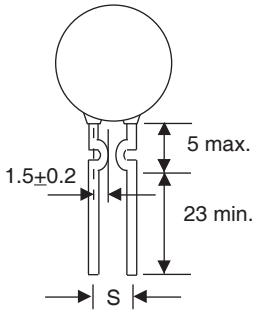
Standard
500Vdc & Up



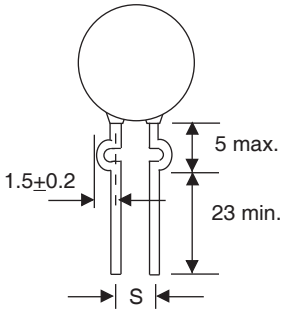

Low Voltage
100Vdc & Below




J Style

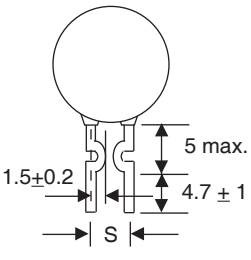



K Style

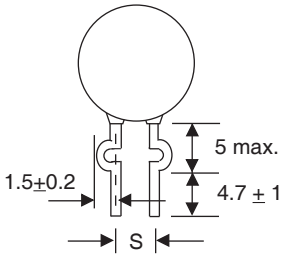



(BULK AND TAPED STYLES)

D Style




E Style




(BULK ONLY)

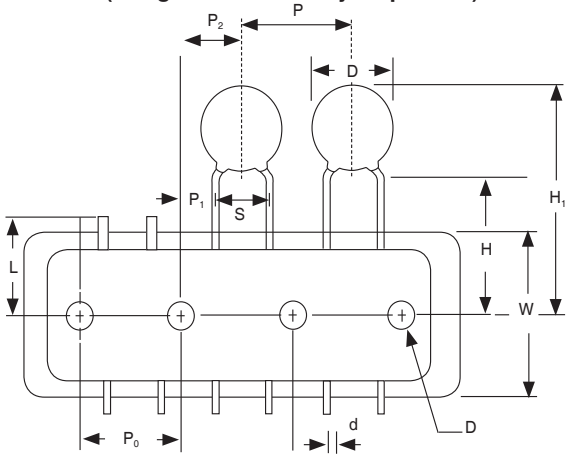
## STANDARD PRODUCTS AND MAXIMUM DIAMETER (mm) BY T.C. AND VOLTAGE

| Cap. (pF/μF) | Y5F/Y5P* | | | Z5U | | | Z5V | | |
|---|---|---|---|---|---|---|---|---|---|
| | Working Voltage (Vdc) | | | | | | | | |
| | 50 100 | 500 | 1K | 50 100 | 500 | 1K | 50 100 | 500 | 1K |
| 100~470pF | 6 | 6 | 6 | - | - | - | - | - | - |
| 560 | 6 | 6 | 6 | - | - | - | - | - | - |
| 680 | 6 | 6 | 7 | - | - | - | - | - | - |
| 750 | 6 | 6 | 7 | - | - | - | - | - | - |
| 820 | 6 | 6 | 7 | - | - | - | - | - | - |
| 0.001μF | 6 | 7 | 7 | 6 | 6 | 6 | - | 6 | 6 |
| 0.0015 | 6 | 8 | 8 | 6 | 6 | 7 | - | 6 | 6 |
| 0.0022 | 6 | 9 | 10 | 6 | 7 | 7 | 6 | 6 | 6 |
| 0.0027 | 7 | 10 | 12 | 6 | 7 | 8 | 6 | 6 | 7 |
| 0.0033 | 7 | 10 | 14 | 6 | 7 | 9 | 6 | 7 | 8 |
| 0.0047 | 8 | 12 | 14 | 6 | 8 | 10 | 6 | 8 | 8 |
| 0.0056 | 9 | 14 | 16 | 6 | 9 | 10 | 6 | 8 | 9 |
| 0.0068 | 9 | 14 | 16 | 7 | 9 | 12 | 6 | 8 | 10 |
| 0.0082 | 10 | 16 | 18 | 7 | 10 | 12 | 6 | 9 | 10 |
| 0.01 | 12 | 16 | 20 | 7 | 10 | 12 | 6 | 9 | 10 |
| 0.015 | 14 | 21 | - | 9 | 14 | 16 | 7 | 10 | 12 |
| 0.022 | - | - | - | 10 | 16 | 18 | 8 | 14 | 16 |
| 0.033 | - | - | - | 8 | 18 | 22 | 7 | 16 | 18 |
| 0.047 | - | - | - | 8 | 21 | 24 | 7 | 16 | 21 |
| 0.068 | - | - | - | 8/9 | 24 | - | 8 | 16 | - |
| 0.1 | - | - | - | 8/9 | 26 | - | 8/9 | 17 | - |

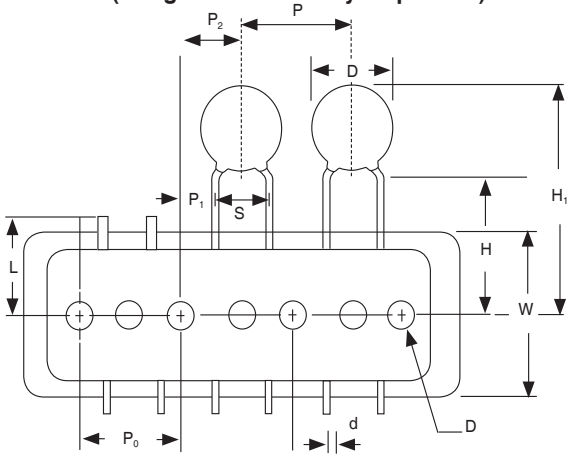
***.0047μF AND ABOVE NOT AVAILABLE IN Y5F, PLEASE USE Y5P.**
**NIC RESERVES THE RIGHT TO REQUEST MINIMUM QUANTITIES ON CERTAIN VALUES.**

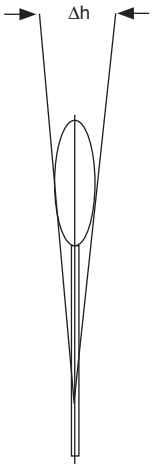
**DIMENSIONS (mm)**

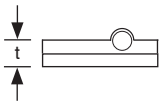
**Straight Leads**
**≤12mm diameter**
**(a slight lead flare may be present)**



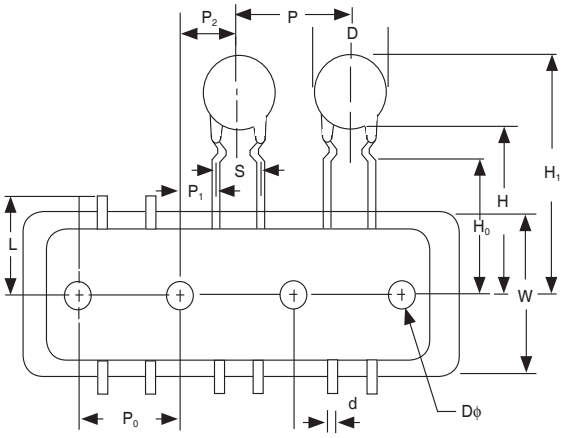

**Straight Leads**
**>12 ~ 23mm diameter**
**(a slight lead flare may be present)**



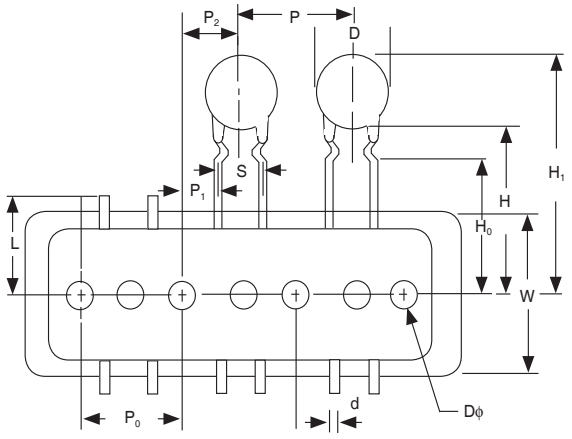




**Crimped Leads**
**≤12mm diameter**
**Inward (J) & Outward (K) are available**



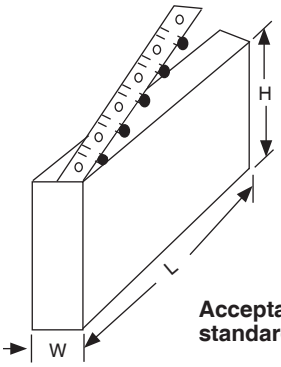

**Crimped Leads**
**>12 ~ 23mm diameter**
**Inward (J) & Outward (K) are available**




| Symbol | D max. | d | P | $P_0$ | $P_1$ | $P_2$ | S | H | $H_0$ | $H_1$ | Dϕ | W | L | t | Δh |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Value | ≤ 12 | 0.6 | 12.7 | 12.7 | 5.1 | 6.35 | 2.5 | 20.0 | Applies to Parts with Crimped Leads<br>16.0 | 32.25 max. | 4.0 | 18.0 | 11.0 max. | 0.6 | 0.0 |
| | | | | | 3.85 | | 5.0 | | | | | | | | |
| | | | | | 3.18 | | 6.35 | | | | | | | | |
| | >12 ~ 23 | 0.6 or 0.8* | 25.4 | | 8.95 | 12.7 | 7.5 | | | H max. + D max. | | | | | |
| | | | | | 7.7 | | 9.5 | | | | | | | | |
| Tolerance | ≤ 12 | +0.06 -0.05 | ±1.0 | ±0.2 | ±0.7 | ±1.0 | +0.8 -0.2 | +1.5 -1.0 | ±0.5 | --- | ±0.2 | ±0.5 | --- | ±0.3 | ±2.0 |
| | >12 ~ 23 | | | | ±1.5 | ±1.3 | | | | | | | | | |

***Lead diameter dependent on capacitor diameter. Contact NIC for details**

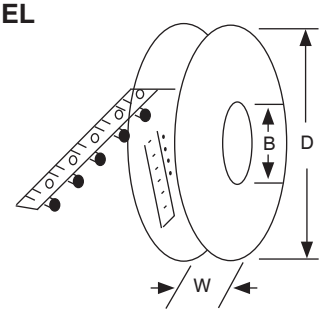
**AMMO PACK**




**H ≤ 372 (14.64")**
**L ≤ 377 (14.84")**
**W ≤ 55 (2.16")**

**Acceptable to standard radial type cartridge.**

**REEL**




**D ≦ 354 (13.93")**
**B ≧ 21 (.83") but ≦ 30 (1.18")**
**W ≦ 55 (2.16")**

**Acceptable to standard radial type cartridge with a few extra accessories.**

**PART NUMBER SUFFIX FOR OPTIONAL TAPE & REEL OR TAPE & BOX PACKAGING**

### Tape & Reel Straight Lead Options

TRF = Tape & Reel with 5mm lead-space
TR.100LSF = Tape & Reel with 2.0mm lead-space
TR.250LSF = Tape & Reel with 6.35mm lead-space
TR.300LSF = Tape & Reel with 7.5mm lead-space
TR.375LSF = Tape & Reel with 9.5mm lead-space

### Tape & Reel Crimped Lead Options (J = Inward Crimp, K = Outward Crimp)

JTRF or KTRF = Tape & Reel with 5mm lead-space
JTR.250LSF or KTR.250LSF = Tape & Reel with 6.35mm lead-space
JTR.300LSF or KTR.300LSF = Tape & Reel with 7.5mm lead-space
JTR.375LSF or KTR.375LSF = Tape & Reel with 9.5mm lead-space

### Tape & Box Straight Lead Options

TBF = Tape & Reel with 5mm lead-space
TB.100LSF = Tape & Reel with 2.0mm lead-space
TB.250LSF = Tape & Reel with 6.35mm lead-space
TB.300LSF = Tape & Reel with 7.5mm lead-space
TB.375LSF = Tape & Reel with 9.5mm lead-space

### Tape & Box Crimped Lead Options (J = Inward Crimp, K = Outward Crimp)

JTBF or KTBF = Tape & Reel with 5mm lead-space
JTB.250LSF or KTBR.250LSF = Tape & Reel with 6.35mm lead-space
JTB.300LSF or KTB.300LSF = Tape & Reel with 7.5mm lead-space
JTB.375LSF or KTB.375LSF = Tape & Reel with 9.5mm lead-space

Notes:
1. The above lead-space options may not be available in all part diameters. Contact NIC for details.
2. Inward "J style" and outward "K style" may not be available in all part diameters and voltages. Contact NIC for details.