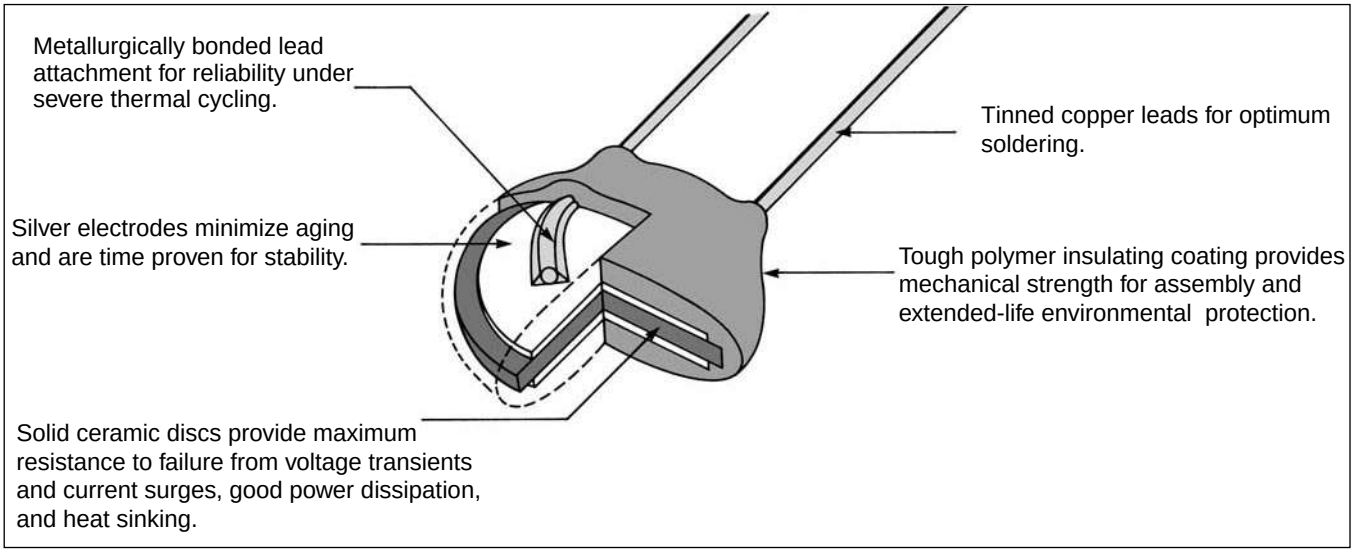
Application Data, Ceramic Disc Capacitors
1.0 Picofarad to 0.1 Microfarad

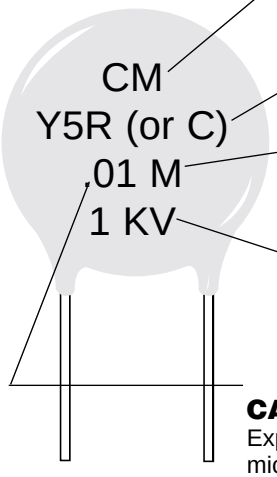
RELIABLE SOLUTIONS IN EMI/RFI, DECOUPLING, DV/DT & DI/DT, SNUBBERS, BY-PASS, ESR & ESL. EXCELLENT FOR HIGH VOLTAGE & SWITCHING POWER SUPPLIES.



MARKING INFORMATION

Wire leaded DC rated, disc capacitors are marked with a code identifying the manufacturer, capacitance, tolerance, voltage, and type of ceramic.

Specialty types such as AC rated are marked as described in those sections.



MANUFACTURER IDENTIFICATION
"Cera-Mite®" or the identification "CM."

TEMPERATURE COEFFICIENT
(See chart at right)

CAPACITANCE TOLERANCE

C = ± .25pF	M = ± 20%
D = ± .5pF	P = +100 – 0%
J = ± 5%	Y = –20 + 50%
K = ± 10%	Z = –20 + 80%

VOLTAGE
Rating normally DC volts. AC voltage rating marked AC or ~ ;. If no voltage is marked, part is 500VDC.

CAPACITANCE
Expressed in picofarads or microfarads.
Examples: 680 = 680 picofarads.
0047 = .0047 microfarads.

OPTIONAL MARKINGS
Lot Date Code and/or Customer Part Number are available options which may also be imprinted on the capacitor

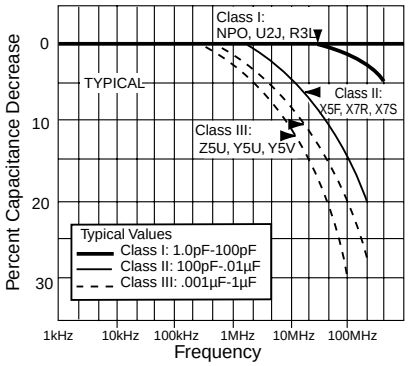
TYPE OF CERAMIC (Temperature Coefficient)

CAPACITANCE CHANGE OVER TEMP. RANGE PPM PER DEGREE C	MARKING CODE FOR TEMP. RANGE –55° TO +125°C				ALTERNATE MARKING CODE	DIELECTRIC CLASS
0 ± 30 (NPO)	C0G				A	I
–750 ± 120 (N750)	U2J				U	I
–1000 ± 250 (N1000)	M3K				V	I
–1500 ± 250 (N1500)	P3K				W	I
–2200 ± 500 (N2200)	R3L				X	I
–3300 ± 500 (N3300)	S3L				Y	I
–4700 ± 1000 (N4700)	T3M				Z	I & II*
MAX. % CHANGE	+ 10° + 85°C	– 30° + 85°C	– 55° + 85°C	– 55° + 125°C	–	–
± 4.7%	Z5E	Y5E	X5E	X7E	B	II
± 7.5%	Z5F	Y5F	X5F	X7F	B	II
± 10%	Z5P	Y5P	X5P	X7P	C	II
± 15%	Z5R	Y5R	X5R	X7R	C	II or IV**
± 22%	Z5S	Y5S	X5S	X7S	C	II or IV
+22 – 56%	Z5U	Y5U	X5U	X7U	E	III
+22 – 82%	Z5V	Y5V	X5V	X7V	F	III

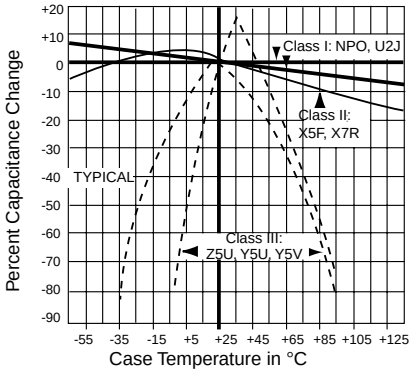
* N4700 is a transition material between Class I and II, and has characteristics of both. It is used for larger cap values: capacitance and DF measured at 1 kHz.

** Class IV uses same material as Class II, but is processed differently.

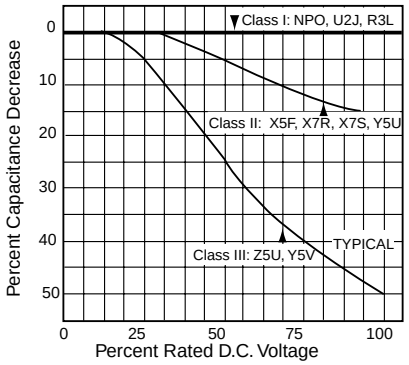
Capacitance Change vs. Frequency



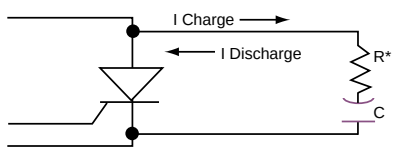
Capacitance Change vs. Temperature



Capacitance Decrease vs. D-C Voltage Bias



Ceramic Disc Capacitors as Snubbers



*Select R to limit dv/dt and di/dt to capacitor and semiconductor ratings. "Lossless" low dissipation factor discs are especially well suited for snubber service due to low self heating. See types 10TCU, 1DF0, 2DF0, and 3DF0.

CERAMIC DISC CAPACITOR APPLICATION NOTES

- **HIGH K:** For small size and higher values of capacitance, EIA 198D Class III, Z5U, Y5U, Y5V. This type is usually broad tolerance: ± 20% or + 80 – 20%.
- **MODERATELY HIGH K:** Materials are formulated to provide better capacitance stability against change in temperature and voltage, but may be larger in size than the HIGH K types, especially in the higher capacitance values, EIA 198D Class II, X5F, X7R, X7S. Usually tighter tolerance. ±10%at 25˚C. Higher dv/dt rating.
- **LOW K FORMULATIONS FOR PRECISION CAPACITORS:** Ultra stable capacitance over broadest temperature, frequency and voltage variation, EIA Class I, NP0, U2J, R3L and S3L. Usually ±5% tolerance. Highest dv/dt rating.
- **HYPERCON** construction gives highest capacitance density. Made by forming a thin dielectric barrier layer at each electrode surface. They exhibit very high capacitance and good temperature stability. Improvements have extended range to 100 VDC. EIA 198D Class IV.
- **CAPACITANCE MEASUREMENTS:** Class IV dielectric are conducted at 50 to 100 millivolts, 1000Hz. All others are measured at 1.0 volts, Class II & III at 1 kHz. Class I at 1 MHz.

FREQUENCY:

- Operating frequency range is determined primarily by capacitor value and self resonance due to lead inductance. This typically occurs at 500 MHz for 100 pF, decreasing to 50 MHz at .01 µF and 10 MHz at 0.1 µF.
- Class III and IV, typical applications are power and logic bus coupling and decoupling, and broad-band bypass filtering. Class I and II are chosen for frequency discriminating filters, d-c blocking, reference circuits, and similar circuits requiring close tolerance and stability.

TEMPERATURE:

- Capacitors are designed for service temperatures of –55˚C to +105˚C or greater. The limiting factor is the life of the polymer coating. Ceramic discs are not injured by short time exposure up to 125˚C.
- In applications where there is continuous heat dissipation in the capacitor, such as in snubber networks for power semiconductors, the case temperature rise should be limited to 30˚C. Class I, II and III may be used for snubber service. Low Dissipation Factor capacitors are especially well suited.

VOLTAGE:

- The extensive range of d-c voltage ratings available allows selection of the appropriate device to minimize d-c voltage effects in the circuit.
- A-C voltage ratings for capacitors up to 1000 volts applies to applications where energy and current are limited by circuit impedance. 1000 ohms impedance at the maximum a-c voltage rating is adequate.
- Ratings apply to 50 kHz. Above 50 kHz derate a-c voltage by $(\text{freq./50kHz})^2$.

CURRENT:

- **For sinusoidal applied voltages:** I_{RMS}= 7VfC where V = rms Voltage; f =frequency; C = farads. Power dissipation may be approximated by Watts = $(I_{RMS})^2$ x Effective Series Resistance (ESR).

Approximate ESR values:

Class I, ESR = $\frac{100}{C(pF)\ f(MHz)}$ Ex.: 10pF ESR = 10 ohms at 1 MHz

Class II or III, ESR = $\frac{1}{C(\mu F)\ f(kHz)}$ Ex.: .001 µF ESR = 100 ohms at 10kHz

Ex.: 100V, 50kHz, .001µF

$I_{RMS} = 7 \times 100 \times (50 \times 10^3) \times (.001 \times 10^{-6}) = 35$ mA

Power Dissipation = $(35 \times 10^{-3})^2 \times 20 = .024$ watts

- **For nonsinusoidal applied voltage** (repetitive transient pulses) limit on peak current is: $I_p = \frac{dv}{dt} \times C$ where V = volts; T = seconds; C = farads; approximate $\frac{dv}{dt}$ limits:

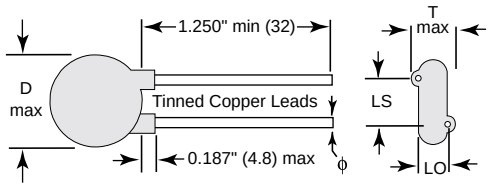
≤ 100pF = 10,000V/µs, Class I	100pF - 1,000pF =2,000V/µs, Class II & III
>100pF = 5,000V/µs, Class I	1000pF - 10,000pF = 1,000V/µs, Class II & III
<100pF = 5,000V/µs, Class II	>10,000pF = 500V/µs, Class II & III
	>10,000pF = 100V/µs, Class IV

Example: .001 µF, Class II; $I_p = \frac{1000}{10^{-6}} \times (.001 \times 10^{-6}) = 1$ ampere peak

Note: Above calculations are typical. Actual circuit conditions may allow more or less current and voltage. Actual circuit test is recommended

High Voltage Disc Capacitors

Radial Lead Style - 2000 to 15,000 VDC
Axial Lead Style - 10,000 to 30,000 VDC



ϕ - 20 AWG .032" (.81) except per Note 1.
LO ~ (Thk - .100") except per Note 1.

Note 1
#22 AWG .025" (.64) wire leads used on:
20GAP10 (LO = .07")
30GASS20 (LO = .08")
30GASS33 (LO = .10")

Vishay Cera-Mite High Voltage Capacitors are the choice of discriminating designers throughout the world. Our reputation for product quality and reliability is a result of continuous research in fine electrical ceramics, high temperature coatings, process controls and rigorous production testing.

The 2 and 3 kV parts are widely used in demanding applications such as snubbers, EMI/RFI filters, and switching power supplies. High voltage capacitors are also specified in lower voltage applications to withstand transient voltage and energy surges in accordance with FCC and IEEE standards.

APPLICATIONS:

- Lighting Ballasts
- Telecommunications
- Power Supplies

2000 VOLT, 10% AND 20% TOLERANCE

- Application Range: Up to 2500 VDC, 600 VRMS
- Insulation Resistance: 10,000 MΩ minimum
- Dissipation Factor: 2.0% maximum

564C Series
- Dielectric Strength: 3500 VDC, 1000 VRMS

VALUE pF	TOL.	CATALOG NUMBER	MECHANICAL (in) DIA.	THK.	L.S.	TEMP. CHAR.
100	K	20TST10	.330	.190	.250	X7R
220	K	20TST22	.330	.180	.250	X7R
330	K	20TST33	.330	.180	.250	X7R
470	K	20TST47	.330	.170	.250	X7R
560	K	20TST56	.330	.185	.250	X7R
680	K	20TST68	.330	.170	.250	X7R
1000	M	20GAD10	.330	.170	.250	Y5U
1000	M	20TSSD10	.330	.175	.250	Y5S
1000	K	20TSD10	.400	.175	.250	X7R
1500	M	20GAD15	.330	.170	.250	Y5U
1500	M	20TSSD15	.400	.170	.250	Y5S
1500	K	20TSD15	.430	.160	.250	X7R
1800	M	20GAD18	.360	.170	.250	Z5U
1800	M	20TSSD18	.430	.170	.250	Y5S
1800	K	20TSD18	.460	.170	.250	X7R
2200	M	20GAD22	.400	.175	.250	Z5U
2200	M	20TSSD22	.460	.170	.250	Y5S
2200	K	20TSD22	.460	.170	.250	X7R
2700	M	20GAD27	.430	.175	.250	Z5U
2700	M	20TSSD27	.530	.175	.250	Y5S
2700	K	20TSD27	.530	.170	.250	X7R
3300	M	20GAD33	.430	.175	.250	Z5U
3300	M	20TSSD33	.530	.175	.250	Y5S
3300	K	20TSD33	.530	.160	.250	X7R
3900	M	20GAD39	.490	.175	.250	Z5U
3900	M	20TSSD39	.620	.175	.250	Y5S
3900	K	20TSD39	.680	.170	.250	X7R
4700	M	20GAD47	.490	.170	.250	Z5U
4700	M	20TSSD47	.680	.175	.375	Y5S
4700	K	20TSD47	.680	.170	.375	X7R
5600	M	20TSSD56	.680	.170	.375	Y5S
6800	M	20GAD68	.560	.170	.375	Z5U
6800	M	20TSSD68	.720	.170	.375	Y5S
.01uF	M	20GAS10	.680	.170	.375	Z5U
.01uF	M	20GASS10	.620	.170	.375	Y5V
.10uF	M	20GAP10	.950	.240	.375	Y5V

3000 VOLT, 10% AND 20% TOLERANCE

- Application Range: Up to 4000 VDC, 1000 VRMS
- Insulation Resistance: 50,000 MΩ minimum
- Dissipation Factor: 2.0% maximum

564C Series
- Dielectric Strength: 5250 VDC, 1500 VRMS

VALUE pF	TOL.	CATALOG NUMBER	MECHANICAL (in) DIA.	THK.	L.S.	TEMP. CHAR.
10	M	30GAQ10	.330	.210	.250	U2J
12	M	30GAQ12	.330	.205	.250	U2J
15	M	30GAQ15	.330	.180	.250	U2J
22	M	30GAQ22	.330	.200	.250	R3L
27	M	30GAQ27	.330	.190	.250	R3L
33	M	30GAQ33	.330	.170	.250	R3L
47	M	30GAQ47	.330	.230	.250	X7R
56	M	30GAQ56	.330	.190	.250	X7R
68	M	30GAQ68	.330	.200	.250	X7R
100	M	30GAT10	.330	.180	.250	X7R
150	M	30GAT15	.330	.190	.250	X7R
220	M	30GAT22	.330	.175	.250	X7R
270	M	30GAT27	.330	.180	.250	X7R
330	M	30GAT33	.330	.175	.250	X7R
390	M	30GAT39	.330	.175	.250	X7R
470	M	30GAT47	.330	.175	.250	X7R
680	M	30GAT68	.330	.175	.250	Y5U
680	K	30TST68	.330	.180	.250	X7R
1000	M	30GAD10	.330	.195	.250	Z5U
1000	M	30TSSD10	.400	.190	.250	Y5S
1000	K	30TSD10	.400	.175	.250	X7R
1500	M	30GAD15	.360	.190	.250	Z5U
1500	M	30TSSD15	.460	.190	.250	Y5S
1500	K	30TSD15	.490	.185	.250	X7R
1800	M	30GAD18	.400	.190	.250	Z5U
1800	M	30TSSD18	.490	.190	.250	Y5S
1800	K	30TSD18	.530	.185	.250	X7R
2200	M	30GAD22	.430	.190	.250	Z5U
2200	M	30TSSD22	.530	.190	.250	Y5S
2200	K	30TSD22	.530	.180	.250	X7R
2700	M	30GAD27	.460	.200	.250	Z5U
2700	M	30TSSD27	.560	.185	.250	Y5S
2700	K	30TSD27	.620	.185	.250	X7R
3300	M	30GAD33	.490	.185	.250	Z5U
3300	M	30TSSD33	.620	.185	.375	Y5S
3300	K	30TSD33	.620	.170	.375	X7R
3900	M	30GAD39	.530	.185	.375	Z5U
3900	M	30TSSD39	.680	.185	.375	Y5S
3900	K	30TSD39	.720	.185	.375	X7R
4700	M	30GAD47	.620	.195	.375	Z5U
4700	M	30TSSD47	.680	.185	.375	Y5S
4700	K	30TSD47	.720	.175	.375	X7R
5600	M	30TSSD56	.790	.190	.375	Y5S
6800	M	30GAD68	.680	.185	.375	Z5U
6800	M	30TSSD68	.900	.205	.375	Y5S
6800	K	30TSD68	.900	.185	.375	X7R
8200	M	30GAD82	.680	.185	.375	Z5U
.01uF	M	30GAS10	.790	.185	.375	Z5U
.01uF	M	30GASS10	.720	.185	.375	Y5V
.02uF	M	30GASS20	.720	.240	.375	Z5U
.033uF	M	30GASS33	.900	.240	.375	Z5U

6000 VOLT, 20% TOLERANCE

- Application Range: Up to 6000 VDC, 1500 VRMS
- Insulation Resistance: 75,000 MΩ minimum
- Dissipation Factor: 2.0% maximum

564C Series
- Dielectric Strength: 10,500 VDC, 3000 VRMS

VALUE pF	CATALOG NUMBER	MECHANICAL (in) DIA.	THK.	L.S.	TEMP. CHAR.
10	60GAQ10	.400	.220	.375	NP0
22	60GAQ22	.460	.240	.375	U2J
33	60GAQ33	.400	.230	.375	R3L
47	60GAQ47	.460	.205	.375	R3L
100	60GAT10	.400	.240	.375	X5F
220	60GAT22	.400	.265	.375	X5F
330	60GAT33	.400	.260	.375	X5S
470	60GAT47	.400	.265	.375	Y5U
560	60GAT56	.400	.240	.375	Y5U
1000	60GAD10	.400	.270	.375	Z5U
1500	60GAD15	.460	.280	.375	Z5U
2200	60GAD22	.530	.240	.375	Z5U
3300	60GAD33	.620	.260	.375	Z5U
4700	60GAD47	.790	.260	.375	Z5U
.01uF	60GAS10	.950	.250	.375	Z5U

561 AND 564 CLASS I SERIES ELECTRICAL OPTIONS (Precision and over 50 kHz)

CERAMIC TYPE	RANGE OF CAPACITANCE VALUES (PICOFARADS)				
	500 VOLT .250" TO .680" (6.4 TO 17mm)	1000 VOLT .250" TO .760" (6.4 TO 19mm)	2000 VOLT .330" TO .900" (8.4 TO 23mm)	3000 VOLT .330" TO .900" (8.4 TO 23mm)	TOLERANCE CODES
NP0	10 - 390	1 - 330	1 - 270	1 -180	C, D, J, K
N750	47 - 680	22 - 470	10 - 330	10 - 270	J, K
N1000	56 - 820	33 - 560	15 - 390	10 - 330	J, K
N2200	68 - 750	56 - 680	33 - 560	22 - 470	J, K
N3300	100 -1000	75 - 820	47 - 750	33 - 560	J, K
N4700	n/A	330-5600	220-4700	100-3300	K, M

Note: Vishay Cera-Mite also offers capacitors in N030, N080, N150, N220, N330, and N470 characteristics to serve special applications requiring TC matching. Values are available in the same range as NP0.

CUSTOM DISCS

Vishay Cera-Mite's most popular 12 Volt to 6,000 Volt values and constructions are shown as standard part numbers in this catalog. Many other values and lead styles are available. Complete capacitance ranges for various Class I, II and III ceramic materials are shown in the tables below. Various wire lead forms and packaging options are detailed on the next pages. Part numbers for custom capacitors consist of an 18-character designator assigned by our application engineering group. Vishay Cera-Mite will provide a certified outline drawing and complete part number covering custom options specified. Customer approval of the outline is usually requested to guarantee satisfaction.

All performance characteristics shown in this catalog apply to the options unless otherwise stated on the outline drawing.

562 AND 564 CLASS II & III SERIES ELECTRICAL OPTIONS

(General Purpose)

CERAMIC TYPE	RANGE OF CAPACITANCE VALUES (PICOFARADS)							
	500 Volt .250" to .950" (6.4 to 24mm)	1000 Volt .250" to .950" (6.4 to 24mm)	2000 Volt .330" to .950" (8.4 to 24mm)	3000 Volt .330" to .950" (8.4 to 24mm)	6000 Volt .400" to .900" (10.2 to 23mm)	TOLERANCE CODES 500 V	1000 V	2 to 6 KV
X5F	200 - 22,000	100 - 20,000	68 - 12,000	47 - 8,200	47 - 2200	K, M	K, M	K, M
X5S	400 - 22,000	300 - 25,000	470 - 22,000	390 -15,000	220 - 3900	M	K, M	K, M
X7R	500 - 22,000	390 - 28,000	390 - 22,000	290 - 15,000	560 - 3900	K, M	K, M	K, M
Y5U	1000 - 50,000	750 - 50,000	560 - 33,000	390 - 33,000	470 - 6800	M	M	M, Y
Z5U	1500 - 100,000	1000 -100,000	1000 - 47,000	680 - 33,000	820 - 8200	M, Z	M, Z	M, Z
Y5V	2000 - 200,000	1500 -150,000	1500 -100,000	1000 - 50,000	N/A	Y, Z	M, Z	M, Z

Note: 100 Volt ratings are available in same ranges as 500 Volt.

CUSTOM PART NUMBER DESIGNATOR

General Method Used To Describe Radial Leaded Custom Disc Capacitors

562C X5F BA 102 E C 151 K

- **CAPACITANCE TOLERANCE** - See Application Data (Marking Information) for code letters.
- **CAPACITANCE (pF)** - First two digits are significant numbers. Last digit specifies number of zeros (151 = 150 pF). Values below 10 pF, use letter R for decimal point (2R2 = 2.2 pF).
- **BODY SIZE** - Disc diameter code letter as specified by Cera-Mite Engineering.
- **COATING MATERIAL** - E = Epoxy, A = Phenolic.
- **WORKING VOLTAGE** - First two digits are significant numbers. Last digit specifies number of zeros (102 = 1000 Volts).
- **WIRE LEAD STYLE & PACKAGING** - See two-letter Option Code tables on following pages.
- **TEMPERATURE CHARACTERISTIC** - See Application Data (Temp Coefficient table) for code letters.
- **VISHAY CERA-MITE PRODUCT CODE** -
  - 561C: Precision Capacitors
  - 562C: General Application Discs - Diameter .250" thru .900"
  - 565C: 100 thru 1000 Volt Dual Parallel Discs - Diameter .510" thru .950"
  - 563C: Low Voltage (12 thru 100 Volt) Hypercon High Cap Density Discs
  - 564C: High Voltage Disc Capacitors (2000 thru 7500 Volt)
  - 615C: High Voltage Disc Capacitors (10,000 Volt and 15,000 Volt)

TAPE & REEL OPTIONS

- Radial leaded parts may be ordered with Tape & Reel packaging by adding appropriate suffix code to part number.
  Example: TGS10 QR (Suffix Code) defines: #22 AWG wire; Straight Lead Form; LS = 5mm; Tape & Reel per EIA 468B.

TAPE & REEL PACKAGING- PART NUMBER SUFFIX CODES					TAPE & REEL SUFFIX CODES FOR VARIOUS WIRE FORMS & SIZES										
TAPE & REEL FIGURE	LEAD SPACING "LS"	MAX. CAP DIAMETER in.	MAX. CAP DIAMETER mm	TAPE & REEL (NOTE 1)	FIG. 11 STRAIGHT WIRE #20 AWG	FIG. 11 STRAIGHT WIRE #22 AWG	FIG. 11 STRAIGHT WIRE #24 AWG	FIG. 12 STEEPLE WIRE #22 AWG	FIG. 12 STEEPLE WIRE #24 AWG	FIG. 13 INLINE WIRE #20 AWG	FIG. 13 INLINE WIRE #22 AWG	FIG. 14 STEP WIRE #22 AWG	FIG. 14 STEP WIRE #24 AWG	FIG. 15 INSIDE CRIMP WIRE #20 AWG	FIG. 15 INSIDE CRIMP WIRE #22 AWG	FIG. 15 INSIDE CRIMP WIRE #24 AWG
A	5mm	.490	12.4	C-M EIA	QG QH	QA QR	QB QD	TK TR	WK TX	XA XB	ZA XN	VC VZ	VQ VE	RA RC	RE RR	RB LA
B	7.5mm	.530	13.5	C-M EIA	QP QS	QK QF	— —	— —	— —	XG XH	ZC XR	— —	— —	RP RX	RK RL	— —
C	10mm	.708	18.0	C-M EIA	QQ AP	QM QX	— —	— —	— —	XJ XK	XS XT	— —	— —	RQ RJ	RM RU	— —
D	7.5mm	.708	18.0	C-M EIA	QW AQ	QN QE	— —	— —	— —	XL XM	XU XV	— —	— —	RW RV	RN RD	— —

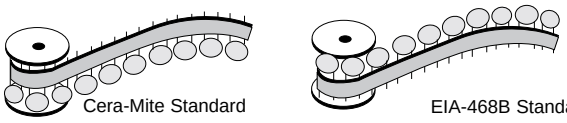
Wire Information : #20 AWG .032" (.81) Tinned Copper Wire
#22 AWG .025" (.64) Tinned Copper Wire
#24 AWG .020" (.51) Tinned Copper Clad Steel Wire

TAPE & REEL (EIA - 468-B)

ITEM (DIMENSIONS IN MM)	CODE	Tape & Reel Packaging FIG A LS=5mm P=12.7mm	FIG B LS=7.5mm P=15mm	FIG C LS=10mm P=25.4mm	FIG D LS=7.5mm P=30mm
Pitch of component	P	12.7	15.0	25.4	30.0
Pitch of sprocket hole	P_0	12.7 ± 0.3	15.0 ± 0.3	12.7 ± 0.3	15.0 ± 0.3
Lead spacing	F	5.0 + 0.8 - 0.2	7.5 ±1.0	10.0 ± 1.0	7.5 ± 1.0
Length from hole center to component center	P_2	6.35 ± 1.3	7.5 ± 1.5	—	7.5 ± 1.5
Length from hole center to lead	P_1	3.85 ± 0.7	3.75 ± 1.0	7.7 ± 1.5	3.75 ± 1.0
Body diameter	D	See individual product specification			
Deviation along tape, left/right	ΔS	0 ± 1.3	0 ± 2.0		
Carrier tape width	W	18.0 ± 0.5			
Position of sprocket hole	W_1	9.0 ± 0.5			
Height (Fig 11) straight wire	H	20 +1.5 - 1.0	20 +1.5 - 1.0	18 +2.0 - 1.0	20 +1.5 - 1.0
Height (Fig 12-15) seating plane	H	16 ± 0.5	16 ± 0.5	16 ± 0.5	16 ± 0.5
Protrusion length	P_3	3.0 Max.			
Dia. of sprocket hole	D_0	4.0 ± 0.2			
Total tape thickness	t_1	0.6 ± 0.3			
Total thickness, tape and lead wire	t_2	1.5 Maximum			
Portion to cut in case of defect	L	11 Maximum			
Hold down tape width	W_0	11.5 Minimum			
Hold down tape position	W_2	1.5 ± 1.5			

EIA lead spacings for tape and reel are based on multiples of .100" (2.5mm) to coordinate with automatic insertion machinery and boards using .100" grid convention.

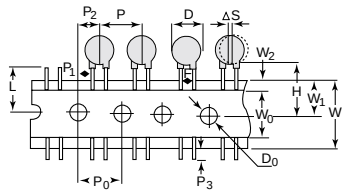
Fig 16 QA RE TK QR RR TR



Note 1 Vishay Cera-Mite standard is a reverse reeled version of EIA 468B.

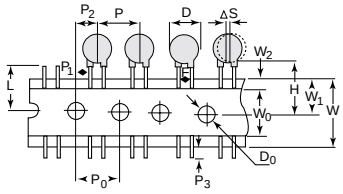
LEAD SPACE	PITCH	CAP DIA.	CAP FAMILY
5mm	12.7mm (0.5")	≤ 12.4mm	≤ 3KVDC

Fig A



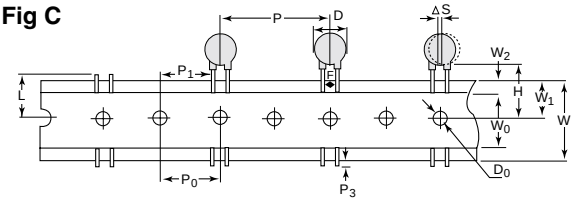
LEAD SPACE	PITCH	CAP DIA.	CAP FAMILY
7.5mm	15mm	≤ 13.5mm	≤ 3KVDC & AC Rated

Fig B



LEAD SPACE	PITCH	CAP DIA.	CAP FAMILY
10mm	25.4mm (1.0")	≤ 18mm	≤ 6KVDC & AC Rated

Fig C



LEAD SPACE	PITCH	CAP DIA.	CAP FAMILY
7.5mm	30mm	≤ 18mm	≤ 6KVDC & AC Rated

Fig D