PRESIDIO COMPONENTS

U.S. Manufacturer of High-Rel Ceramic Capacitors Since 1980

CATALOG 3500 – REV. N – OCTOBER 2023

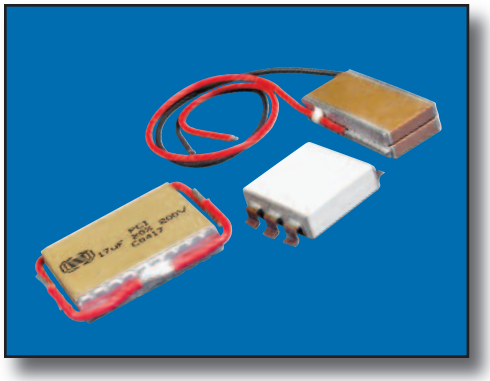
HIGH TEMPERATURE CERAMIC CAPACITORS

150°C · 175°C · 200°C · 225°C · 250°C · 500°C

SURFACE MOUNT CHIPS

SMPS STACKED

RADIAL LEADED



PRESIDIO COMPONENTS, INC.

The industry leader for high temperature ceramic capacitors. We have an active development program for material, packaging and testing from 200°C to above 500°C.

Presidio Components has been an industry leader in the manufacture of ceramic capacitors since 1980. We are dedicated to excellence in manufacturing, process control and customer service. All products are manufactured and tested in our state-of-the-art, 75,000 square foot facility in San Diego, California, allowing for immediate response to your business needs. We have numerous patents, and hundreds of years of combined engineering experience, and we can formulate the right product for your application. At Presidio Components we work hard to build positive, long term relationships with our customers and we will go the extra distance to ensure customer satisfaction.

PRESIDIO PRODUCT LINES

If you have a demanding application, please call the factory. We are easy to reach. Although Presidio Components maintains more than 100 million commercial and military parts in inventory, we can help with multitudes of intermediate sizes, voltages, tolerances, termination finishes, lead-frame styles and more. Some of our specialties include ceramic capacitors for high temperatures, cryogenic temperatures, and pulse discharge applications, as well as high Q dielectric, negative and positive temperature characteristic and piezoelectric ceramic formulations. We also have a series of ceramic capacitors for microwave and RF applications, including wirebondable single layer, wirebondable bypass, and SMD broadband DC blocking caps.

DIVERSE MARKETS

Presidio Components provides ceramic capacitors for high quality commercial, downhole oil, military, and space applications. Our customers manufacture products such as oil exploration drillbits, aircraft, missile guidance systems, switch mode power supplies, phased array radar, high frequency transponders and receivers, and ring laser gyros.

QPL PRODUCTS & DSCC APPROVED TEST LAB

Presidio Components was initially qualified to MIL-PRF-55681 in 1984. Since then we have upgraded our processing line to obtain the highest established reliability rating of “S” level. We are also qualified on two additional space level specifications, MIL-PRF-123 and MIL-PRF-49470 “T” level. And, Presidio Components is proud to be the first QPL supplier to MIL-PRF-49467, the high voltage ceramic capacitor specification. All QPL testing per MIL-STD-202 is done on site at our DSCC approved test lab. For a list of environmental test capability, consult the factory.

For more information about Presidio’s products or the name of your local sales representative visit our website at:

www.presidiocomponents.com

PRESIDIO COMPONENTS, INC.
7169 Construction Court, San Diego, CA 92121 USA • Tel: +1-858-578-9390 • Fax: +1-858-578-6225
www.presidiocomponents.com • info@presidiocomponents.com

TELL US ABOUT YOUR APPLICATION

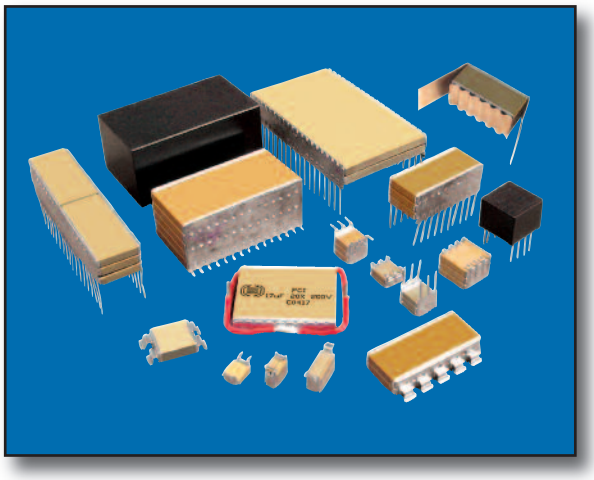
Use this catalog as a guideline only. The capacitor sizes noted here are only a few of the total we have available...the most common ones. Presidio Components is tooled to produce many additional sizes and styles.

We regularly design new products to meet specific applications needed by our customers, including special voltage requirements, optimized shapes, new types of terminations, and even particular tests and screening.

PARAMETERS TO CONSIDER WHEN SELECTING THE BEST CERAMIC CAPACITORS

To provide you with the best parts possible, we'd like to work with your engineering team early in the design process. Some of the key considerations we can help you address include:

1. Maximum working temperature requirements
2. Maximum working voltage at maximum temperature
3. Life expectancy of parts at maximum temperature
4. Capacitance value required at maximum temperature
5. Maximum height / length / width allowed
6. Type of solder / attachment to be used
7. DC or AC voltage and if AC, frequency needed
8. Lead style requirements for stacks
9. RoHS Compliancy – Determine if RoHS parts are required
10. Quantity required and when the parts are needed



Our engineering team looks forward to hearing from you.
Give us a call at (858) 578-9390 or email us at info@presidiocomponents.com.

TABLE OF CONTENTS

High Temperature Ceramic Capacitors Dielectric Characteristics 4
High Temperature Ceramic Chip Capacitors (HT) 6
High Temperature High Voltage Chip Capacitors (HT) 8
High Temperature Stacked Capacitors (HTS) Soldering Recommendations 9
High Temperature SMPS Stacked Capacitors (HTS) 10
High Temperature High Voltage Stacked Capacitors (HTS) 12
High Temperature High Voltage Radial Leaded Capacitors (RT) 13
High Temperature Wire Bondable Vertical Layer Capacitors (HTVL) 14
Design-In Codes 15
Presidio Product Lines 16

HIGH TEMPERATURE CERAMIC CAPACITORS

Consult Factory for Requirements Above 250°C

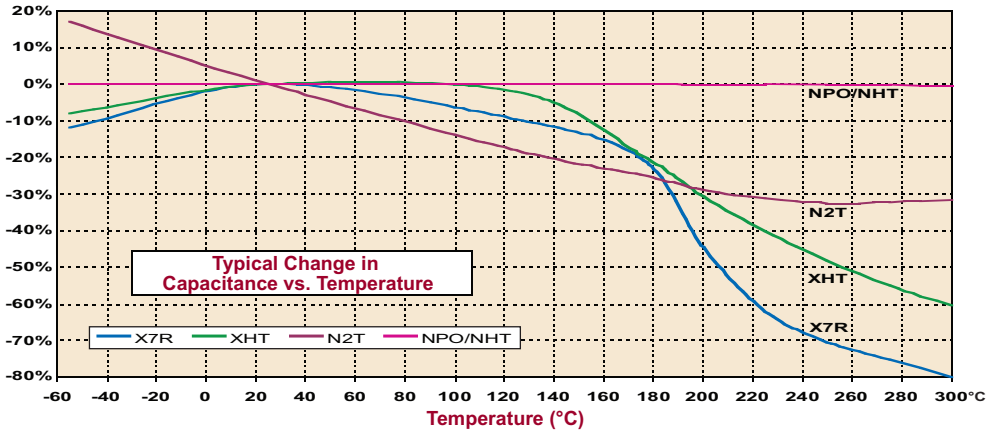
DIELECTRIC CHARACTERISTICS

* Contact factory regarding NPQ & N2T dielectric

CHARACTERISTICS	NPO/NHT/NPQ/N2T* DIELECTRIC	XHT DIELECTRIC	X7R DIELECTRIC
OPERATING TEMPERATURE RANGE	-55°C to 500°C+ N2T (125°C Max)	-55°C to 250°C+	-55°C to 250°C+
TEMPERATURE COEFFICIENT UP TO 200°C	NPO/NHT/NPQ: 0 ± 30 ppm/°C N2T: -55°C to 25°C: -3330 ppm/°C max. change, no min. 25°C to 125°C: -2700 ppm/°C max. change, no min.	+15 - 32% Δ °C Typical	+15 - 45% Δ °C Typical
INSULATION RESISTANCE @ 25°C @ 200°C	>100 GΩ or >1000 ΩF >1 GΩ or >10 ΩF	>100 GΩ or >1000 ΩF >1 GΩ or >10 ΩF	>100 GΩ or >1000 ΩF >1 GΩ or >10 ΩF
DIELECTRIC WITHSTANDING VOLTAGE	DWV tested at 250% rated voltage except 500V rated parts are testedat 150% rated voltage.	DWV tested at 250% rated voltage except 500V rated parts are tested at 150% rated voltage.	DWV tested at 250% rated voltage except 500V rated parts are tested at 150% rated voltage.
DISSIPATION FACTOR @ 25°C VOLTAGE RATING:	NPO/NHT/NPQ/N2T* DIELECTRIC	XHT DIELECTRIC	X7R DIELECTRIC
10 VDC	.15%	5.0%	7.5%
16/25 VDC	.15%	3.5%	5.0%
50 VDC	.15%	2.5%	3.5%
>50 VDC	.15%	2.5%	2.5%

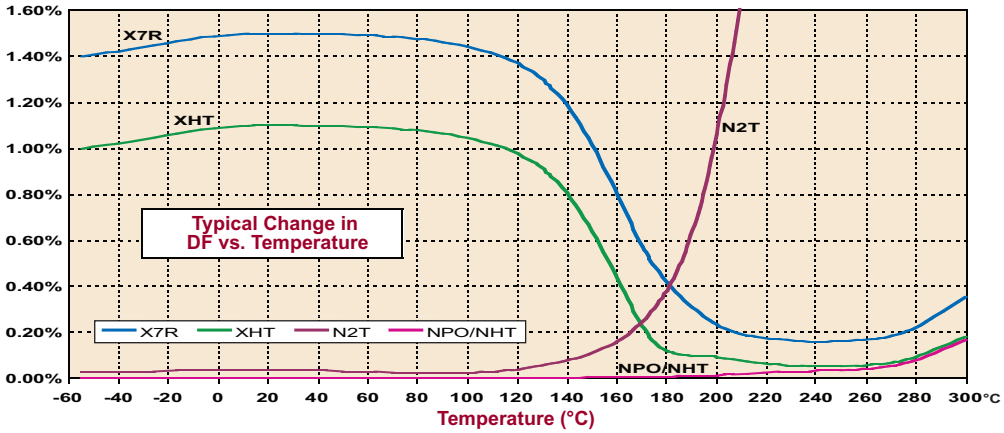
TEMPERATURE COEFFICIENT

Tested at 1VACRMS 1KHz
Capacitance Change



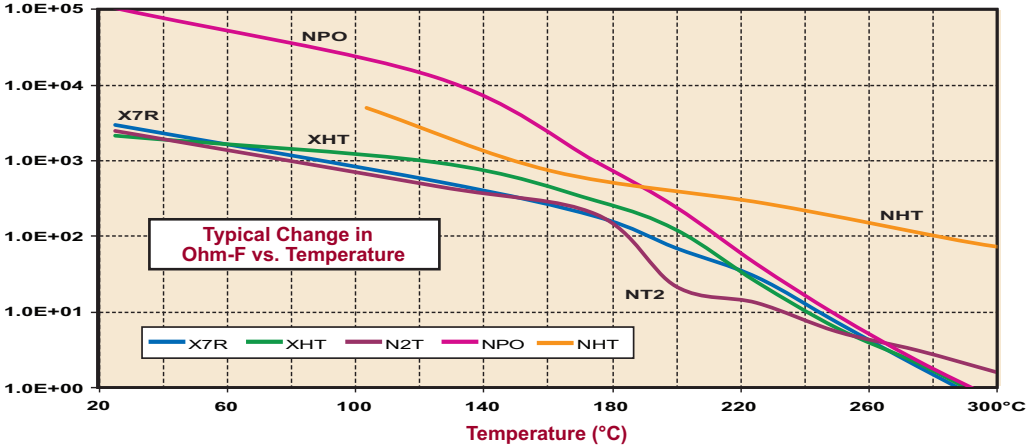
DISSIPATION FACTOR

Percentage Change



INSULATION RESISTANCE

Ohm-F

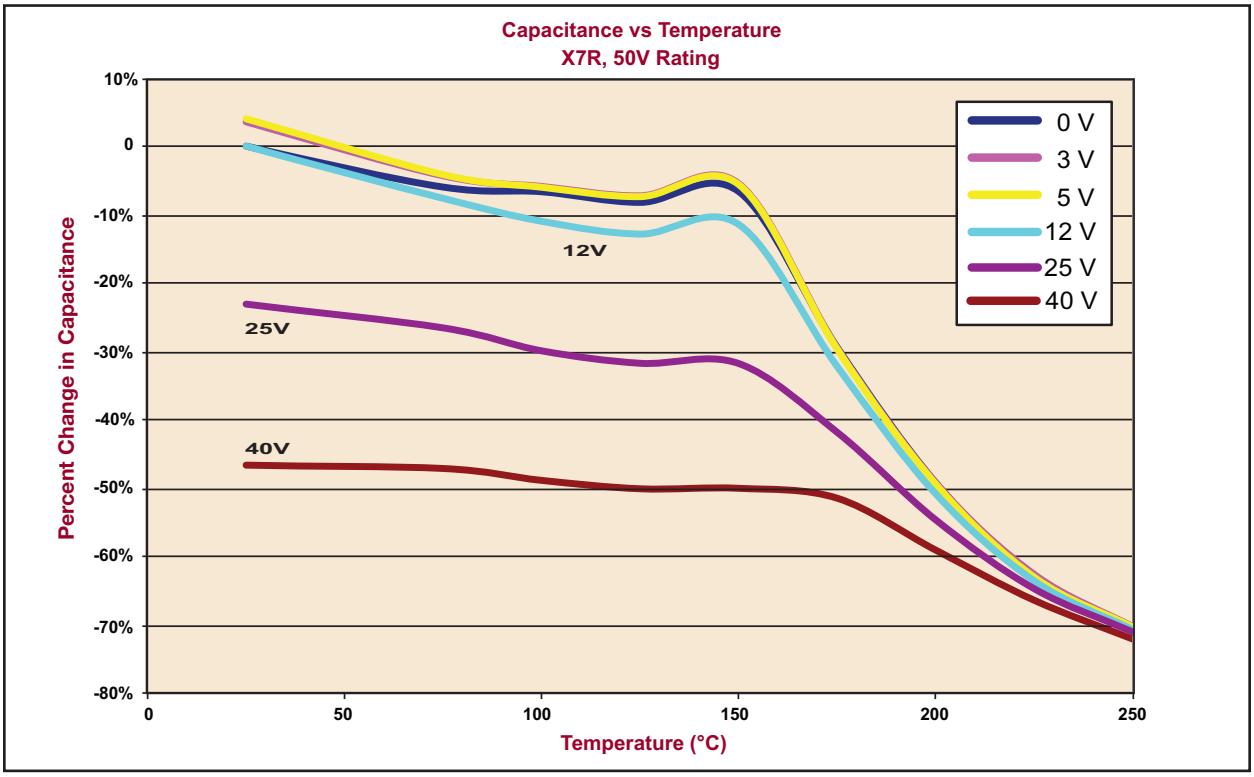


HIGH TEMPERATURE CERAMIC CAPACITORS

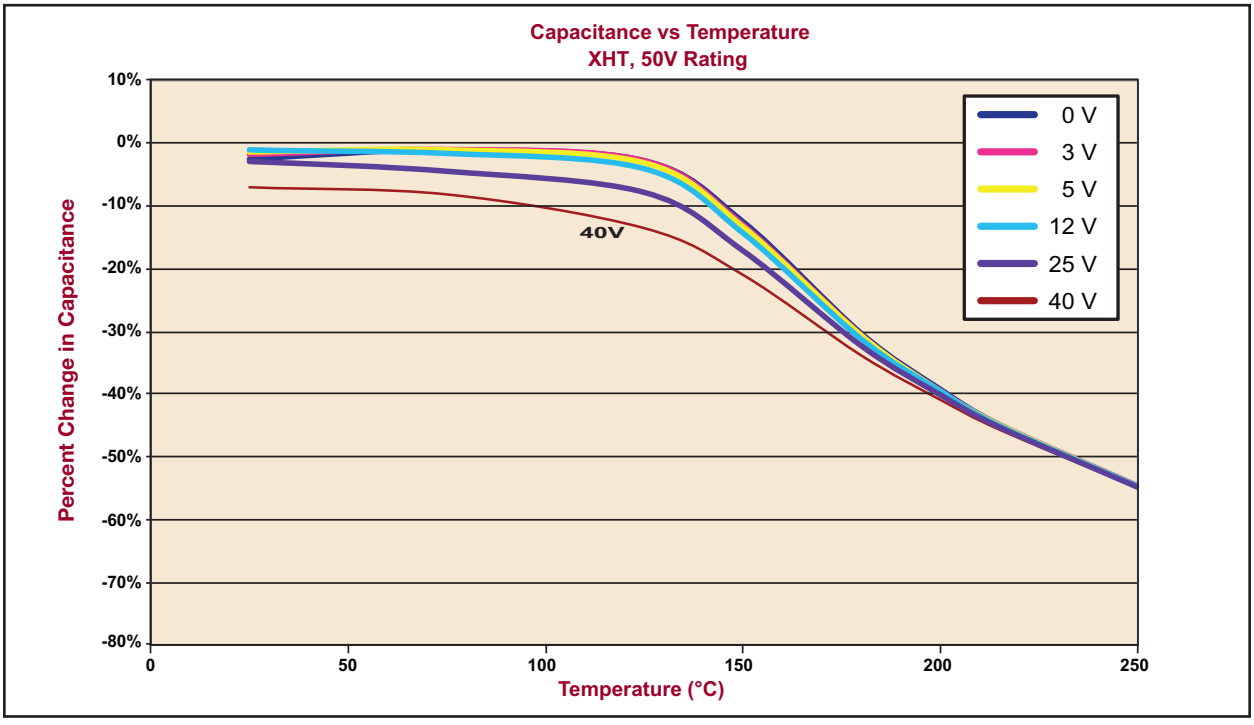
Consult Factory for Requirements Above 250°C

DIELECTRIC CHARACTERISTICS

TYPICAL VOLTAGE TEMPERATURE COEFFICIENT (X7R)



TYPICAL VOLTAGE TEMPERATURE COEFFICIENT (XHT)



HIGH TEMPERATURE CERAMIC CHIP CAPACITORS (HT)

HIGH TEMPERATURE DESIGNATION — CODE "HT"

This code signifies that the parts are designed for high temperature use and have followed the Group A testing program of the "HR" type listed in our catalog. Temperatures of 250°C are acceptable for these capacitors, in terms of the inherent capability of the ceramic and depending on the voltage applied. Presidio's HT product line features many proprietary design elements, in both materials and construction, that have been shown to work well in the downhole environments. Consult factory for higher temperature requirements.

NON-MAGNETIC PARTS

All of our capacitors can be made "Non-Magnetic" by simply selecting the correct termination (P, F or H).

ROHS COMPLIANCE — CODE "R"

This code signifies that the parts are made in compliance with the RoHS Directive.

MAIN SOLDERING/TERMINATION OPTIONS (Contact factory for other options)

Code	Description	Attachment Method Recommended Max. Temp.	Summary
NT9	Standard Ni + 90% Sn 10% Pb	Sn63 or HMP (150°C) (200°C)	Traditional 90/10 SnPb termination.
Q	Ni + 100% Sn Matte Finish	Sn96 (180°C) DO NOT USE HMP	Standard Pure Tin over Ni termination for high temperature. **Sizes 1712 and above are not compatible for all soldering processes. Customers need to run their own tests and qualifications on these parts.**
P	Pd/Ag Termination	HMP (250°C) or Epoxy	Standard Pd/Ag termination. **(NON-MAGNETIC)**
F	Polished Pd/Ag Termination	HMP (250°C) or Epoxy or Wirebond	Standard Pd/Ag termination polished for easier soldering or for wirebonding. **(NON-MAGNETIC)**
H	Thick Film Gold	Wirebond or Solder or Epoxy (500°C+)	Pure Gold termination. **(NON-MAGNETIC)**
S	Thick Film Silver	Solder or Epoxy – Silver Sintering (300°C)	Pure Silver termination. **(NON-MAGNETIC)**

Other terminations available. Contact factory.
Note: Presidio does not recommend wave soldering. Careful qualification for any wave solder process is recommended.

HOW TO ORDER HT CHIPS

HT	0805	XHT	103	K	1	Q	5	R	(F)

PREFIX
HT

SIZE
0402
0403
0504
0603
0805
1206
1209
1712
1725
**

DIELECTRIC
NPQ*
NPO
NHT
N2T*
(175°C Max.)
XHT
X7R

CAPACITANCE CODE
Two significant figures followed by the number of zeros.
Example:
0R1 = 0.1 pF
1R0 = 1.0 pF
100 = 10 pF
101 = 100 pF
102 = 1000 pF
103 = .01 µF
104 = .10 µF
105 = 1.0 µF

TOLERANCE CODE

A = ± .05pF < 10pF	NPQ* NPO NHT
B = ± .10pF < 10pF	
C = ± .25pF < 10pF	
D = ± .50pF < 10pF	
E = ± 0.5% ≥ 10pF	
F = ± 1% ≥ 10pF	
G = ± 2% ≥ 10pF	
J = ± 5% ≥ 10pF	
K = ± 10%	ALL
L = -10% / +20%	
M = ± 20%	
Z = + 80% / -20%	
P = +100% / -0%	

±0.5% NPO Available Tolerance Code E

VOLTAGE

E	=	10 VDC
F	=	12 VDC
G	=	16 VDC
1	=	25 VDC
2	=	50 VDC
3	=	100 VDC
A	=	150 VDC
4	=	200 VDC
&	=	250 VDC
5	=	300 VDC
6	=	500 VDC
7	=	600 VDC
8	=	750 VDC
#	=	800 VDC
9	=	1000 VDC
**		

TERMINATION CODE
NT9 = Ni/Sn/Pb Min. 4% Pb
Q = 100% Sn over Ni
P = Pd/Ag
F = Polished Pd/Ag
H = 100% Gold
S = 100% Silver
Other terminations available. Contact factory.

PACKAGING
1 Reel, 7", plastic tape, unmarked
5 Waffle, unmarked
A Reel, 13", plastic tape, unmarked
C Reel, 7", paper, unmarked (0402 & 0603 only)

DESIGN-IN CODE
See Page 15

RoHS
Blank = Non-RoHS
R = RoHS Compliant
Only compatible with Q, P, F, H, S terminations

* Contact factory regarding NPQ and N2T dielectric
** Contact factory for other sizes and voltages

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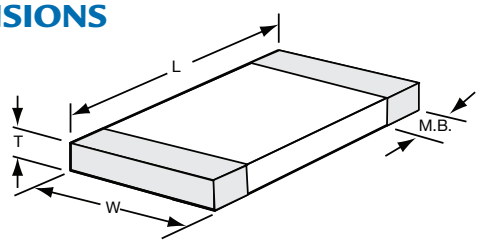
HIGH TEMPERATURE CERAMIC CHIP CAPACITORS (HT)

Consult Factory for Requirements Above 250°C

DIMENSIONS



VOLTAGE DERATING

For high operating temperatures follow your voltage derating rules or contact Presidio for assistance.

Example: At 175°C a 50V part is not to be used at full rated voltage.

AVAILABLE CAPACITANCE VALUES

SIZE**	L Inches (mm)	W Inches (mm)	Thickness Max (T)*** Inches (mm)	Metalization Band (M.B.) Inches (mm)	WVDC**	DIELECTRIC* (Maximum Capacitance)			
						NPO	NHT***	XHT	X7R
0402	0.040 (1.02) ± 0.004 (0.10)	0.020 (0.51) ± 0.004 (0.10)	0.024 (0.61)	0.004 (0.10) min. band 0.015 (0.38) min. space	10V	390 pF	390 pF	6800 pF	0.012 µF
					25V	120 pF	120 pF	2200 pF	4700 pF
					50V	100 pF	100 pF	1800 pF	3900 pF
					100V	39 pF	39 pF	680 pF	1200 pF
0403	0.040 (1.02) ± 0.010 (0.25)	0.030 (0.76) ± 0.010 (0.25)	0.030 (0.76)	0.004 (0.10) min. band 0.015 (0.38) min. space	10V	1200 pF	1200 pF	0.020 µF	0.047 µF
					25V	390 pF	390 pF	6800 pF	0.015 µF
					50V	330 pF	330 pF	5600 pF	0.012 µF
					100V	68 pF	68 pF	1000 pF	2200 pF
0504	0.050 (1.27) ± 0.010 (0.25)	0.040 (1.02) ± 0.010 (0.25)	0.040 (1.02)	0.005 (0.13) min. band 0.015 (0.38) min. space	10V	2700 pF	2700 pF	0.068 µF	0.12 µF
					25V	1500 pF	1500 pF	0.027 µF	0.047 µF
					50V	1200 pF	1200 pF	0.020 µF	0.039 µF
					100V	180 pF	180 pF	2700 pF	6800 pF
0603	0.063 (1.60) ± 0.006 (0.15)	0.032 (0.81) ± 0.006 (0.15)	0.035 (0.89)	0.005 (0.13) min. band 0.025 (0.64) min. space	10V	2200 pF	2200 pF	0.039 µF	0.10 µF
					25V	680 pF	680 pF	0.015 µF	0.10 µF
					50V	560 pF	560 pF	0.010 µF	0.022 µF
					100V	100 pF	100 pF	1800 pF	3300 pF
0805	0.080 (2.03) ± 0.010 (0.25)	0.050 (1.27) ± 0.010 (0.25)	0.055 (1.40)	0.020 (0.51) ± 0.010 (0.25)	10V	4700 pF	4700 pF	0.1 µF	0.22 µF
					25V	2700 pF	2700 pF	0.047 µF	0.10 µF
					50V	2200 pF	2200 pF	0.039 µF	0.10 µF
					100V	560 pF	560 pF	8200 pF	0.022 µF
1206	0.126 (3.20) ± 0.008 (0.20)	0.063 (1.60) ± 0.008 (0.20)	0.059 (1.50)	0.020 (0.51) ± 0.010 (0.25)	10V	0.012 µF	0.012 µF	0.25 µF	0.56 µF
					25V	6800 pF	6800 pF	0.15 µF	0.27 µF
					50V	5600 pF	5600 pF	0.1 µF	0.22 µF
					100V	1500 pF	1500 pF	0.027 µF	0.068 µF
					200V	820 pF	820 pF	0.012 µF	0.027 µF
1209	0.125 (3.18) ± 0.010 (0.25)	0.095 (2.41) ± 0.010 (0.25)	0.065 (1.65)	0.020 (0.51) ± 0.010 (0.25)	10V	0.018 µF	0.018 µF	0.39 µF	1.0 µF
					25V	0.010 µF	0.010 µF	0.22 µF	0.47 µF
					50V	0.010 µF	0.010 µF	0.18 µF	0.39 µF
					100V	3900 pF	3900 pF	0.068 µF	0.15 µF
					200V	1800 pF	1800 pF	0.033 µF	0.068 µF
1712	0.175 (4.45) ± 0.015 (0.38)	0.125 (3.18) ± 0.010 (0.25)	0.065 (1.65)	0.020 (0.51) ± 0.010 (0.25)	10V	0.039 µF	0.039 µF	0.82 µF	1.8 µF
					25V	0.022 µF	0.022 µF	0.47 µF	1.0 µF
					50V	0.015 µF	0.015 µF	0.27 µF	1.0 µF
					100V	6800 pF	6800 pF	0.12 µF	0.27 µF
					200V	3300 pF	3300 pF	0.056 µF	0.12 µF
1725	0.175 (4.45) ± 0.015 (0.38)	0.250 (6.35) ± 0.018 (0.46)	0.065 (1.65)	0.020 (0.51) ± 0.010 (0.25)	10V	0.082 µF	0.082 µF	2.0 µF	3.9 µF
					25V	0.056 µF	0.056 µF	1.2 µF	2.2 µF
					50V	0.039 µF	0.039 µF	0.82 µF	1.8 µF
					100V	0.018 µF	0.018 µF	0.33 µF	0.68 µF
					200V	8200 pF	8200 pF	0.12 µF	0.27 µF

* Contact factory regarding NPQ and N2T dielectric.

** Contact factory for other voltages, sizes or special requirements.

*** NHT Max (T) equals Max (W)

HIGH TEMPERATURE HIGH VOLTAGE CHIP CAPACITORS (HT)

NPO, NHT and XHT DIELECTRIC

Size	L Inches (mm)	W Inches (mm)	Thickness Max (T)*** Inches (mm)	Metalization Band (M.B.) Inches (mm)	WVDC**	DIELECTRIC (Maximum Capacitance)		
						NPO	NHT***	XHT
1209	0.125 (3.18) ± 0.010 (0.25)	0.095 (2.41) ± 0.010 (0.25)	0.080 (2.03)	0.020 (0.51) ± 0.010 (0.25)	500V	2700pF	2700pF	0.01µF
					1000V	390pF	390pF	1800pF
1514	0.150 (3.81) ± 0.010 (0.25)	0.140 (3.56) ± 0.010 (0.25)	0.140 (3.56)	0.020 (0.51) ± 0.010 (0.25)	500V	3900pF	3900pF	0.047µF
					1000V	1800pF	1800pF	0.018µF
					2000V	390pF	390pF	3300pF
					3000V	150pF	150pF	1500pF
1812	0.180 (4.57) ± 0.020 (0.51)	0.125 (3.18) ± 0.010 (0.25)	0.120 (3.05)	0.020 (0.51) ± 0.010 (0.25)	500V	6800pF	6800pF	0.047µF
					1000V	2200pF	2200pF	0.015µF
					2000V	270pF	270pF	1800pF
					3000V	120pF	120pF	390pF
1825	0.180 (4.57) ± 0.020 (0.51)	0.250 (6.35) ± 0.018 (0.46)	0.160 (4.06)	0.020 (0.51) ± 0.010 (0.25)	500V	0.012µF	0.012µF	0.15µF
					1000V	5600pF	5600pF	0.027µF
					2000V	1000pF	1000pF	6800pF
					3000V	470pF	470pF	1800pF
1918	0.190 (4.83) ± 0.013 (0.33)	0.180 (4.57) ± 0.013 (0.33)	0.150 (3.81)	0.020 (0.51) ± 0.010 (0.25)	500V	8200pF	8200pF	0.082µF
					1000V	3900pF	3900pF	0.022µF
					2000V	820pF	820pF	4700pF
					3000V	330pF	330pF	1800pF
2225	0.230 (5.84) ± 0.020 (0.51)	0.250 (6.35) ± 0.018 (0.46)	0.200 (5.08)	0.020 (0.51) ± 0.010 (0.25)	500V	0.015µF	0.015µF	0.27µF
					1000V	6800pF	6800pF	0.068µF
					2000V	1500pF	1500pF	0.012µF
					3000V	560pF	560pF	3900pF
2720	0.270 (6.85) ± 0.020 (0.51)	0.230 (5.84) max.	0.200 (5.08)	0.020 (0.51) ± 0.010 (0.25)	500V	0.012µF	0.012µF	0.25µF
					1000V	5600pF	5600pF	0.027µF
					2000V	1500pF	1500pF	6800pF
					3000V	560pF	560pF	3300pF

*** NHT Max (T) equals Max (W)

** WVDC = Working Voltage Direct Current

PLEASE CONTACT FACTORY FOR OTHER SIZES AND VOLTAGES
MANY OPTIONS ARE AVAILABLE

For sizes above 1812 Presidio recommends the chips be leaded (see "How to Order" on Page 10). During a thermal cycle, the leads help absorb the mechanical stress created by the CTE difference between the ceramic chip and the board.

HOW TO ORDER HT CHIPS

HT	1825	XHT	102	K	11	P	3	R	(F)
PREFIX	SIZE	DIELECTRIC	CAPACITANCE CODE	TOLERANCE CODE	VOLTAGE CODE	TERMINATION CODE	PACKAGING	RoHS	DESIGN-IN CODE

PREFIX: HT

SIZE: See Table Above **

DIELECTRIC: NPQ* NPO NHT N2T* (175°C Max) X7R XHT

CAPACITANCE CODE: Two significant figures followed by the number of zeros.
Example:
100 = 10 pF
101 = 100 pF
102 = 1000 pF
103 = .01 µF

TOLERANCE CODE:

F = ± 1% ≥ 10pF G = ± 2% ≥ 10pF J = ± 5% ≥ 10pF	NPQ* NPO ONLY
K = ± 10% L = -10% / +20% M = ± 20% Z = + 80% / -20% P = +100% / -0%	ALL

VOLTAGE CODE:
6 = 500 VDC
9 = 1000 VDC
11 = 2000 VDC
13 = 3000 VDC
14 = 4000 VDC
15 = 5000 VDC
**

TERMINATION CODE:
NT9 = Ni/Sn/Pb Min. 4% Pb
Q = 100% Sn over Ni
H = 100% Gold
P = Pd/Ag
F = Polished Pd/Ag
S = 100% Silver
Other terminations available. Contact factory.

PACKAGING:
1 = Reel, 7", plastic tape, unmarked
3 = Bulk, unmarked
5 = Waffle, unmarked
A = Reel, 13", plastic tape, unmarked
C = Reel, 7", paper, unmarked (0402 and 0603 only)

RoHS:
Blank = Non-RoHS
R = RoHS Compliant
Only compatible with Q, P, F, H, S terminations

DESIGN-IN CODE: See Page 15

* Contact factory regarding NPQ and N2T dielectric

** Contact factory for other sizes and voltages

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HIGH TEMPERATURE SMPS STACKED CAPACITORS (HTS)

Consult Factory for Requirements Above 250°C

GENERAL RECOMMENDATIONS FOR SOLDERING CERAMIC STACKED CAPACITORS

In general, Presidio recommends against hand soldering for this type of large ceramic device. However, if the customer cannot avoid hand soldering, it should be done with care to avoid thermally cracking the parts. Soldering of these parts to the circuit board, if done in a careless manner, can be the most likely source of reliability problems.

Preheating and Mounting. For reflow, the parts should be preheated to within 50ºC to 60ºC to the reflow temperature, or as close as is practical. A convection-style reflow oven with nitrogen is ideal. During reflow, the heat-up and cool-down rates (dT/dt) should be kept well under 4ºC/sec, and preferably under 2ºC/sec.

Hand Soldering. If hand soldering must be used, preheat the parts as recommended above. A hot-air gun is an ideal tool for this procedure. When hand soldering, avoid excessive heat, and keep the tip of the solder iron as far away from the ceramic as possible. As an example, for through-hole leaded parts, solder from the backside of the board. This will minimize the risk of thermally cracking the ceramic. After soldering, allow the parts to air cool to room temperature before cleaning.

Leads. The leads do not need to be pre-tinned as they have already been tinned with Sn63 as part of our process. For special code 'Y', leads are coated with silver.

In addition to the above, the following rules apply:

1. **Never dip the stacked capacitors into a solder pot (for pre-tinning, for example).**
2. **Never allow an operator to touch-up a solder joint with a soldering iron.**

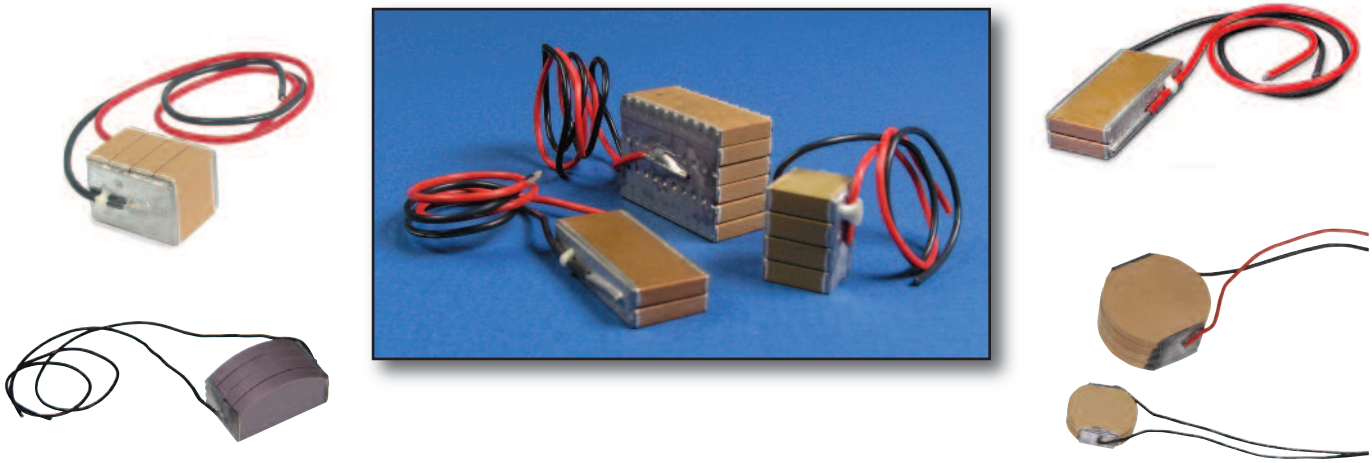
IN ACCORDANCE WITH MIL-PRF-49470

The following precaution should be followed to prevent THERMAL SHOCK

"Precautionary Note: Capacitors covered by this specification sheet are very susceptible to thermal shock damage due their large ceramic mass. Temperature profiles used should provide adequate temperature rise and cool-down time to prevent damage from thermal shock."

SPECIAL STACKS AND LEADS

Presidio can tailor the lead configuration to your needs. We also offer special shapes that optimize the volume available (semi-round and round shapes). Other shapes are also available.



HIGH TEMPERATURE SMPS STACKED CAPACITORS (HTS)

Consult Factory for Requirements Above 250°C

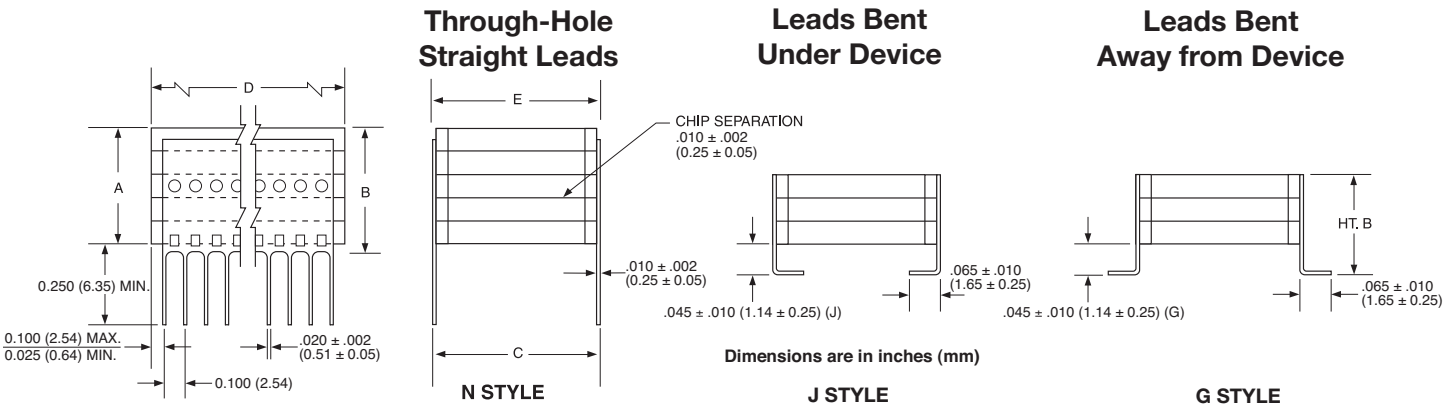
SOLDERING AND LEAD COATING RECOMMENDATIONS

Special Code	Description	Attachment Method Recommended Max. Temp.	RoHS Status
Blank	Sn63 / HMP Compatible	Sn63 or HMP (150°C / 200°C)	Not Compliant
X	Sn96 / HMP Compatible	Sn96 or HMP (180°C / 250°C)	Compliant with Exemption 7A.
Y	Sn96 / HMP Compatible	Sn96 or HMP (180°C / 250°C)	Not Compliant
R	Sn96	Sn96 (180°C) **DO NOT USE HMP**	Compliant (Lead Free)

NON-MAGNETIC STACKS AVAILABLE **(RoHS 200°C — Non-RoHS 250°C)**

SURFACE MOUNT STACKS

PRESIDIO LEAD STYLES AND DIMENSIONS



HOW TO ORDER HTS STACKS

HT	S	4	05	X7R	804	K	2	J	4	Y	(F)
PREFIX	CONFIGURATION STACKED	NO. OF CAPS	CASE CODE	DIELECTRIC	CAPACITANCE CODE	TOLERANCE CODE	VOLTAGE CODE	LEAD STYLE	NO. OF LEADS PER SIDE	SPECIAL CODE	DESIGN-IN CODE
HT	Capacitor Assembly	No. of chips per stack	See Table Pg. 11 **	NPQ* NPO NHT N2T* (175°C Max) X7R XHT	Two significant figures followed by the number of zeros. Example: 100 = 10 pF 101 = 100 pF 102 = 1000 pF 103 = .01 µF	F = ± 1% ≥ 10pF G = ± 2% ≥ 10pF J = ± 5% ≥ 10pF (NPQ* NPO N2T* ONLY); K = ± 10% L = -10% / +20% M = ± 20% Z = +80% / -20% P = +100%/ -0% (ALL)	1 = 25 VDC 2 = 50 VDC 3 = 100 VDC A = 150 VDC 4 = 200 VDC & = 250 VDC 5 = 300 VDC 6 = 500 VDC 7 = 600 VDC 8 = 750 VDC # = 800 VDC 9 = 1000 VDC **	J = Leads formed under G = Leads formed out N = Through-hole * = Soft-leaded See Above Consult Factory for more information	See Page 11	See Above (Leave blank or add Code X, Y or R)	See Page 15

* **Contact factory regarding NPQ and N2T dielectric**

** **Contact factory for other case codes/sizes and voltages**

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HIGH TEMPERATURE SMPS STACKED CAPACITORS (HTS)

X7R, XHT, and NPO DIELECTRIC

Consult Factory for Requirements Above 250°C

PRESIDIO CASE SIZE (Maximum Capacitance µF)													"B" Ht. Max. inch (mm)	No. of Caps per Stack
Case Code*	08			01			05			13				
Dielectric	X7R	XHT	NPO	X7R	XHT	NPO	X7R	XHT	NPO	X7R	XHT	NPO		
WVDC** 25V (Voltage Code = 1)	1.4	.82	.036	2.5	1.5	.065	7.0	4.0	.16	20	14	.50	.150 (3.81)	1
	2.8	1.6	.072	5.0	3.0	.13	14	8.0	.32	40	28	1.0	.200 (5.08)	2
	4.2	2.4	.11	7.5	4.5	.19	21	12	.48	60	42	1.5	.275 (6.99)	3
	–	–	–	10	6.0	.26	28	16	.64	80	56	2.0	.350 (8.89)	4
	–	–	–	12	7.5	.32	35	20	.80	100	70	2.5	.425 (10.80)	5
	–	–	–	15	9.0	.39	42	24	.96	120	84	3.0	.500 (12.70)	6
WVDC** 50V (Voltage Code = 2)	1.2	.6	.030	2.1	1.0	.055	5.6	3.0	.14	18	10	.40	.150 (3.81)	1
	2.4	1.2	.060	4.2	2.0	.11	11	6.0	.28	36	20	.80	.220 (5.59)	2
	3.6	1.8	.090	6.3	3.0	.16	17	9.0	.42	54	30	1.2	.310 (7.87)	3
	–	–	–	8.4	4.0	.22	22	12	.56	72	40	1.6	.400 (10.16)	4
	–	–	–	10	5.0	.27	28	15	.70	90	50	2.0	.490 (12.45)	5
	–	–	–	12	6.0	.33	33	18	.84	110	60	2.4	.580 (14.73)	6
WVDC** 100V (Voltage Code = 3)	.75	.34	.020	1.4	.70	.040	4.0	1.8	.10	12	6.0	.30	.160 (4.06)	1
	1.5	.68	.040	2.8	1.4	.080	8.0	3.6	.20	24	12	.60	.280 (7.11)	2
	–	–	–	4.2	2.1	.12	12	5.4	.30	36	18	.90	.400 (10.16)	3
	–	–	–	5.6	2.8	.16	16	7.2	.40	48	24	1.2	.520 (13.21)	4
	–	–	–	7.0	3.5	.20	20	9.0	.50	60	30	1.5	.640 (16.26)	5
	–	–	–	–	–	–	–	–	–	72	36	1.8	.760 (19.30)	6
WVDC** 200V (Voltage Code = 4)	.22	.14	.012	.42	.25	.022	1.2	.70	.056	3.5	2.2	.18	.160 (4.06)	1
	.44	.28	.024	.84	.50	.044	2.4	1.4	.11	7.0	4.4	.36	.280 (7.11)	2
	–	–	–	1.2	.75	.066	3.6	2.1	.17	10	6.6	.54	.400 (10.16)	3
	–	–	–	1.7	1.0	.088	4.8	2.8	.22	14	8.8	.72	.520 (13.21)	4
	–	–	–	2.1	1.2	.11	6.0	3.5	.28	17	11	.90	.640 (16.26)	5
	–	–	–	–	–	–	–	–	–	21	13	1.1	.760 (19.30)	6
WVDC** 500V (Voltage Code = 6)	.11	.07	.006	.19	.13	.011	.55	.39	.028	1.6	1.2	.080	.160 (4.06)	1
	.22	.14	.012	.38	.26	.022	1.1	.75	.056	3.2	2.4	.16	.280 (7.11)	2
	–	–	–	.57	.39	.033	1.6	1.1	.084	4.8	3.6	.24	.400 (10.16)	3
	–	–	–	.76	.52	.044	2.2	1.5	.11	6.4	4.8	.32	.520 (13.21)	4
	–	–	–	.95	.65	.055	2.7	1.9	.14	8.0	6.0	.40	.640 (16.26)	5
	–	–	–	–	–	–	–	–	–	9.6	7.2	.48	.760 (19.30)	6
Dimensions inch (mm)	0.215 (5.46)			0.275 (6.99)			0.400 (10.16)			0.450 (11.43)			C ± .025 (.64)	
	0.215 (5.46)			0.275 (6.99)			0.425 (10.80)			1.075 (27.31)			D (Max) Width	
	0.240 (6.10)			0.300 (7.62)			0.440 (11.18)			0.500 (12.70)			E (Max) Length	
Leads Per Side	2			3			4			10				
Chip Size	2018			2627			3941			4399				

* Contact factory regarding NPQ dielectric, additional case sizes, or optimized shapes.

** WVDC = Working Voltage Direct Current

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HIGH TEMPERATURE HIGH VOLTAGE STACKED CAPACITORS (HTS)

XHT and NPO DIELECTRIC

Consult Factory for Requirements Above 250°C

PRESIDIO CASE SIZE (Maximum Capacitance µF)															"B" Ht. Max. inch (mm)	No. of Caps per Stack
Case Code*	52		53		54		55		56		57		58			
Dielectric	XHT	NPO	XHT	NPO	XHT	NPO	XHT	NPO	XHT	NPO	XHT	NPO	XHT	NPO		
WVDC** 1000V (Voltage Code = 9)	.040	.0036	.080	.0075	.16	.014	.25	.022	.35	.030	.38	.033	.70	.060	.200 (5.08)	1
	.080	.0072	.16	.015	.32	.028	.50	.044	.70	.060	.76	.066	1.4	.12	.350 (8.89)	2
	.12	.011	.24	.022	.48	.042	.75	.066	.10	.090	1.1	.10	2.1	.18	.500 (12.70)	3
	.16	.014	.32	.030	.64	.056	1.0	.088	.14	.12	1.5	.13	2.8	.24	.650 (16.51)	4
WVDC** 2000V (Voltage Code = 11)	.0080	.00075	.019	.0017	.035	.0032	.055	.0050	.080	.0070	.090	.0082	.17	.015	.200 (5.08)	1
	.016	.0015	.038	.0034	.070	.0064	.11	.010	.16	.014	.18	.016	.34	.030	.350 (8.89)	2
	.024	.0022	.057	.0051	.10	.0096	.16	.015	.24	.021	.27	.024	.51	.045	.500 (12.70)	3
	.032	.0030	.076	.0068	.14	.013	.22	.020	.32	.028	.36	.033	.68	.060	.650 (16.51)	4
WVDC** 3000V (Voltage Code = 13)	–	–	.0070	.00065	.014	.0013	.022	.0021	.033	.0030	.039	.0035	.070	.0065	.200 (5.08)	1
	–	–	.014	.0013	.028	.0026	.044	.0042	.066	.0060	.078	.0070	.14	.013	.350 (8.89)	2
	–	–	.021	.0019	.042	.0039	.066	.0063	.10	.0090	.11	.010	.21	.019	.500 (12.70)	3
	–	–	.028	.0026	.056	0052	.088	.0084	.13	.012	.15	.014	.28	.026	.650 (16.51)	4
WVDC** 4000V (Voltage Code = 14)	–	–	–	–	.007	.00060	.012	.0010	.017	.0015	.020	.0018	.039	.0035	.200 (5.08)	1
	–	–	–	–	.014	.0012	.024	.0020	.034	.0030	.040	.0036	.078	.0070	.350 (8.89)	2
	–	–	–	–	.021	.0018	.036	.0030	.051	.0045	.060	.0054	.11	.010	.500 (12.70)	3
	–	–	–	–	.028	.0024	.048	.0040	.068	.0060	.080	.0072	.15	.014	.650 (16.51)	4
WVDC** 5000V (Voltage Code = 15)	–	.–	–	–	.0040	.00042	.0065	.00070	.0090	.0010	.011	.012	.022	.0024	.200 (5.08)	1
	–	–	–	–	.0080	.00084	.013	.0014	.018	.0020	.022	.024	.044	.0048	.350 (8.89)	2
	–	–	–	–	.012	.0012	.019	.0021	.027	.0030	.033	.036	.066	.0072	.500 (12.70)	3
	–	–	–	–	.016	.0016	.026	.0028	.036	.0040	.044	.048	.088	.0096	.650 (16.51)	4
Dimensions inch (mm)	0.300 (7.62)		0.415 (10.54)		0.500 (12.70)		0.600 (15.24)		0.700 (17.78)		0.975 (24.77)		1.375 (34.93)		C ± .025 (0.64)	
	0.260 (6.60)		0.350 (8.89)		0.460 (11.68)		0.560 (14.22)		0.660 (16.76)		0.520 (13.21)		0.670 (17.02)		D (Max) Width	
	0.325 (8.26)		0.440 (11.18)		0.525 (13.34)		0.625 (15.88)		0.725 (18.42)		1.000 (25.40)		1.400 (35.56)		E (Max) Length	
Leads Per Side	3		4		4		5		6		5		6			
Chip Size	2824		3933		4844		5854		6864		9650		13565			

** WVDC = Working Voltage Direct Current

HOW TO ORDER HIGH VOLTAGE HTS STACKS

HT	S	3	52	XHT	123	K	9	J	3	Y	(F)
PREFIX: HT	CONFIGURATION STACKED: Capacitor Assembly	NO. OF CAPS: No. of Chips per Stack	CASE CODE: See Table Above	DIELECTRIC: NPQ* NPO NHT XHT	CAPACITANCE CODE: Two significant figures followed by the number of zeros. Example: 100 = 10 pF, 101 = 100 pF, 102 = 1000 pF, 103 = .01 µF	TOLERANCE CODE: F = ± 1% ≥ 10pF, G = ± 2% ≥ 10pF, J = ± 5% ≥ 10pF (NPQ* NPO ONLY); K = ± 10%, L = -10% / +20%, M = ± 20%, Z = +80% / -20%, P = +100%/ -0% (ALL)	VOLTAGE CODE: 9 = 1000V, 11 = 2000V, 13 = 3000V, 14 = 4000V, 15 = 5000V. Other Voltages Available	LEAD STYLE: J = Leads formed under, G = Leads formed out, N = Through-hole, * = Soft-leaded. Consult Factory for more information	NO. OF LEADS PER SIDE: See Above	SPECIAL CODE: See Page 10 (Leave blank or add Code X, Y or R)	DESIGN-IN CODE: See Page 15

* Contact factory regarding NPQ dielectric, additional case sizes, or optimized shapes.

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HIGH TEMPERATURE HIGH VOLTAGE RADIAL LEADED CAPACITORS (RT)

X7R, XHT and NPO DIELECTRIC

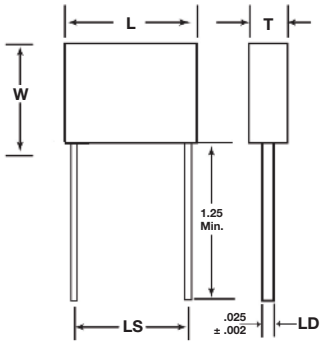
Consult Factory for Requirements Above 250°C

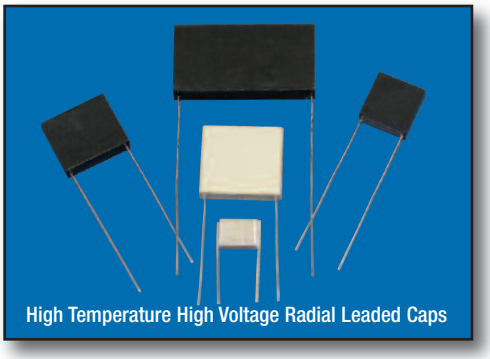
SPECIFICATIONS

MECHANICAL:

Case: DAP up to 220°C Code B
PEEK up to 240°C Code P
Uncoated up to 250°C Code U

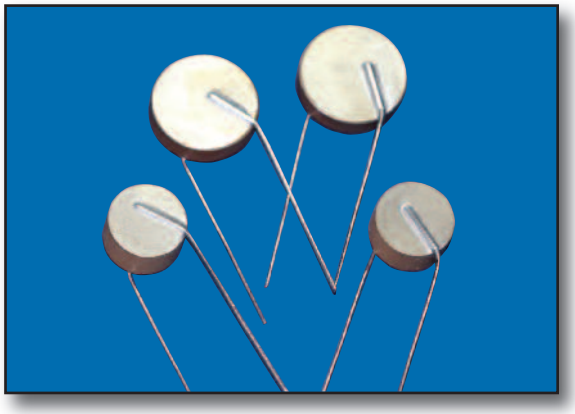
Leads: Solder coated copper clad steel is standard; other types available




High Temperature High Voltage Radial Leaded Caps

ALSO AVAILABLE

High Temperature High Voltage Disc Capacitors
Call Factory for More Information



DIMENSIONS (Inches)

SIZE	L (Max.)	W (Max.)	T (Max.)	LS (±.032)	LD (±.002)
RT1814	0.300	0.200	0.200	0.200	0.025
RT1824	0.300	0.300	0.200	0.200	0.025
RT2225	0.350	0.300	0.200	0.250	0.025
RT2824	0.400	0.300	0.200	0.300	0.025
RT3933	0.500	0.400	0.200	0.400	0.025
RT4844	0.600	0.500	0.200	0.500	0.025
RT5854	0.700	0.600	0.200	0.600	0.025
RT6864	0.800	0.700	0.200	0.700	0.025
RT9650	1.100	0.600	0.200	0.980	0.025
RT13565	1.450	0.720	0.200	1.375	0.025

MAXIMUM CAPACITANCE (µF)

WVDC**	25V		50V		100V		200V		500V		1000V	
SIZE	X7R	NPO	X7R	NPO	X7R	NPO	XHT	NPO	XHT	NPO	XHT	NPO
RT1814	.47	.022	.33	.018	.22	.012	.10	.0075	.075	.0035	.012	.0010
RT1824	.82	.045	.25	.033	.50	.024	.20	.014	.15	.0068	.024	.0020
RT2225	1.2	.056	1.0	.047	.60	.033	.25	.020	.20	.0090	.032	.0027
RT2824	1.5	.070	1.2	.056	.85	.040	.33	.022	.25	.011	.040	.0036
RT3933	2.7	.16	2.5	.12	1.5	.085	.60	.050	.50	.024	.080	.0075
RT4844	5.0	.18	4.0	.20	2.0	.14	1.2	.082	.82	.039	.16	.014
RT5854	7.8	.27	6.8	.30	4.5	.21	1.8	.12	1.2	.060	.25	.022
RT6864	12	.60	9.5	.44	6.0	.31	2.5	.18	1.8	.085	.35	.030
RT9650	15	.68	10	.47	6.8	.34	2.7	.20	2.0	.095	.39	.033
RT13565	–	–	–	–	–	–	4.7	.36	3.9	.17	.70	.060

** WVDC = Working Voltage Direct Current

HOW TO ORDER RT RADIAL LEADS

RT	1814	XHT	804	K	2	B	200	R	(F)
PREFIX	SIZE	DIELECTRIC	CAPACITANCE CODE	TOLERANCE CODE	VOLTAGE CODE	CASE	LEAD SPACING	RoHS	DESIGN-IN CODE
RT	See Above	NPQ* NPO NHT XHT X7R	Two significant figures followed by the number of zeros. Example: 100 = 10 pF, 101 = 100 pF, 102 = 1000 pF, 103 = .01 µF	F = ± 1% ≥ 10pF, G = ± 2% ≥ 10pF, J = ± 5% ≥ 10pF (NPQ* NPO ONLY); K = ± 10%, L = -10% / +20%, M = ± 20%, Z = +80% / -20%, P = +100% / -0% (ALL)	1 = 25 VDC, 2 = 50 VDC, 3 = 100 VDC, 4 = 200 VDC, 5 = 300 VDC, 6 = 500 VDC, 9 = 1000 VDC, **	Molded Box (Encapsulated) B = Up to 220°C, P = Up to 240°C, U = Uncoated	(LS) See Above	Blank = Non-RoHS, R = RoHS Compliant	See Page 15

* **Contact factory regarding NPQ dielectric, additional case sizes, or optimized shapes.**

****HIGHER VOLTAGES AVAILABLE 20KV and Above**

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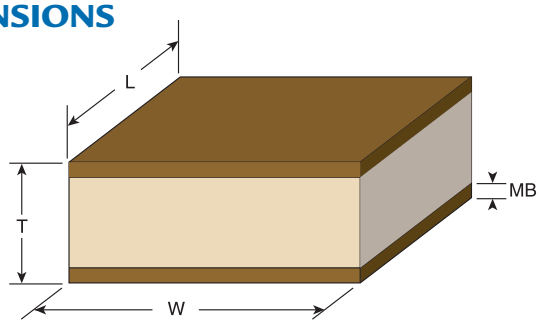
HIGH TEMPERATURE WIRE BONDABLE VERTICAL LAYER CAPACITORS (HTVL) FOR POWER APPLICATIONS

Consult Factory to Discuss Your Application

DIMENSIONS



For RF High Temperature Applications Please See Our RF/MW Catalog 6100 and Consult the Factory

AVAILABLE CAPACITANCE VALUES

SIZE**	L Inches (mm)	W Inches (mm)	Thickness Max (T) Inches (mm)	Metalization Band (M.B.) Inches (mm)	Working Voltage WVDC**	DIELECTRIC* (Maximum Capacitance) NPO	DIELECTRIC* (Maximum Capacitance) X7R	NOTES
3030	0.030 (0.762) ± 0.003 (0.076)	0.030 (0.762) ± 0.003 (0.076)	0.030 (0.762)	0.005 (0.127)	10V	Contact Presidio	22,000 pF	Contact Presidio to Discuss Your Voltage and Derating Requirements
					16V		10,000 pF	
					25V		6,800 pF	
					50V		3,000 pF	
					100V		1,200 pF	
4040	0.040 (1.016) ± 0.004 (0.102)	0.040 (1.016) ± 0.004 (0.102)	0.040 (1.016)	0.005 (0.127)	10V		47,000 pF	
					16V		30,000 pF	
					25V		20,000 pF	
					50V		8,200 pF	
					100V		4,700 pF	
4080	0.042 (1.067) ± 0.004 (0.102)	0.083 (2.108) ± 0.004 (0.102)	0.040 (1.016)	0.005 (0.127)	16V		68,000 pF	
					25V		30,000 pF	
					50V		15,000 pF	
					100V		8,200 pF	

HOW TO ORDER HT VERTICAL LAYER CAPACITORS

HT	VL	3030	X	103	M	G	H	5	R	–	(F)
PREFIX	**PRODUCT**	**SIZE**	**DIELECTRIC**	**CAPACITANCE CODE**	**CAPACITANCE TOLERANCE**	**VOLTAGE CODE**	**TERMINATION**	**PACKAGING**	**RoHS**	**HYPHEN REQUIRED**	**DESIGN-IN CODE**
High Temp	Vertical Layer	See Table Above **	N = NPO X = X7R	Two significant figures followed by the number of zeros. Example: 100 = 10 pF 101 = 100 pF 102 = 1000 pF 103 = .01 µF	G = ± 2% J = ± 5% K = ± 10% **NPO ONLY** M = ± 20% Z = + 80% / - 20%	E = 10 VDC G = 16 VDC 1 = 25 VDC 2 = 50 VDC 3 = 100 VDC	H = 99.95% Au top & bottom suitable for conductive epoxy K = 99.95% Au top, PdAg bottom conductive epoxy or solder	5 = Waffle Pack (Standard) F = Grip Ring 6.0" Diameter (Standard)	Blank = Non-RoHS R = RoHS Compliant (Only compatible with H terminations)	Hyphen (Required for VL products)	See Page 15

**** Contact factory for other case sizes and special requirements**

PRESIDIO COMPONENTS, INC.

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www.presidiocomponents.com • info@presidiocomponents.com

PRESIDIO COMPONENTS DESIGN-IN CODES

A WORD TO DESIGN ENGINEERS

After the design work is done, outsourcing manufacturing on a global basis is a management option. At Presidio Components, we are striving for complete customer satisfaction which includes “after” service for all of our products.

We added a “Design-In” locator code for quick traceability, if needed. Please select your location from the table below and add the appropriate code at the end of the part number. If you need assistance, please give us a call at **+1-858-578-9390** or email **info@presidiocomponents.com.**

UNITED STATES

USA	Code	USA	Code
Alabama	(G)	Nebraska	(P)
Alaska	(P)	Nevada, North	(B)
Arizona	(D)	Nevada, South	(C)
Arkansas	(P)	New Hampshire	(L)
California, North	(B)	New Jersey	(J)
California, South	(C)	New Mexico	(D)
Colorado	(E)	New York, Metro	(J)
Connecticut	(L)	New York, Upstate	(K)
Delaware	(I)	North Carolina	(G)
District of Columbia	(H)	North Dakota	(O)
Florida	(G)	Ohio	(M)
Georgia	(G)	Oklahoma	(P)
Hawaii	(P)	Oregon	(A)
Idaho	(A)	Pennsylvania	(I)
Illinois	(N)	Rhode Island	(L)
Indiana	(M)	South Carolina	(G)
Iowa	(O)	South Dakota	(O)
Kansas	(P)	Tennessee	(G)
Kentucky	(M)	Texas	(F)
Louisiana	(P)	Utah	(E)
Maine	(L)	Vermont	(L)
Maryland	(H)	Virginia	(H)
Massachusetts	(L)	Washington	(A)
Michigan	(N)	West Virginia	(P)
Minnesota	(O)	Wisconsin, East	(N)
Mississippi	(G)	Wisconsin, West	(O)
Missouri	(N)	Wyoming	(E)
Montana	(A)		

OUTSIDE THE UNITED STATES

Americas	Code
Canada	(R)
Mexico	(R)
Caribbean	(R)
Central America	(R)
South America	(R)
Pacific Rim	
Australia	(S)
China	(T)
Japan	(U)
Korea, South	(V)
Malaysia	(W)
Singapore	(X)
Other Pacific Rim Countries	(Y)

Europe	Code
Austria	(3)
Belgium	(1)
Denmark	(5)
Finland	(5)
France	(2)
Germany	(3)
Ireland	(6)
Italy	(4)
Luxembourg	(1)
Netherlands	(1)
Norway	(5)
Sweden	(5)
Switzerland	(3)
United Kingdom	(6)
Other European Countries	(7)
Other	
India	(Z)
Israel	(8)
Rest of World	(9)

PART NUMBER EXAMPLE:
HT0805XHT473K1Q5R(F)

Add Design-In Code inside the parentheses at the end of the Presidio part number as shown above.

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PRESIDIO PRODUCT LINES

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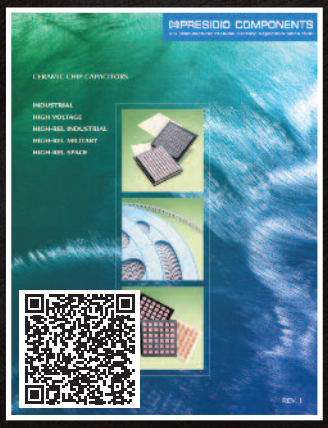
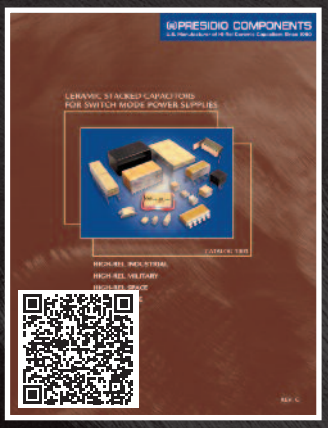
Click Catalog Cover or Scan QR Code to Visit Product Page on Website



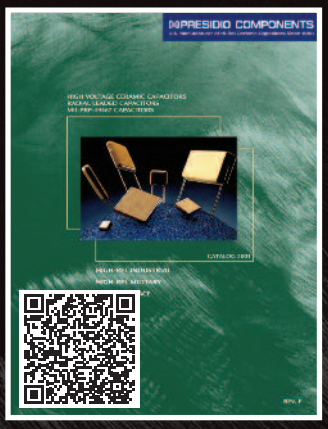
SURFACE MOUNT CERAMIC CHIP CAPACITORS

HIGH RELIABILITY EXTENDED RANGE CHIPS FOR SPACE

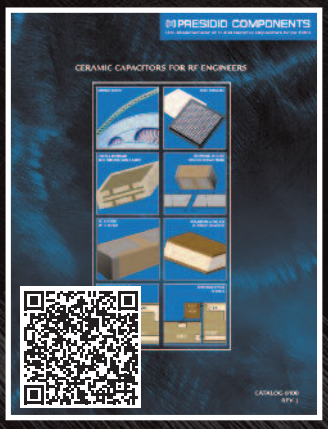


CERAMIC STACKED CAPACITORS FOR SMPS

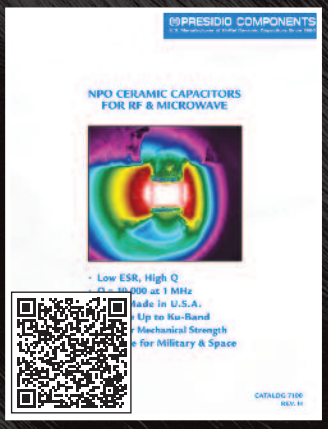
HIGH TEMPERATURE CERAMIC CAPACITORS



HIGH VOLTAGE RADIAL LEADED & MIL-PRF-49467 CERAMIC CAPACITORS



CERAMIC CAPACITORS FOR RF ENGINEERS



HIGH Q NPO CERAMIC CAPACITORS FOR RF & MICROWAVE

PULSE DISCHARGE CERAMIC CAPACITORS

Information in this document is subject to change without notice.

CATALOG 3500
REV. N
OCTOBER 2023

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