

# 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 50°C to 60°C 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 4°C/sec, and preferably under 2°C/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.

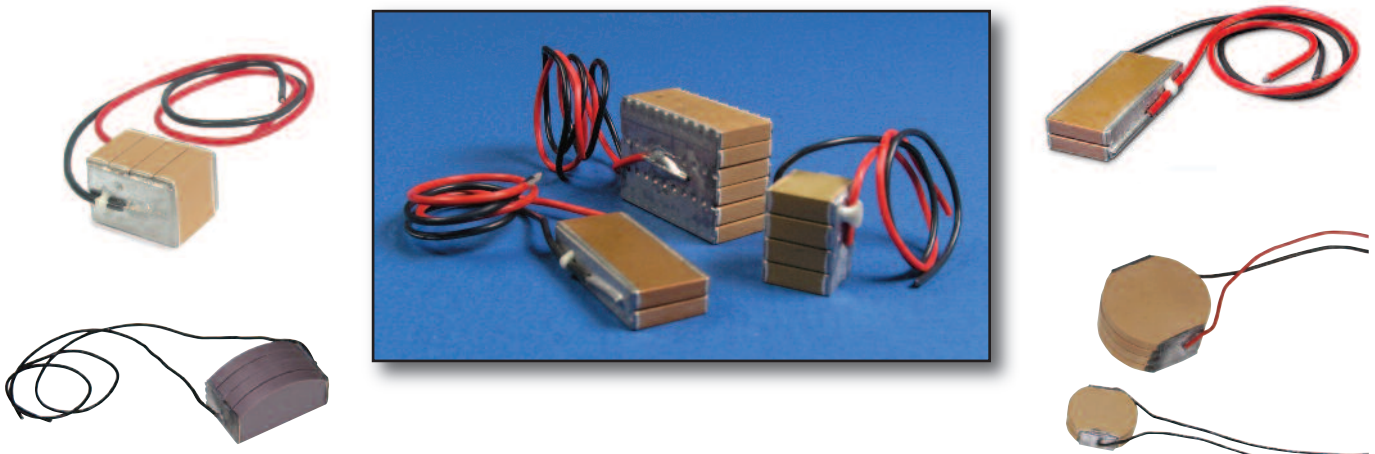
### IN ACCORDANCE WITH MIL-PRF-49470

**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.



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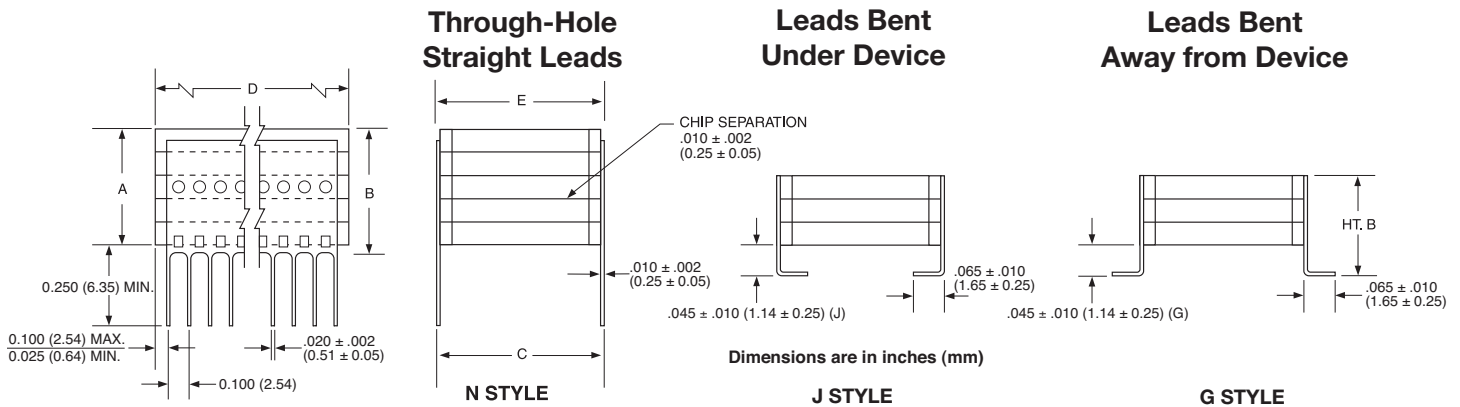
## SOLDERING AND LEAD COATING RECOMMENDATIONS

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) <b>DO NOT USE HMP</b>	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

<b>HT</b>	<b>S</b>	<b>4</b>	<b>05</b>	<b>X7R</b>	<b>804</b>	<b>K</b>	<b>2</b>	<b>J</b>	<b>4</b>	<b>Y</b>	<b>(F)</b>
<b>TESTING</b>	<b>CONFIGURATION STACKED</b>	<b>NO. OF CAPS</b>	<b>CASE CODE*</b>		<b>CAPACITANCE CODE</b>	<b>TOLERANCE CODE</b>	<b>VOLTAGE CODE</b>	<b>LEAD STYLE</b>	<b>NO. OF LEADS PER SIDE</b>	<b>SPECIAL CODE</b>	<b>DESIGN-IN CODE</b>
HT	Capacitor Assembly	No. of chips per stack	See Table Pg. 11*		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  K = ± 10% L = -10% / +20% M = ± 20% Z = +80% / -20% P = +100% / -0%	1 = 25 VDC 2 = 50 VDC 3 = 100 VDC 4 = 200 VDC 5 = 300 VDC 6 = 500 VDC 7 = 600 VDC 8 = 750 VDC 9 = 1000 VDC ***	J = Leads formed under G = Leads formed out N = Through-hole * = Soft-leaded Consult Factory for more information	See Above	See Above (Leave blank or add Code X, Y or R)	See Page 15
			<b>DIELECTRIC</b>								
			NPQ** N2T (175°C Max) X7R XHT								

\* Contact factory for other case codes/sizes  
\*\* Contact factory regarding NPQ and N2T dielectric  
\*\*\* Contact factory for other voltages



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## X7R, XHT, and NPO DIELECTRIC

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PRESIDIO CASE SIZE (Maximum Capacitance $\mu$ F)													"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 $\pm$ .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 custom shapes

\*\* WVDC = Working Voltage Direct Current



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# PRESIDIO COMPONENTS DESIGN-IN CODES

## A WORD TO THE DESIGN ENGINEER

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 **(858) 578-9390** or email **HT@presidiocomponents.com**.

### UNITED STATES

### OUTSIDE THE UNITED STATES

USA	Code	USA	Code	Americas	Code	Europe	Code
Alabama	(G)	Nebraska	(P)	Canada	(R)	Austria	(3)
Alaska	(P)	Nevada, North	(B)	Mexico	(R)	Belgium	(1)
Arizona	(D)	Nevada, South	(C)	Caribbean	(R)	Denmark	(5)
Arkansas	(P)	New Hampshire	(L)	Central America	(R)	Finland	(5)
California, North	(B)	New Jersey	(J)	South America	(R)	France	(2)
California, South	(C)	New Mexico	(D)			Germany	(3)
Colorado	(E)	New York, Metro	(J)	<b>Pacific Rim</b>		Ireland	(6)
Connecticut	(L)	New York, Upstate	(K)	Australia	(S)	Italy	(4)
Delaware	(I)	North Carolina	(G)	China	(T)	Luxembourg	(1)
District of Columbia	(H)	North Dakota	(O)	Japan	(U)	Netherlands	(1)
Florida	(G)	Ohio	(M)	Korea, South	(V)	Norway	(5)
Georgia	(G)	Oklahoma	(P)	Malaysia	(W)	Sweden	(5)
Hawaii	(P)	Oregon	(A)	Singapore	(X)	Switzerland	(3)
Idaho	(A)	Pennsylvania	(I)	Other Pacific Rim Countries	(Y)	United Kingdom	(6)
Illinois	(N)	Rhode Island	(L)			Other European Countries	(7)
Indiana	(M)	South Carolina	(G)			<b>Other</b>	
Iowa	(O)	South Dakota	(O)			India	(Z)
Kansas	(P)	Tennessee	(G)			Israel	(8)
Kentucky	(M)	Texas	(F)			Rest of World	(9)
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)						

**PART NUMBER EXAMPLE:**  
**HT0805XHT473K1Q5R(F)**  
 Add Design-In Code inside the parentheses at the end of the Presidio part number.