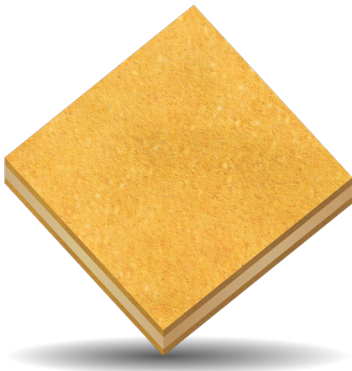


Microwave SLCs
ULTRA MAXI Series



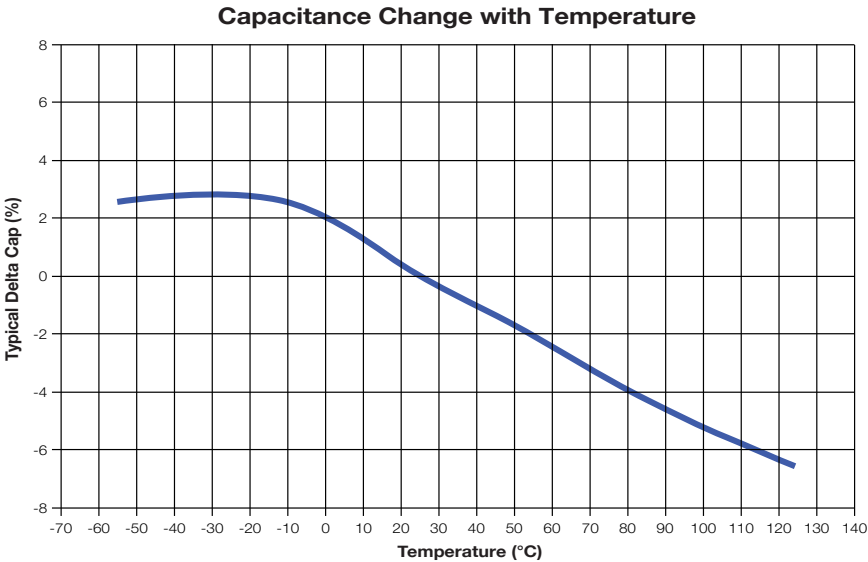
The Ultra Maxi Series is the latest addition to the KYOCERA AVX family of proprietary high k, inter-granular barrier layer dielectric systems. This series is similar to our Maxi & Maxi+ product offerings, but with the notable difference that the dielectric constant has been increased to 60,000 - double the previous high for our industry leading GBBL formulations. These new Single Layer Ceramic Capacitors, with X7R TCC and rated at 25VDC (-55°C thru +125°C), set a new standard for circuit miniturization. On average, the required board mounting area will be reduced by approximately two-thirds when compared to an equivalent capacitance value for our Maxi+ series. The Ultra Maxi series offers an ideal solution for broadband bypass applications where high performance and the smallest footprint are the primary considerations. The Ultra Maxi Series is RoHS compliant - as are all KYOCERA AVX SLC products. Terminations (Au over Ti/W) provide an excellent wire bonding surface and are compatible with conductive epoxy and Au/Sn eutectic solder attach. Samples and custom configurations are available on request.



inches (millimeters)

Table with 4 columns: Style, Length x Width ±.003" (0.076), Capacitance (pF) Min, and Capacitance (pF) Max. Rows include styles GD10 through GD55 with their respective dimensions and capacitance ranges. A thickness specification of .0065±.001 (.165±.025) is listed at the bottom.

Sample kits are available
ULTRA MAXI KIT Catalog # KITSLCK60KSAMPL
includes 10 each:
GD1030301ZAW, GD1530601ZAW,
GD2030102ZAW, GD3030202ZAW



HOW TO ORDER

Ordering code breakdown: GD (Type Code), 20 (L&W in mils), 3 (Rated Voltage 25 VDC), 0 (Dielectric k=60,000), 102 (Capacitance Code in pF), Z (Capacitance Tolerance M=±20%, Z=+80/-20%), A (Termination Au over Ti/W), 6N (Packaging Antistatic Waffle Pack 400 per).



# Microwave SLCs

## Single Layer Ceramic Capacitors (SLC's)

**TABLE I - Dielectric Codes, Types & Product Styles**

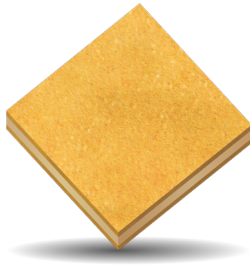
Dielectric Type & Code		Dielectric Constant	Temperature Coefficient	Temperature Range	Min Q at 1MHz	Max. DF (%)*		IR (Min) 25°C
						1 MHz	1 kHz	
NPO	A	14	+90±30PPM/°C	-55°C to +125°C	10,000	0.01	N/A	10 <sup>5</sup> Mohms
	1	31	0±30PPM/°C		660	0.15	N/A	
	2**	60	0±30PPM/°C		660	0.15	N/A	
Temp Comp	3	130	-750±200PPM/°C	-55°C to +125°C	660	0.15	N/A	10 <sup>5</sup> Mohms
	5	165	-1500±500PPM/°C		400	0.25	N/A	
	4	200	±7.5% (non-linear)		400	0.25	N/A	
	7	420	-2000±500PPM/°C		200	0.70	0.30	
	Y	650	-4700±1500PPM/°C		400	0.30	0.30	
	6	650	±10% (non-linear)		60	1.50	1.50	
X7R	J	1,100	+5% to -15% (non-linear)	-55°C to +125°C	40	2.50	2.00	10 <sup>5</sup> Mohms
	F	2,000	±15% (non-linear)		40	2.50	2.00	
	C	4,000	±15%		25	4.00***	2.00***	
	G	6,000	+10% to -75% max. change (non-linear)		40	2.50	2.00	
	K	9,000	0% to -92% max. change (non-linear)		25	4.00	2.00	
	L	16,000	0/-92%		30	3.50	2.00	
X7S	Z	5,000-18,000	±22%	-55°C to +125°C	30	NA	2.5	10 <sup>4</sup> Mohms
X7R	8	20,000	±15%	-55°C to +125°C	30	NA	2.5	10 <sup>4</sup> Mohms
	9	30,000	±15%					
	0	60,000	±15%					

\*Capacitance & DF are measured at 1MHz for values ≤100pF and 1 KHz for capacitance values >100pF

\*\*NOTE: Code 2 DIELECTRIC IS NOT RoHS COMPLIANT

\*\*\*DF for the GP, GM, and the GA series with C dielectric is 6.5%

### GH SERIES



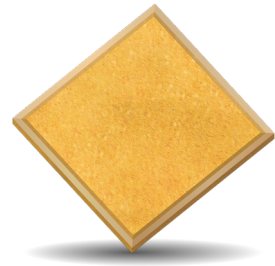
### GB SERIES



### GP SERIES



### GN SERIES



**TABLE II**

MIL Reference	Parameter	Method or Paragraph
MIL-STD-883	Bond Strength	2011.7
MIL-STD-883	Shear Strength	2019
MIL-PRF-49464	Thermal Shock	4.8.3
MIL-PRF-49464	Voltage Conditioning	4.8.3
MIL-PRF-49464	Temperature Coefficient	4.8.10
MIL-STD-202	Low Voltage Humidity	103 A
MIL-STD-202	Life Test	108

# Microwave SLCs

## High Reliability Certification Program



### Commercial Off The Shelf

### High Reliability Certification Program

The COTS Program provides a cost efficient approach to qualifying standard products for enhanced reliability applications. This flexible program offers standard screening packages with options to support specifics of customer-driven program requirements.

#### Applications:

- Ruggedized Commercial  
(Medical, Industrial, Telecommunications)
- Military  
(Ground, Naval, Airborne)
- Space/Satellite

### COTS Screening Options

#### HD: Highest Screening Level

The highest screening option adds life testing as an assurance in mission critical applications and is often used as an alternative in space qualified applications.

#### HC: Airborne Applications

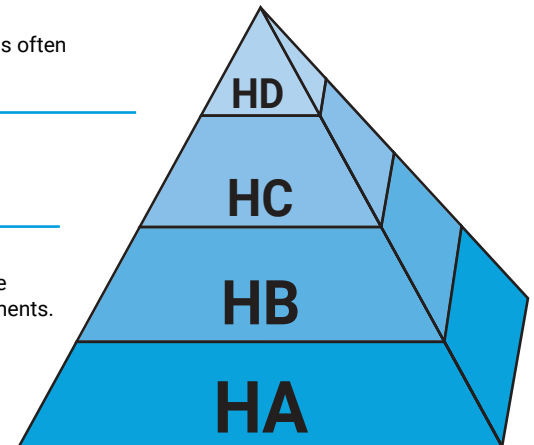
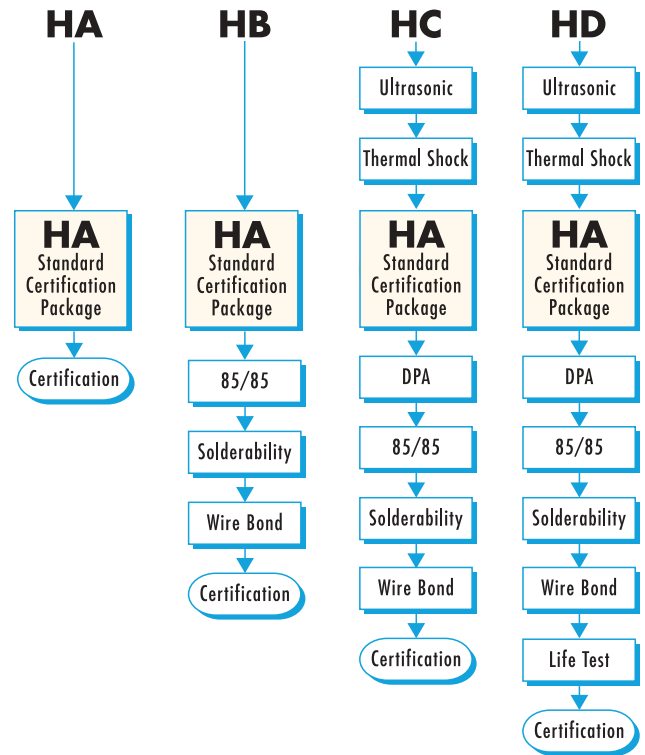
Often used in airborne applications, this profile closely models the military specifications.

#### HB: Additional Sample Testing

Built upon our standard HA Screening, this program provides additional sample testing to certify the termination for attachment integrity and the ability to survive and perform in high humidity environments.

#### HA: Standard Upscreen Package

ATC's Standard Hi Rel certification screening profile is typically used as a lower cost means to certify product reliability. HA screening is used throughout the industry in ground based military applications as well as stringent commercial applications.



P/N Prefix				Evaluation Operation	Sample Size
HA	HB	HC	HD		
		X	X	Ultrasonic Screening†	100%
		X	X	Thermal Shock (5 Cycles for HC and 20 Cycles for HD)	100%
X	X	X	X	Standard Hi-Rel Certification Package (HA)	100%
		X	X	Destructive Physical Analysis	see table*
	X	X	X	85/85 (Low Voltage Moisture Humidity)	13 units*
	X	X	X	Solderability (Solderable or Solder Coated Only)	5 units*
	X	X	X	Wire Bond Test (Gold Terminated Chips Only)	13 units*
			X	Life Test (2000)	25 units*

DPA Sample Table	
Lot Size	Sample
1 - 500	14
501 - 10,000	32
10,001 - 35,000	50
35,001 and up	80

\* Additional sample units required that have passed the 100% testing along with the deliverable (flight) quantity.

† Ultrasonic Screening does not apply to SLC products.