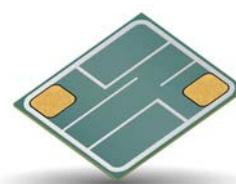
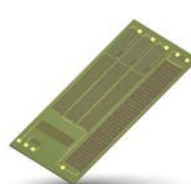
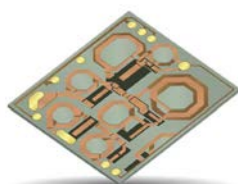
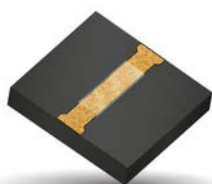
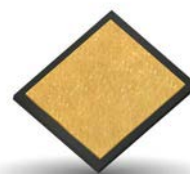


# WIRE BOND COMPONENTS PRODUCT GUIDE

FOR CHIP AND ASSEMBLY



### GD, GH, GB SERIES & ARRAYS

#### MARKETS & APPLICATIONS

- Hybrid Circuits
- Military Communications Equipment
- Decoupling wide band noise in high frequency systems
- DC Blocking close to semiconductor ICs
- MMICs
- RFICs
- Optical communications
- Instrumentation
- Test Equipment



#### FEATURES & ADVANTAGES

- GD Series: Highest dielectric constant of 60,000
- GH Series: Dielectric constant from 14 to 30,000
- GB Series: Bordered SLCs with dielectrics 14 to 30,000
- Miniature Sizes – 0.010x0.010" to 0.10x0.10"
- Gold Terminations
- Wire Bondable
- High dielectric constant for high capacitance values in miniature

#### DIELECTRICS

PART NUMBER	SUBSTRATE	LENGTH (mils)	WIDTH (mils)
GD	Ultra-Maxi		+/- 15%
GH/GB	Maxi+		+/- 15%
GH/GB	Maxi		+/- 15%
GH/GB	X7S		+/- 22%
GH/GB	X7R		+/- 15%
GH/GB	Temperature Compensating	200	±7.5% (non-linear)
		420	-2,000 ± 500 ppm/°C
		650	-4,700 ± 1,500 ppm/°C
GH/GB	NP0	14 - 60	0 ± 30 ppm/°C

Minimum Size: 0.009 x 0.009 in. (0.229 x 0.229 mm)  
Maximum Size: Specified by the Customer  
Nominal Thickness: 0.0045 to 0.007 in. (0.114mm to 0.178mm)

#### MILITARY SPECIFICATIONS

MIL-REFERENCE	PARAMETERS	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	LifeTest	108

#### SAMPLE KITS

SAMPLE KIT PIN	SERIES	PARTS INCLUDED
KITSLCK60KSAMPL	GD Series Dielectric Constant = 60,000	GD1030301ZAW, GD1530601ZAW, GD2030102ZAW, GD3030202ZAW
KITSLCK20KSAMPL	GH Series Dielectric Constant = 20,000	GH0158101MA6N, GH0258221MA6N, GH0258471MA6N, GH0358102MA6N, GH0458182MA6N
KITSLCK30KSAMPL	GH Series Dielectric Constant = 30,000	GH159331MA6N, GH0259751MA6N, GH0359152MA6N, GH0459302MA6N, GH0559602MA6N
KITSLCZDIESAMPL	GH Series X7S Dielectric	GH015Z101MA6N, GH025Z221MA6N, GH035Z471MA6N, GH045Z102MA6N

# WIRE BOND CAPACITORS

## TRANSMISSION LINE MIM CAPACITORS



### METAL-INSULATOR-METAL

#### MARKETS & APPLICATIONS

- DC Blocking at UHF
- High Frequency Link
- RF Microwave applications

#### FEATURES & ADVATANGES

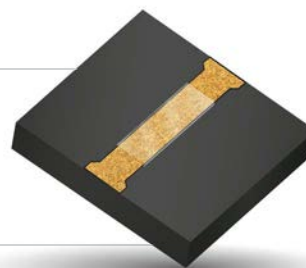
- HFSS Design Unique for every device
- Gold Wirebondable
- Copper Conductor Design for improved Circuit Conductivity
- Designs Optimized for RF/Performance
- ROHS Compliant

#### SUBSTRATE MATERIALS

- Alumina (Al<sub>2</sub>O<sub>3</sub>)
- Quartz

#### GENERAL CHARACTERISTICS

CHARACTERISTICS	DESIGN DEPARTMENT
Capacitor Range	0.3 - 50 pF
Tolerance	±20%
Backing	Gold Metalization
Termination Type	Gold Wire Bond



#### AVAILABLE PART NUMBERS

PART NUMBER	SUBSTRATE	LENGTH (mils)	WIDTH (mils)	THICKNESS (mils)	CAP VALUE (pF)*
MV0304CA150MABW	Alumina	30	40	10	15
MV0402CA150MAAW	Alumina	40	20	5	15
MV0802CA150MAAW	Alumina	80	20	5	15
MV0804CA1R0MABW	Alumina	80	40	10	1
MV0804CA150MABW	Alumina	80	40	10	15
MV3204CA150MABW	Alumina	120	40	10	15
MV0404CA150MABW	Alumina	40	40	10	15
MV0505CA150MQAW	Quartz	50	50	5	15

\*Capable Capacitance Value Ranging from: 0.3 - 50 (pF)  
Most Common Capacitance Values Requested are 1.5, and 15 (pF)

#### TEST METHODS

SPECIFICATION		LIMIT
MIL-STD-883-2011.8	Bond Strength	> 3 gm min. w/ 0.001" Au Wire
MIL-STD-883-2019.10	Bond Strength	Size Dependent See Procedure
MIL-STD-202-108	Life	1,000 hrs @ 125°C

# WIRE BOND CAPACITORS

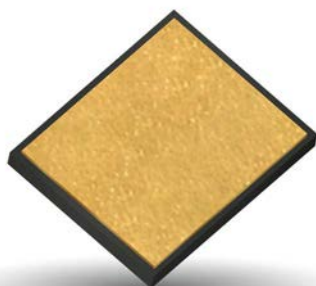
## MOS CAPACITORS



### MS SERIES

#### MARKETS & APPLICATIONS

- Hybrid Circuits
- MMICs
- RFICs
- Aerospace
- Bias Networks
- Test & Measurement Equipment
- GaN, SiCr & other transistor packages
- TOSA & ROSA Optical Sub-assemblies



#### MIL TEST METHODS

MIL-REFERENCE	PARAMETERS	METHOD OR PARAGRAPH
MIL-STD-883	Bond Strength	2011.7
MIL-STD-883	Shear Strength	2019
MIL-PRF-49464	Thermal Shock	107
MIL-STD-202	Life Test	108
MIL-STD-202	Load Humidity (THB)	103 at rated VDC

#### FEATURES & ADVANTAGES

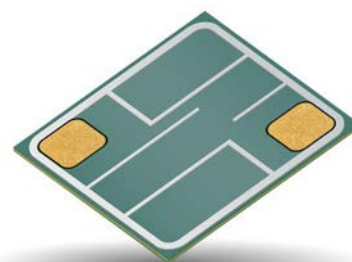
- Small Size: 0.010 to 0.070 inches square
- Capacitance: 1.0 to 1000pF
- High Q
- Frequency range: DC to 20GHz

### WBR SERIES

# WIRE BOND RESISTORS

#### MARKETS & APPLICATIONS

- Military/Defense
- Hybrid Designs
- Multi-Chip Module (MCM)
- Instrumentation
- High Reliability Microelectronics
- RF/Microwave Communications



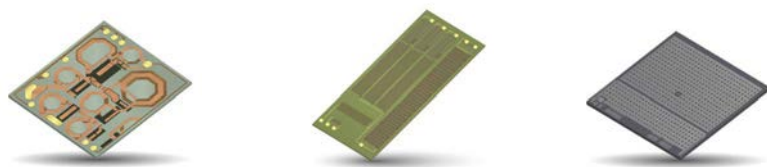
#### FEATURES & ADVANTAGES

- Small Size 0202
- Resistance from 1Ω to 10MΩ
- Extremely Tight Tolerance (0.1% - 5%)
- 250 mW Power Rating
- Ultra High Stability
- High Reliability
- Top Contact
- Isolated Bottom
- Unique Value Marking

### CAPACITOR ARRAYS, RESISTOR ARRAYS, & INTERPOSERS

#### FEATURES

- Integrate capacitors, inductors, and resistors in a miniature package
- Fully custom design evaluated upon request
- Create a system in package with an KYOCERA AVX interposer as a submount



#### SUBSTRATE OPTIONS & FEATURES

SUBSTRATE	THICKNESS	NOTE
P-Si Boron Doped	4 - 25mil	15 $\Omega$ -cm
N++ Si Arsenic Glass	4 - 25mil	0.002 $\Omega$ -cm
Boro-silicate Glass	4 - 25mil	$10^{13}$ $\Omega$ -cm
Alumina Nitride	10 - 60mil	Lapped or Polished
Alumina	4 - 50mil	Lapped or Polished
Fused Silica	4 - 25mil	$10^{14}$ $\Omega$ -cm

#### CONDUCTOR OPTIONS & THICKNESS

CONDUCTOR	THICKNESS
Al	150 - 40kÅ
Au	500 - 20kÅ
Au Plated	0.5 - 20 $\mu$ m
Cu	2k - 25kÅ
Cu Plated	0.5 - 100 $\mu$ m
Ni(V)	500 - 10kÅ
Pd	500 - 5kÅ
Pt	1K - 4kÅ (2,500Å Typical)
TaN	300 - 1.5kÅ
TiW	300 - 2kÅ (500Å Typical)

#### PASSIVE OPTIONS & FEATURES

PASSIVE ELEMENT	RESISTORS		CAPACITORS	INDUCTORS
Material	TaN	SiCr	SiOn	Cu
Sheet Resistance or Specific Capacitance	10 - 100 $\Omega$ /sqr	700 - 1,400 $\Omega$ /sqr	100 pf/sqmm	N/A
Typical Ranges	1 $\Omega$ - 1M $\Omega$	47 - 20 $\Omega$	1 - 500pF	0.5 - 20nH
Breakdown Conditions				
Minimum Tolerance	$\pm 0.1\%$	$\pm 0.1\%$	$\geq 0.5\%$ Trimmed $\pm 4\%$ Untrimmed	$\pm 5\%$
Performance Note: TCR inppm/ $^{\circ}$ C	TCR $\pm 150$ $\pm 100$ $\pm 50$ $\pm 25$	TCR $\pm 150$ $\pm 100$ $\pm 50$ $\pm 25$	K 6.1 TCC 60	$Q \leq 80$



## ABOUT KYOCERA AVX

KYOCERA AVX is a worldwide leading supplier of passive electronic components, connectors, passive and active antennas, sensors and control units. KYOCERA AVX offers a wide range of components manufactured to the highest quality and reliability standards.

Our products include ceramic, solid electrolytic and film capacitors, pulse supercapacitors, varistors, thermistors, filters, inductors, diodes, antennas, connectors, sensors and control units. Our worldwide manufacturing capability includes facilities located in seventeen countries on four continents, allowing us to continue meeting customer needs on a global basis. KYOCERA AVX is committed to supporting the needs of its customers for applications today and in the future.

Together with continuous quality improvement process, KYOCERA AVX components provide reliable solutions for consumer application needs.

As a technology leader, KYOCERA AVX will continue to add to its product portfolio on a regular basis. Details of new devices being offered and their specifications will be shown on the KYOCERA AVX website: [WWW.KYOCERA-AVX.COM](http://WWW.KYOCERA-AVX.COM).

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