AVX RF
A KYOCERA GROUP COMPANY

IMAGINATION. CREATION. INNOVATION.

- 3DB HYBRID COUPLERS
- ANTENNA SWITCH MODULES
- ATTENUATORS
- BLUETOOTH MODULES
- CONNECTORS
- DIRECTIONAL COUPLERS
- HI-Q CAPACITORS
- INDUCTORS
- LOW ESR NP0 CAPACITORS
- LOW PASS FILTERS
- MOS CAPACITORS
- PASSIVE MICRO COMPONENTS
- POWER RF CAPACITORS
- RX MODULES
- SAW FILTERS
- SINGLE LAYER CAPACITORS
- TIMING DEVICES
- TX MODULES

AVX RF/Microwave Short Form

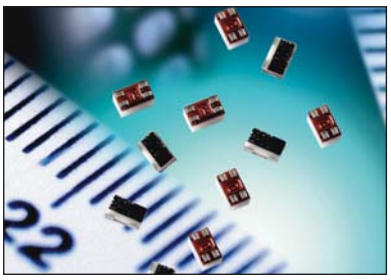
RF Microwave Products Application Guide

APPLICATIONS / PRODUCTS	Medical (MRI) Public Safety Radio Marine Radio Power Amplifiers	ISM Radios WLAN (802.XX) Gigabit Ethernet/Optical Power Amplifiers Basestation Amplifiers	Space & Military WLAN (802.XX) Gigabit Ethernet/Optical Power Amplifiers Basestation Amplifiers	Space & Military Gigabit Ethernet/Optical Power Amplifiers
System Frequency	Up to 300MHz	300-3000MHz	3-30GHz	30GHz+
High Directivity Couplers (0402, 0603)		✓	✓	
Couplers (0603, 0805)		✓	✓	
3dB Couplers		✓	✓	
KNA Filter	✓	✓		
Low Pass Filter 0805		✓	✓	
Low Pass Filter 0603		✓	✓	
EMI Miniature Filter	✓	✓	✓	
Inductors (0603,0805)	✓	✓	✓	
LGA Inductors 0402	✓	✓	✓	
Ultra Tight Tolerance RF Capacitors (Accu-P®)	✓	✓	✓	
SQ CS,CA,CB Capacitors	✓	✓	✓	
U Dielectric Capacitors	✓	✓	✓	
HQ CC/CE Capacitors	✓	✓	✓	
HQ L Capacitors	✓	✓	✓	
Single Layer Capacitors (SLC)		✓	✓	✓
Bordered Single Layer Capacitors		✓	✓	✓
Multi-Padded Single Layer Capacitors		✓	✓	✓
Maxi Single Layer Capacitors		✓	✓	✓
GZ Capacitors	✓	✓	✓	✓
GZ StackCap	✓	✓	✓	✓
MOS/MIS Capacitors	✓	✓	✓	✓
Filters - Passive Micro Components	✓	✓	✓	
Inductors - Passive Micro Components	✓	✓		
Resistors - Passive Micro Components	✓	✓	✓	
Capacitors - Passive Micro Components	✓	✓	✓	
Attenuators	✓			
Bluetooth Module RB06		✓		
Bluetooth Module RB04		✓		
Voltage Controlled Crystal Oscillators	✓			
Antenna Switch Module		✓		
CMOS Clock Oscillators	✓			
Crystal Units	✓			
SMD MHz Resonators	✓			
RF Shield Lock Connector 8069	✓	✓	✓	✓
MOBO™ Standard I/O with RF Co-ax	✓	✓		
Pogo Pin I/O with RF Co-ax	✓	✓		

RF Microwave Short Form

Table of Contents

High Directivity Couplers (0402, 0603)

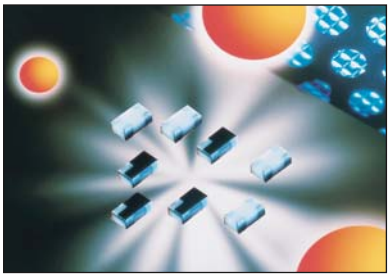


- High Directivity
- Low Parasitics
- 4 Terminal
- 3 Watts Continuous
- Low Profile

HOW TO ORDER

CP	0603	X	****	X	L	TR
Style Directional Coupler	**Size** 0402 0603	**Type**	**Frequency** MHz	**Sub Type**	**Termination Code** L = LGA Sn90, Pb10 N = LGA Sn100	**Packaging Code** TR = Tape and Reel

Directional Couplers (0603, 0805)



- 50 ohm Impedance
- Lead Free
- 800 MHz to 6 GHz
- 3 Watts Continuous
- Low Profile

HOW TO ORDER

CP	0603	X	****	X	W	TR
Style Directional Coupler	**Size** 0603 0805	**Type**	**Frequency** MHz	**Sub Type**	**Termination Code** W = Sn90, Pb10 S = Sn100	**Packaging Code** TR = Tape and Reel

3dB Couplers

- 0805 Size
- 10 Watts Continuous
- 4 Terminal
- Low Insertion Loss
- High Isolation

HOW TO ORDER

DB	0805	A	****	A	W	TR
Style	**Size**	**Type**	**Frequency** MHz	**Sub Type**	**Termination Code** W = Sn90, Pb10 S = Sn100	**Packaging Code** TR = Tape and Reel

EMI Filter – KNA Series

- Distributed constant type LC Filter
- Prevents Ringing caused by Circuit Impedance
- Suitable for High Speed Digital Circuits and Video Signal Lines
- Stable Noise Attenuation over Wide Frequency Ranges
- Small, Low Profile SMT Package

HOW TO ORDER

KNA	21	400	W	3
Series	**Size** EIA = 0805 EIAJ = 2012	**Frequency** 400 = 400MHz *Frequency at Attenuation typical 3dB, max 6dB	**Taping Direction** W = Standard	**Quantity per Reel** 3 = 3000 pieces

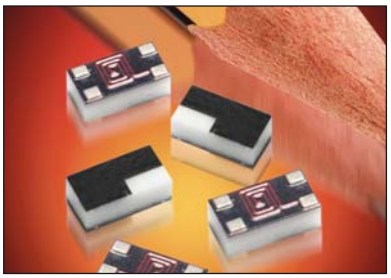
Low Pass Filter 0805

- 50 ohm Impedance
- 3 Watts Continuous
- Low Profile
- 800 MHz to 3.5 GHz
- 4 Terminal

HOW TO ORDER

LP	0805A	0902	AW	TR
Style Low Pass	**Size** 0805	**Frequency** MHz	**Termination** Nickel/Solder (Sn/Pb)	**Packaging Code** TR = Tape and Reel

Low Pass Filter 0603

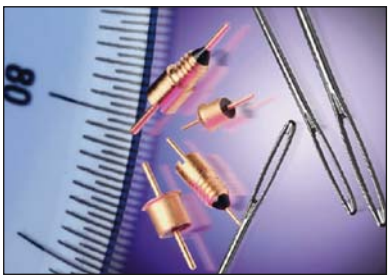


- 50 ohm Impedance
- 3 Watts Continuous
- Low Profile
- Lead Free
- Low Parasitics

HOW TO ORDER

LP	0603	A	XXXX	A	N	TR
Style	**Size** 0603	**Type**	**Frequency** MHz	**Sub Type**	**Termination** LGA Ni/Lead Free Solder	**Tape & Reel**

EMI Miniature Filters

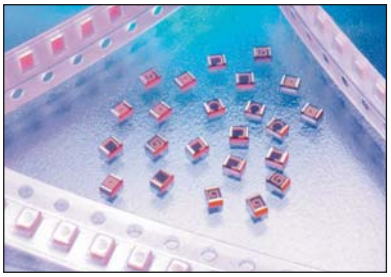


- World's smallest filters 73mm diameter
- Available in screw-in and solder-in style
- Superior insertion loss up to 10GHz
- Available in "L", "C", or "T" circuit
- Rugged discoidal capacitor design

HOW TO ORDER

ZXS	2	C	3	–	1 0 3
Basic Style ZX5 ZYS ZZS SXD SYD SZD	**Circuit** 1 = Feed Thru 2 = L-Section 4 = T-Section	**Voltage** A = 100 VDC B = 200 VDC C = 50 VDC	**Lead** 3 = Special	**Reliability Code** – = Standard R = R-Level B = Class "B" S = Class "S"	**3-Digit Capacitor Code** (In pF)

Inductors (0603, 0805)

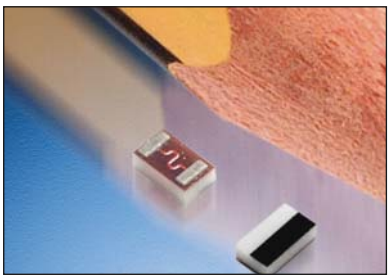


- Tight Tolerance
- Hi-Q
- High Self Resonance
- High RF Power Capability
- Low DC Resistance

HOW TO ORDER

L	0805	4R7	D	E	W	TR
Product Inductor	**Size** 0603 0805	**Inductance** Expressed in nH (2 significant digits + number of zeros) **for values <10nH,** letter R denotes decimal point. Example: 22nH = 220 4.7nH = 4R7	**Tolerance for** **L ≤ 4.7nH,** B = ±0.1nH C = ±0.2nH D = ±0.5nH **L ≥ 10nH,** G = ±2% J = ±5% **4.7nH<L<10nH,** C = ±0.2nH D = ±0.5nH	**Specification Code** E = Accu-L® 0805 technology G = Accu-L® 0603 technology	**Termination Code** W = Nickel/ solder coated (Sn63, Pb37)	**Packaging Code** TR = Tape and Reel (3,000/reel)

LGA Inductors (0402)

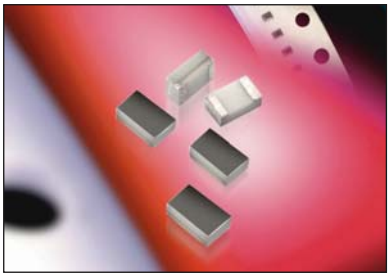


- Inherent Low Profile
- Low Parasitics
- Tight Tolerance
- Better Heat Dissipation
- Low Profile

HOW TO ORDER

L	0402	XXX	X	H	L	TR
Inductor	**Size** 0402 0603	**Inductance** (nH)	**Tolerance** A = ±0.05nH B = ±0.1nH C = ±0.2nH D = ±0.5nH	**Series** F = ±1% G = ±2% J = ±5%	**LGA Termination**	**Tape & Reel**

Ultra Tight Tolerance RF Capacitors (Accu-P®)



- Tight Tolerance
- No secondary resonances
- Repeatable lot to lot
- 0201-1210 size
- Low ESR

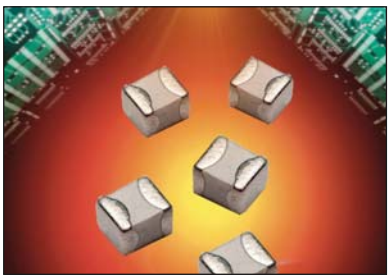
HOW TO ORDER

0805	5	J	120	G	B	W	TR
Size 0201 0402 0603 0805 1210	**Voltage** 1 = 100V 5 = 50V 3 = 25V Y = 16V Z = 10V	**Temperature Coefficient** (1) J = 0±30ppm/°C (-55°C to +125°C) K = 0±60ppm/°C (-55°C to +125°C)	**Capacitance** Capacitance expressed in pF. (2 significant digits + number of zeros) **for values <10pF,** letter R denotes decimal point. Example: 68pF = 680 8.2pF = 8R2	**Tolerance** **for C≤2.0pF*** P = ±0.02pF Q = ±0.03pF A = ±0.05pF B = ±0.1pF C = ±0.25pF **for C≤3.0pF** Q, A, B, C **for C≤5.6pF** A, B, C **for 5.6pF<C<10pF** B, C, D **for C≥10pF** F = ±1% G = ±2% J = ±5%	**Specification Code** B = Accu-P® technology	**Termination Code** W = Nickel/ Solder Coated ***Accu-P® 0201 & 0402*** Sn90, Pb10 T = Nickel/High Temperature Solder Coated ***Accu-P® 0603, 0805, 1210*** Sn96, Ag4 S = Nickel/Lead Free Solder Coated ***Accu-P® 0402*** Sn100	**Packaging Code** TR = Tape and Reel

(1) TC's shown are per EIA/IEC Specifications.

* Tolerances as tight as ±0.01pF are available. Please consult the factory.

SQCS, SQCA & SQCB



- High Self Resonance
- WVDC to 500 VDC
- Low ESR
- Hi-Rel versions available
- Lead Free available

HOW TO ORDER

SQ	CB	7	M	100	J	A	1	ME
AVX Style SQ	**Case Size** CS = 0603 CA = 0605 CB = 1210	**Voltage Code** 5 = 50V 1 = 100V E = 150V 2 = 200V V = 250V 9 = 300V 7 = 500V	**Temperature Coefficient Code** M = +90±20ppm/°C A = 0±30ppm/°C C = 15% ("J" Termination only)	**Capacitance** EIA Capacitance Code in pF. First two digits = significant figures or "R" for decimal place. Third digit = number of zeros or after "R" significant figures.	**Capacitance Tolerance Code** A = ±.05 pF B = ±.1 pF C = ±.25 pF D = ±.5 pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20% N = ±30%	**Failure Rate Code** A = Not Applicable	**Termination Style Code** 1 = Pd/Ag 7 = Ag/Ni/Au J = Nickel Barrier Sn/Pb (60/40) T = 100% Tin	**Packaging Code** ME = 7" Reel RE = 13" Reel WE = Waffle Pack 3A = SQCS 13" 6A = SQCS Waffle Pack 1A = SQCS 7"

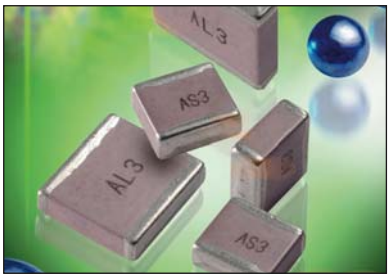
U Dielectric

- Low ESR
- High Q
- Low Cost
- High Self Resonance
- 0402-1210 sizes

HOW TO ORDER

0805	1	U	100	J	A	T	2	A
Case Size 0402 0603 0805 1210	**Voltage Code** 3 = 25V 5 = 50V 1 = 100V 2 = 200V	**Dielectric = Ultra Low ESR**	**Capacitance** EIA Capacitance Code in pF. First two digits = significant figures or "R" for decimal place. Third digit = number of zeros or after "R" significant figures.	**Capacitance Tolerance Code** B = ±0.1pF C = ±0.25pF D = ±0.5pF F = ±1% G = ±2% J = ±5% K = ±10% M = ±20%	**Failure Rate Code** A = Not Applicable	**Termination** T = Plated Ni and Tin	**Packaging Code** 2 = 7" Reel 4 = 13" Reel 9 = Bulk	**Special Code** A = Standard

HQCC & HQCE

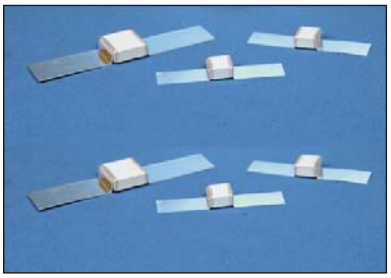


- 600 to 4,000 VDC
- High Current capable
- Low ESR
- Non-Magnetic Versions
- Leaded versions available

HOW TO ORDER

HQCC	A	A	271	J	A	T	1	A
AVX Style HQCC HQCE	**Voltage** 600V = C 1000V = A 1500V = S 2000V = G 2500V = W 3000V = H 4000V = J	**Temperature Coefficient** C0G = A	**Capacitance Code** (2 significant digits + no. of zeros) Examples: 4.7 pF = 4R7 10 pF = 100 100 pF = 101 1,000 pF = 102	**Capacitance Tolerance** C = ±0.25pF (<13pF) D = ±0.50pF (<25pF) F = ±1% (≥25pF) G = ±2% (≥13pF) J = ±5% K = ±10% M = ±20%	**Test Level** A = Standard	**Termination** 1 = Pd/Ag T = Plated Ni and Sn (RoHS Compliant) J = 5% Min Pb	**Packaging** 1 = 7" Reel 3 = 13" Reel 9 = Bulk	**Special Code** A = Standard

HQLC & HQLE

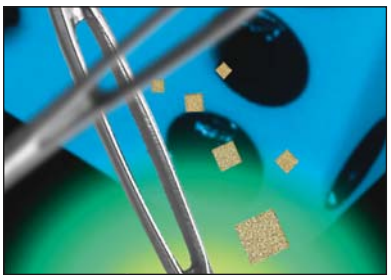


- 600 to 4,000 VDC
- High Current capable
- Low ESR
- Non-Magnetic Versions
- Leaded versions available

HOW TO ORDER

HQLC	A	A	271	J	A	A
AVX Style HQLC HQLE	**Voltage** 600V = C 1000V = A 1500V = S 2000V = G 2500V = W 3000V = H 4000V = J	**Temperature Coefficient** C0G = A	**Capacitance Code** (2 significant digits + no. of zeros) Examples: 4.7 pF = 4R7 10 pF = 100 100 pF = 101 1,000 pF = 102	**Capacitance Tolerance** C = ±0.25pF (<13pF) D = ±0.50pF (<25pF) F = ±1% (≥25pF) G = ±2% (≥13pF) J = ±5% K = ±10% M = ±20%	**Test Level** A = Standard	**Lead Style** A = Axial Ribbon M = Microstrip

Single Layer Capacitors (SLC) – GH Series

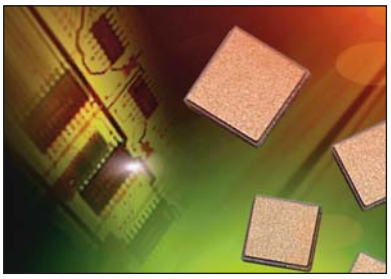


- Dielectrics - NPO thru X7R
- High Q
- Voltage Ratings to 200 VDC
- High Wirebond Strength
- Decoupling/Bypass Applications

HOW TO ORDER

GH	35	5	A	6R8	K	A	6N
Type Code GH = No Borders	**Case Code**	**Working Voltage Code** 5 = 50WVDC 1 = 1000WVDC	**Dielectric Code** A = NP0 4 = TC 7 = TC Y = TC C = X7R	**Capacitance Value** EIA Cap Code in pF First two digits = significant figures or "R" for decimal place. Third digit = number of zeros or after "R" significant figures.	**Capacitance Tolerance** <10pF A = ±0.05pF (Special order) B = ±0.1pF C = ±0.25pF D = ±0.5pF >10pF J = ±5% K = ±10% M = ±20%	**Termination Code** A = Au (100 µ-in min) over Ti/W (1000 Å nom) also available N = Ti/W-Ni-Au	**Packaging Code** 6N = Antistatic Waffle Pack

Bordered Single Layer Capacitors – GB Series

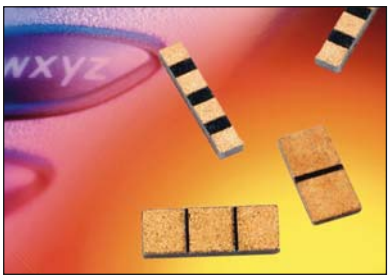


- Minimizes Epoxy Shorting
- Enhances Vision Recognition
- Excellent Wirebonding
- Multiple Dielectrics including Maxi & Maxi+
- Decoupling/Bypass Applications

HOW TO ORDER

GB	35	5	A	6R8	K	A	6N
Type Code GB = With Borders	**Case Code**	**Working Voltage Code** 5 = 50WVDC 1 = 1000WVDC	**Dielectric Code** A = NP0 4 = TC 7 = TC Y = TC C = X7R	**Capacitance Value** EIA Cap Code in pF First two digits = significant figures or "R" for decimal place. Third digit = number of zeros or after "R" significant figures.	**Capacitance Tolerance** <10pF A = ±0.05pF (Special order) B = ±0.1pF C = ±0.25pF D = ±0.5pF >10pF J = ±5% K = ±10% M = ±20%	**Termination Code** A = Au (100 µ-in min) over Ti/W (1000 Å nom) also available N = Ti/W-Ni-Au	**Packaging Code** 6N = Antistatic Waffle Pack

Multi-Padded Single Layer Capacitors

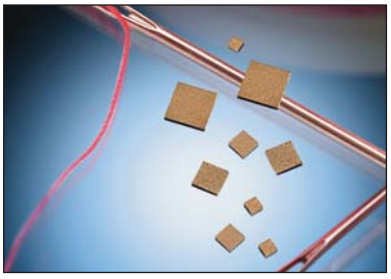


- Maximizes Board Space Efficiency
- Reduces Part Handling
- Excellent Wirebonding
- Multiple Dielectrics including Maxi/Maxi+
- Custom Configurations Available

HOW TO ORDER

GH	B	5	5	8	102	P	A	6N
Type Code	**Array Code** B = 2 C = 3 D = 4 E = 5 F = 6	**Size Code** 2 = .020" W Y = .025" W 3 = .030" W 4 = .040" W 5 = .050" W S = Special	**Working Voltage Code** 5 = 50VDC	**Dielectric Code** A = NP0 C = X7R Z = X7S 8 = Maxi 9 = Maxi+	**Cap Code** EIA Cap Code in pF	**Cap Tolerance** P = +100% -0% Z = +80% -20% Dual-Caps M = ±20% available	**Termination Code** A = Au (100 µ-in min) over Ti/W (1000 Å nom) also available N = Ti/W-Ni-Au	**Packaging Code** 6N = Antistatic Waffle Pack

Maxi/Maxi+ Single Layer Capacitors

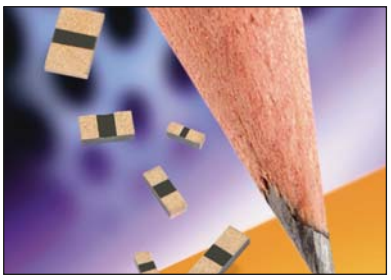


- 20K & 30K Dielectric Constants
- Industry Leading Volumetric Efficiency
- X7R Temperature Characteristics
- Excellent for RF Bypass Applications
- High Bond Strength

HOW TO ORDER

GH	02	5	8	102	M	A	6N
Type Code GH = No Borders GB = With Borders	**Case Size** 01 02 03 04 05 06	**Working Voltage Code** 5 = 50 VDC	**Dielectric Code** 8 = Maxi (k = 20,000) 9 = Maxi+ (k = 30,000)	**Capacitance Value** EIA Cap Code in pF	**Capacitance Tolerance** K = ±10% M = ±20% Z = +80% -20%	**Termination Code** A = Au (100 µ-in min) over Ti/W (1000 Å nom) also available N = Ti/W-Ni-Au	**Packaging Code** 6N = Antistatic Waffle Pack

GZ Surface Mount SLC

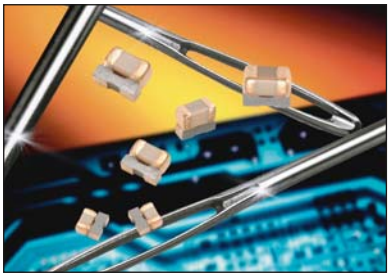


- Performance thru 40 GHz
- Surface Mount Configuration
- 6 Standard Footprints - 0415 thru 0805
- Compatible with All Standard Soldering Processes
- Custom Designs Available

HOW TO ORDER

GZ	0402	5	800	Z	N	W
Style	**Mounting Footprint**	**Voltage Rating** 5 = 50V	**Capacitance** EIA Cap Code in pF	**Capacitance Tolerance** Z = +80%, 20%	**Termination (Sputtered)** TiW-Ni-Au	**Packaging Code** Waffle Pack

GZ StackCap



- DC Blocking to 40 GHz
- High Temp SLC/MLC Joint
- 0415, 0402 & 0602 Footprints
- No Solder Embrittlement Issues
- Custom Designs Available

HOW TO ORDER

GZ	0402	Z	D	104	M	800	Z	N	T or W
Style	**Mounting Footprint**	**Voltage Rating** Z = 10V Y = 16V 3 = 25V	**MLC Dielectric** X7R = C X5R = D	**MLC Capacitance** EIA Cap Code in pF	**MLC Tolerance** M = ±20%	**SLC Capacitance** EIA Cap Code in pF	**SLC Tolerance** Z = +80% -20%	**SLC Termination** Ti/W-Ni-Au	**Packaging Code** T = Tape & 7" Reel W = Waffle Pack

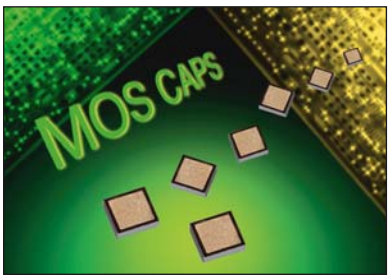
PMC (PASSIVE MICRO COMPONENTS)
RESISTORS, CAPACITORS & INDUCTORS
DISCRETE, ARRAY OR RCL FILTERS

Typical R, C, L Materials & Designs Offered

Passive	Resistors		Capacitors				Inductor
Material	TaN	SiCr	SiON	SiO_2	BCB	X7R	Cu
Minimum Chip Size (mm)	0.5x0.5	0.5x0.5	0.25x0.25	0.25x0.25	0.5x0.5	0.5x0.5	1.0x0.5
Range	0.47-1M Ohm	47R-20M Ohm	1-500pF	1-500pF	1-50pF	2.2pF-400nF	0.5-20nH
Trimmable	Yes	Yes	Yes	No	Yes	No	No
Tolerance NOTE value dependent	0.05%	0.05%	≥ 0.5%; or ≥ 0.05pF	≥ 0.5%; or ≥ 0.05pF	≥ 0.5%; or ≥ 0.05pF	5%	5%
Performance NOTE TCR, in ppm/°C	TCR -100 to -150	TCR ±25; ±250	K 5.8 TCC 60	K 4 TCC 30	K 2.7 TCC 42	K 1000	Q ≤ 80
I/O Type	BGA (Ball Grid Array), LGA (Land Grid Array), and gold or aluminum wire bond						

NOTE: Maximum chip size 6x6mm

MOS/MIS Capacitors

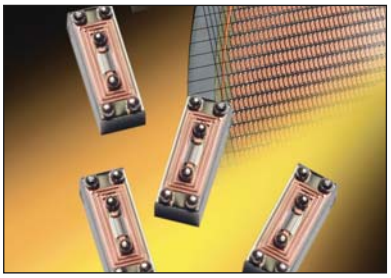


- GHz operation
- Ultra stable capacitance through time and with temperature
- Custom specification welcome, arrays or binary
- Size down to 10x10 mils
- SiO_2 and SiON Dielectrics

HOW TO ORDER

MS	20	3	S	100	M	3893	W
Series Code MS = MOS MI = MIS	**Case Size** Square Size in mils 10, 20, 30, 40 OS = Special Order Please supply design	**Working Voltage** 2 = 2V 4 = 4V Z = 10V 3 = 25V 5 = 50V 1 = 100V	**Dielectric Code** S = SiO_2 For MOS Style ONLY N = SiON For MIS Style ONLY	**Capacitance** EIA Capacitance Code in pF First two digits = significant figures or R for decimal place Third digit = number of zeros or after "R" significant figures	**Capacitance Tolerance** F = ±1% (MOS only) J = ±5% (MOS only) K = ±10% M = ±20%	**Termination Code** 1st position top layer 2nd position top bonding layer 3rd position bottom bonding layer 4th position bottom layer 1=Al, 2=Cr, 3=Au, 4=Ni, 5=Pd, 6=Ta, 7=TaN, 8=TiW, 9=TiWNi OSOS=Special Order Please Supply Design	**Packaging** W = Antistatic Waffle Pack T = Tested, Whole Wafer D = Tested. Diced Wafer on Tape

RCLs/Filters – Passive Micro Components

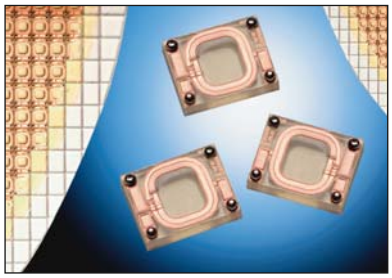


- Trimmable capacitors and resistors for superior performance
- Bring us your analog RCL designs
- BGA, LGA, wire bondable terminations
- Silicon, glass or quartz substrates
- RF blocking, DC bias filters

HOW TO ORDER

N	2	2	2	5	B	2	A	C	E	G	1	2A
Integrated Passive Thin Film	**Number of Resistors** 0-9 a = 10 b = 11 c = 12 etc.	**Number of Capacitors** 0-9 a = 10 b = 11 c = 12 etc.	**Number of Inductors** 0-9 a = 10 b = 11 c = 12 etc.	**Rated Voltage** 2 = 2V 4 = 4V Z = 10V 3 = 25V 5 = 50V	**Wafer Substrate** A = Glass B = Silicon C = Quartz S = Special	**Resistor Material** 1 = SiCr 2 = TaN X = NA	**Capacitor Material** A = NP0 C = X7R X = NA	**Inductor Material** C = Copper X = NA	**Special Features** A = Al wire pad E = Eutectic F = Fiducial G = Au wire pad H = High Temp Solder U = Lead Free	**Failure Rate** A = Standard G = Medical	**Termination Type** 1 = BGA 2 = Flip Clip 3 = Wire Bond 4 = LGA "Land Grid Array"	**Packaging** 2A = 7" Reel 6A = Waffle Pack T = Tested, whole wafer D = Tested, diced wafer on tape

Inductors – Passive Micro Components

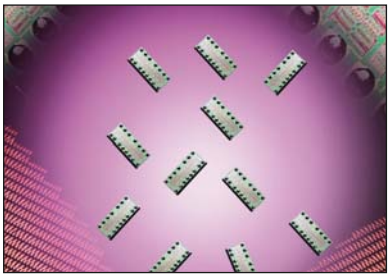


- Up to 40nH or Q of 80
- Low profile multiturn designs
- BGA, LGA, wire bondable terminations
- Glass substrates for improved performance
- Thick precision plated copper layers

HOW TO ORDER

N	X	X	2	L	B	X	X	C	E	G	1	2A
Integrated Passive Thin Film	**Number of Resistors** X = NA	**Number of Capacitors** X = NA	**Number of Inductors** 0-9 a = 10 b = 11 c = 12 etc.	**Rated Voltage** L = Current and Frequency Dependent	**Wafer Substrate** A = Glass B = Silicon C = Quartz S = Special	**Resistor Material** X = NA	**Capacitor Material** X = NA	**Inductor Material** C = Copper	**Special Features** A = Al wire pad E = Eutectic F = Fiducial G = Au wire pad H = High Temp Solder U = Lead Free	**Failure Rate** A = Standard G = Medical	**Termination Type** 1 = BGA 2 = Flip Clip 3 = Wire Bond 4 = LGA "Land Grid Array"	**Packaging** 2A = 7" Reel 6A = Waffle Pack T = Tested, whole wafer D = Tested, diced wafer on tape

Resistors – Passive Micro Components

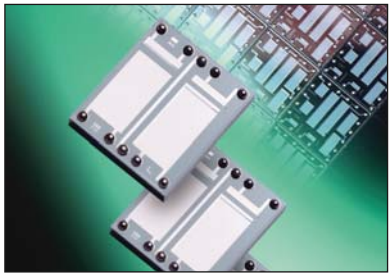


- High Ohmic SiCr and TaN materials
- Laser trimmable designs, matched arrays and networks
- BGA, LGA, wire bondable terminations
- Silicon, glass or quartz substrates
- High voltage designs up to 1000 volts

HOW TO ORDER

N	2	X	X	R	B	2	X	X	E	G	1	2A
Integrated Passive Thin Film	**Number of Resistors** 0-9 a = 10 b = 11 c = 12 etc.	**Number of Capacitors** X = NA	**Number of Inductors** X = NA	**Rated Voltage** R = Power Dependent	**Wafer Substrate** A = Glass B = Silicon C = Quartz S = Special	**Resistor Material** 1 = SiCr 2 = TaN	**Capacitor Material** X = NA	**Inductor Material** X = NA	**Special Features** A = Al wire pad E = Eutectic F = Fiducial G = Au wire pad H = High Temp Solder U = Lead Free	**Failure Rate** A = Standard G = Medical	**Termination Type** 1 = BGA 2 = Flip Clip 3 = Wire Bond 4 = LGA "Land Grid Array"	**Packaging** 2A = 7" Reel 6A = Waffle Pack T = Tested, whole wafer D = Tested, diced wafer on tape

Capacitors – Passive Micro Components

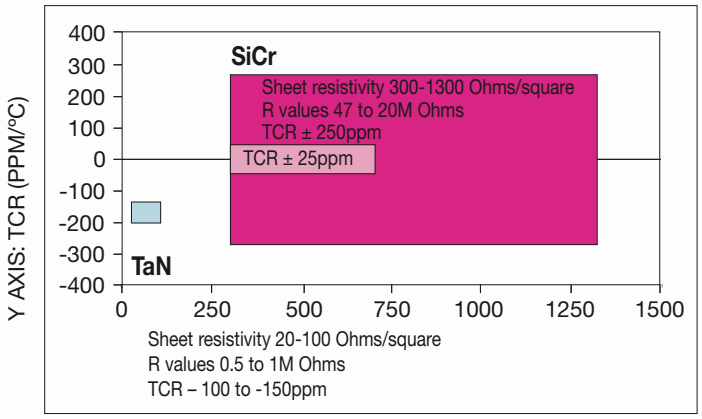


- Precision tolerances, 0.5% capacitance, 0.05% tracking available
- NP0 materials suitable for GHz applications
- BGA, LGA, wire bondable terminations
- Complex matched arrays and networks welcome
- Silicon, glass or quartz substrates
- Stability, ±30, 42, or 60 ppm/°C

HOW TO ORDER

N	X	2	X	Z	B	X	A	X	E	G	1	2A
Integrated Passive Thin Film	**Number of Resistors** X = NA	**Number of Capacitors** 0-9 a = 10 b = 11 c = 12 etc.	**Number of Inductors** X = NA	**Rated Voltage** 2 = 2V 4 = 4V Z = 10V 3 = 25V 5 = 50V 1 = 100V	**Wafer Substrate** A = Glass B = Silicon C = Quartz S = Special	**Resistor Material** X = NA	**Capacitor Material** A = NP0 C = X7R	**Inductor Material** X = NA	**Special Features** A = Al wire pad E = Eutectic F = Fiducial G = Au wire pad H = High Temp Solder U = Lead Free	**Failure Rate** A = Standard G = Medical	**Termination Type** 1 = BGA 2 = Flip Clip 3 = Wire Bond 4 = LGA "Land Grid Array"	**Packaging** 2A = 7" Reel 6A = Waffle Pack T = Tested, whole wafer D = Tested, diced wafer on tape

Resistors Material Selection



Capacitor Material Details

Material	X7R	SiON	SiO_2	BCB
pF / mm² Typical	8000 @ 5V, up to 25000 @ 3V*	55	35	25
Stability	-55 to +125 ±15%	±60 ppm/°C	±30 ppm/°C	±42 ppm/°C
Rated Voltage	3 - 5	≤ 100	≤ 100	≤ 25
BDV (V/µm)	100	600	1000	300
DF	≤ 8%	≤ 0.1%	≤ 0.1%	≤ 0.1%
Voltage Stability	Less 1.25% per volt from 0 to 5 volts	Independent	Independent	Independent
Frequency Range	≤ 10 GHz	≤ 40 GHz	≤ 40 GHz	≤ 75 GHz
*Based on dielectric thickness of 0.25µm @ 3V, and 0.5µm @5V				

MODULES & TIMING DEVICES

Chip Attenuators ATC1A Series

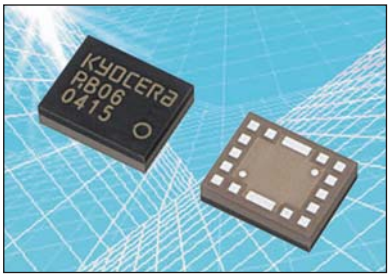
- Attenuation: 1 ~ 10dB
- 50 ohm Impedance
- Reduction in Mounting and Process Costs
- Saves PCB Space
- RoHS Compliant

HOW TO ORDER

ATC	1A	2	C	H
Series	**Size** 1A = 1.0x1.0mm	**Attenuation** (1 digit numbering) 1 = 1dB 6 = 6dB 2 = 2dB 7 = 7dB 3 = 3dB 8 = 8dB 4 = 4dB 9 = 9dB 5 = 5dB A = 10dB	**Attenuation Tolerance** C = ±0.3dB D = ±0.5dB	**Packaging** H = Taping Paper 10,000pcs/reel *2mm pitch taping

Available in Asia from KED
(Kyocera Electronic Devices)

Bluetooth Module – RB06 Series



- Best Solution for CDMA cell phones
- Miniature Size – 5.0 x 4.0 x 1.4mm
- Improved Reception Sensitivity
- Low Power Consumption
- Wide Operating Temperature Range -30 to +75°C

HOW TO ORDER

All part numbers are customer specific.

Available in Asia from KED
(Kyocera Electronic Devices)

Bluetooth Module – RB04 Series

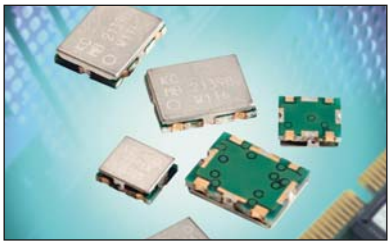
- Bluetooth Host Control Interface
- Chip Set: Bluecore3-ROM CSP
- Improved High Sensitivity – -80dBm (typ.) Low Current Consumption – 35mA (typ.)
- Ultra Miniature Size – 5.0 x 4.0 x 1.4mm
- Wide Operating Temperature Range – -40 ~ +85°C
  Power Class 2, RoHS Compliant

HOW TO ORDER

All part numbers are customer specific.

Available in Asia from KED
(Kyocera Electronic Devices)

Voltage Controlled Crystal Oscillators
VC-TCXO-208C / KT18B, VC-TCXO-214C / KT21 Series



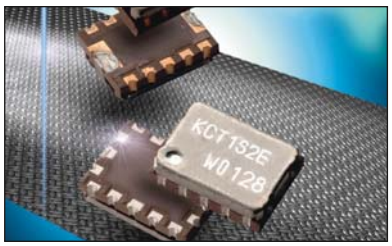
- Designed for use in Cellular Phones and Automotive Applications
- SMT Ceramic Package for Auto Pick-and-Place
- Reflow Soldering Compatible
- Low Power Consumption
- Lead Free

Available in Asia from KED
(Kyocera Electronic Devices)

HOW TO ORDER

KT18	D	C	V	30	□	19.680M	T
Series KT18 KT21	**Frequency Stability** K = ±5ppm E = ±2.5ppm D = ±2.0ppm	**Lower Operating Temperature** C = -30ºC E = -20ºC G = -10ºC	**Upper Operating Temperature** W = 85ºC V = 80ºC U = 75ºC	**Supply Voltage** 28 = 2.8V 30 = 3.0V	**Option Code**	**Frequency (MHz)** 12,600 16,800 19,800 13,000 19,200 26,000 14,400 19,440 38,400 19,680	**Packaging** Tape & Reel KT18 = 4000pcs/Reel KT21 = 2000pcs/Reel

Antenna Switch Module LM/LX Series



- Supports multiple Bands – GSM/DCS/PCS
- Dual / Triple / Quad Bands
- Small Size / Low Profile
- Low Current Consumption
- Includes ESD Protection

HOW TO ORDER

LX	Q	6	15	SX	E
Series LM = Dual LM = Triple LX = Quad	**Circuit** Q = Quad T = Triple D = Dual	**Type** 1 5 6	**Height** 15 = 1.5mm max 18 = 1.8mm max	**Custom Specification**	**ESD Protection**

Available in Asia from KED
(Kyocera Electronic Devices)

CMOS Clock Oscillator – MFO-208F Series

- "H" type Designed Ceramic SMT Package
- Reflow Solder Compatible
- High Reliability Seam Welding
- Tri-sate Function
- CMOS Output
- ±15 PPM / -40 ~ +85ºC available

Available in Asia from KED
(Kyocera Electronic Devices)

HOW TO ORDER

KT5032N	26000	D	C	W	28	T	AA
Series	**Output Frequency**	**Frequency Tolerance** B = ±1.0x10^{-6} C = ±1.5x10^{-6} D = ±2.0x10^{-6}	**Lower Operating Temperature** C = -30ºC E = -20ºC G = -10ºC	**Upper Operating Temperature** W = +85ºC V = +80ºC U = +75ºC	**Supply Voltage** 28 = 2.8V 30 = 3.0V	**Voltage Control Range** TCXO = T VCTCXO = Customer Spec	**Option Code**

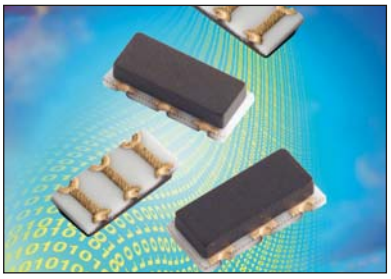
Crystal Units CX-3225SB (CX-101F), CX-2520SB, CX5032SB (CX-96F)

- For Audio and Visual Office Equipment and Mobile Communications
- Reference Frequency for Telecommunication Systems
- Small and Low Profile Ceramic Package
- Lead Free Product
- Reflow Solder Compatible

Available in Asia from KED
(Kyocera Electronic Devices)

CX-2520SB	CX-3225SB	CX-5032SB
2.5 x 2.0mm	3.2 x 2.5mm	5.0 x 3.2mm
26-60 kHz	12-54 kHz	9.8-120 MHz

SMD Resonators PBRC-MR Series



- SMT Package – 4.5 x 2.0 mm
- Frequency Range – 2.00 ~ 20.00 MHz
- Initial Frequency Tolerance – 0.3%, 0.5% or 0.7%
- Automotive Grade Available
- RoHS Compliant

Available in Asia from KED
(Kyocera Electronic Devices)

HOW TO ORDER

PBRC	15	H	R	10	Y	0AB
Series PBRC: Consumer	**Frequency** (MHz)	**Type** H & M	**Packing** Bulk (Null) R = Reel	**Frequency Tolerance at 25ºC** 10 = ±0.1% 20 = ±0.2% 30 = ±0.3% 40 = ±0.4% 50 = ±0.5% 70 = ±0.7%	**Operating Temperature** X = -40/85ºC Y = -40/125ºC Z = -40/150ºC	**Unique Code**

Resonator Cross-Reference Table

AVX		MURATA		TDK		Panasonic	
Part Number	**Range**	**Part Number**	**Range**	**Part Number**	**Range**	**Part Number**	**Range**
PBRC-GR (AR)	3.58-20.00	CSAC_MGCM	1.80-13.00	CCR_MX7	16.93-50.00	EFOP	2.00-13.00
PBRC-HR (BR)	3.58-20.00	CSTCC_MG	2.00-10.00	CCR_MXC7	16.93-50.00	EFOS	2.00-13.00
PBRV-HR-Y	3.58-20.00	CSTCC_MG_A	2.00-10.00				
PBRC-LR	4.00-20.00						
PBRC-MR	4.00-20.00	CSTCR_MG	4.00-7.99				
PBRV-MR-Y	4.00-20.00	CSTCR_MG_A	4.00-7.99				
SSR-B	20.00-60.00						
SSR-D	20.00-60.00	CSTCW_MX	20.00-70.00				

All information in this cross reference guide, should be checked by the customer for suitability of our products for their applications.
AVX shall have no liability for the accuracy of the information contained within this cross reference.

AVX

CONNECTORS

Connectors – 8069 Series & 0.5mm/0.4mm Pitch Board to Board

- Designed for RF Shielding
- 1.8mm and 3.0mm heights available
- Applicable to 0.2mm shield case thickness
- Two locking point secure holding feature
- Easy Shield Case removal

HOW TO ORDER

04	8069	000	X00	800
Tape & Reel	Series Number		Variation Code	Plating Code

MOBO™ Standard I/O with RF Co-ax

- Combination signal and RF format
- SMT receptacle and cabled plug
- 10k mating cycles
- Vertical SMT cradle connector
- Robust, keyed connector system

HOW TO ORDER

10	9157	015	000	001
10 = Plug 20 = Socket	Series	Number of Positions	Coax Option	Termination

Pogo Pin I/O with RF Co-ax

- Compression RF contact design
- Integrated into Pogo-Pin connector body
- Custom capabilities
- Robust/Industrial design
- 30,000 mating cycles

HOW TO ORDER

58	9151	012	000	001
00 = Standard 58 = Special	Series	Number of Positions	Not Assigned	Variation Code

If you have any questions about our RF/Microwave products, please e-mail us at avxrf@avxus.com

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www.avxrf.com

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商斯达工控安防网：http://www.pc-ps.net/
商斯达电子 元器件网：http://www.sunstare.com/
商斯达微波光电产品网:HTTP://www.rfoe.net/
商斯达消费电子产品网://www.icasic.com/
商斯达军工产品网:http://www.junpinic.com/
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邮编：518033 E-mail:szss20@163.com QQ: 195847376
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