

**COMPETITOR CROSS REFERENCE - CLOCK OSCILLATORS**

COMPETITOR PRODUCT SERIES															
CTS MODEL	ABRACON	CARDINAL	CITIZEN	CONNOR-WINFIELD	ECLIPTEK	ECS	EPSON TOYOCOM	FOX	KYOCERA AVX KSS	MtronPTI CHAMPION	PERICOM SARONIX	PLETRONICS	RALTRON	VALPEY-FISHER MF	VECTRON VITE
<b>CB3 (5.0V)</b>	ASL ASL1	CC065H CC065S CC85	CSX750F	CWX815 CWX825 HSM59 HSM6x HSM6x5 HSM9x HSM9x5	EC25xxx EH25xx	3951C 3951M 3951M-BN 3955C 3955M	SG-710 SG-645 SG-710**W SG-730 TCO-708x	F33xx F41xx 090- 118- 091- 119- 092- 120- 093- 121- 094- 122- 095- 123- 096- 446-	KC7050A-C5 KC7050C-C5 K50-HC KC7050B FXO-31F FXO-34F FXO-37F FXO-37N	M1 MM CMO5	S1615 S1700 S1750 S1800 S1850	SM77xxD SM77xxH SM77xxM	CO47 CO48 CO49	VF1 VF5 VFAC3 Txxxx Rxxxx	VCC1-A VCC1-E VCC1-105 VCC1FIBR C-Type
<b>CB3LV (3.3V)</b>	ASV ASV1	CC065L CC85	CSX750F	CWX813 CWX823 HSM6x3 HSM9x3 Xxx3 X813	EC26xx EH26xx EB13C3	3953C 3953M 3953M-BN	SG-710 SG-645 SG-710**W SG-730 TCO-708x	F41xx 116- 117- 124- 125- 126- 127- 128-	KC7050A-C3 KC7050C-C3 KC7050H-C3 K50-3C K50H-3C KC7050B FXO-31F FXO-34F FXO-37F FXO-37N	M2 M3 CMO3	S1613 S1613XP S1703 S1803	SM77xxDV SM77xxHV SM77xxMV	CO43 CO46 CO43S CO46S	VF3 VFAC3 Txxxx Rxxxx	VCC1-B VCC1-F VCC1-103 VCC1FIB3 C-Type
<b>CB2V5 (2.5V)</b>	ASV ASV1	---	---	5112 X132 5122 X142 5132 X212 5212 X222 5222 X232 5232 X312 X112 X322 X122 X332	EB15D7 EC27xx	ECS-5725	---	F44xx 521- 522- 523- 524- 525- 526- 527-	KC7050A-C2 K53-2C	M2250	S1614 S1614XP	SM77xxDW SM77xxHW SM77xxMW	CSY CSH	---	VCC1-G
<b>CB1V8 (1.8V)</b>	ASV ASV1	---	---	5111 5121 5131 5211 5221 5231 X221	EC29xx	ECS-5718	---	F45xx 528- 529- 530- 531- 532- 533- 534-	KC7050A-C1 K53-1C	M2180	S1612	SM77xxDX SM77xxHX SM77xxMX	CO418 CSJ	R1800 R1801 R1802 R3800 R3801 R3802	VCC1-H

CB3/CB3LV - 7x5mm Leadless Ceramic Package, 5.0V/3.3V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1.5 MHz - 160 MHz  
 CB2V5/CB1V8 - 7x5mm Leadless Ceramic Package, 2.5V/1.8V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1 MHz - 125 MHz

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CTS MODEL	ABRACON	CARDINAL	CITIZEN	CONNOR-WINFIELD	ECLIPTEK	ECS	EPSON TOYOCOM	FOX	KYOCERA AVX KSS	MtronPTI CHAMPION	PERICOM SARONIX	PLETRONICS	RALTRON	VALPEY-FISHER MF	VECTRON VITE
<b>CP5</b> (Programmable)	ASFLP AP5S AP5S1	CPPLC5L CPPLT5L	---	---	EP36xx	ECS-P53	SG-8002LB	FXO-HC53	---	---	---	---	---	---	---
<b>CP7</b> (Programmable)	ASVP AP7S	CPPFXC7L CPPFXT7L CPPLC7L CPPLT7L	CSX750PB CSX750PJ	---	EP26xx	ECS-P73	SG-8002CA SG-8002JF	FXO-HC73 JITO-2-DC3 JITO-2-DS3	---	---	S8002	---	CP4	---	VPC1B VPC1F
<b>636</b>	ASF ASF1 ASFL ASFL1 ASFL2 ASFL3	CC137 CC137L CC532 CC532L	---	7115 7133 7125 7143 7135 7213 7215 7222 7225 7223 7235 7232 7113 7233 7123	EB13C5 EC35xx EC36xx EC37xx EC39xx EH35xx EH36xx	ECS-3961 ECS-3963 ECS-3518 ECS-3525	SG-550SEF SG-550SDF SG-550SCF SG-550SCG TCO-710x	F51xx F54xx F53xx F55xx 551- 562- 552- 563- 553- 564- 554- 474- 555- 475- 556- 476- 557- 550- 558- 492- 559- 636- 560- 546- 561-	KC5032C-C1 K30-1C KC5032C-C2 K30-2C M5L KC5032C-C3 K30-3C KC5032C-C5 K30-HC KC5032D FXO-61F2 FXO-64F2	M2033 M2034 M3L M5L	S1633 S1634	SM55xxT_Y SM55xxT_W SM55xxT_X SM55xxM_Y SM55xxM_V SM55xxM_W SM55xxM_X	COM23 COM25	VFGC G Model	VCC4-A VCC4-B VCC4-E VCC4-F VCC4-G VCC4-H
<b>635</b>	ABFM	CAE CAL	---	P112 P233 P113 L112 P122 L113 P123 L122 P124 L123 P132 L132 P133 L133 P212 L212 P213 L213 P214 L222 P222 L223 P223 L232 P232 L233	E13C4 E13C7 E13D8 E15C7 E15D8 EL13C7 EL13C9 EL13D8 EL15C7 EL15D8	ECS-PEC25 ECS-PEC33 ECS-LVDS25 ECS-LVDS33	SG-770SCD EG2121CA EG2101CA EG2102CA	F46xx F471x F470x 535- 713- 536- 714- 537- 715- 538- 703- 539- 704- 540- 705- 710- 706- 711- 707- 712- 708-	KC7050P-L2 KC7050P-L3 KC7050S-L2 KC7050S-L3 KC7050P-P2 KC7050P-P3	UVCJ M2001	SDS3811 SEL382 SEL383	PE88xxD PE77xxD LV88xxD LV77xxD	CLD CLDP CLDL CLDPL CS9 CSP	VFXO301 VF261 VF265 VF266 VF267	VCC6-Q/R VCC6-L/V

CP5 - 5x3.2mm Leadless Ceramic Package, 3.3V/2.5V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 2 MHz - 200 MHz  
 CP7 - 7x5mm Leadless Ceramic Package, 3.3V/2.5V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 2 MHz - 200 MHz  
 636 - 5x3.2mm Leadless Ceramic Package, 5.0V/3.3V/2.5V/1.8V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1 MHz - 125 MHz  
 635 - 7x5mm Leadless Ceramic Package, 3.3V/2.5V Operating Voltage, LVPECL or LVDS, Frequency Range 19.44 MHz - 250 MHz

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COMPETITOR PRODUCT SERIES															
CTS MODEL	ABRACON	CARDINAL	CITIZEN	CONNOR-WINFIELD	ECLIPTEK	ECS	EPSON TOYOCOM	FOX	KYOCERA AVX KSS	MtronPTI CHAMPION	PERICOM SARONIX	PLETRONICS	RALTRON	VALPEY-FISHER MF	VECTRON VITE
658	ALD	CHE CHL	---	P701 P702 P731 P752 L703	---	---	---	FCP90AXT FCP95AXT 728- 745-	---	UVC	SEL381	---	CLP C9P	VF230C	VCC6-Q (>270 MHz) VCC6-L (>270 MHz)
MXO45 (Full Size, 5.0V)	ACO	CH11xx1 CTH11xx1	---	See Note 1	EC11xx EH11xx	ECS-100X ECS-200X ECS-400X	SG-51 SG-51P	F5C-2xLF F5C-2x F11xxE F11xxH F11xxHT 147LF- 199- 180LF- 326- 181LF- 330- 199LF- 513- 326LF- 049- 330LF- 055- 513LF- 060- 147- 061- 180- 343- 181- 465-	KXO-01 KXO-HC	MHO+ K1100BA K1150BA K1125BA K1100FA K1100FB K1100FC K1144AC/E K1144AD/E K1144BM/E K1300 K1350	NTHxx0 NCHxx0 ST41xx	P11xx-3S P11xx-HC P11xx-3SD	CO1 CO6 CO15 Cx72D Cx72E Cx72H Cx72I Cx72J Cx72K Cx72M Cx72O Cx72P Cx72Q	VF140 M1210 M3210 M1211 M3211 M1212 M3212 M1280 M3290 M1281 M3291 M1282 M3292 M1286 M3296 M1288 M3298 M1289 M3299 M1991 M3991 M1992 M3992 M1998 M3998 M1999 M3999	VCA1-A VCA1-E F-Type
MXO45HS (Half Size, 5.0V)	ACH	CH11xx4 CTH11xx4	---	See Note 1	EC11xxHS EH11xxHS	ECS-2100X ECS-2200X	SG-531 SG-531P SG-531**W	HC5C-2xLF H5C-2x 267LF- 267- 271LF- 271- 275LF- 275- 335LF- 335- 336LF- 336- 342LF- 342- 347LF- 347-	KHO-HC	MH MAH K500BA K550BA K525BA K500FA K500FB K500FC	NTHxx9 NCHxx9 ST41xx	SQ33xx SQ22xx SQ33xxD	CO13 CO12 CO19 Cx22D Cx22E Cx22H Cx22I Cx22J Cx22K Cx22M Cx22O Cx22P Cx22Q	VF70 VFHS85 H1210 H3210 H1211 H3211 H1212 H3212 H1280 H3290 H1281 H3291 H1282 H3292 H1286 H3296 H1288 H3298 H1289 H3299 H1991 H3991 H1992 H3992 H1998 H3998 H1999 H3999	VCB1-A VCB1-E H-Type

658 - 7x5mm Leadless Ceramic Package, 3.3V/2.5V Operating Voltage, HCMOS, LVPECL or LVDS, Frequency Range 38 MHz - 750 MHz

MXO45 - Full Size Metal DIP Package, 5.0V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1 MHz - 105 MHz

MXO45HS - Half Size Metal DIP Package, 5.0V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1 MHz - 105 MHz

Notes:

1. There are too many product series to affectively list them all here. Please consult the factory for proper crossing

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COMPETITOR PRODUCT SERIES															
CTS MODEL	ABRACON	CARDINAL	CITIZEN	CONNOR-WINFIELD	ECLIPTEK	ECS	EPSON TOYOCOM	FOX	KYOCERA AVX KSS	MtronPTI CHAMPION	PERICOM SARONIX	PLETRONICS	RALTRON	VALPEY-FISHER MF	VECTRON VITE
MXO45LV (Full Size, 3.3V)	ACOL	CH11xx1L CTH11xx1L	---	See Note 1	EC13xx EH13xx	ECS-100X ECS-200X ECS-400X	---	F5C-2E3LF F5C-2E3 148LF- 148- 328LF- 328- 329LF- 329- 355LF- 355- 356LF- 356- 358LF- 358- 567LF- 567-	---	MHO3 K3100GA K3100GB K3100GC	NTHxx0x3 NCHxx0x3 ST41xx	P11xx-3SV P11xx-HCV P11xx-3SDV	CO1(3.3) CO6(3.3) CO15(3.3) Cx22D(3.3) Cx22E(3.3) Cx22H(3.3) Cx22I(3.3) Cx22J(3.3) Cx22K(3.3) Cx22M(3.3) Cx22O(3.3) Cx22P(3.3) Cx22Q(3.3)	VF140xxL M1310 M3398 M1312 M3399 M1380 M1381 M1382 M1388 M1389 M3310 M3312 M3390 M3391 M3392	VCA1-B VCA1-F F-Type
MXO45HSLV (Half Size, 3.3V)	ACHL	CH11xx4L CTH11xx4L	---	See Note 1	EC13xxHS EH13xxHS	ECS-2100X ECS-2200X	SG-531*CW	H5C-2E3LF H5C-2E3 272LF- 272- 350LF- 350- 351LF- 351- 352LF- 352- 353LF- 353- 354LF- 354- 566LF- 566-	---	M3H M3A K3500GA K3500GB K3500GC	NTHxx9x3 NCHxx9x3 ST41xx	SQ33xxV SQ22xxV SQ33xxDV	CO13(3.3) CO12(3.3) CO19(3.3)	VF70xxL VFHS85xxL H1310 H1312 H1380 H1381 H1382 H1388 H1389 H3310 H3312 H3390 H3391 H3392 H3398 H3399	VCB1-B VCB1-F H-Type

MXO45LV - Full Size Metal DIP Package, 3.3V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1.5 MHz - 50 MHz  
 MXO45HSLV - Half Size Metal DIP Package, 3.3V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1.5 MHz - 50 MHz

- Notes:  
 1. There are too many product series to affectively list them all here. Please consult the factory for proper crossing

**COMPETITOR CROSS REFERENCE - CLOCK OSCILLATORS**

COMPETITOR PRODUCT SERIES																
CTS MODEL	ABRACON	CARDINAL	CITIZEN	CONNOR-	ECLIPTEK	ECS	EPSON	FOX		KYOCERA	MtronPTI	PERICOM	PLETRONICS	RALTRON	VALPEY-FISHER	VECTRON
632	ASE	---	CSX-325P	---	EB13E2	ECS-2325	SG-310	F310	665-	KC3225A-C2	M2532	S1643	SM4445T	COM11810	VFJC	---
	ASE2				EB15E2	ECS-2333		F310R	676-	K25-2C		S1644		COM11805		
	ASE3							F315	667-	KC3225A-C3				COM12510		
								F316	668-	K25-3C				COM112505		
								F330	584-					COM1310		
								F330R	585-					COM1305		
								F335	586-							
								F335R	587-							
								F336	588-							
								F340	639-							
								F340R	643-							
								F345	640-							
								F345R	644-							

632 - 3.2x2.5mm Leadless Ceramic Package, 3.3V/2.8V/2.5V/1.8V Operating Voltage, HCMOS/TTL Compatible, Frequency Range 1.0 MHz - 75 MHz

### COMPETITOR CROSS REFERENCE - CRYSTAL PRODUCTS

COMPETITOR PRODUCT SERIES													
CTS MODEL	ABRACON	CARDINAL	CITIZEN	ECLIPTEK	ECS	EPSON TOYOCOM	FOX	KYOCERA AVX	MtronPTI	PERICOM SARONIX	PLETRONICS	RALTRON	VECTRON VITE
<b>ATS SERIES</b>	ABL	CLP	HC49US	E2U EC2	HC-49US	---	HC49SLF HC49S FOXs/xxx	HC49SFWB CXH49SFB HC-49/U-S	ATS-49 ATS-49-R	49S HC-49/S	LP49	AS- HC-49/S	VXA4
<b>ATS-SM SERIES</b>	ABLS	CSM1	HCM49	E2S EC2SM	CSM-7	---	HC49SDLF HC49SD FOXSD/xxx	CX49GFWB CXZ49GFB CX-49G	ATSM-49 ATSM-49-R	49SMLB 49S SMD	SM42	AS-SMD HC-49/US	VXB2
<b>MP SERIES</b>	AB	C49	---	EU EC	HC-49U	---	HC49ULF HC49U FOXxxx	---	MP-1 MP-1-R	NMP NYP HC-49/U	MP49	A- HC-49/U	VXA1
<b>MODEL 407 SERIES</b>	ABMM ABMM1 ABM4B	CX051 CX12B CX5	---	ECCM1	CSM-8B CSM-8M	---	FD FL 218-	---	PM	NKS7 NLS7	SM13T	H13	VXC1 VXC4
<b>MODEL 406 SERIES</b>	ABMM2 ABMM3	---	---	ECCM5A	ECX-64 ECX-64C	---	FMB 411-	---	PP	NKS6	SM12T	H10S	VXE4
<b>MODEL 405 SERIES</b>	ABM3B ABM3C	CX45	CS5032H	ECCM9	ECX-53B	TSX-5032	FX532B FX532C 495- 646-	CX5032SB CX-96F	M1325	NKS5	SM11T	H130B	VXM2
<b>MODEL 403 SERIES</b>	ABM8	CX325	CS325	ECCM7	ECX-32	TSX-3225 FA-238V FA-238	FX325BS 603-	CX3225SB CX3225SA CX-101F	M1253	NKS3	SM10T	RH100	---
<b>MODEL 402 SERIES</b> <small>Available Q2 2007</small>	ABM10	---	---	---	---	FA-20H	FX252B 637-	CX2520SB CX-2520SB	---	---	---	R2520	---

ATS - HC-49/US Metal Package, 3.68mm Maximum Package Height, Frequency Range 3.5 MHz - 60 MHz

ATS-SM - HC-49/US-SM Metal Package, 4.3mm Maximum Package Height, Frequency Range 3.5 MHz - 60 MHz

MP - HC-49/U Metal Package, Frequency Range 1.8 MHz - 48 MHz

MODEL 407 - 7x5mm Leadless Ceramic Package, Frequency Range 8 MHz - 100 MHz

MODEL 406 - 6x3.5mm Leadless Ceramic Package, Frequency Range 9.6 MHz - 100 MHz

MODEL 405 - 5x3.2mm Leadless Ceramic Package, Frequency Range 11 MHz - 75 MHz

MODEL 403 - 3.2x2.5mm Leadless Ceramic Package, Frequency Range 12 MHz - 50 MHz

MODEL 402 - 2.5x2.0mm Leadless Ceramic Package, Frequency Range TBD

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