

FREQUENCY CONTROL DIVISION 400 Reimann Ave., Sandwich, IL 60548 • 815/786-8411 • FAX 815-786-9743

C-MOS Compatible Clock Oscillators

CXO HG SERIES

Allows Choice of Standard, Enable or 3-State Output Options

Able to Drive CMos OR TTL Loads

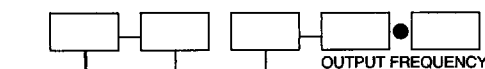
14 Pin DIP or 8 Pin DIP Compatible

50 KHz to 41.5 MHz

(Higher frequencies to be released

3rd Qtr 1991, consult factory for details)

ORDERING INFORMATION



PACKAGE TYPE / OPTION	MODEL
14 Pin DIP / STD OUTPUT	CXO-65HG
14 Pin DIP / STD OUTPUT W/ ENABLE	CXO-65HGE
14 Pin DIP / TRISTATE OUTPUT	CXO-63HG
8 Pin DIP / STD OUTPUT	CXO-25HG
8 Pin DIP / STD OUTPUT W/ ENABLE	CXO-25HGE
8 Pin DIP / TRISTATE OUTPUT	CXO-23HG

FREQUENCY TOL. (NOTE 2)	CODE
± .1% (1000 ppm)	1
± .01% (100 ppm)	2
± .005% (50 ppm)	3
± .05% (500 ppm)	4
± .0025% (25 ppm) (0°C to 70°C only)	5

OPERATING TEMP. RANGE	CODE
0°C to +70°C	C
-40°C to +85°C	I

TRISTATE / ENABLE TRUTH TABLE:

CONTROL INPUT	OUTPUT
OPEN or HIGH	OSC. OUTPUT
LOW	HIGH Z or LOGIC 1

**NOTE: SEE PAGE 18 FOR 14 PIN PACKAGE OUTLINE
DRAWING
SEE PAGE 24 FOR 8 PIN PACKAGE OUTLINE
DRAWING**

ELECTRICAL SPECIFICATIONS (–40 to +85°C)

SPECIFICATION	UNITS	SYMBOL	MODEL	FREQUENCY RANGE	MINIMUM	TYPICAL	MAXIMUM	CONDITION*
Operating Voltage	V	Vcc	HG	50.0 KHz to 41.5 MHz	4.5	5	5.5	
Max Oper. Voltage	V	Vcc max	HG	50.0 KHz to 41.5 MHz			7	
Supply Current	mA mA/MHz	Icc	HG HG	50.0 KHz to 10.0 MHz > 10.0 to 41.5 MHz		24 2 1.8	30 2.4 2.0	CMOS or TTL 50 PF CMOS 15 PF CMOS or TTL
Start Up Time	mS	Ts	HG	50.0 KHz to 41.5 MHz		5	15	CMOS or TTL
Output Voltage—HI	V	Voh	HG	50.0 KHz to 41.5 MHz	Vcc-.4V	Vcc-.3V		CMOS or TTL
Output Voltage—LO	V	Vol	HG	50.0 KHz to 41.5 MHz		0.3	0.4	CMOS or TTL
Rise and Fall Time	nS	Tr & Tf	HG HG	50.0 KHz to 25.0 MHz > 25.0 MHz to 41.5 MHz		5 4	8 5	CMOS or TTL CMOS or TTL
Duty Cycle (up time)	%	Sym	HG	50.0 KHz to 41.5 MHz	45	50	55	CMOS or TTL
Output Current—HI	mA	Ioh	HG	50.0 KHz to 41.5 MHz			- 16	Voh = Vcc-.4V
Output Current—LO	mA	Iol	HG	50.0 KHz to 41.5 MHz			16	Vol = .4V
Fanout	pF Ids	Fo	HG	50.0 KHz to 41.5 MHz			50 10	CMOS TTL
Enable Input Load	pF	Fi	HG	50.0 KHz to 41.5 MHz			10	
Enable Voltage—HI	V	Vih	HG	50.0 KHz to 41.5 MHz	2		5.5	
Enable Voltage—LO	V	Vil	HG	50.0 KHz to 41.5 MHz	- .05		0.8	
High Impedance Output Current	mA	Ioff	HG	50.0 KHz to 41.5 MHz			.05	

*TEST CONDITIONS

Symmetry
Load
Rise & Fall Time

CMOS (50 pF)

50% of waveform
50 pF (unless noted)
10 to 90% of waveform

TTL

1.5 V Level
10 TTL Loads
.4V to 2.4V

CTS CORPORATION**KNIGHTS CRYSTALS AND OSCILLATORS**

FREQUENCY CONTROL DIVISION 400 Reimann Ave., Sandwich, IL 60548 • 815/786-8411 • FAX 815-786-9743

T-90-01

Surface Mount Hybrid Clock Oscillators

■ **SURFACE MOUNT APPLICATIONS**—CTS Knights presently offers a number of options to suit your surface mount needs. Besides the CCXO series, leadless chip carriers, we are offering the MXO-55 type package in an economical surface mountable configuration, through a simple lead formation operation. The surface mount option is specified by adding an "S" to the part number (eg. SMXO-55, SCXO-65). Coplanarity for lead formed packages is $\pm .006"$ (max).

■ **VAPOR PHASE REFLOW**—CTS Knights' standard hybrid oscillators are capable of withstanding hand and wave soldering processes, but are not manufactured to survive vapor phase reflow profiles without degradation to device reliability. All surface mountable products are built with a special, high-temperature construction process to allow vapor phase reflow.

Standard DIP SERIES

The Standard DIP surface mount series squarewave crystal oscillator is contained in a rugged, economical .500" x .800", hermetically sealed metal package. The leads are shaped for surface mounting in a Gullwing design.

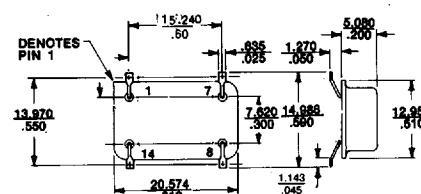


FIG. 13 SMXO-55

AVAILABLE MODELS:

SURFACE MOUNT	EQUIVALENT STANDARD SERIES	LOGIC	FREQUENCY RANGE
SMX055	MX055	TTL	19.2 KHz TO 100 MHz
SCX065	CX065	HCMOS	1 MHz TO 50 MHz
SVX055	VX055	TTL VCXO	765 KHz TO 25 MHz
SEX055	EX055	10K	25 MHz TO 125 MHz
SEX065	EX065	100K ECL	25 MHz TO 150 MHz
SCX063	CX063	HCMOS TRI-STATE	1 MHz TO 70 MHz
SMX053	MX053	TTL TRI-STATE	765 KHz TO 60 MHz

Mini-DIP SERIES

The Mini-DIP surface mount series of squarewave crystal oscillators are contained in a rugged, economical .500" x .500", hermetically sealed metal package. The leads are shaped for surface mounting in a gullwing design.

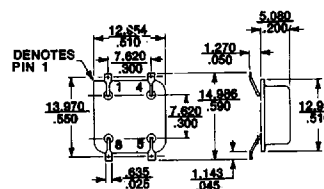


FIG. 14 SMXO-25

AVAILABLE MODELS:

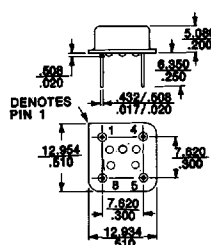
SURFACE MOUNT	ELECTRICALLY EQUIVALENT STANDARD SERIES	LOGIC	FREQUENCY RANGE
SMX025	MX055	TTL	307.2 KHz TO 70 MHz
SCX025	CX065	HCMOS	307.2 KHz TO 70 MHz

MINIATURE DUAL-IN-LINE OSCILLATORS**MXO-25 SERIES**

TTL logic output
electrically similar to MXO-55
310 KHz to 70 MHz

CXO-25 SERIES

Hi-speed CMOS logic output
Electrically similar to CXO-65
200 Hz to 50 MHz



Pin 1—N/C
Pin 4—Ground/case
Pin 5—Output
Pin 8—+5 VDC supply

FIG. 15 Mini-DIP PACKAGE

NOTE: Tristate Minidip Oscillators are Also Available. Consult Factory for Info