

OCXOs

1999 Oscillator DataBook

TCXOs

VCXOs

Crystal Filters

Clock Oscillators

Component Ovens

Oak

frequency
control
group

[THIS PAGE INTENTIONALLY BLANK]

INTRODUCTION

Oak Frequency Control Group (OFCG) is a leading supplier of quartz crystals, crystal oscillators, and crystal filters to the communications, test and instrumentation, position location, automotive and military/aerospace electronic markets.

This Data Book is organized by product and features an extensive Application Notes section. The information provided in the Data Book is also available on-line at www.ofc.com. Our website includes the latest product updates, new product announcements and engineering features. You can e-mail OFC at sales@ofc.com.

[THIS PAGE INTENTIONALLY BLANK]

TABLE OF CONTENTS

OFC Facts		
Company Background		ii
Facilities		iii
OCXOs		
Ordering Information		1
Yearly Aging		2
Temperature – Stability Specifications		3
Size – Volume Specifications		4
Products		5
TCXOs		
Ordering Information		28
Products		29
VCXOs		
Ordering Information		43
Products		44
Clocks		
Products		64
Hybrid Clock Ordering Information		67
ACMOS, CMOS, HCMOS Reference Tables		68
ACMOS, CMOS, HCMOS Hybrid Clock Oscillators		69
TTL Reference Tables		76
TTL Hybrid Clock Oscillators		77
ECL Reference Tables		85
ECL Hybrid Clock Oscillators		86
MIL-PRF-55310 Reference Tables		89
High Reliability Programs		100
Mini Ovens		
Specifications		103
Model 2106		105
Crystal Filters & Crystal Units		
Reference Tables		107
Ordering Information		108
DRAT Crystal Cuts		109
Quartz Crystal Processing		110
Application Notes		
OCXO Tutorial		114
OCXO Specification Guideline		119
Aging and Retrace		128
Electrical Frequency Control		130
Frequency Stability Characterization in the Time Domain		131
Frequency Control Devices for Wireless Base Stations		138
TCXO Tutorial		148
VCXO Tutorial		151
Surface Mount OCXO		154
General Information		
Environmental Test Capability		159
Quality Codes		160
Oscillator Specification Form		161
Map & Directions		162

**C
O
N
T
E
N
T
S**

Parent Company: Oak Industries, Waltham, MA USA (New York Stock Exchange: OAK)
Oak is a leading manufacturer of highly engineered components for the communications and other selected industries. Oak's communications components consist primarily of frequency control devices used in wireless communications infrastructure, fiber-optic components for wired telephony infrastructure, and connectors for the CATV industry.

Division Name: Oak Frequency Control Group (OFCG). OFCG was formed through the combination of McCoy Electronics, Spectrum Technology, Ovenaire Industries, Croven Crystals, H.E.S. International, Piezo Crystal Company and Tele Quarz GmbH. OFCG designs and manufactures precision crystals and oscillators that serve as stable frequency references for a variety of applications.

Mission Statement: OFCG will strive to be the preferred supplier of frequency control products and related systems by providing innovative, cost-effective solutions with world-class quality and customer support.

Products: OCXOs including low aging, high stability, DIP, through-hole and surface mount
TCXOs including high stability, surface mount and custom compensated
VCXOs including DIP, surface mount and custom compensated
Clock oscillators including DIP and surface mount
Quartz crystals, including surface mount, AT-Cut and SC-Cut from 1.5 to 360 MHz
Crystal filters
Component ovens
Glass-to-metal hermetic seal packages including through-hole and surface mount

Facilities: OFCG has over 1300 employees with facilities in:
Mt. Holly Springs, PA (USA) Mercersburg, PA (USA)
Carlisle, PA (USA) Kansas City, KS (USA)
Whitby, ONT (Canada) Shanghai (China)
Neckarbischofshiem (Germany) Piestany (Slovakia)

Capabilities: OFC's capabilities include:
High volume, automated manufacturing of precision frequency control products
Customized design, prototyping and pre-production support
High reliability military and aerospace designs (MIL-C-3098, MIL-O-55310)
Vertical integration from crystal production to final oscillator and filter products
Extensive field support
EDI support
Fully integrated, automated test network
ISO-9001 and QS 9000 certified

Markets: Applications for OFCG's products include cellular, personal communications systems (PCS), paging and specialized mobile radio base stations, test instrumentation, satellite communications, automotive and other applications where precision timing is required.

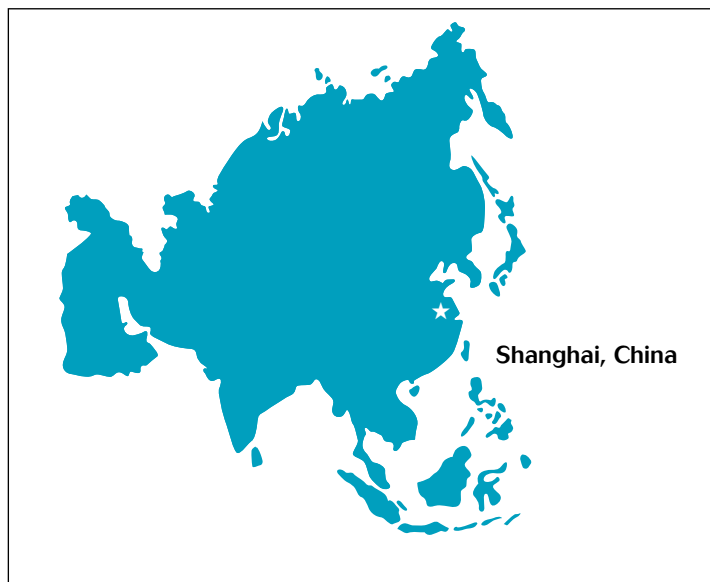
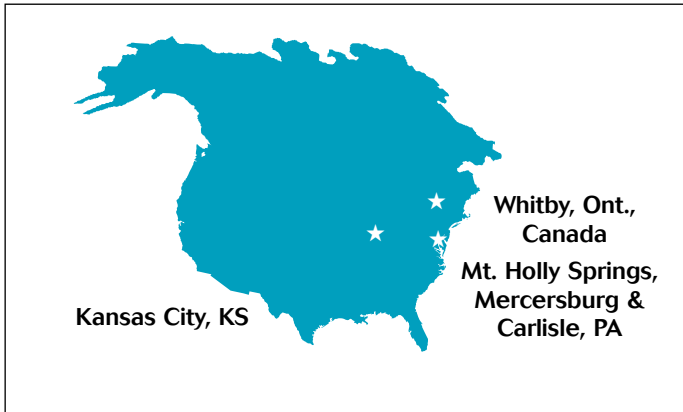
Customers: OFCG has strategic partnerships with key OEM manufacturers and offers standard products for a broad range of technologies including W-CDMA, CDMA, TDMA, GSM, ATM, SDH, NAMPS, TACS, PDC and TETRA. Customers are served by regional sales offices and a worldwide network of sales representatives.

Contact: Oak Frequency Control Group, 100 Watts Street, Mount Holly Springs, PA 17065
Telephone: 1-717-486-3411 Facsimile: 1-717-486-5920
e-mail: sales@ofc.com Website: www.ofc.com

European Division: Tele Quarz GmbH, Landstrasse, D-74924 Neckarbischofsheim, Germany
Telephone: +49 07268/ 801-0 Facsimile: +49 07268/ 801281
e-mail: info@telequarz.de Website: www.telequarz.de

O
F
C
F
A
C
T
S

OAK Frequency Control Group Manufacturing Facility Locations



[THIS PAGE INTENTIONALLY BLANK]