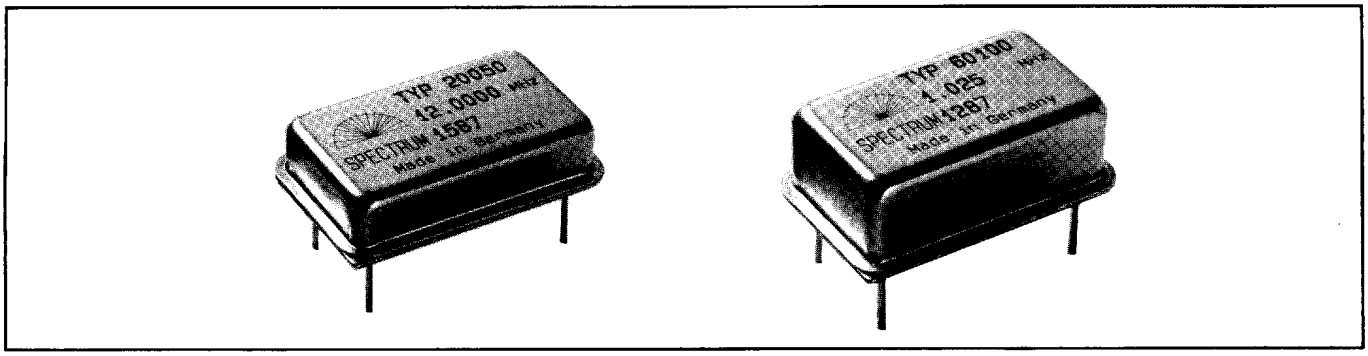
SPECTRUM CONTROL, INC.

CRYSTAL OSCILLATORS 0.2 to 100 MHz

Bulletin 27-0027-19 Rev. 0



Parts not to size

INTRODUCTION

Spectrum Control's German facility for hybrid circuits manufactures a complete series of TTL Crystal Oscillators ranging from 0.2 to 100 MHz. The Crystal Oscillators are built in hybrid thick-film technology and the complete unit is hermetically sealed in a metal housing, providing excellent performance against humidity and RF-radiation.

The Crystal Oscillators are available with overall tolerances 50 and 100 ppm over the entire high professional temperature range – 40 to + 85°C. For the industrial range 0–70°C Spectrum offers overall stabilities of 10-25-50 and 100 ppm.

Crystal Oscillators are used for timing functions in many digital electronic circuits like PCs, modems, numeric control units, printers/plotters, memory boards, micro processor circuits, instruments, telephone equipment and any other circuit that requires clock frequencies.

BENEFITS

Spectrum's hermetically-sealed, all metal, welded oscillators provide excellent resistance to heat and humidity. The case is grounded and meets EMI shielding specifications. The oscillator can be soldered in wave-line operations or plugged into a DIP-socket. Fits most standard logic boards.

Reduces overall cost with only one package to plug in. No separate discrete components to insert. Compact design saves board space. Fixed performance eliminates matching of single crystal to other discrete circuit components. Insertion of one component (oscillator) saves labor costs.

Quality is assured through complete process control. Adjustment of each quartz is automatic, matching it to the hybrid circuit. Manufacturer of our own hybrid thick-film circuits assures quality conformance and continuity. All oscillators are assembled in our clean rooms, assuring you of the best possible assembly environment. Computerized automated testing is done on all of our oscillators.

Reliability is assured through advanced circuit design. We utilize our advanced hybrid circuit technology to reduce interconnects and increase the reliability without sacrificing performance.

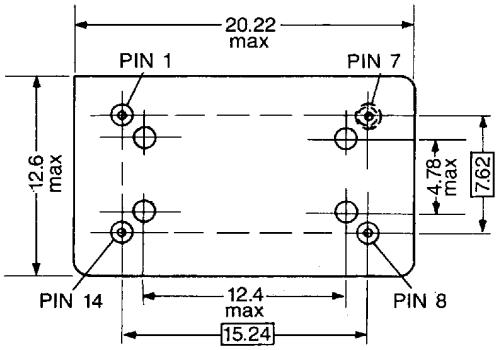
Spectrum oscillators offer you a full frequency range from 0.2 to 100 MHz. We also manufacture oscillators to your specifications, plus supply C-MOS, ECL and programmable frequencies. Enable/disable oscillators with true on/off switching are available. Contact Spectrum Control for your oscillator needs.

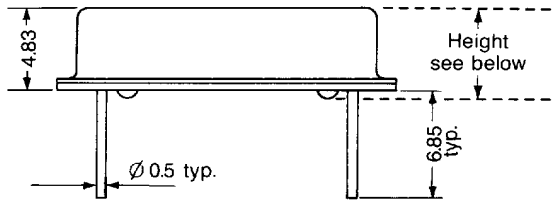
3773 D-02

In the United States: SPECTRUM CONTROL, INC., 2185 West Eighth Street, Erie, PA 16505 U.S.A.
Phone (814) 455-0966. TWX 510-699-6871. FAX: (814)-455-2550.
In Europe: SPECTRUM CONTROL GmbH, a subsidiary of Spectrum Control, Inc. Hansastrasse 6, D-8540 Schwabach, West Germany
Telefon (09122) 795-0. Telex 625008. Telefax (09122) 795-58

DESIGN DATA

Temperature cycle	MIL-STD-883C Method 1010/5 Condition A
Vibration	MIL-STD-883C Method 2007/1 Condition A for 12 hours
Shock	MIL-STD-883C Method 2002/2 Condition A
Humidity	85% RH, 85°C, 500 hours
Solvent resistance	Isopropylalcohol, Trichloraethane, Freon TMC–1 minute dip.
Solderability	Solderbath: 230°C ± 6°C, solder 60/40 Zn/Pb Flux: RMA–type Dip the terminals into flux and after into solderbath for 5 sec. All leads must exhibit a min. of 90% continuous solder coating.
Hermetic seal test	Mass spectrometer leak rate less than 2 x 10^{-8} atmos. cc/sec. of helium.
Construction	Thick-film Hybrid Circuit in hermetically sealed metal case, fully shielded.
Mounting on PCB	Solderbath 260°C max. for 10 sec. max.
Pin connection	Pin 1 = no connection Pin 7 = ground–connected to case Pin 8 = TTL output Pin 14 = +VDC
Ordering instructions:	Series–frequency–ppm–temp. range Ex.: Series 30000, 60 MHz, 50 ppm, 0–70°C (See HOW TO ORDER OSCILLATORS FROM SPECTRUM) Page 4
SPECIAL DESIGNS	(See HOW TO ORDER OSCILLATORS FROM SPECTRUM) Page 4





All dimensions in mm

SERIES	20000	30000	50000	60000
Frequency (MHz)	3–25.0	25.1–100	3.5–30	0.2–4
*Frequency stability (ppm) Temp. 0–70°C	50–100	50–100	10–25	50–100
*Frequency stability (ppm) Temp. –40 to +85°C	100	50–100	25–50–100	50–100
Storage temperature range (°C)	–55 to +125	–55 to +125	–55 to +125	–55 to +125
Input voltage (VDC)	+5 ± 10%	+5 ± 10%	+5 ± 10%	+5 ± 10%
Input current (mA max.)	50	45	40	60
Symmetry at 1.4 VDC level	40:60–60:40	40:60–60:40	40:60–60:40	45:55–55:45
Output load (TTL gates)	1–10	1–10	1–10	1–10
Rise and fall time (T_R,T_F) nsec max. Voltage level 0.4 to 2.4 VDC	10	6	15	15
"O" Level + V max. (16 mA max.)	0.4	0.4	0.4	0.4
"1" Level + V min. (–400 μA)	2.4	2.4	2.4	2.4
Start-up time msec, (typ.)	5	5	5	5
Aging (ppm)	5	5	5	5
Height see drawing	5.4 mm max.	8 mm max.	8 mm max.	8 mm max.
*Including: Calibration tolerance at +25°C, operating temp. range, input voltage change, load change, aging, shock and vibration.				

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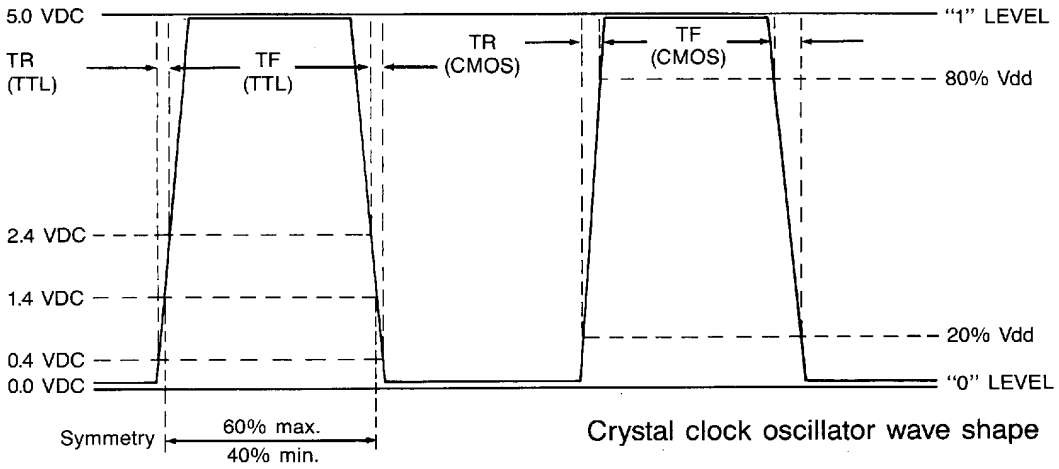
WAVE SHAPE



Crystal clock oscillator wave shape

STANDARD CRYSTAL OSCILLATORS IN STOCK

SERIES 20000	
Part No.	**Frequency MHz**
55-20104-0001	3.6864
55-20104-0002	4.0
55-20104-0003	4.096
55-20104-0004	4.9152
55-20106-0005	5.0
55-20106-0006	5.0688
55-20106-0007	5.25
55-20106-0008	5.9904
55-20106-0009	6.0
55-20106-0010	6.144
55-20106-0011	6.24
55-20108-0012	8.0
55-20108-0013	8.889
55-20110-0014	10.0
55-20110-0015	10.24
55-20110-0016	10.73
55-20110-0017	12.0
55-20114-0018	14.318
55-20115-0019	16.0
55-20115-0020	16.257
55-20115-0021	16.384
55-20115-0022	18.432
55-20119-0023	19.084
55-20119-0024	19.6608
55-20119-0025	20.0
55-20119-0026	22.1184
55-20119-0027	24.0

SERIES 30000	
Part No.	**Frequency MHz**
55-30013-0034	28.0
55-30001-0035	30.0
55-30001-0036	32.0
55-30002-0037	36.0
55-30002-0038	40.0
55-30004-0039	48.0
55-30005-0040	60.0
55-30006-0041	64.0

SERIES 60000	
Part No.	**Frequency MHz**
55-60113-0028	1.0
55-60114-0029	1.8432
55-60114-0030	2.0
55-60114-0031	2.4576
55-60115-0032	2.5
55-60115-0033	2.9696

Above list shows frequencies in stock.

Other frequencies are available within the specified ranges.

Prototypes of any frequency in the Series 30000–50000 or 60000 are available.

SPECTRUM CONTROL, INC.

SPECTRUM'S QUALITY RESPONSE PROCESS

We are committed to quality performance. As an organization—and as individuals— we will continually seek out the specific needs of those who depend on us. We will then consistently satisfy these needs by doing everything right the first time...a journey toward error-free performance.

Copy, fill out and mail to Spectrum Control, Inc.

HOW TO ORDER OSCILLATORS FROM SPECTRUM

A) STANDARD CRYSTAL OSCILLATORS - (SEE PAGE 3 FOR DETAILS)

Series: ☐ 20000 ☐ 30000 ☐ 50000 ☐ 60000

Frequency: _____ MHz

Frequency Stability: _____ ppm (= Overall Stability)

Temp. Range: ☐ 0 to +70°C ☐ −40 to +85°C ☐ Other _____ °C to _____ °C

B) CUSTOM MADE CRYSTAL OSCILLATORS

Size (mm): L _____ W _____ H _____ or standard metal case (If not standard metal case, please attach drawing with pin locations)

Frequency: _____ MHz Waveform: ☐ Square ☐ Sine ☐ TTL ☐ CMOS ☐ ECL

Frequency Stability: _____ ppm (= Overall Stability)

If specific stability requirements are needed, please specify:

Calibration Tolerance @ 25°C ± _____ ppm

TC from _____ °C to _____ °C ± _____ ppm

Change with ±_____ % supply voltage variation ± _____ ppm

Other _____ ± _____ ppm

Temp. Range: _____ °C to _____ °C

Input Voltage: _____ VDC ±_____ %

Input Current: _____ mA max

Symmetry: _____ : _____ at _____VDC Level

Output Load: _____ Gates _____ Start Up Time:_____ msec max

Rise and Fall Time (T_R, T_F): _____ nsec max

Pin Connection:

Pin 1 = _____	Pin 8 = _____
Pin 2 = _____	Pin 9 = _____
Pin 3 = _____	Pin 10 = _____
Pin 4 = _____	Pin 11 = _____
Pin 5 = _____	Pin 12 = _____
Pin 6 = _____	Pin 13 = _____
Pin 7 = _____	Pin 14 = _____

7/87

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