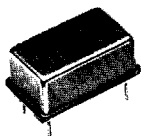
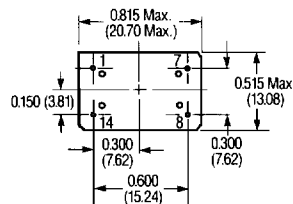
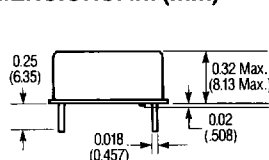


CRYSTAL OSCILLATORS

VCXO, MINIATURE HYBRID



DIMENSIONS: in. (mm)

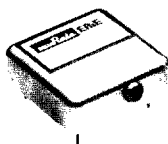


PIN	FUNCTION
1	Voltage Control Input
7	V_{cc} (-5.2V)
8	Output
14	Case & Circuit Ground

SPECIFICATIONS

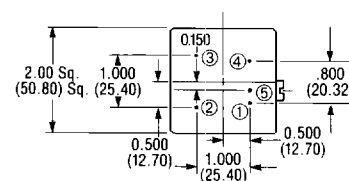
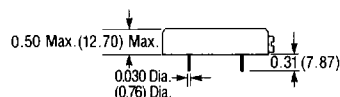
Model	Features	Frequency Range	Input Voltage & Current	Output Type	Control Voltage and Freq. vs. Voltage Slope	AFC Input Impedance	Linearity	Deviation	Temp. Stability	Temp. Range
VH2340HE	High frequency fundamental crystal	15MHz to 60MHz	-5.2VDC @ 35mA Typ.	ECL "10KH"	0V to -5.0V Negative	10K Ω Min.	$\pm 20\%$	± 100 ppm	± 25 ppm	0°C to 70°C

TCXO, STANDARD



DIMENSIONS: in. (mm)

PIN	FUNCTION
1	Output
2	B+
3	Ground
4	N/C
5	Ground



SPECIFICATIONS

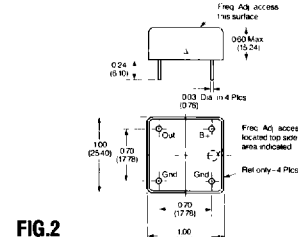
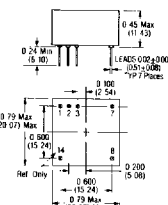
Model	Features	Frequency Range	Frequency Stability vs. Temperature Range	Input Voltage & Current	Output Type	Aging Rate	Frequency Adjustment
TC2140DT	High stability Very low aging	6MHz to 20MHz	± 0.25 ppm 0°C to +50°C	+12VDC @ 15mA max.	TTL Std.	0.2ppm/Yr.	Mechanical 10 Yr. Range Minimum

TCXO, MINIATURE



DIMENSIONS: in. (mm)

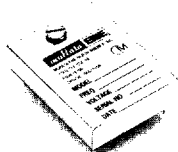
PIN	FUNCTION
1	Ground
2	RF Output
3	+VDC
7	Frequency Adj. V ref.
8	N/C
14	Frequency Adj. input



SPECIFICATIONS

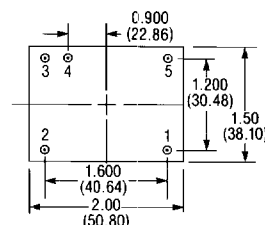
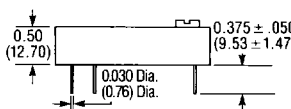
Model	Features	Frequency Range	Frequency Stability vs. Temperature Range	Input Voltage & Current	Output Type	Aging Rate	Frequency Adjustment	Figure
TC2100CN	Requires only 0.35 cu. in. Direct replacement for K1516 Series	6MHz to 24MHz	± 2 ppm -40°C to +85°C	+10VDC @ 15mA max.	Sine, 1Vp-p, 1k Ω Load (Harmonics < -20dBc)	1ppm/Yr.	Electrical via Ext. Pot. or control voltage; 5 Yr. Range Minimum	1
TC2110AH	Low cost unit +5VDC operation	5MHz to 18MHz	± 1 ppm -20°C to +70°C	+5VDC @ 15mA max.	"HC" CMOS	1ppm/Yr.	Mechanical 10 Yr. Range Minimum	2

TCXO, HIGH FREQUENCY



DIMENSIONS: in. (mm)

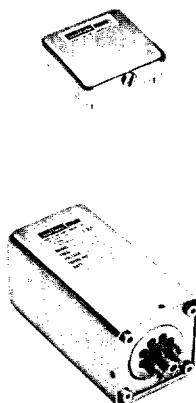
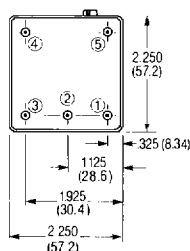
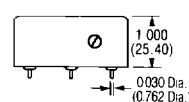
PIN	FUNCTION
1	B+
2	Ground
3	Output
4	Ground
5	Ground



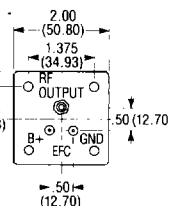
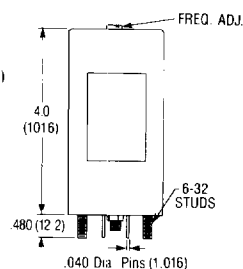
SPECIFICATIONS

Model	Features	Frequency Range	Frequency Stability vs. Temperature Range	Input Voltage & Current	Output Type	Aging Rate	Frequency Adjustment	Figure
TC2170BJ	Small package; Internal freq. multiplier for better stability with fundamental crystal	24MHz to 120MHz	± 1 ppm -40°C to +70°C	+7.5VDC @ 40mA max.	Sine, +3dBm, 50 Ω LOAD	1ppm/Yr.	Mechanical 5 Yr. Range Minimum	3
TC2180BJ	Very small package for UHF TCXO	120MHz to 500MHz	± 5 ppm -40°C to +70°C	+7.5VDC @ 45mA max.	Sine, +3dBm, 50 Ω LOAD	2ppm/Yr.	Mechanical 5 Yr. Range Minimum	3

OCXO, HIGH STABILITY


DIMENSIONS: in. (mm)

FIG. 1

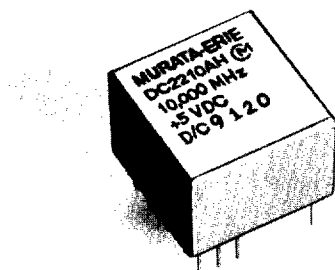
PIN	FUNCTION
1	Tuning
2	N/C
3	Output
4	Case & Ckt. Gnd.
5	B+


FIG. 2


SPECIFICATIONS

Model	Features	Frequency Range	Input Voltage & Power	Output Type	Electronic Freq. Control and Freq. vs. Voltage Slope	Temperature Stability	Aging	Package	Figure
OC2500ET	Low profile oven	1MHz to 20MHz	+15VDC 1.5W @ 25°C Typ. 4W max. @ turn-on	TTL	± 2 ppm min. for 0 ± 5 v Negative	$\pm 1 \times 10^{-7}$ -20°C to +70°C	2×10^{-9} /Day	2.25 $\times$ 2.25 $\times$ 1.00	1
OC2520EK	"SC" or "IT" Cut Crystal For fast warm-up Low phase noise	5MHz to 15MHz	+15VDC 3.0W @ 25°C Typ. 15W max. @ turn-on	+7dBm into 50 Ω	$\pm 2 \times 10^{-7}$ min. for 0 ± 5 v Negative	$\pm 5 \times 10^{-8}$ -40°C to +75°C	5×10^{-10} /Day	2.0 $\times$ 2.0 $\times$ 4.0	2
OC2530EJ	VHF frequency coverage	50MHz to 400MHz	+15VDC 3.0W @ 25°C Typ. 9W max. @ turn-on	+3dBm into 50 Ω	± 3 ppm Mechanical	$\pm 1 \times 10^{-7}$ -20°C to +70°C	1×10^{-9} /Day	2.0 $\times$ 2.0 $\times$ 4.0	2

DCXO, SINGLE CHIP



SPECIFICATIONS – MODEL DC221□□□

- Only one active device gives high reliability
- Low parts count for smallest size and best price
- Better stability than any other low cost TCXO

Frequency Range: 6MHz to 25MHz

Output: "H" ("HC" CMOS)

Spurious: -60dBc Typ.

Input Voltage: A Std. (+5VDC)

Input Current: 20mA Typ.

Frequency Adjustment:

To offset at least 10 Yrs. Aging

Frequency Stability: ($\Delta f/f$) vs.:

Temperature: See Table

Input Voltage: $\pm 1 \times 10^{-8}$ /%

Load Variation: $\pm 1 \times 10^{-8}$ /%

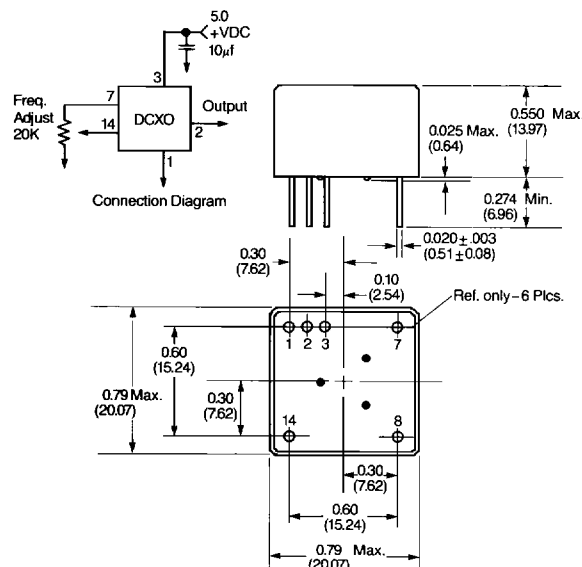
Time: 1ppm/Yr. Typ.

Time After Turn-On:

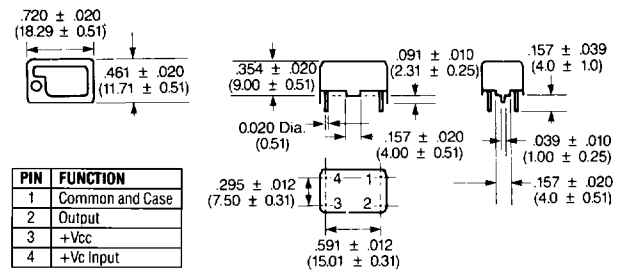
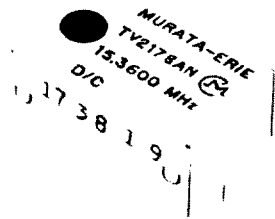
$\pm 1 \times 10^{-7}$ within 5 sec.

Short Term (T=1 sec.): 1×10^{-9}

Model No.	Temp. Range	Max. Freq. Error
DC2210	-40°C to +85°C	$\pm 1 \times 10^{-6}$
DC2211	-20°C to +75°C	$\pm 5 \times 10^{-7}$
DC2212	0°C to +70°C	$\pm 3 \times 10^{-7}$
DC2213	0°C to +50°C	$\pm 2 \times 10^{-7}$


Dimensions: in (mm)

PIN	CONNECTIONS
1	GND.
2	R.F. Output
3	+5.0VDC
7	Freq. Adj. V Ref.
8	N/C
14	Freq. Adj. Input



PIN	FUNCTION
1	Common and Case
2	Output
3	+Vcc
4	+Vc Input

Dimensions: in. (mm)

SPECIFICATIONS

MODEL

Features

Frequency Range

Input Voltage and Current

Output Type

Load

Frequency Adj.

Electronic Freq. Control:
Control Voltage and Deviation

Frequency vs. Temperature

Stability vs. Supply Voltage

Aging

Package

TV2178 AN

Low Cost

6.0MHz to 25.0MHz

+5.0VDC, $\pm 5\%$ @ 2mA Max.

1Vp-p, Clipped Sine Wave

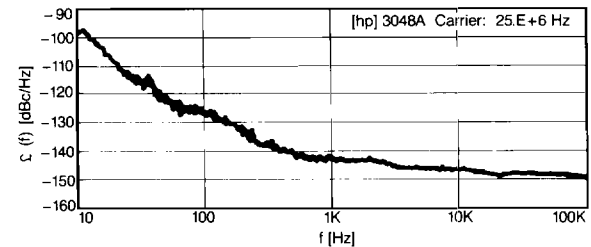
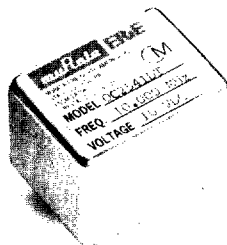
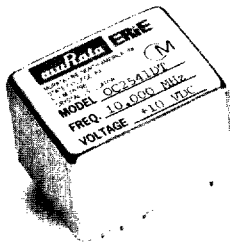
1K Ω // 10pF

Mechanical; 5 Yr. Range Min.

2.5V $\pm$ 2V, ± 6 ppm Min. ± 1 ppm, -40°C to $+85^\circ\text{C}$ ± 0.08 ppm (+5.0VDC, $\pm 5\%$)+1.0ppm/1 Yr., ± 5 ppm/10 Yr.

0.461" X 0.720" X 0.354"H

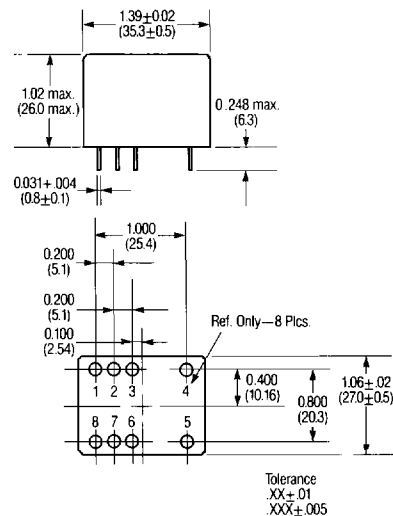
PHASE NOISE (TV2178 AN)

MINIATURE
OCXO

SPECIFICATIONS

MODEL	OC2541 DT	OC2545 DT
Features	Very low cost for High stability "SC" cut osc. Low phase noise Small package	Low cost High stability Low phase noise Small package
Frequency Range	5MHz to 20MHz	5MHz to 20MHz
Input Voltage and Power	+12VDC @ 250mA max. (90mA Typ.)	+12VDC @ 250mA max. (90mA Typ.)
Output Type	TTL 50/50 duty cycle	TTL 50/50 duty cycle
Electronic Freq. Control: Freq. vs. Voltage	± 1 ppm min., 0 to +10VDC	± 4 ppm min., 0 to +6VDC
Temperature Stability	± 0.01 ppm Typ., 0°C to $+50^\circ\text{C}$	± 0.05 ppm Typ., 0°C to $+50^\circ\text{C}$
Aging	0.15ppm/Yr.	0.3ppm/Yr.
Package	1.39"x1.06"x1.00"	1.39"x1.06"x1.00"

OC2541, 2545



PIN	FUNCTION
1	Output
2	N/C
3	N/C
4	Ground
5	N/C
6	Control Voltage
7	N/C
8	+12V

TYPICAL PHASE NOISE CHARACTERISTICS
(OC2541 DT)