FIXED OSCILLATORS
ECL and PECL
0° to 70°C

FULL SIZE D.I.L
M1400, M2400
M1410, M2410
M1436, M2436
M1444, M2444
M1445, M2445
M1500, M2500
M1510, M2510
M1536, M2536
M1544, M2544
M1545, M2545

Thru-Hole/Gull Wing
10 MHz to 125 MHz

1400 and 2400 – 10K logic, ECL, -5.2V
1500 and 2500 – 10K logic, PECL, +5V

10K Logic — ECL and PECL

MF Electronics' high speed clock oscillators for digital and communications applications are based on 5V ECL logic and are available in full size (M) and half size (H) thru-hole packages. Designed in ECL 10K logic, the oscillators develop 10 MHz to 125 MHz output. Frequency stability choices are from ±50 ppm to ±200 ppm.

All models are available in complementary output, and a choice of either positive (PECL) or negative DC operating voltage. These models are intended for designs which interface with 10K logic. For superior performance, see our models using 10KH or ECLPS.

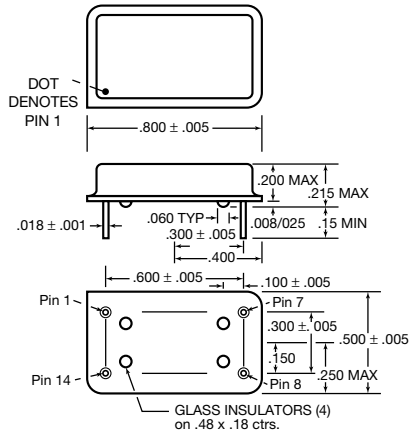
The MF ECL and PECL oscillators are available in a variety of common configurations. Series M1400 and M1500, in 10 K logic, with and without complementary outputs are full size DIL package in frequencies from 10 MHz to 125 MHz. Frequency tolerances from ±200 ppm to ±25 ppm include all effects of voltage, load and aging.

- Single or dual complementary outputs
- Start up time less than 5 ms.
- Stability options from .02% (200 ppm) to .0025% (25 ppm)
- Guaranteed start-up with ramping DC Supply
- Specified for extended temperature to 85°C, to allow for additional heat rise in confined space
- Terminating resistor may be internal - consult factory

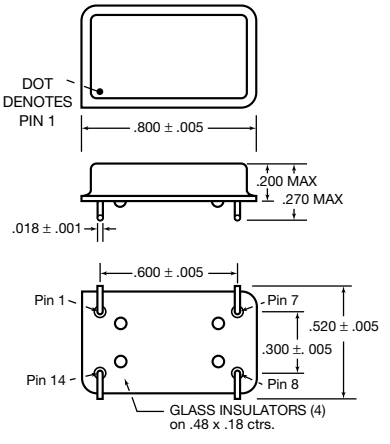
ECL OSCILLATORS		
10K Logic 10 MHz thru 125 MHz		
-5 Volt Power on Pin 14		
Single Output	**Complementary Output**	**Frequency Stability**
M1400	M2400	±100 ppm
M1410	M2410	±200 ppm
M1436*	M2436*	±100 ppm
M1444	M2444	±25 ppm
M1445	M2445	±50 ppm

PECL OSCILLATORS		
10K Logic 10 MHz thru 125 MHz		
+5 Volt Power on Pin 14		
Single Output	**Complementary Output**	**Frequency Stability**
M1500	M2500	±100 ppm
M1510	M2510	±200 ppm
M1536*	M2536*	±100 ppm
M1544	M2544	±25 ppm
M1545	M2545	±50 ppm

*Guaranteed Superior Symmetry 45/55



"M" Package – "L" Package is same as "M" but seated height is 0.190



"M" Package with Gull Wing

MF ELECTRONICS
10 Commerce Drive, New Rochelle, NY10801 • 914-576-6570 • Fax: 914-576-6204 • http://www.mfelectronics.com • email:mfsales@mfelec.com

FULL SIZE D.I.L
M1400, M2400
M1410, M2410
M1436, M2436
M1444, M2444
M1445, M2445
M1500, M2500
M1510, M2510
M1536, M2536
M1544, M2544
M1545, M2545

FIXED OSCILLATORS
ECL and PECL, 0° to 70° C
Thru-Hole / Gull Wing
10 MHz to 125 MHz

1400 and 2400 – 10K logic, ECL, -5.2V
1500 and 2500 – 10K logic, PECL, +5V

SPECIFICATIONS

Temperature

Operating	0 to 70°C, case temperature
Storage	–55 to +125°C

Frequency Range 10 MHz to 125 MHz

	MIN.	TYP	MAX	UNITS
Input Voltage				
Negative Input Units	–4.75	–5.2	–5.45	volts
Positive Input Units	4.75	5.0	5.25	volts
Input Current		45	60	ma
Output Levels,				
Negative Input Units				
"0" Level				
25°C	–1.85		–1.65	volts
70°C	–1.825		–1.65	volts
"1" Level				
25°C	–0.96		–0.81	volts
70°C	–0.89		–0.70	volts
Positive Input Units				
"0" Level				
25°C	(Vc–1.85)		(Vc–1.65)	volts
70°C	(Vc–1.825)		(Vc–1.65)	volts
"1" Level				
25°C	(Vc–0.96)		(Vc–0.81	volts
70°C	(Vc–0.89)		(Vc–0.7)	volts
Rise and Fall Times				
(20 to 80%)		2.0	3.0	ns
Symmetry				
All units, except '36 Models		45/55	40/60	percent
M1436, M1536, M2436, M2536		48/52	45/55	percent

AGING

3 to 5 ppm, first year, typ.
1 ppm per year thereafter, typ.

ENVIRONMENTAL SPECIFICATIONS

Temperature Cycle – Not to exceed ±5 ppm change when exposed to 2 hours maximum at each temperature from 0 to 120°C, with 25°C reference

Shock – 1000 G's, 0.35 ms, 1/2 sine wave, 3 shocks in each plane

Vibration – 10-2000 Hz of .06" d.a. or 20 G's, whichever is less

Humidity – Resistant to 85° R.H. at 85°C

MECHANICAL SPECIFICATIONS

Gross Leak – Each unit checked in 125°C flurocarbon

Fine Leak – Mass spectrometer leak rate less than 2 X 10^{-8} atmos, cc/sec of helium

Pins – Kovar, nickel plated with 60/40 solder coat.

Bend Test – Will withstand two bends of 90° from reference

Header – Steel, with nickel plate

Case – Stainless steel, type 304

Marking – Printing is black epoxy ink

Resistance to Solvents – MIL STD 202, Method 215

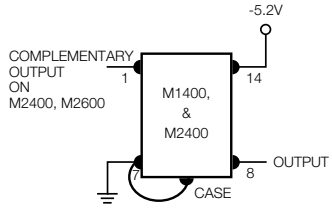


Fig. 1

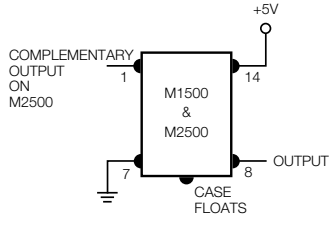


Fig. 2

Note: Outputs must be properly terminated

MF ELECTRONICS
10 Commerce Drive, New Rochelle, NY10801 • 914-576-6570 • Fax: 914-576-6204 • http://www.mfelectronics.com • email:mfsales@mfelec.com

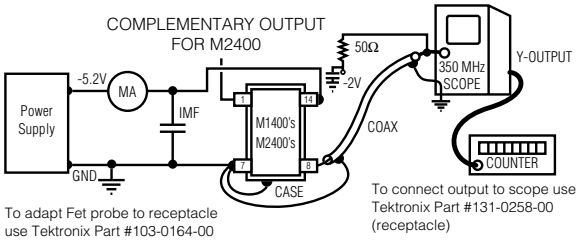
FULL SIZE D.I.L
M1400, M2400
M1410, M2410
M1436, M2436
M1444, M2444
M1445, M2445
M1500, M2500
M1510, M2510
M1536, M2536
M1544, M2544
M1545, M2545

FIXED OSCILLATORS
ECL and PECL, 0° to 70° C
Thru-Hole / Gull Wing
10 MHz to 125 MHz

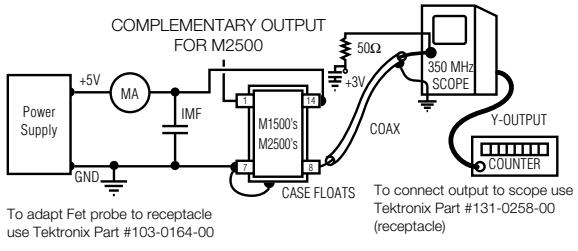
1400 and 2400 – 10K logic, ECL, -5.2V
1500 and 2500 – 10K logic, PECL, +5V

CONNECTIONS

PINS	M1400, M2400 Models	M1500, M2500 Models
1.	Not used in Single Output or Used for Complementary Output (same termination as Pin 8.)	
7.	Electrical Ground and Case	Electrical Ground
8.	Output requires termination of 270 ohms to Pin 14. or 50 ohms to –2V	Output requires termination of 270 ohms to Pin 7. or 50 ohms to +3V
14.	–5.2 volts	+5 Volts
CASE	Tied to Pin 7.	Floating



TEST CIRCUIT FOR M1400's
M2400's HAVE ADDITIONAL OUTPUT ON PIN 1.



TEST CIRCUIT FOR M1500's
M2500's HAVE ADDITIONAL OUTPUT ON PIN 1.

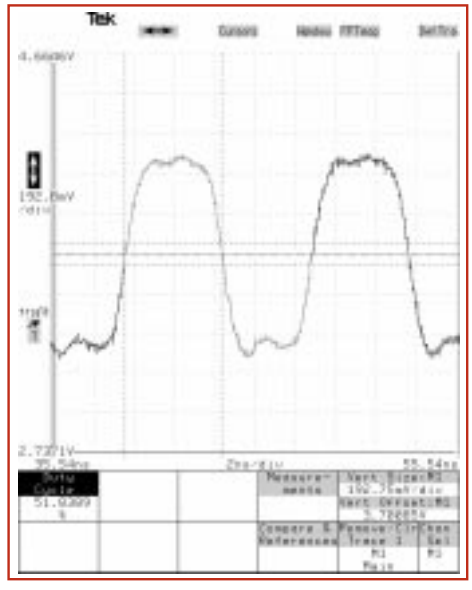


Fig. 3 M2545-107M, 10K logic

HOW TO ORDER

For Part Number, put package type before model number, and add frequency in MHz, for example:

M 1500-66.666M G

- "M" is full size DIL "L" is low height, full size DIL
- "1500" is model type
- "66.666 M" frequency in MHz
- Add "G" for gullwing