

# M302 Series

## VCXO 200MHz to 1000MHz

The M302 Series is a family of Voltage Controlled Crystal Oscillators (VCXO) with center frequencies ranging from 200MHz to 1000MHz. These highly-stable devices provide a differential clock output with Less Than 2.0ps (RMS) Jitter.

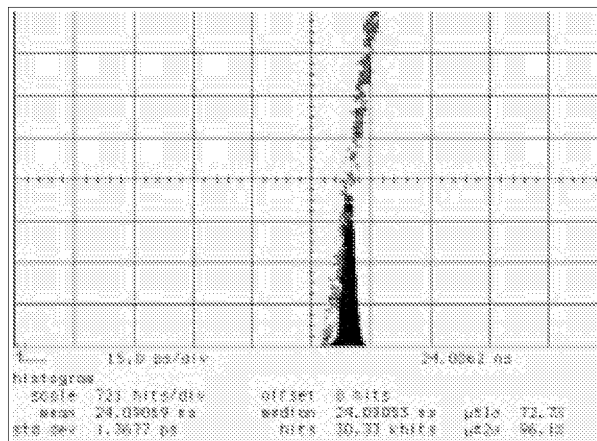
The M302 precision VCXO series was developed specifically for tough applications which require low jitter and high accuracy.

Packaged in small, 24-pin double-wide metal DIP packages, the M302 Series devices are available with either ECL or PECL differential outputs and operate from a single supply (+5V for PECL and -5V for the ECL). Standard models are specified for 0°C to +70°C operation. Extended temperature range models are available for -25°C to +85°C operation (contact factory for additional temperature ranges).

The M302 Series VCXOs are ideal for applications found in today's high-performance Telecom, Datacom, Computer, and ATE systems.

### Features:

- 200MHz to 1000MHz Center Frequency
- Low 2.0ps Phase Jitter
- 30ppm/Volt Sensitivity
- 10ppm Accuracy @  $V_c=2.5V$
- DC to 2kHz Modulation Bandwidth
- 25k $\Omega$  Input Impedance
- ECL/PECL Differential Outputs
- Single Supply Operation
- 0°C to +70°C, and -25°C to +85°C Operation



*For additional information regarding Custom Microelectronic Products and Services, please contact Micro Networks at:*



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## Absolute Maximum Ratings

Operating Temperature Range	-40°C to +85°C
Specified Temperature Range	
M302X-XXX.XXXX X K	0°C to +70°C
M302X-XXX.XXXX X L	-25°C to +85°C
Storage Temperature Range	-55°C to +125°C
Supply M302E	-7.0 to 0 Volts
Supply M302P	0 to +7.0 Volts

## Ordering Information

Part Number **M302E0622.0800BK**

Select device output format.  
Specify "E" for ECL output format or "P"  
for PECL output format

Select device center frequency XXX.XXXXMHz

Stability: "A" = 20ppm

"B" = 30ppm

"C" = 40ppm

Add "K" for 0°C to +70°C operation

Add "L" to "B" or "C" models for -25°C to +85°C operation

## Specifications

Specifications @  $T_A = +25^\circ\text{C}$ ,  $V_S = -5\text{V}$  for "E",  $V_S = +5\text{V}$  for "P", unless otherwise indicated

	Min.	Typ.	Max.	Units
Center Frequency Range (Note 1)	200		1000	MHz
Frequency Accuracy (@ $V_C = 2.5\text{V}$ ) (Note 3)		10	35	ppm
Control Voltage (Note 2):				
M300E		0 to -5	0 to -8	Volts
M300P		0 to +5	0 to +8	Volts
Sensitivity	25	30		ppm/Volt
Pull Range: (0V to 5V)	125	170		ppm
(0V to 8V)		260		ppm
Non-Linearity ( $V_C = 0.5\text{V}$ to 5V) (Note 5)		5	10	%
Input Impedance (Note 3)		25		K $\Omega$
Modulation Bandwidth (Note 3)		DC - 2kHz		
Output Configuration:				
M302E		Differential ECL		
M302P		Differential PECL		
Symmetry (Note 4)	45/55	50/50	55/45	%
Rise/Fall Time: (20% to 80%)		150		psec
Output Phase Jitter		2	5	psec (rms)
Frequency Pushing		3		ppm/V
Start Up Time		40		msec
Power Supply Requirements:				
M302E	-4.75	-5.00	-5.25	Volts
M302P	+4.75	+5.00	+5.25	Volts
Power Supply Current:				
M302E		-70	-125	mA
M302P		+70	+125	mA

- Notes:
- Specify when ordering.
  - The lowest frequency of the tuning range will occur at  $V_C = 0$  Volts.
  - Consult the factory for options.
  - Symmetry is measured at  $V_{IO} = -1.35\text{V}$  for M302E models and  $V_{IO} = V_{CC} - 1.35\text{V}$  for M302P models.
  - Best fit straight line.

Specifications subject to change without notification as Micro Networks reserves the right to make improvements and changes in its products.



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## Pin Designations

### M302E Model

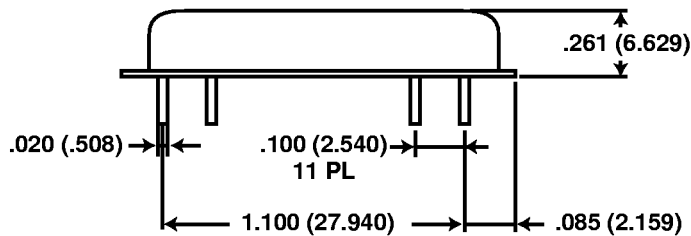
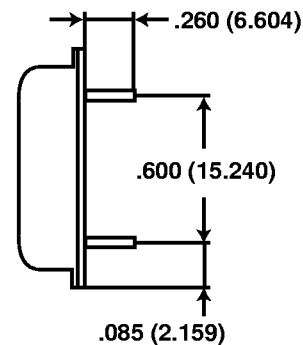
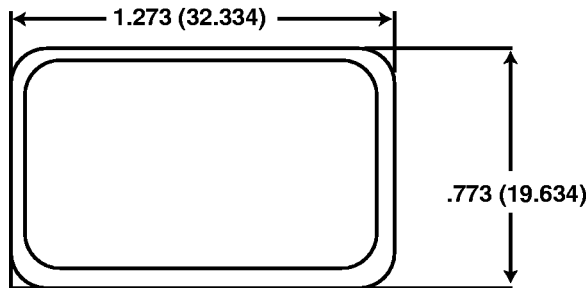
1. Ground	24. Ground
2. Ground	23. V <sub>C</sub>
3. Ground	22. -5 Volts
4. -5 Volts	21. Ground
5. Ground	20. -5 Volts
6. -5 Volts	19. Test Point
7. Ground	18. -5 Volts
8. -5 Volts	17. Ground
9. Ground	16. -5 Volts
10. Osc. Out $\bar{Q}$	15. NC
11. Osc. Out Q	14. -5 Volts
12. Ground	13. Ground



### M302P Model

1. Ground	24. Ground
2. Ground	23. V <sub>C</sub>
3. Ground	22. Ground
4. Ground	21. +5 Volts
5. +5 Volts	20. Ground
6. Ground	19. Test Point
7. +5 Volts	18. Ground
8. Ground	17. +5 Volts
9. +5 Volts	16. Ground
10. Osc. Out $\bar{Q}$	15. NC
11. Osc. Out Q	14. Ground
12. +5 Volts	13. +5 Volts

## Package Outline



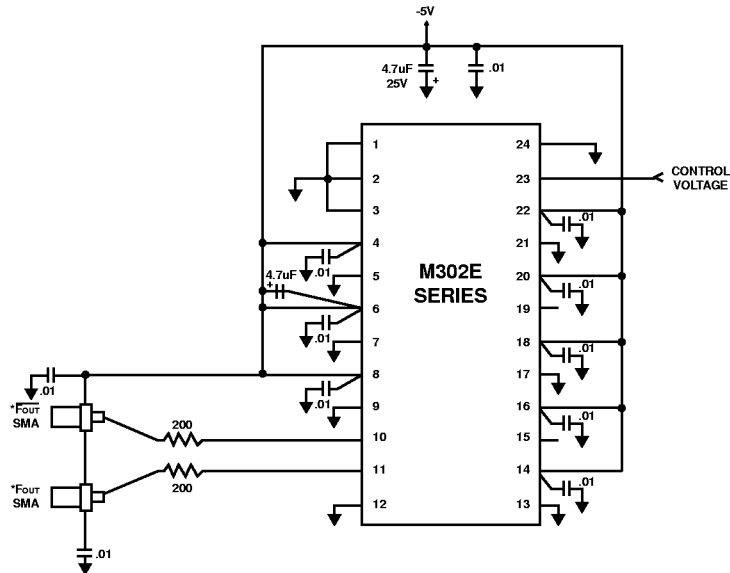
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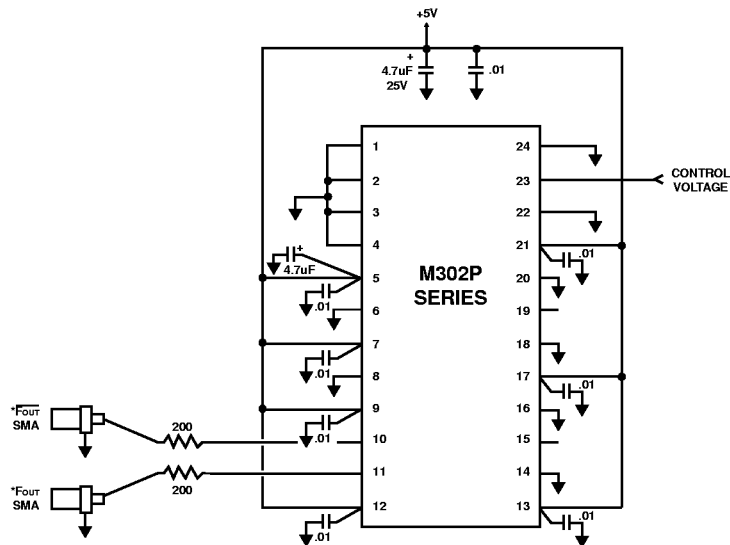
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## Test Circuits



\* Termination Impedance of 50 Ohms, DC coupled



\* Termination Impedance of 50 Ohms, DC coupled



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