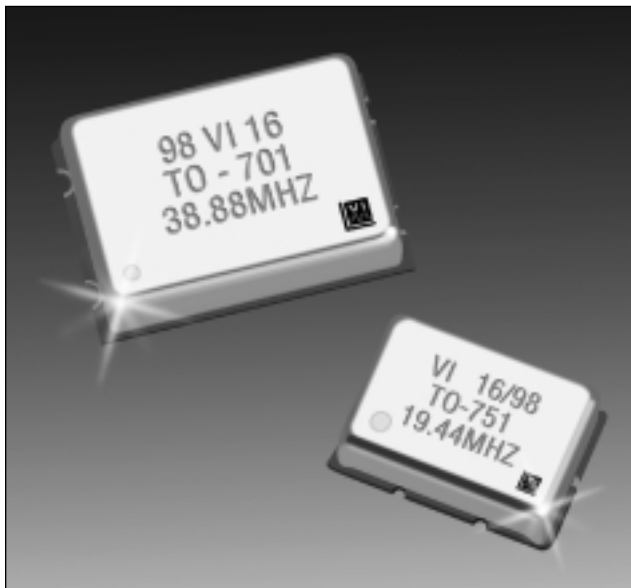


TO-700 Series Temperature Compensated Crystal Oscillator



Features

- Frequencies to 52 MHz
- Stability to ± 1 ppm @ -40°C to $+85^{\circ}\text{C}$
- Low Aging
- 14mm x 9mm and 19mm x 13mm Surface Mount Designs
- 3.3 and 5.0 Volt Options
- HCMOS, LVHCMOS and Sinewave Outputs Available
- ASIC Technology

Applications

- Wireless Communication Equipment
- Mobile Radios and Network systems
- ISDN, ATM, SONET/SDH and GSM Systems

Description

The model TO-700 Temperature Compensated Crystal Oscillator is available in frequencies from 2 MHz to 52MHz.

The new design introduces an ASIC based temperature compensation method that provides exceptionally low aging rates and superior temperature stabilities in a small surface mount package.

The TO-700 can achieve an aging rate of <1 ppm/ year with stability to ± 1 ppm at -40°C to $+85^{\circ}\text{C}$.

TO-700 Series

Temperature Compensated Crystal Oscillator

Performance Characteristics

Parameter		Characteristic		
Series:	TO-700	TO-710	TO-720	
Frequency Range:	10 MHz to 52 MHz	2 MHz to 52 MHz	10 MHz to 52 MHz	
Nominal Frequency Tolerance: @ 2.5 V before reflow soldering @ 2.5 V after reflow soldering	<±1 ppm <±3 ppm			
Frequency Stability (in the Operating Temperature Range):	TO-701: <±1.0 ppm TO-702: <±1.5 ppm TO-703: <±0.5 ppm TO-704: <±1.0 ppm	TO-711: <±1.0 ppm TO-712: <±1.5 ppm TO-713: <±0.5 ppm TO-714: <±1.0 ppm	TO-721: <±1.0 ppm TO-722: <±1.5 ppm TO-723: <±0.5 ppm TO-724: <±1.0 ppm	
Frequency vs Supply - Voltage	<±0.2 ppm ±10%	<±0.25 ppm ±5%		
Frequency vs Load - Changes	0.1 ppm ±10%			
Aging @ 25°C:	<±2.0 ppm/first year <±1.0 ppm/year			
Frequency Control Range:	±10 to 15 ppm			
Control Voltage Range:	0.5V to 4.5V		0.3V to 3.0V	
Voltage Control Input Impedance:	>50 k Ohm			
Transfer Function Linearity:	negative/10%			
Supply Voltage:	5.0Vdc±10%		3.3Vdc±10%	
Current Consumption:	≤3 mA	≤20 mA		
Output Voltage/Load:	Sinewave ≥1V _{pp} , 10 k Ohm//10pF (optional 1kOhm)	HCMOS 1k Ohm//15pF 40%...60%	LVHCMOS 1k Ohm//15pF 40%...60%	
Phase Noise (typical) at 10 MHz:	-110 dBc/Hz at 100 Hz offset -130 dBc/Hz at 1 kHz offset -135 dBc/Hz at 10 kHz offset			
Temperature Ranges	TO-701/TO-702 -40°C to +85°C TO-703/TO-704 -20°C to +70°C	TO-711/TO-712 -40°C to +85°C TO-713/TO-714 -20°C to +70°C	TO-701/TO-702 -40°C to +85°C TO-723/TO-724 -20°C to +70°C	

TO-700 Series

Temperature Compensated Crystal Oscillator

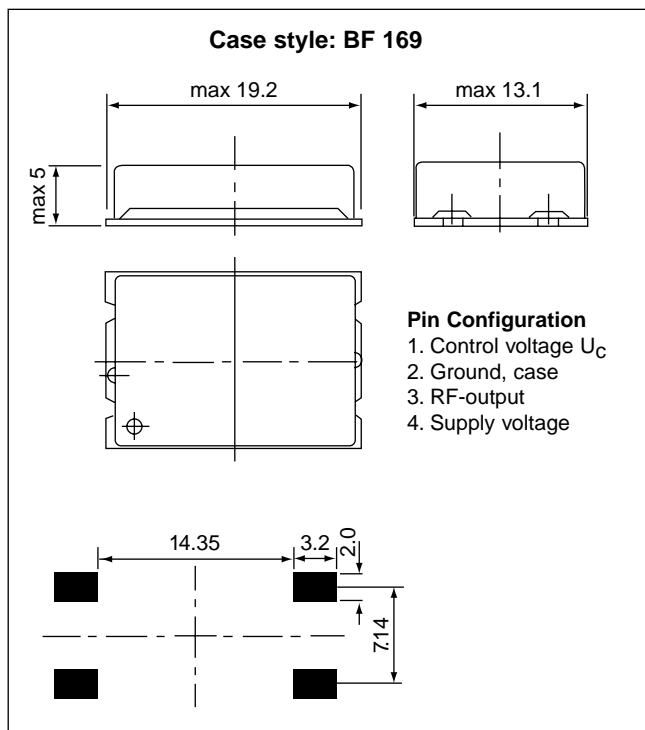
Performance Characteristics

Parameter		Characteristic	
Series:	TO-750	TO-760	
Frequency Range:	TO-751/752: 15 MHz to 22 MHz TO-753/754: 15 MHz to 26 MHz	15 MHz to 52 MHz	
Nominal Frequency Tolerance: @ 2.5 V before reflow soldering @ 2.5 V after reflow soldering	<±1 ppm <±3 ppm		
Frequency Stability (in the Operating Temperature Range):	TO-751: <±2.5 ppm TO-752: <±3.0 ppm TO-753: <±1.5 ppm TO-754: <±2.0 ppm	TO-761: <±1.0 ppm TO-762: <±1.5 ppm TO-763: <±0.5 ppm TO-764: <±1.0 ppm	
Frequency V Supply - Voltage ±10%:	TO-751: <±1.5 ppm TO-752: <±1.0 ppm TO-753: <±1.0 ppm TO-754:	<±0.2 ppm	
Frequency V Load - Changes ±10%:	<±0.3 ppm	<±0.1 ppm	
Aging @ 25°C:	<±2.0 ppm/first year <±1.0 ppm/year after 2 years		
Frequency Control Range:	≥±10 ppm		
Control Voltage Range:	0.5V to 4.5V		
Voltage Control Input Impedence:	>50 k Ohm		
Transfer Function Linearity:	negative/10%		
Supply Voltage:	5.0Vdc±10%		
Current Consumption:	≤20 mA	≤3 mA	
Output Voltage/Load:	HCMOS 1k Ohm//15pF 40%...60%	Sinewave 10 k Ohm//10pF	
Phase Noise (typical) at 10 MHz:	-105 dBc/Hz at 100 Hz offset -125 dBc/Hz at 1 kHz offset -130 dBc/Hz at 10 kHz offset		
Temperature Ranges	TO-751/752/761/762	TO-753/754/763/764	
Operating:	-40°C ... +85°C	-20°C ... +70°C	
Operable:	-45°C ... +90°C	-25°C ... +85°C	
Storage:	-50°C ... +105°C	-50°C ... +105°C	

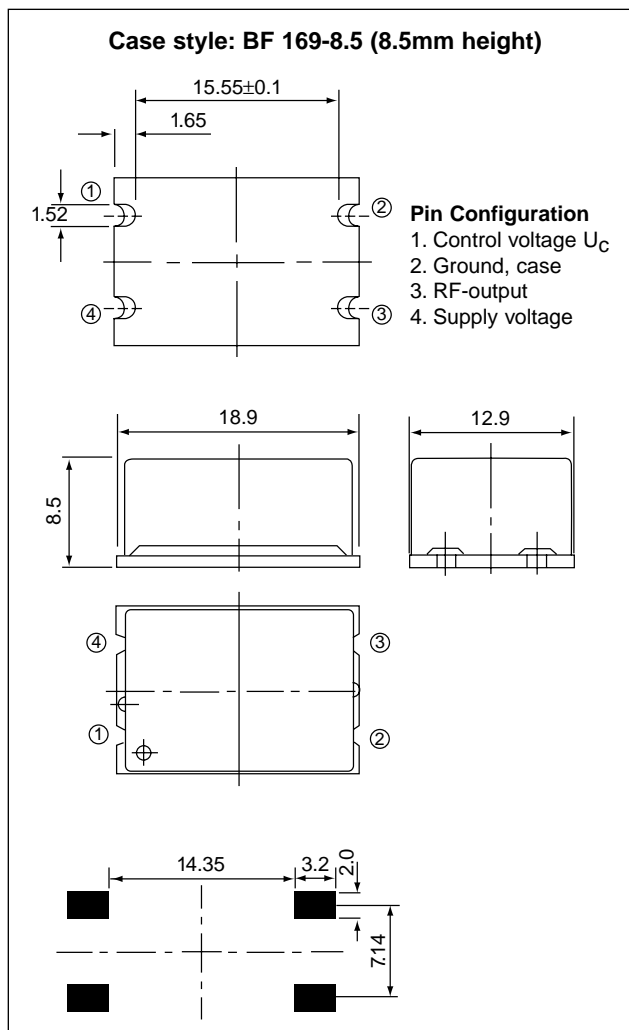
TO-700 Series

Temperature Compensated Crystal Oscillator

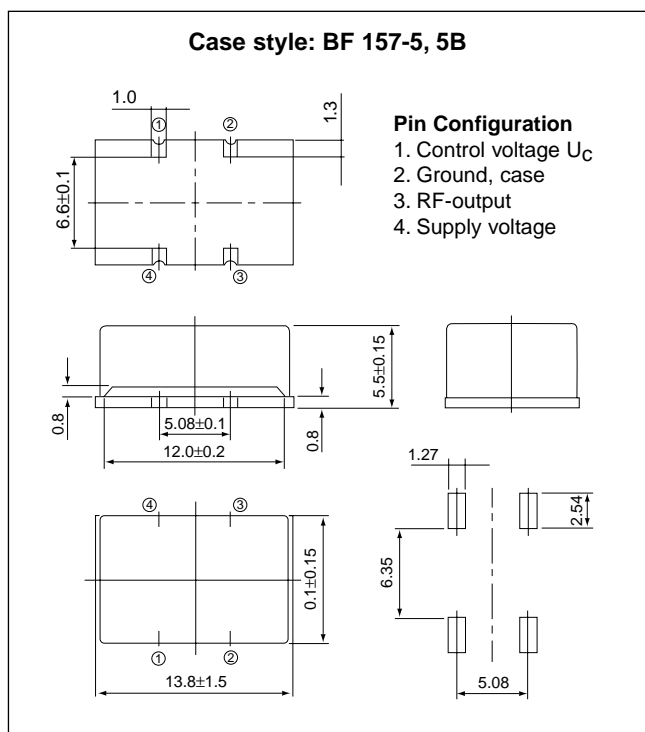
TO-700 and TO-710 Series



TO-720 Series



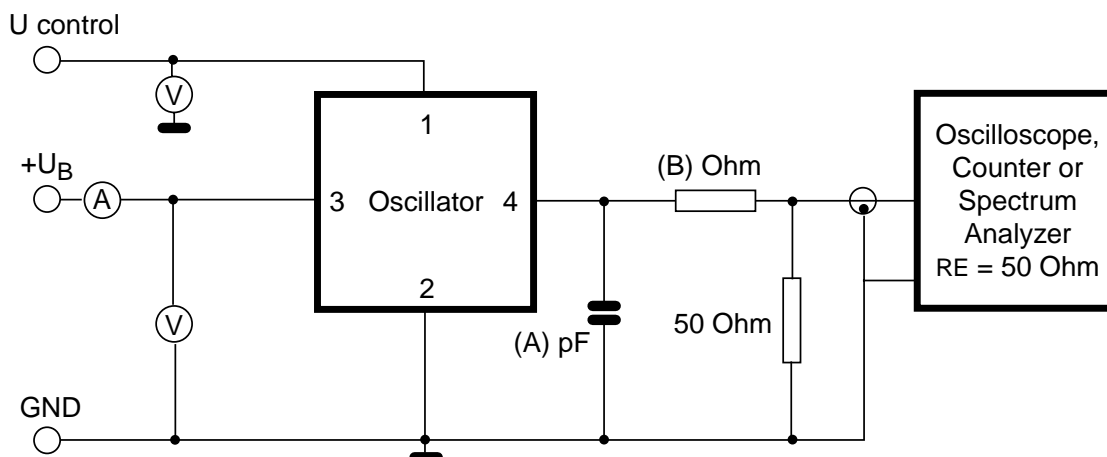
TO-750 and TO-760 Series



Note: Dimensions in millimeters

TO-700 Series Temperature Compensated Crystal Oscillator

Test Circuit



	A	B
TO-700 Series	10 pF	9975 ohm
TO-710 Series	15 pF	975 ohm
TO-720 Series	15 pF	975 ohm
TO-750 Series	15 pF	9975 ohm
TO-760 Series	10 pF	9975 ohm

How To Order

at
 Series _____ Frequency _____

Examples: TO-701 @ 10 MHz
 TO-711 @ 10 MHz
 TO-724 @ 52 MHz
 TO-753 @ 26 MHz
 TO-762 @ 52 MHz

TO-700 Series Temperature Compensated Crystal Oscillator

**Visit Our Website at
www.vectron.com**

For additional information please contact:



www.vectron.com

USA: Vectron International • 166 Glover Avenue, Norwalk, CT 06856 **Tel: 1-88-VECTRON-1 • Fax: 1-888-FAX-VECTRON**
EUROPE: In Denmark, Finland, Ireland, Israel, Norway, Spain, UK **Tel: 44 (0) 1703 766 288 • Fax: 44 (0) 1703 766 822**
 In Austria, Belgium, France, Germany, Italy, Luxembourg
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