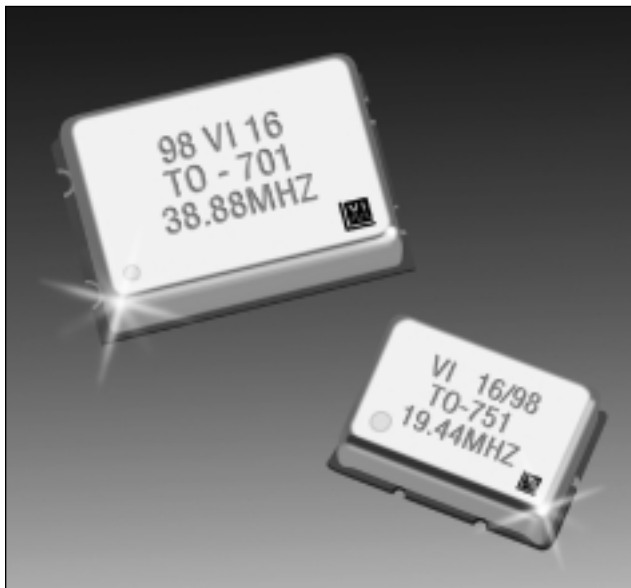


TO-700 Series Temperature Compensated Crystal Oscillator



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

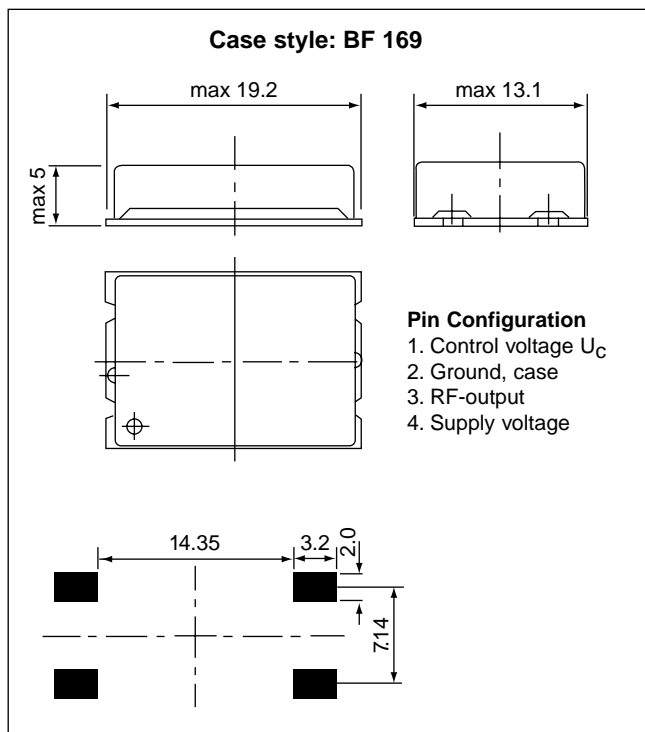
Performance Characteristics

| 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 | |

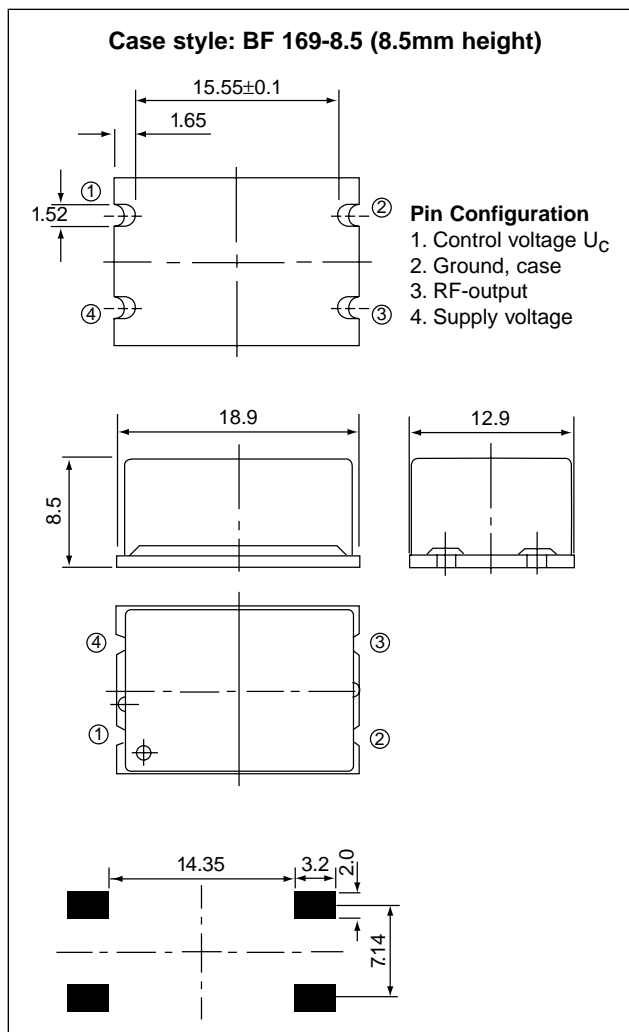
TO-700 Series

Temperature Compensated Crystal Oscillator

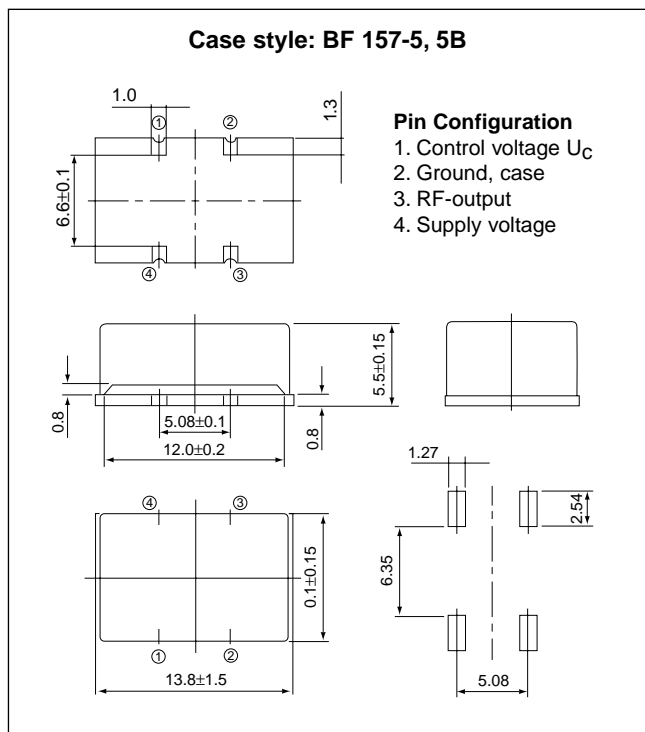
TO-700 and TO-710 Series



TO-720 Series



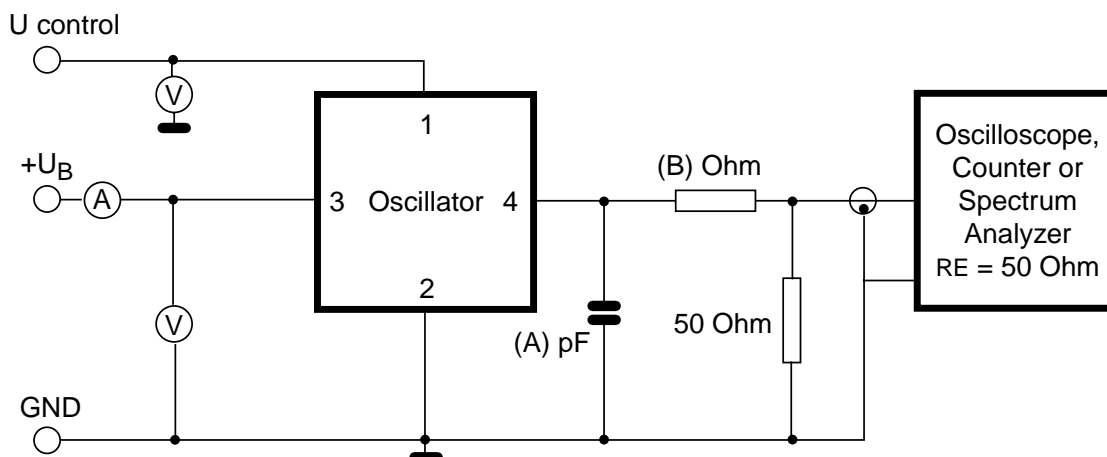
TO-750 and TO-760 Series



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**

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