

VFOV100 Series

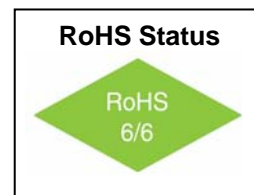
OCXO – Ultra Low Noise, Ultra Stable

HCMOS / SINEWAVE



Features

- 5MHz to 120MHz Frequency Range
- Ultra Low Phase Noise: (fundamental crystal @10MHz)
 - -155 dBc/Hz @ 1KHz offset
 - -168 dBc/Hz floor
- Sine Wave or HCMOS output
- Multiple package options



Applications

- PLL reference for Telecommunication Systems
- Microwave Communications / RADAR signal source
- GPS holdover
- Instrumentation / Test and Measurement

Replaces Valpey Fisher Part Number(s): VFTCS, VFTCR, VFTCE, and VFTCI

Electrical Specifications

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note |
|-----------------------------|--------------|---|----------------------|--------------------|----------------------|------------|--|
| Frequency Range | F | | 5 | | 120 | MHz | |
| Frequency Stability | $\Delta F/F$ | Vs. Operating Temp. E: -30°C to +70°C | | ± 10 | | ppb | STD option shown. See "How to Order" Chart below |
| | | Vs. Supply Voltage | | ± 3 | ± 5 | ppb | Ref. Vcc typ. |
| | | Vs. Aging / Day Vs. Aging / Year | | 3 0.3 | | ppb ppm | after 30 days 0.2ppb available |
| Operating Temperature Range | T | | -30° | | +70° | °C | STD option shown. See "How to Order" Chart below |
| Allan Variance | | 1s | | 10e-12 | | | |
| SSB Phase Noise | | 1Hz | | -95 | | dBc/Hz | For 10MHz Oscillator (For 100MHz see plot on next page) |
| | | 10Hz | | -125 | | | |
| | | 100Hz | | -145 | | | |
| | | 1KHz | | -155 | | | |
| | | 10KHz | | -165 | | | |
| | | 100KHz | | -168 | | | |
| Retrace | | After 30 min. | | | ± 20 | ppb | |
| G-sensitivity | | worst direction | | | ± 1 | ppb/g | |
| Supply Voltage | Vcc | | 11.4 4.75 3.14 | 12.0 5.0 3.3 | 12.6 5.25 3.47 | V | |
| Power Consumption | P | steady state, 25°C steady state, -30°C start-up | | 1.0 2.0 3.2 | 1.2 2.2 3.5 | W | |
| Warm up time | τ | to 0.1ppm accuracy | | 2 | 3 | min | |

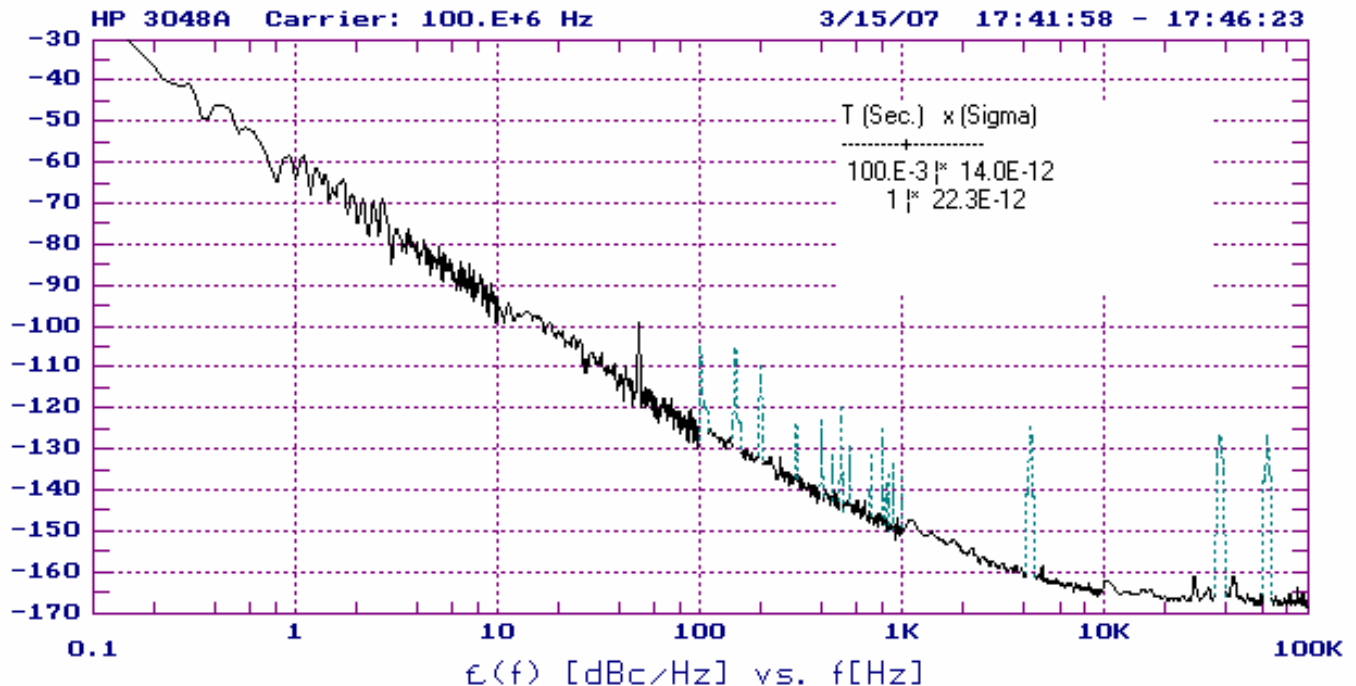


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Electrical Specifications

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note |
|---------------------------|------------------|--|---------------|------------|------------|-----------|------------------------|
| HCMOS / TTL Output Levels | | HCMOS/TTL | 10KOhm / 15pF | | | | Order Code H |
| | V _H | V _{cc} = 5 or 12V V _{cc} =3.3V | 3.9 2.4 | | | V | |
| | V _L | | | | 0.4 | V | |
| Rise / Fall time | | At 100MHz | | | 10 | ns | |
| Duty Cycle | | | 45 | | 55 | % | |
| Sine-Wave Output Levels | | V _{cc} =5 or 12V | +6 | +8 | +10 | dBm | Order Code S |
| | R _L | | | 50 | | Ω | |
| Harmonics | | | | | -25 | dBc | |
| Sub-Harmonics | | | none | | | | Fundamental |
| Control Voltage | V _c | V _{cc} = 5 or 12V V _{cc} =3.3V | 0 0 | | 4.3 2.8 | V | |
| Pull Range | | from nominal F | ±0.5 | ±1 | | ppm | At 100MHz |
| Deviation slope | | V _{cc} = 5 or 12V V _{cc} = 3.3V | 0.125 0.4 | | | ppm/ V | Monotonic, Positive |
| Reference output | V _{ref} | V _{cc} = 5 or 12V V _{cc} =3.3V | 4.1 2.7 | 4.3 2.8 | 4.4 2.9 | V | |



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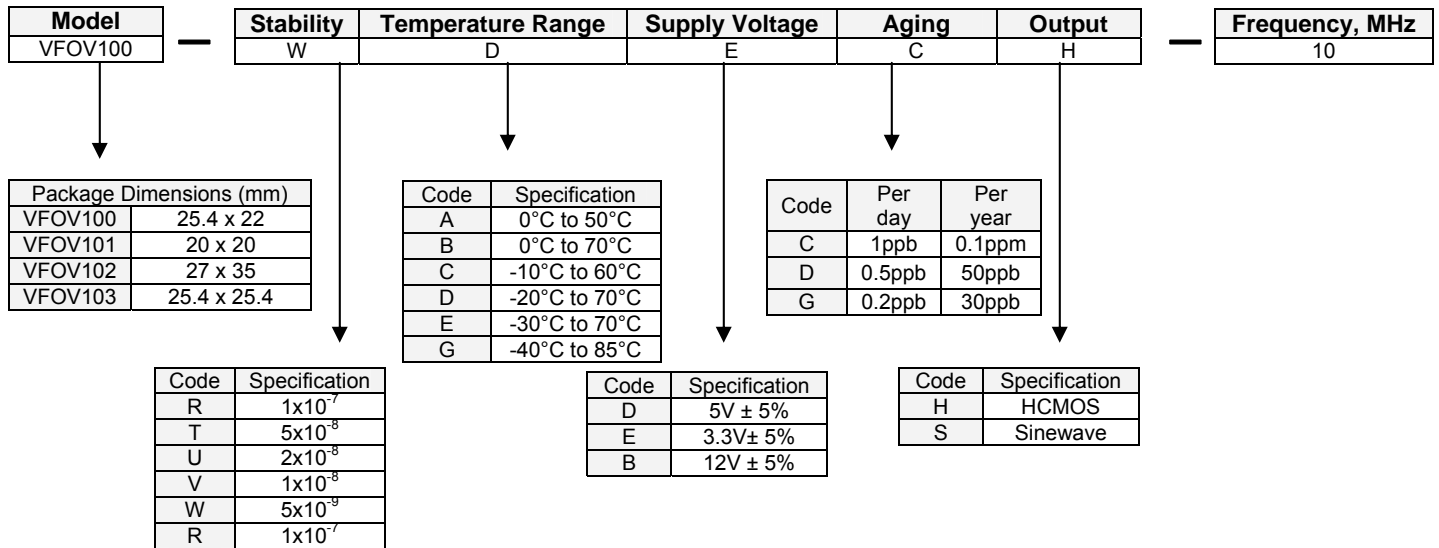
Absolute Ratings

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note |
|---------------------------|-----------------|-----------|------|-----|----------------------|------|------|
| Supply Break Down Voltage | V _{cc} | | -0.5 | | V _{cc} +20% | V | |
| Control Voltage | V _c | | -1 | | 9 | V | |

Environmental and Mechanical

| Parameter | Specification |
|----------------------|---|
| Storage Temperature | -60°C to +90°C |
| Humidity | Hermetically Sealed |
| Mechanical Shock | Per MIL-STD-202, 30g, half sine, 11ms |
| Vibration | Per MIL-STD-202, 10g swept Sine to 2000Hz |
| Soldering Conditions | 260°C for 10s |

How to Order




Available Frequency Stabilities over Operating Temperature Ranges

| Order Code | Temperature Range | Stability | | | | |
|------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | | 1x10 ⁻⁷ | 5x10 ⁻⁸ | 2x10 ⁻⁸ | 1x10 ⁻⁸ | 5x10 ⁻⁹ |
| A | 0°C to 50°C | * | * | * | * | * |
| B | 0°C to 70°C | * | * | * | * | * |
| C | -10°C to 60°C | * | * | * | * | * |
| D | -20°C to 70°C | * | * | * | * | * |
| E | -30°C to 70°C | * | * | * | * | * |
| F | -40°C to 85°C | * | * | * | * | * |

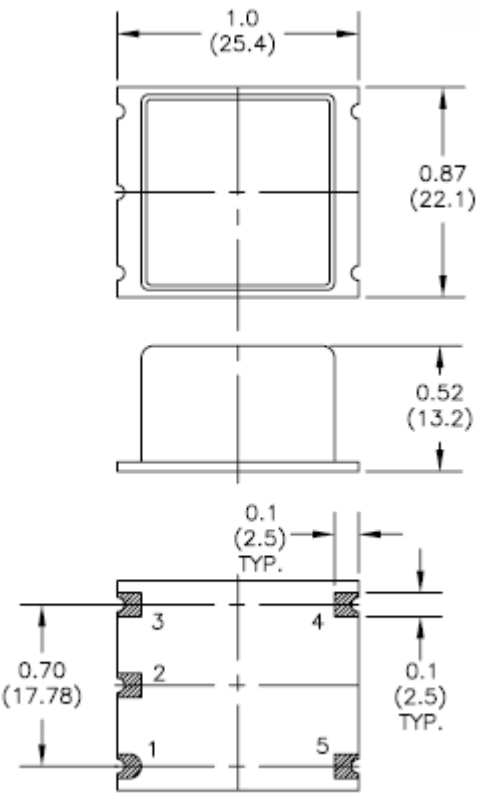
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Package Options



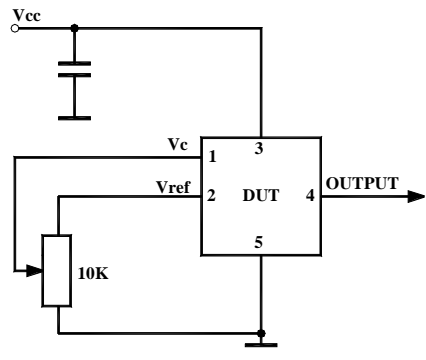
VFOV100



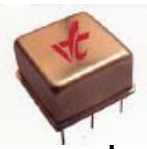
Top view dimensions: 1.0 (25.4) mm width, 0.87 (22.1) mm height.

Side view dimensions: 0.52 (13.2) mm height.

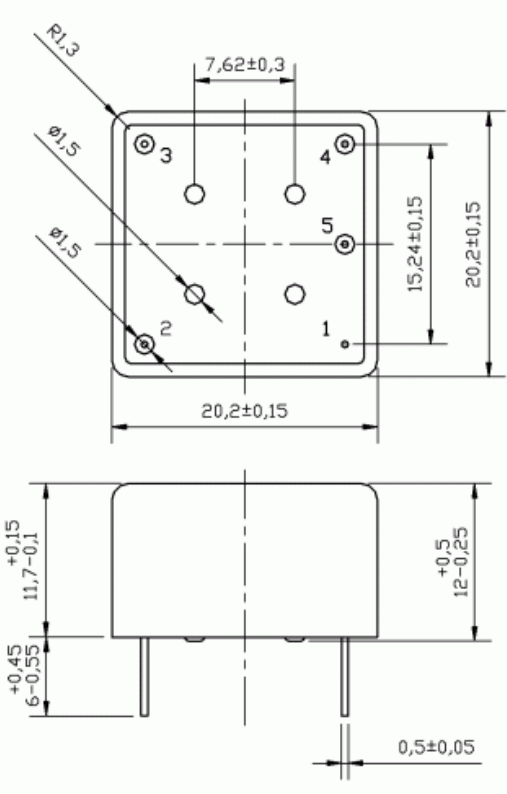
Pin detail dimensions: 0.1 (2.5) mm TYP. for pin width, 0.70 (17.78) mm for pin pitch, 0.1 (2.5) mm TYP. for pin height.



| Pin # | Connection |
|-------|------------|
| 1 | Vc |
| 2 | Vref |
| 3 | Vcc |
| 4 | Output |
| 5 | GND |

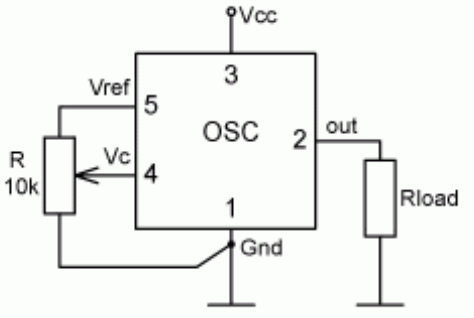


VFOV101



Top view dimensions: 7.62±0.3 mm width, 20.2±0.15 mm height, 20.2±0.15 mm width.

Side view dimensions: 11.7±0.1 mm height, 0.5±0.05 mm pin width, 12±0.25 mm total height.




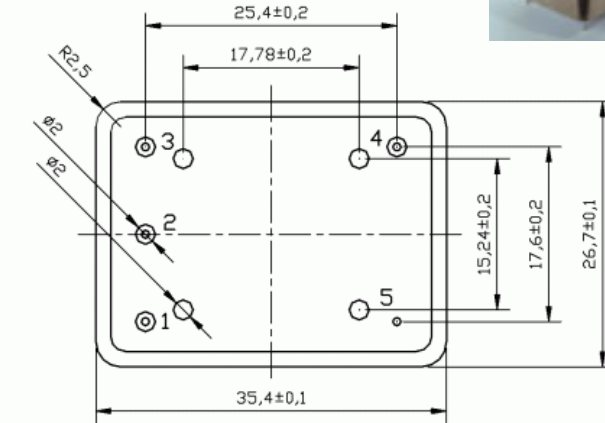
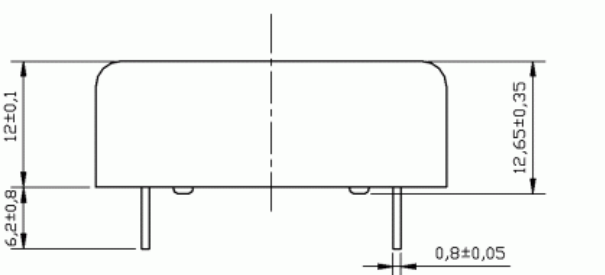
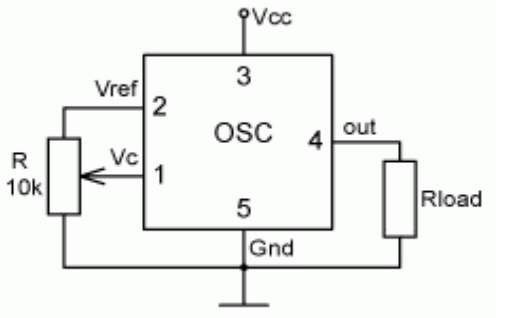
| Pin # | Connection |
|-------|------------|
| 1 | Gnd |
| 2 | Output |
| 3 | Vcc |
| 4 | Vc |
| 5 | Vref |

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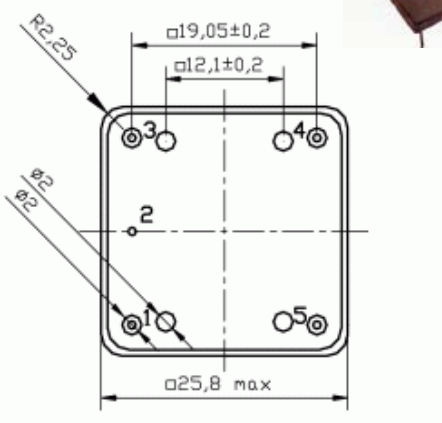
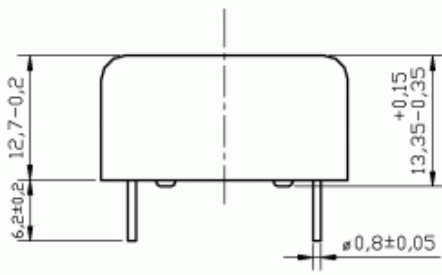
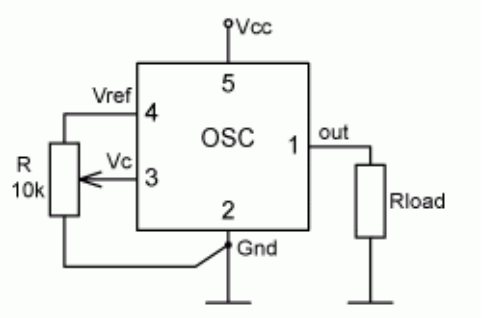
Package Options

VFOV102

| Pin # | Connections |
|-------|-------------|
| 1 | Vc |
| 2 | Vref |
| 3 | Vcc |
| 4 | Output |
| 5 | GND |

VFOV103

| Pin # | Connection |
|-------|------------|
| 1 | Output |
| 2 | GND |
| 3 | Vc |
| 4 | Vref |
| 5 | Vcc |