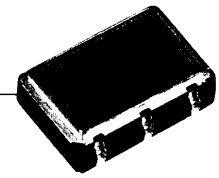
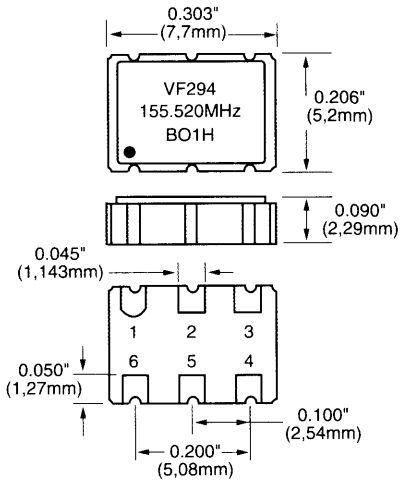
# VF194/VF294 Series



## HCMOS/TTL Hybrid VCXO
## Surface Mount Ceramic Package
## Tristate Output Standard

### FEATURES

- Very Low Phase Jitter
- Industrial Temperature Range
- High Reliability
- Wide Frequency Range
- Miniature Package
- 3.3V supply available




All dimensions are typical unless otherwise specified.

Creating a Part Number

**VF194/294** □□□-□-□-**FREQ.**

| FREQUENCY STABILITY | |
|---|---|
| Code | Specification |
| S | ±20 ppm |
| | (std.) |

| ABSOLUTE PULL RANGE (ppm) | |
|---|---|
| Code | Specification |
| XXX | Specify Deviation MIN. |
| | (MAX. ±100 PPM) |

| DUTY CYCLE | |
|---|---|
| Code | Specification |
| H | ±5% |
| | ±10% (std.) |

| OPERATIONAL TEMP. RANGE | |
|---|---|
| Code | Specification |
| | 0°C to +70°C (std.) |
| 1 | -40°C to +85°C |

| INPUT VOLTAGE | |
|---|---|
| Code | Specification |
| L | 3.3 Volt ±5% |
| | 5.0 Volt ±5% (std.) |

Example: VF194-1-100-77.76MHz: Frequency Stability ±25ppm, Duty Cycle ±10%, Input Voltage 5.0 Volt ±5%, Operating Temperature -40°C to +85°C, Absolute Pull Range (ppm) ±100min. Output Tristate Control Pin #5, Frequency 77.76MHz.

Notes:
1. Current is frequency and load dependent.
2. Tighter duty cycle available.
3. ±100ppm available at some frequencies. ±32ppm for some frequencies at 3.3V is the only option.
4. 0–5V control voltage available for Vcc 3.3V. Nominal control voltage is 2.5V and setability is ±0.5V in this case.
5. For higher frequency Tr/Tf is shorter.

| | Parameter | Symb | Condition | Min | Typ | Max | Unit | Note |
|---|---|---|---|---|---|---|---|---|
| Absolute Max. Ratings | Input Break Down Voltage | Vcc | | -0.5 | | 7.0 | V | |
| | Storage Temp. | Ts | | -55 | | +125 | °C | |
| | Control Voltage | Vc | | -1 | | 9 | V | |
| Electrical | Frequency Range | F | | 1.5 | | 160 | MHz | |
| | Frequency Stability | ΔF/F | vs. Temp., Vcc | | | ±25 | ppm | |
| | Input Voltage | Vcc | | 4.75<br>3.15 | 5.00<br>3.30 | 5.25<br>3.45 | V | Standard<br>LV Opt. |
| | Input Current | Icc | No load | | | 30 | mA | 1 |
| | Load | 10 TTL gates or 50pF | | | | | | |
| | Duty Cycle | | @1.4V | 40 | 50 | 60 | % | 2 |
| | Rise/Fall Time | Tr/Tf | 20% to 80%<br>0.4V to 2.4V | | | 6<br>4 | ns | 5 |
| | Logic "1" Level | Voh | Max Load | 0.9Vcc | | | V | |
| | Logic "0" Level | Vol | Max Load | | | 0.1Vcc | V | |
| | Start-up Time | Ts | | | 2 | 10 | ms | |
| | Phase Jitter | | 1σ, F<52 MHz<br>1σ, F>52 MHz | | | 1<br>20 | ps | fj>1KHz |
| | Modulation BW | fm | @Vc = 2.5V | 10 | | | KHz | @-3db |
| | Input Impedance | | fm<10KHz | 50 | | | KOhm | |
| | Control Voltage | Vc | Vcc = 5.0V<br>Vcc = 3.3V | 0<br>0 | | 5.0V<br>3.3V | V | 4 |
| | Absolute Pull Range | APR | Overall | ±50 | | | ppm | 3 |
| | Deviation Slope | | Monotonic, positive | | 50 | | ppm/V | |
| | Linearity | | | | | ±20 | % | |
| | Setability (Vc for center freq) | Vc0 | @25°C, Fnominal | 2.00<br>1.25 | 2.50<br>1.65 | 3.00<br>2.05 | V | Vcc = 5.0V<br>Vcc = 3.3V |
| | Tristate Function | Input HIGH (>2.5V) or floating: ACTIVE<br>Input LOW (<0.5V): INFINITE IMPEDANCE | | | | | | |
| | Enable/ Disable Time | | | | | 100 | ns | |

| | | |
|---|---|---|
| Environmental and Mechanical | Operating Temperature Range | 0°C to +70°C (-40°C to +85°C available) |
| | Mechanical Shock | Per MIL-STD-202, Method 213, Cond. E |
| | Thermal Shock | Per MIL-STD-883, Method 1011, Cond. A |
| | Vibration | Per MIL-STD-883, Method 2007, Cond. A |
| | Soldering Conditions | 230°C, for 90s, Max. |
| | Hermetic Seal | Leak rate less than 5 x $10^{-8}$ atm.cc/s of helium |
| Electrical Connections | Pin Out | Pin #1–Voltage Control<br>Pin #3–Ground, Case<br>Pin #5–Tristate (194), N/C (294)<br>Pin #2–N/C (194) Tristate (294)<br>Pin #4–Output<br>Pin #6–Vcc |

All specifications are subject to change without notice.



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