

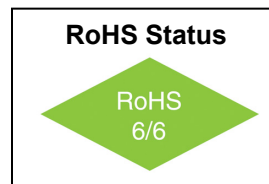
VFVX301

VCXO Low Jitter 2.5V, 3.3V

5x7mm SMD, LVPECL / LVDS

Features

- 38MHz to 700MHz Frequency Range
- Ultra Low Phase Noise
- <0.5ps jitter over 12KHz ~ 20MHz
- APR to ± 150ppm



Applications

- Optical Networking, SONET / SDH
- 10 Gigabit Ethernet
- Broadband Access

Electrical Specifications

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note |
|---|-----------------|--|--------------|---------------------|----------------------|---------------------|--|
| Frequency Range | F | | 38 | | 700 | MHz | |
| Frequency Stability | $\Delta F/F$ | Vs. Operating Temperature | | | ± 50 ± 25 ± 20 | ppm | Order Code B Order Code C Order Code D |
| | | Vs. Supply Voltage Vs. Aging / Year | | ± 1.5 ± 3 ± 1 | ± 3 | ppm/V ppm ppm | First Year After first year |
| Operating Temperature | T | | 0° -40° | | +70° +85° | °C | Order Code B Order Code G |
| Output | | LVPECL LVDS | | | | | Order Code L Order Code D |
| Supply Voltage | V _{CC} | | 3.15 2.35 | 3.3 2.5 | 3.45 2.65 | V | Order Code E Order Code G |
| Voltage Control | V _C | | 0 0 | | 3.3 2.5 | V | 0.3 – 3.0 available |
| APR | | | 100 | 150 | | ppm | |
| Period Jitter RMS | | 77.76 MHz | | 2.5 | 4 | ps | |
| | | 155.52 MHz | | 3 | 4 | | |
| | | 311.08 MHz | | 3 | 5 | | |
| | | 622.08 MHz | | 6 | 8 | | |
| Integrated Jitter RMS 12KHz to 20MHz | | 155.52MHz | | 0.4 | 0.5 | ps | |
| | | 311.04MHz | | 0.4 | 0.5 | | |
| | | 622.08MHz | | 0.4 | 0.5 | | |
| Period Jitter Peak-to-Peak | | 77.76MHz | | 18 | 30 | ps | |
| | | 155.52MHz | | 20 | 30 | | |
| | | 311.08MHz | | 25 | 30 | | |
| | | 622.08MHz | | 42 | 55 | | |
| VCON Modulation Bandwidth | BW | 0V < VCON < 3.3V | 25 | | | kHz | |

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|-----------------------------|--|---------------------------------------|-----------------------|------------|----------------|--------|--------------|----|------|
| Symmetry | | $(V_{DD}-1.3) V_{DC}$ $1.25V_{DC}$ | 45 45 | | 55 55 | % | PECL LVDS | | |
| Phase Noise | | 10Hz | | -66 | | dBc/Hz | @77.76MHz | | |
| | | 100Hz | | -96 | | | | | |
| | | 1KHz | | -124 | | | | | |
| | | 10KHz | | -136 | | | | | |
| | | 100KHz | | -132 | | | | | |
| | | 1MHz | | -145 | | | | | |
| | | 10Hz | | -62 | | dBc/Hz | @155.52MHz | | |
| | | 100Hz | | -92 | | | | | |
| | | 1KHz | | -120 | | | | | |
| | | 10KHz | | -132 | | | | | |
| | | 100KHz | | -128 | | | | | |
| | | 1MHz | | -144 | | | | | |
| | | 10Hz | | -59 | | dBc/Hz | @311.04MHz | | |
| | | 100Hz | | -86 | | | | | |
| | | 1KHz | | -116 | | | | | |
| | | 10KHz | | -129 | | | | | |
| | | 100KHz | | -124 | | | | | |
| | | 1MHz | | -140 | | | | | |
| Supply Current | I_{CC} | 38 – 100MHz | | | 65 | mA | PECL | | |
| | | 100 – 300MHz | | | 80 | | | | |
| | | 300 – 640MHz | | | 90 | | | | |
| | | 38 – 100MHz | | | 45 | | | mA | LVDS |
| | | 100 – 320MHz | | | 60 | | | | |
| | | 320 – 640MHz | | | 70 | | | | |
| Load | 50 Ohm to $V_{DD}-2V$ (PECL) 100 Ohm (LVDS) | | | | | | | | |
| Output High Voltage | V_{OH} | | $V_{DD}-1.025$ 1.4 | | 1.6 | V | PECL LVDS | | |
| Output Low Voltage | V_{OL} | | 0.9 | 1.1 | $V_{DD}-1.620$ | V | PECL LVDS | | |
| Output Differential Voltage | V_{OD} | | 247 | 355 | 454 | mV | LVDS | | |
| Offset Voltage | V_{OS} | | 1.125 | 1.2 | 1.375 | V | LVDS | | |
| Rise / Fall Time | T_r/T_f | 20% to 80% | | 0.6 0.7 | 1.5 1.0 | ns | PECL LVDS | | |
| Tristate | "1": Output Enable – Pin 2 may float 2.8V min (3.3V V_{DD}) or 2.25V min (2.5V V_{DD}) "0": Tristate – Pin 2 requires 0.4V max (3.3V or 2.5V V_{DD}) | | | | | | | | |

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Absolute Maximum Ratings

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note |
|----------------------|----------------|--------------------|-----|-----|-------|------|------|
| Lead Temperature | | Soldering, 10s max | | | 260 | °C | |
| Storage Temperature | T _s | | -55 | | +125° | °C | |
| Junction Temperature | T _J | | | | +125° | °C | |
| Supply Voltage | V _C | | -1 | | 4.6 | V | |
| ESD Protection | | Human Body Model | | | 2 | kV | |

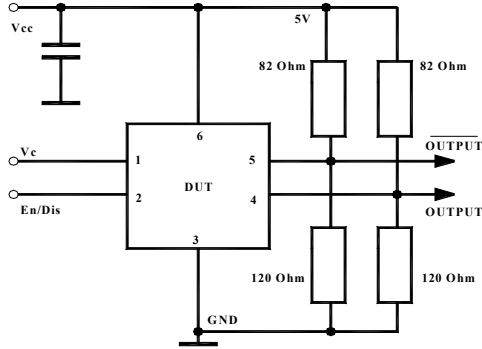
Environmental and Mechanical Conditions

| Parameter | Specification |
|------------------------|--|
| Shock | 1000 Gs, 0.35ms, ½ sine wave, 3 shocks in each plane |
| Humidity | Resistant to 85 °R.H. at 85 °C |
| Vibration | 10-2000 Hz of 0.06" d.a. or 20 Gs, whichever is less |
| Leak | Leak rate less than 5x10 ⁻⁸ atm.cc/s of helium (crystal only) |
| Case | Ceramic with hermetic resistance-welded metal lid |
| Pads | Solderable gold over nickel |
| Marking | Epoxy ink or laser engraved |
| Resistance to Solvents | MIL STD 202, Method 215 |

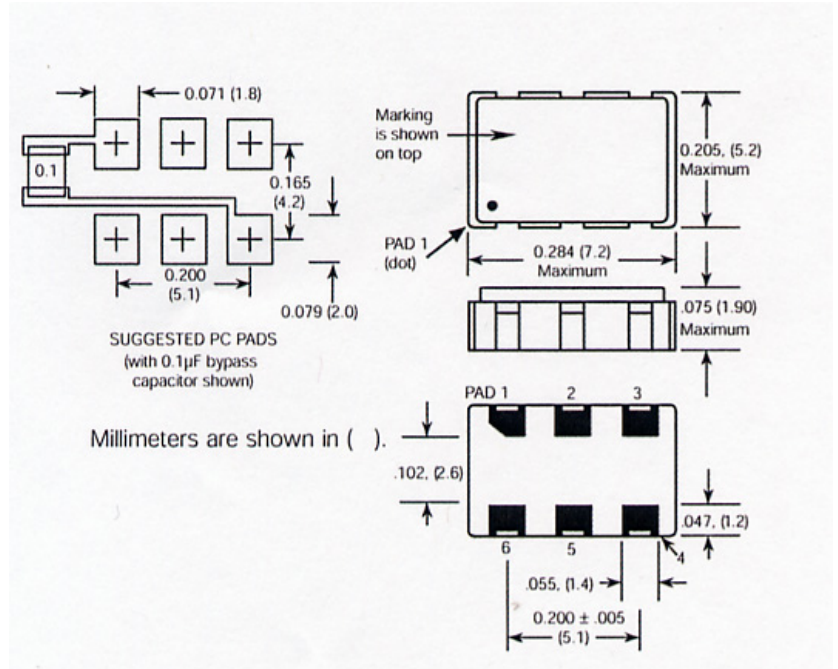
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| Pin # | Connection |
|-------|----------------|
| 1 | V _c |
| 2 | Tristate |
| 3 | Case, GND |
| 4 | Output |
| 5 | Output |
| 6 | Supply Voltage |



How to Order

VFVX301 — [] [] [] [] — FREQUENCY, MHz

| Stability | |
|-----------|---------------|
| Code | Specification |
| B | 50 ppm |
| C | 25 ppm |
| D | 20 ppm |

| Temperature Range | |
|-------------------|---------------|
| Code | Specification |
| B | 0°C to 70°C |
| G | -40°C to 85°C |

| Supply Voltage | |
|----------------|--------|
| Code | Output |
| E | 3.3V |
| G | 2.5V |

| Output | |
|--------|--------|
| Code | Output |
| L | LVPECL |
| D | LVDS |