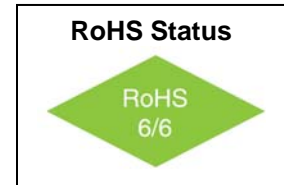


VFH3225
Extended Temperature/COTS
-55°C to + 125°C
XO 3.2x2.5mm SMD, CMOS



Features

- 25 MHz to 160 MHz frequency range
- 3.3V, 2.8V, 2.5V, or 1.8V supply voltage
- Low jitter
- Low power consumption
- Group A & B testing available



Applications

- Military
- Industrial
- Portable

Electrical Specifications

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note | |
|-----------------------|--------------------------------|-----------------------------------|------------------------------|------------------------------|------------------------------|-------------|--|--------------------------------------|
| Frequency Range | F _{out} | 3.3V 2.5V 1.8V | 25 | | 160 | MHz | Consult Factory for Standard Frequencies | |
| Frequency Stability | ΔF/F | Operating Temperature | | | ± 100 ± 50 | ppm | Order Code A Order Code B | |
| | | Supply Voltage; 1st Year Aging | | | ± 3 ± 3 | | | |
| Operating Temperature | T _a | | -55 | | +125 | °C | | |
| Supply Voltage | V _{DD} | | 3.00 2.52 2.25 1.71 | 3.30 2.80 2.50 1.80 | 3.60 3.08 2.75 1.89 | V | Order Code D Order Code E Order Code F Order Code G | |
| Supply Current | I _{cc} MAX | 25MHz ≤ F _o <160MHz | 3.3V | 2.8V | 2.5V | 1.8V | mA | Max Current across entire temp range |
| | | | 10 | 9 | 8 | 7 | | |
| TRISTATE | | Output Active or Enabled | 0.7 V _{DD} | | | V | | |
| | | Output in Tri-State (Disable) | | | 0.3 V _{DD} | | | |
| Rise / Fall Time | T _r /T _f | 10% to 90% of V _{DD} | | | 5.0 | ns | | |
| Duty Cycle | | | 45 | 50 | 55 | % | | |

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Electrical Specifications

| Parameter | Symbol | Condition | Min | Typ | Max | Unit | Note |
|---------------------|----------------|---|---------------------|---|---------------------|--------|----------|
| Output | | CL = 15 pF | LVCMOS | | | | |
| Logic "1" Level | Voh | | 90% V _{DD} | | - | V | |
| Logic "0" Level | Vol | | - | | 10% V _{DD} | V | |
| Phase Noise | φ _n | 10 Hz Offset 100 Hz 1K Hz 10K Hz 100 KHz 1 MHz | | -66 -101 -126 -138 -145 -149 | | dBc/Hz | @ 66 MHz |
| Start up time | | | | | 8 | ms | |
| RMS Jitter | £ | 12KHz to 20MHz | | 0.25 | >1 | ps | |
| Storage Temperature | T _s | | -55 | | +125° | °C | |

How to Order



| Frequency Stability | |
|---------------------|-----------|
| Code | Stability |
| A | ±100ppm |
| B | ± 50ppm |

| Supply Voltage | |
|----------------|-----------------|
| Code | V _{DD} |
| D | 3.3V |
| E | 2.8V |
| F | 2.5V |
| G | 1.8V |

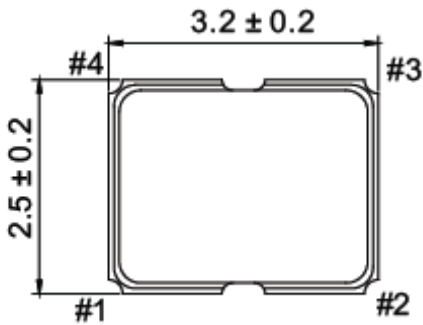
Standard Available Frequencies:
25 MHz, 33MHz, 50 MHz, 66 MHz, 75 MHz, 100 MHz, 125 MHz and 150 MHz
Consult Factory for Additional Available Frequencies.

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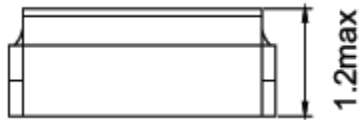
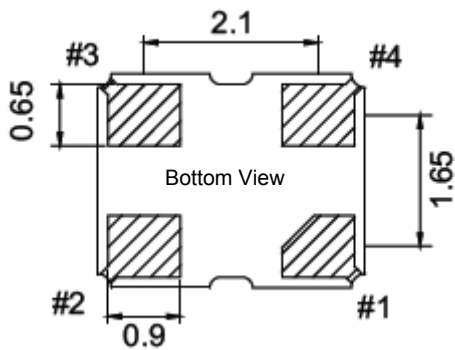


Environmental and Mechanical

| Parameter | Specification |
|----------------------|---|
| Mechanical Shock | Per MIL-STD-202, Method 213, Condition E |
| Thermal Shock | Per MIL-STD-883, Method 1011, Condition A |
| Vibration | Per MIL-STD-883, Method 2007, Condition A |
| Soldering Conditions | 260°C for 10s max |
| Hermetic Seal | Leak rate less than 5×10^{-8} atm.cc/s of helium |



| Pin # | Connection |
|-------|-----------------|
| 1 | TRISTATE |
| 2 | GND |
| 3 | Output |
| 4 | V _{DD} |



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TABLE 2
Valpey Fisher Qualification Test Procedures and Conditions for
Quartz Crystal Oscillators

1. Group A

- Electrical Characteristics at -55°, +25° and +125 ° C
 - Frequency @ +1.8 and + 3.3 volts
 - Symmetry (Duty Cycle)
 - Input current
 - Zero/One levels
 - Rise/Fall times
- Physical Dimensions
 - Length/width
 - Height
 - Package finish (Corrosion, discoloration, etc.)
 - Marking placement/legibility

2. Group B- Life Test

1000 hrs at 125°C with bias and load

3. Group C- All units have passed Group A testing

A. Subgroup 1-12pcs.

| <u>Standard</u> | <u>Condition</u> | <u>Description</u> | <u>End Point Measurement</u> |
|-----------------|-------------------------|--|------------------------------|
| MIL-STD-883 | Method 2002 COND.B | Mechanical Shock 1500 g's, 5ms 5 drops, 6 axis | Frequency Output waveform |
| MIL-STD-883 | Method 2007 COND. A. | Vibration, var. freq. 20 g's, .06" disp., 20- 20, 000-20 Hz | Frequency Output waveform |
| MIL-STD-883 | Method 2003 | Solderability | Visual 95% Coverage |

B. Subgroup 2: 6 pcs (One-half of Subgroup 1)

| <u>Standard</u> | <u>Condition</u> | <u>Description</u> | <u>End point Measurement</u> |
|-----------------|------------------------|---|---|
| MIL-STD-883 | Method 1011 COND. B | Thermal Shock Liq. To liq. | Frequency Output waveform 15 cycles |
| MIL-STD-202 | Method 105 COND. B | Altitude, 3.44 inch Hg. 12 hrs | Frequency Output waveform |
| MIL-STD-883 | Method 1004 | Moisture resist. with 3.3V applied 25-65°C, 90 to 100% RH, 10 cycles | Frequency Output waveform |
| MIL-STD-202 | Method 210 COND.A | Resistance to Solder Heat | Frequency Output waveform Immersion @350°C 3.5 sec |

C. Subgroups 3: 6 pcs. (One half of Subgroup 1)

| <u>Standard</u> | <u>Condition</u> | <u>Description</u> | <u>End point Measurement</u> |
|-----------------|---------------------------|---|--|
| | Storage Temp. No. Oper | 24 hrs. @ -55°C 24 hrs. @ 125°C | Frequency Output waveform |
| MIL-STD-883 | Method 1009 COND. A | Salt Atmosphere 24 hrs. @ 35°C .5-3.0% Solution | Frequency Output waveform Visual |
| MIL-STD-883 | Method 1014 COND. B | Fine Leak | Qs <5 X10 ⁻⁸ |
| MIL-STD-883 | Method 1014 COND. C | Gross Leak | Visual in 125°C Detector fluid |

