

# VFH3225

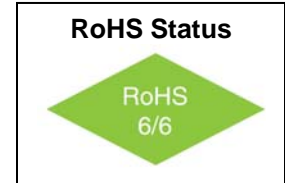
## Clock Oscillators $-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

### 3.2x2.5mm SMD, CMOS



#### Features

- 50 MHz to 160 MHz Frequency Range
- 3.3V, 2.8V, 2.5V, or 1.8V Supply Voltage
- Low Jitter
- Low power consumption



#### Applications

- Military Portable Communications
- Test & Measurement
- Gigabit Ethernet

#### Electrical Specifications

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Note	
Frequency Range	F <sub>out</sub>	3.3V 2.5V 1.8V	50		160	MHz	Consult Factory for Standard Frequencies	
Frequency Stability	$\Delta F/F$	Operating Temperature			$\pm 100$ $\pm 50$	ppm	Order Code A Order Code B	
		Supply Voltage; 1st Year Aging			$\pm 3$ $\pm 3$			
Operating Temperature	T <sub>a</sub>		-55		+125	°C		
Supply Voltage	V <sub>DD</sub>		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 <sub>cc</sub> MAX	50 MHz ≤ F <sub>o</sub> < 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 <sub>DD</sub>			V		
		Output in Tri-State (Disable)			0.3 V <sub>DD</sub>			
Rise / Fall Time	T <sub>r</sub> /T <sub>f</sub>	10% to 90% of V <sub>DD</sub>			5.0	ns		
Duty Cycle			45	50	55	%		



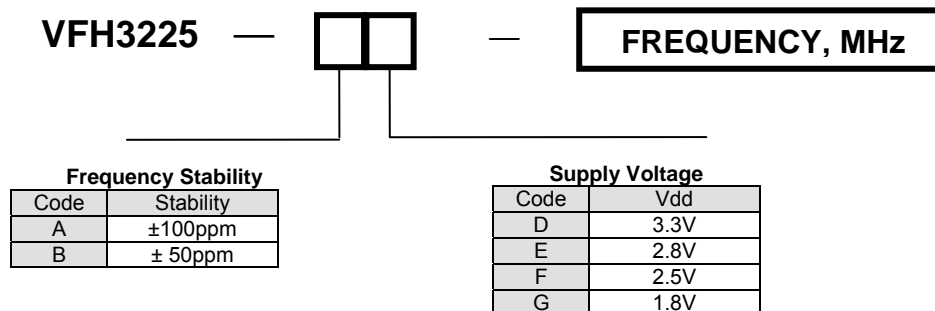
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**Clock Oscillators**  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$   
**3.2x2.5mm SMD, CMOS**



**Electrical Specifications**

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

**How to Order**



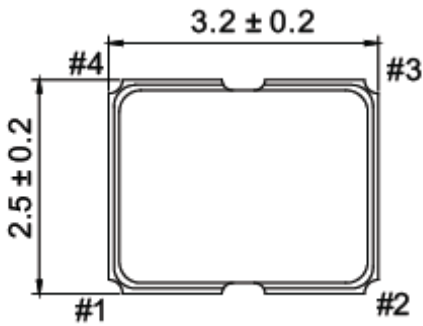
**Standard Available Frequencies:**  
**50 MHz, 66 MHz, 75 MHz, 100 MHz, 125 MHz and 150 MHz**  
**Consult Factory for Additional Available Frequencies.**

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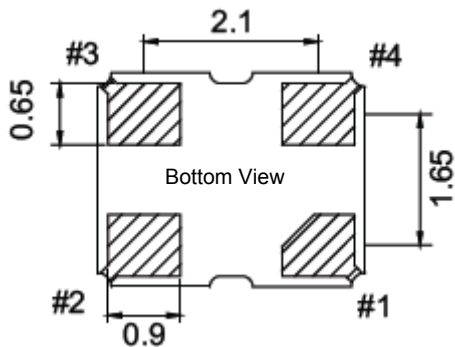


**Environmental and Mechanical**

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 $5 \times 10^{-8}$ atm.cc/s of helium



Pin #	Connection
1	TRISTATE
2	GND
3	Output
4	$V_{DD}$



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**TABLE 2**  
**Reliability 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 <sup>-8</sup>
MIL-STD-883	Method 1014 COND. C	Gross Leak	Visual in 125°C Detector fluid

