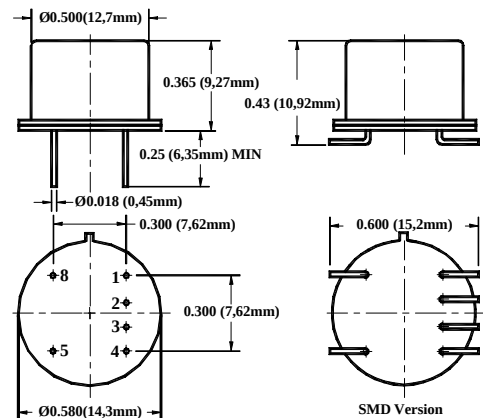
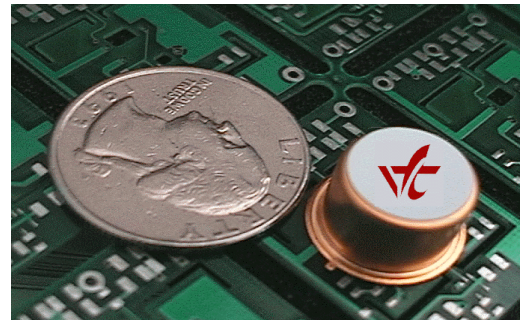


## Product Data Sheet

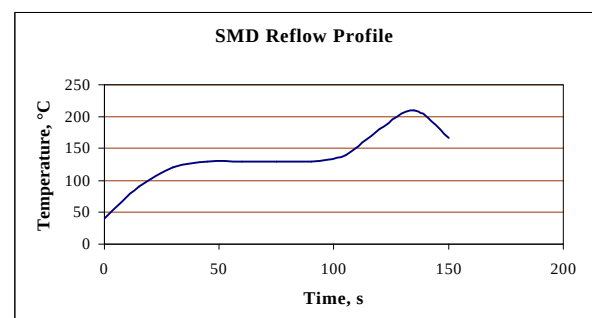
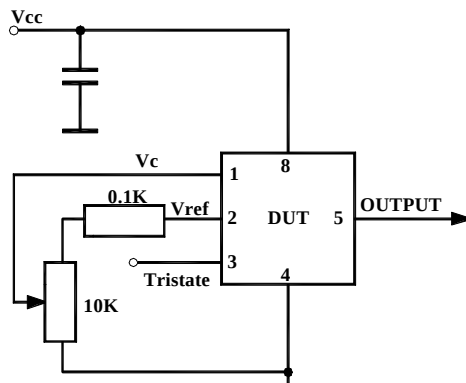
### Features

- Smallest OCXO available ( $< 1 \text{ cm}^3$ , 2g weight)
- SC-cut crystal
- High Vacuum Sealed Enclosure
- Extremely Low Power Consumption ( $< 100 \text{ mW}$ )
- Very Fast Warm-up Time (30s)
- High Stability (up to  $\pm 5 \times 10^{-9}$  over  $0^\circ\text{C}$  to  $50^\circ\text{C}$ )
- Low Aging ( $5 \times 10^{-10}$  /day,  $5 \times 10^{-8}$  /year)
- Very Low Phase Noise ( $-160\text{dBc/Hz}$  TYP)
- HCMOS/TTL output
- “Gull-Wing” SMD Version Available
- 4.8 MHz to 50 MHz Frequencies Available
- “Half-size”, DIL-8 compatible pinout
- Tristate output



### Applications

- Telecommunications
- Data Communications
- Battery Powered Systems and Equipment
- GPS
- Instrumentation
- SARSAT Beacons



## VFT8H Series Micro-miniature, Evacuated OCXO

### Specifications:

| Parameter | Symb | Condition | Min | Typ | Max | Unit | Note |
|-----------|------|-----------|-----|-----|-----|------|------|
|-----------|------|-----------|-----|-----|-----|------|------|

#### Absolute Maximum Ratings

|                          |                 |  |      |  |      |    |  |
|--------------------------|-----------------|--|------|--|------|----|--|
| Input Break Down Voltage | V <sub>cc</sub> |  | -0.5 |  | 13.0 | V  |  |
| Storage temper.          | T <sub>s</sub>  |  | -40  |  | 85   | °C |  |
| Control Voltage          | V <sub>c</sub>  |  | -1   |  | 9    | V  |  |

#### Electrical

|                     |                                                                     |                                                               |      |                           |       |        |                           |
|---------------------|---------------------------------------------------------------------|---------------------------------------------------------------|------|---------------------------|-------|--------|---------------------------|
| Frequency           | F                                                                   |                                                               | 4.8  | 10.000                    | 50    | MHz    | All parameters for 10 MHz |
| Frequency stability | $\Delta F/F$                                                        | vs. Temp.                                                     |      | ±50                       | ±100  | ppb    |                           |
|                     |                                                                     | vs. Supply                                                    |      | 1                         | 5     | ppb/V  |                           |
| Aging               |                                                                     | per day                                                       |      | 5E-10                     |       |        |                           |
|                     |                                                                     | per year                                                      |      | 1E-7                      |       |        |                           |
| Allan Variance      |                                                                     | .1s to 10s                                                    |      | 1E-11                     |       |        |                           |
| SSB Phase Noise     |                                                                     | 10 Hz<br>100 Hz<br>10 KHz                                     |      | -120<br>-145<br>-160      |       | dBc/Hz |                           |
| Retrace             |                                                                     | After 30 minutes                                              |      |                           | ±20   | ppb    |                           |
| G-sensitivity       |                                                                     | worst direction                                               |      |                           | ±1.0  | ppb/G  |                           |
| Input Voltage       | V <sub>cc</sub>                                                     |                                                               | 4.75 | 5.0                       | 5.25  | V      | 12V±5% optional           |
| Input Current       | I <sub>cc</sub>                                                     | steady state, 25°C<br>steady state, -30°C<br>start-up current |      | 25/12<br>70/35<br>100/200 | 35/20 | mA     | 5V/12V supply             |
| Load                | 10KOhm//15pF                                                        |                                                               |      |                           |       |        |                           |
| Warm-up time        | $\tau$                                                              | to 0.1ppm accuracy                                            |      | 35                        |       | s      | 20s at 12V supply         |
| Output Waveform     | 3.3V HCMOS/TTL compatible                                           |                                                               |      |                           |       |        |                           |
| Tristate Control    | Logic “high” or floating – active; logic “low” – infinite impedance |                                                               |      |                           |       |        |                           |
| Control voltage     | V <sub>c</sub>                                                      |                                                               | 0    |                           | 4.1   | V      |                           |
| Pull range          |                                                                     | from nominal F                                                | ±0.5 | ±1                        |       | ppm    |                           |
| Deviation slope     |                                                                     | Monotonic, posit                                              |      | 0.4                       |       | ppm/V  |                           |
| Setability          | V <sub>c0</sub>                                                     | @25°C, F <sub>nom</sub>                                       | 1.0  | 2.0                       | 3.0   | V      |                           |

#### Environmental and Mechanical

|                       |                                                                      |
|-----------------------|----------------------------------------------------------------------|
| Operating temp. range | -30°C to 70°C Standard, Other options – see chart below              |
| Mechanical Shock      | Per MIL-STD-202, 30G, 11ms                                           |
| Vibration             | Per MIL-STD-202, 5G to 2000 Hz                                       |
| Soldering Conditions  | Leads Temperature 260°C, for 10s, Max, 230°C for 30s Max SMD profile |
| Hermetic Seal         | Leak rate less than $1 \times 10^{-8}$ atm.ccm/s of helium           |

#### Electrical Connections

|         |                                                                                                                                   |
|---------|-----------------------------------------------------------------------------------------------------------------------------------|
| Pin Out | Pin 1- V <sub>c</sub> ; Pin 2-V <sub>ref</sub> ; Pin 3- Tristate Control; Pin 4- Case, GND; Pin5 – Output; Pin 8- V <sub>cc</sub> |
|---------|-----------------------------------------------------------------------------------------------------------------------------------|

### Creating a Part Number

|                   |               |                       |                    |       |                          |                |               |
|-------------------|---------------|-----------------------|--------------------|-------|--------------------------|----------------|---------------|
| VFT8H             |               |                       |                    |       |                          | FREQUENCY, MHz |               |
| Temperature Range |               | Temperature Stability |                    | Aging |                          | Supply Voltage |               |
| Code              | Specification | Code                  | Specification      | Code  | Specification            | Code           | Specification |
| A                 | 0°C to 50°C   | 17                    | $1 \times 10^{-7}$ | L     | $1 \times 10^{-9}$ /Day  | 5              | 5V ± 5%       |
| B                 | -10°C to 60°C | 58                    | $5 \times 10^{-8}$ | S     | $5 \times 10^{-10}$ /Day | 2              | 12V ± 5%      |
| C                 | 0°C to 70°C   | 28                    | $2 \times 10^{-8}$ | P     | $2 \times 10^{-10}$ /Day |                |               |
| D                 | -20°C to 70°C | 18                    | $1 \times 10^{-8}$ |       |                          |                |               |
| E                 | -30°C to 70°C | 59                    | $5 \times 10^{-9}$ |       |                          |                |               |
| F                 | -40°C to 85°C | YZ                    | $Y \times 10^{-Z}$ |       |                          |                |               |

Not all combinations are available. Consult Factory.