

### Technical Data

S5300 Series



#### Description

A temperature compensated crystal oscillator available for 5 Volt operations with Clipped Sinewave, HCMOS and TTL output. The low power consumption of this TCXO makes it ideal for portable, wireless applications. The TCXO version comes in a 3 pin package and the TCVCXO version in a 4 pin package.

#### Applications & Features

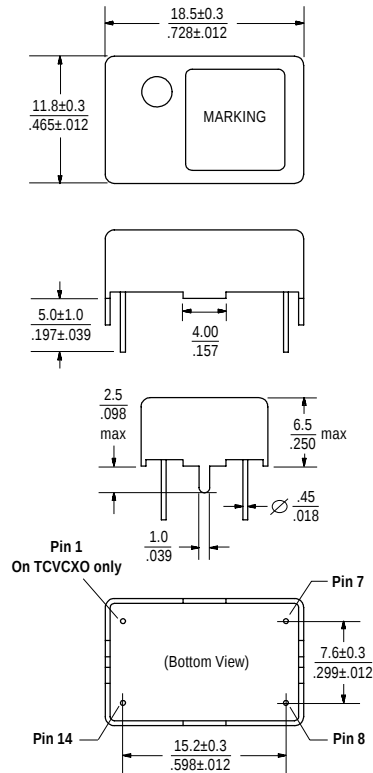
- Cellular Applications (GSM, TDMA, CDMA)
- GPS Devices
- Mobile and Portable Radio/Telephone
- Communications Transceivers

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Frequency Range:</b>       | 8.4672 MHz to 34.3680 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Frequency Stability:</b>   | vs. temperature: $\pm 2.0$ (0 to $+55^{\circ}\text{C}$ ), $\pm 2.5$ , $\pm 3.0$ or $\pm 5.0$ ppm max<br>vs. aging: $\pm 2.0$ ppm (85 $^{\circ}\text{C}$ , 1000 hrs)<br>vs. supply voltage: $\pm 0.3$ ppm (5V $\pm 5\%$ )<br>vs. load: $\pm 0.2$ ppm (10 pF to 20pF)<br>vs. hysteresis: $\pm 0.5$ ppm (temp change $1^{\circ}\text{C}$ per minute)<br>vs. temp cycle: $\pm 0.2$ ppm (10 cycles, min to max storage temp)<br>perturbations: 0.5 ppm peak-to-peak max |
| <b>Temperature Range:</b>     | Operating: 0 to $+55^{\circ}\text{C}$ , -10 to $+60^{\circ}\text{C}$ or -20 to $+70^{\circ}\text{C}$<br>Storage: -40 to $+85^{\circ}\text{C}$                                                                                                                                                                                                                                                                                                                      |
| <b>Supply Voltage:</b>        | 5V $\pm 5\%$                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Supply Current:</b>        | 5mA max (Clipped Sinewave)<br>15mA max (HCMOS and TTL)                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Output:</b>                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <u>Clipped Sinewave</u>       | Level: 1.0V peak-to-peak min<br>Load: 20K $\Omega$ // 10pF                                                                                                                                                                                                                                                                                                                                                                                                         |
| <u>TTL Compatible</u>         | Symmetry: 40/60% max @ 1.5V<br>Rise & Fall Times: 4ns max, 0.5V to 2.5V<br>Logic 0: 0.5V max<br>Logic 1: 2.5V min<br>Load: 2TTL or 15pF                                                                                                                                                                                                                                                                                                                            |
| <u>HCMOS Compatible</u>       | Symmetry: 40/60% max @ 50% $V_{DD}$<br>Rise & Fall Times: 8ns max, 20% to 80% $V_{DD}$<br>Logic 0: 10% max<br>Logic 1: 90% min<br>Load: 15pF                                                                                                                                                                                                                                                                                                                       |
| <b>Frequency Adjustment</b>   | $\pm 5$ ppm min relative to nominal frequency (using externally accessible, internal trimmer)<br>Rated Control Voltage: $+0.5\text{V}$ to $+4.5\text{VDC}$<br>Relative Pull Range: $\pm 5$ ppm min ( $V_C = 2.5\text{V} \pm 2\text{V}$ )<br>Control V Input Impedance: 1 M $\Omega$ min<br>Modulation Bandwidth: 1 kHz min                                                                                                                                         |
| <b>Phase Noise (typical):</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <u>Clipped Sinewave</u>       | -45 dBc/Hz min @ 1 Hz offset from carrier<br>-80 dBc/Hz min @ 10 Hz<br>-110 dBc/Hz min @ 100 Hz<br>-142 dBc/Hz min @ 1 kHz<br>-150 dBc/Hz min @ 10 kHz<br>-155 dBc/Hz min @ 100 kHz                                                                                                                                                                                                                                                                                |
| <u>HCMOS or TTL</u>           | -120 dBc/Hz min @ 1 kHz offset from carrier<br>-140 dBc/Hz min @ 10 kHz<br>-150 dBc/Hz min @ 100 kHz                                                                                                                                                                                                                                                                                                                                                               |
| <b>Mechanical:</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Shock:                        | MIL-STD-883, Method 2002, Condition B                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Solderability:                | MIL-STD-883, Method 2003                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Vibration:                    | MIL-STD-883, Method 2007, Condition A                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Solvent Resistance:           | MIL-STD-202, Method 215                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Resistance to Soldering Heat: | MIL-STD-202, Method 210, Condition B                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Environmental:</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Thermal Shock:                | MIL-STD-883, Method 1011, Condition A                                                                                                                                                                                                                                                                                                                                                                                                                              |

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#### Package Details



#### Pin Functions TCXO:

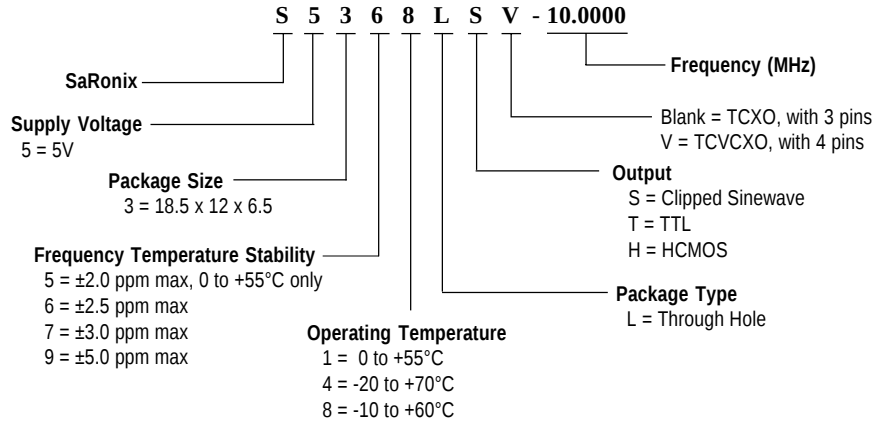
Pin 7: GND  
Pin 8: Output  
Pin 14: VCC

#### Pin Functions TCVCXO:

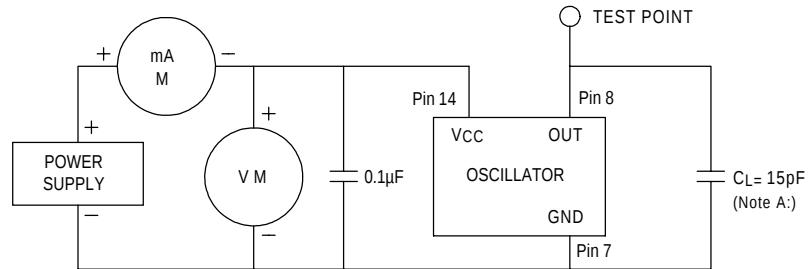
Pin 1: V Control  
Pin 7: GND  
Pin 8: Output  
Pin 14: VCC

Scale: None (Dimensions in  $\frac{\text{mm}}{\text{inches}}$ )

#### Part Numbering Guide

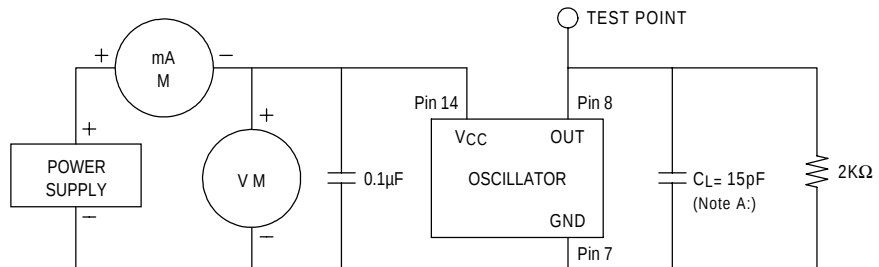


#### Test Circuit



#### HCMOS TEST CIRCUIT

NOTE A:  $C_L$  includes probe and fixture capacitance.



#### TTL TEST CIRCUIT

NOTE A:  $C_L$  includes probe and fixture capacitance.

All specifications are subject to change without notice.