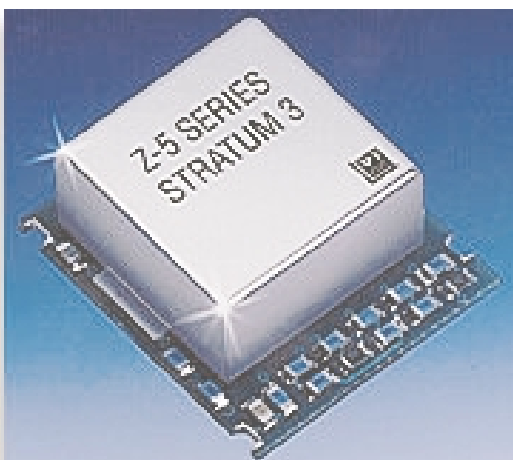


## TC-210 (Z5) Series P/N's 6661, 6662, 6663, 6664 Temperature Compensated Crystal Oscillators



### Features

- 12.800 MHz output frequency
- Stability as tight as  $\pm 0.28$  ppm over temperature
- Low Current Draw Consumption:  $< 20$  mA
- Aging to  $< 4.0$  ppm for 20 years
- Package: 1.0" x 1.15" x 0.395" (25.40x29.21x10.03mm)
- TTL output
- +3.3 Vdc (operable over +3.135 Vdc to +5.5 Vdc)

### Applications

- For use with Semtech Chip ACS8510 SETS
- SONET/SDH Network Timing Sources
- Computer Telephony CT-BUS

### Description

The 6661, 6662, 6663, 6664 have been optimized to work with the Semtech Chip ACS8510 SETS to meet the requirements of Bell Core specification GR-1244-CORE and ITU G.813.

The 6664 in particular has been designed to meet the stringent Holdover requirements for a Stratum 3 Clock source as called out in GR-1244-CORE, per Table 3-1 as described in Sections 5.2 and 9.1.1.

All four units have been designed to meet the Frequency vs Supply requirement of  $\pm 0.05$  ppm over any  $\pm 5\%$  change in Supply from a minimum of +3.135 Vdc to a maximum of +5.5 Vdc.

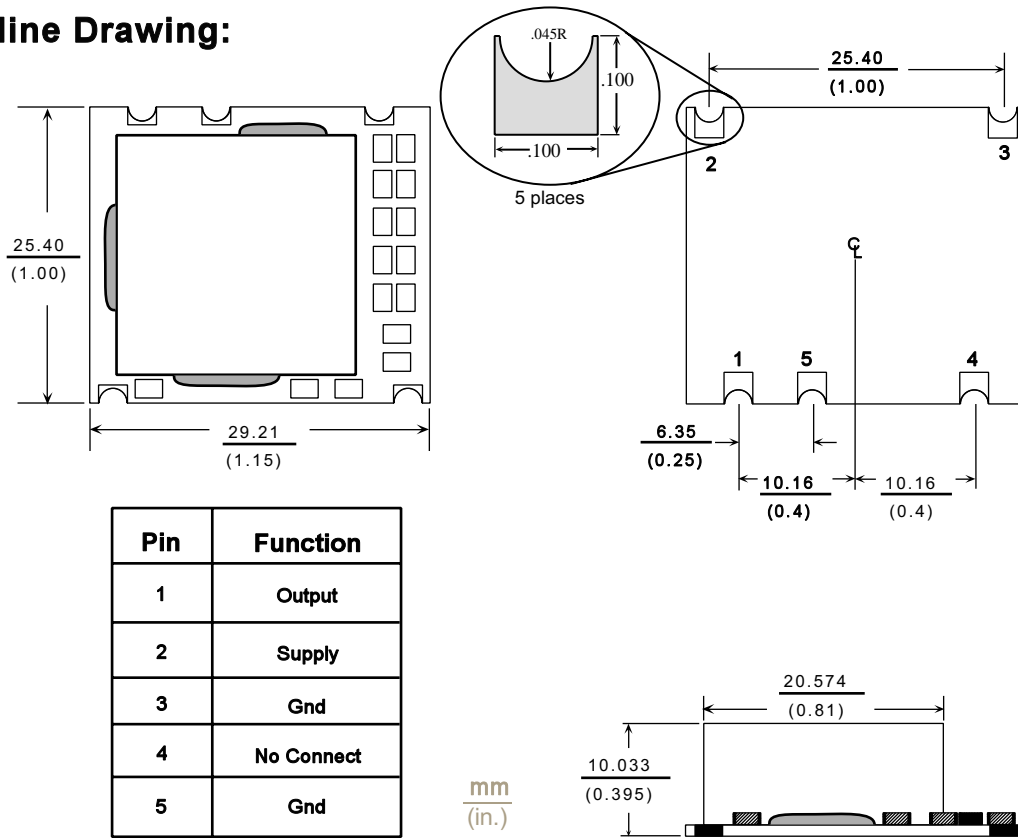
**Note:** Other stability and output options are available. A data sheet explaining all the TC-210 (Z5) series options can be downloaded from our website at:

**[www.stratum3.com](http://www.stratum3.com)**

## Performance Characteristics

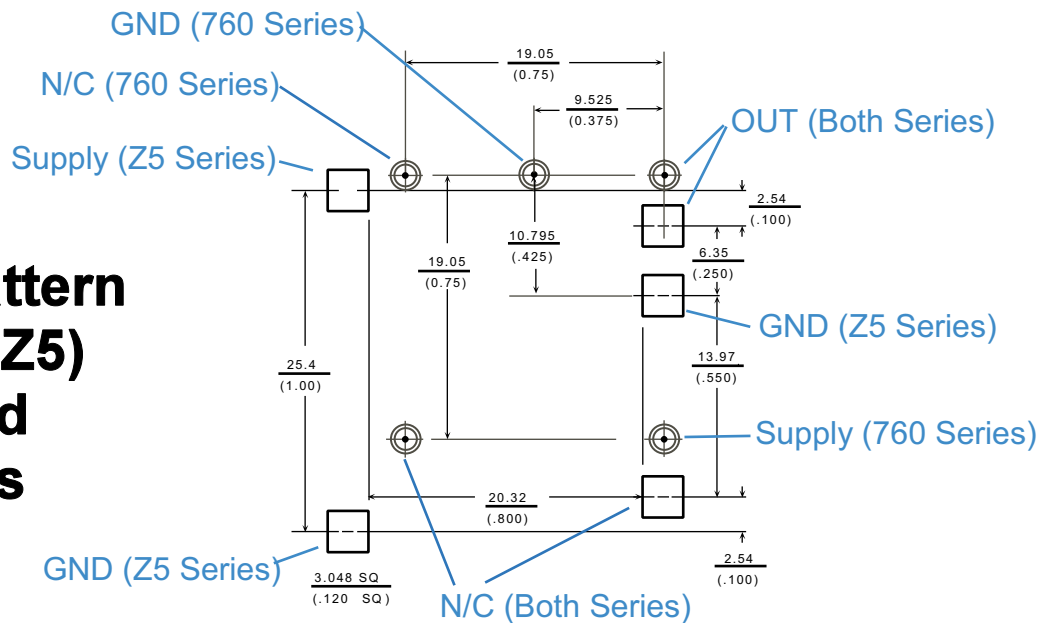
Parameter	Characteristics			
Part Number:	6661	6662	6663	6664
Frequency:	12.800 MHz	12.800 MHz	12.800 MHz	12.800 MHz
Operating Temp Range:	-20°C to +70°C	0°C to +50°C	-20°C to +70°C	0°C to +50°C
Aging:	<20 ppm for 20 years	<20 ppm for 20 years	<4.0 ppm for 20 years	<4.0 ppm for 20 years
Stability vs Temperature:	±1.0 ppm -20°C to +70°C	±0.28 ppm 0°C to +50°C	±1.0 ppm -20°C to +70°C	±0.28 ppm 0°C to +50°C
Stability vs Supply:	±0.05 ppm for any ±5% change in Voltage			
Initial Accuracy @ +25°C:	±1.5 ppm Pre-Reflow			
Supply Voltage:	+3.3 Vdc (operable over +3.135 Vdc to +5.5 Vdc)			
Current (@ +3.3 Vdc):	<20 mA (7 mA Typical)			
Output:	TTL			
Symmetry (at 50% Vdd):	60/40 to 40/60, maximum			
Rise/Fall Time (10-90%):	<10 nanoseconds			
Level "0" and "1":	<0.5 Volts, >2.5 Volts			
Phase Noise: (TYPICAL)	<u>Offset</u> 100 Hz 1k Hz 10k Hz 100k Hz	<u>Phase Noise</u> -115 dBc/Hz -130 dBc/Hz -140 dBc/Hz -155 dBc/Hz		
Shock:	50g, 11ms per MIL-STD-202 Method 213 Condition G			
Vibration - Sine:	10g, 10Hz to 500Hz per MIL-STD-202 Method 204 Condition A			
Vibration - Random:	5.2g rms per MIL-STD-202 Method 214 Condition A			
Thermal Shock:	-55°C to +85°C per MIL-STD-202 Method 107 Condition A			
Acceleration:	50g per MIL-STD-202 Method 212 Condition A			
Size:	1.00" x 1.15" x 0.395" (25.40mm x 29.21mm x 10.03mm )			

210 (Z5) Outline Drawing:



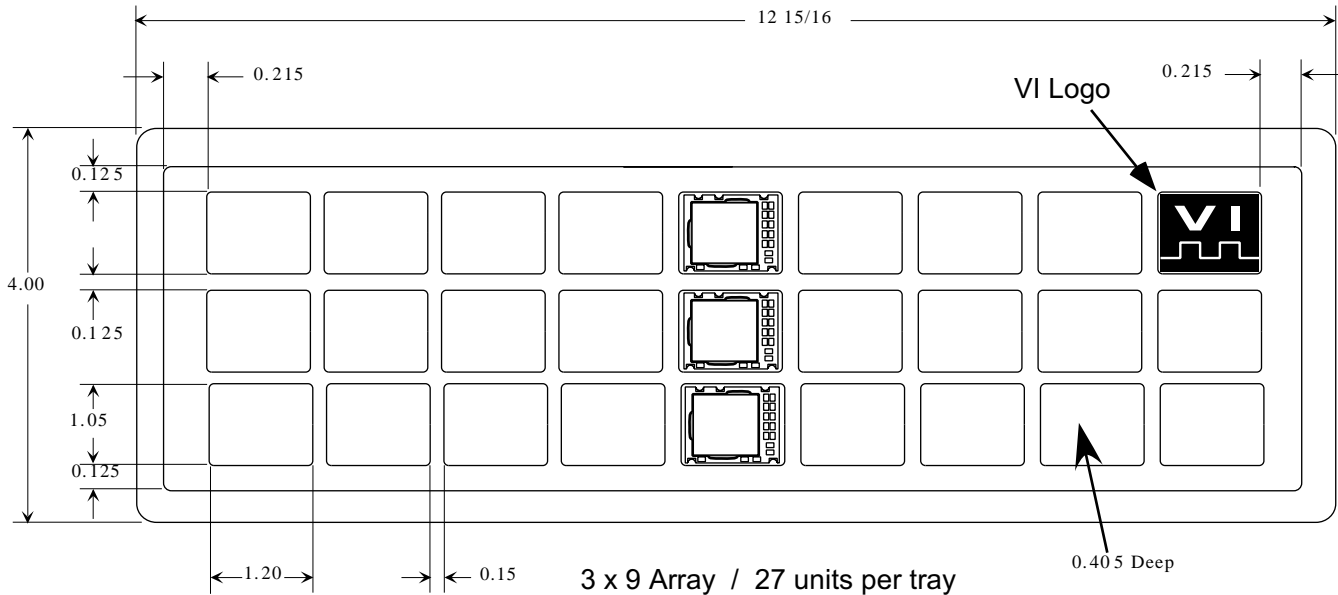
Recommended Land Pattern

Dual Land Pattern for TC-210 (Z5) Series and 760 Series



**Standard Shipping method:**

The Standard ship method for volume production of the TC-210 series is in a matrix tray. These trays are 100% recyclable. The trays also offer the added feature that they can be continuously feed into a pick-n-place machine eliminating the down time required with tape-n-reel.



**Handling Precautions:**

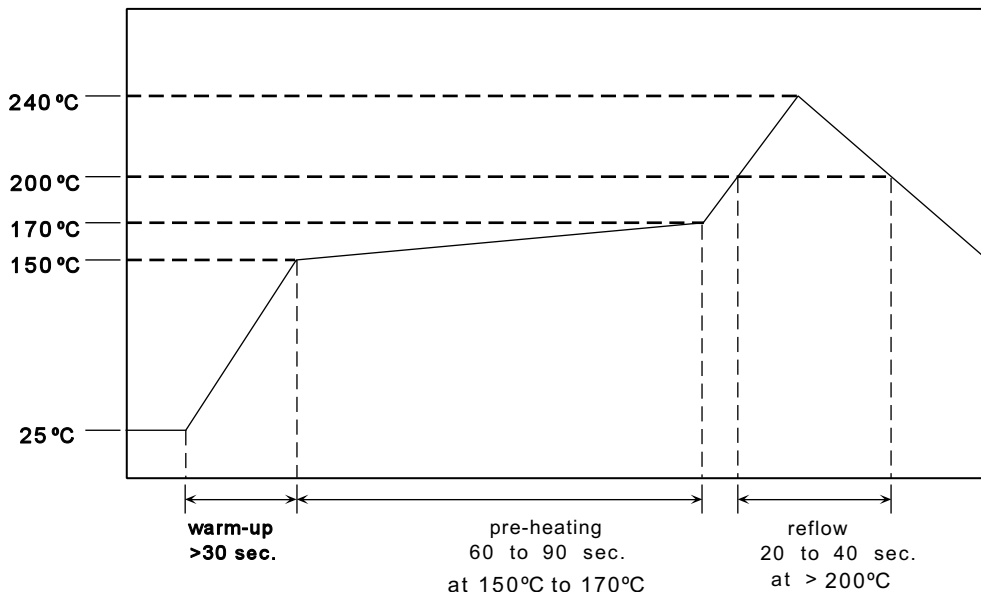
Although protection circuitry has been designed into this device, proper precautions should be taken to avoid exposure to electrostatic discharge (ESD) during handling and mounting. VI employs a human-body model (HBM) and a charged-device model (CDM) for ESD-susceptibility testing and protection design evaluation. ESD voltage thresholds are dependent on the circuit parameters used to define the mode.

Although no industry-wide standard has been adopted for the CDM, a standard HBM (resistance = 1500 ohms, capacitance = 100pf) is widely used and therefore can be used for comparison purposes. The HBM ESD threshold presented here was obtained by using these circuit parameters.

ESD Threshold Voltage		
Model	Threshold	Unit
Human-Body (HBM)	500	V min
Charged-Device	500	V min

Recommended Reflow Profile

Convection Reflow Profile



Note: TCXO's are precision subsystems with tolerances measured to  $\pm 0.01$  ppm. Non-Hermetically sealed TCXO's should not be subjected to a wash process that will immerse the TCXO in solvents. NO CLEAN is the recommended procedure. The TC-210 (Z5) series of TCXO's has been designed for pick and place reflow soldering. The suggested reflow profile is shown above. The TCXO may be reflowed two times. Typical frequency shift as a result of reflow is  $< 1.0$  ppm per reflow. VI recommends waiting at least two hours after reflow before measuring the unit.

How to Order

6661 ( $\pm 1.0$  ppm  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ ,  $< 20$  ppm aging for 20 years)

6662 ( $\pm 0.28$  ppm  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ ,  $< 20$  ppm aging for 20 years)

6663 ( $\pm 1.0$  ppm  $-20^{\circ}\text{C}$  to  $+70^{\circ}\text{C}$ ,  $< 4.0$  ppm aging for 20 years)

6664 ( $\pm 0.28$  ppm  $0^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ ,  $< 4.0$  ppm aging for 20 years)

Visit Our Website at [www.vectron.com](http://www.vectron.com)

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