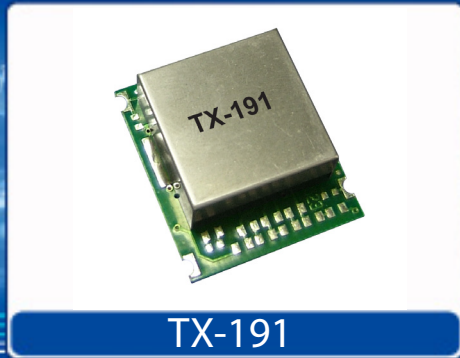


Helping Customers Innovate, Improve & Grow



### Description

Vectron International has introduced a series of surface mount, Temperature Compensated Crystal Oscillators (TCXO) available in The TX-191 surface mount TCXO's can be mounted using the standard convection reflow process. The units can meet the  $\pm 0.37$  holdover requirement of GR-1244-CORE table 3-1 from 0 °C to +70 °C temperature range and operate from 3.3V or 5.0V supply.

### Features

- Stratum 3 Compliant
- EAR99
- Made in USA
- Tight Stability
- Low Aging
- Frequency Range: 10 MHZ to 622 MHZ
- Previous Model: MC1200, TC-210, C2560

### Applications

- SONET/SDH
- Synthesizers
- Optimized for Semtech SONET / SDH
- Synchronization Sets

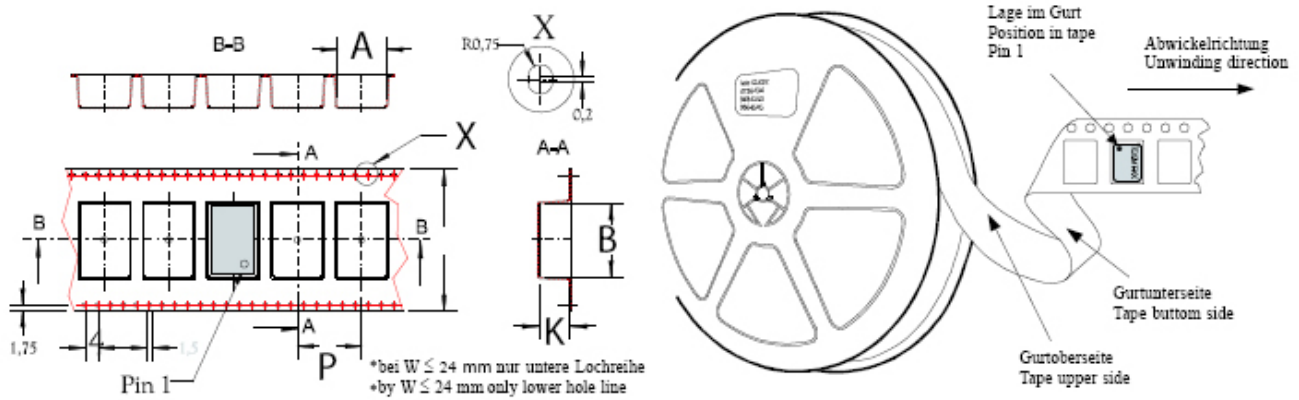
### Performance Specifications

Parameter	Min	Typ	Max	Units	Condition
<b>Frequency Stabilities<sup>1</sup></b>					
vs. operating temperature range (referenced to +25°C)	-0.8		+0.8	ppm	-40... +85°C
	-1.0		+1.0	ppm	-40... +85°C
	-0.28		+0.28	ppm	-30... +85°C
	-0.8		+0.8	ppm	-20... +70°C
	-0.28		+0.28	ppm	-20... +70°C
	-0.28		+0.28	ppm	0... +50°C
Initial Tolerance (w\fixed frequency)	-1.5		+1.5	ppm	at time of shipment, No EFC
vs. supply voltage change	-0.1		+0.1	ppm	Vs $\pm$ 5%
vs. load change	-0.1		+0.1	ppm	Load $\pm$ 10%
vs. aging / 15 years	-2.5		+2.5	ppm	
Overall Tolerance	-4.6		+4.6	ppm	*Stratum 3 per GR-1244-CORE: < $\pm$ 4.6 ppm for all causes and 15 years aging, Holdover: < $\pm$ 0.37 ppm over 24 hours
<b>Supply Voltage (Vs)</b>					
Supply voltage (Standard)	3.135	3.3	3.465	VDC	

## Performance Specifications

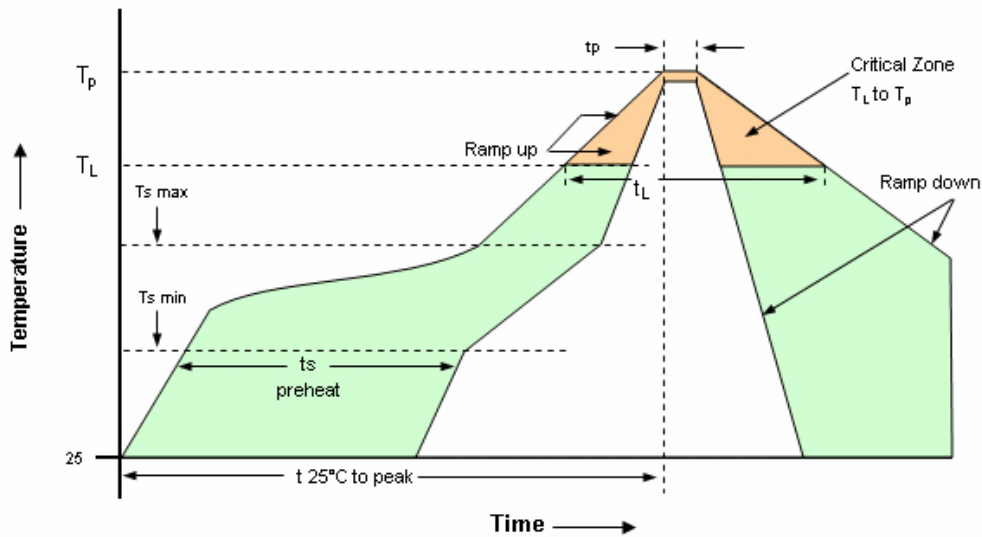
Parameter	Min	Typ	Max	Units	Condition
Supply voltage (Option)	4.75	5.0	5.25	VDC	
Current consumption (depends on frequency and output type)			15 15 70	mA mA mA	steady state @ +25°C & 3.3VDC steady state @ +25°C & 5.0VDC PECL
<b>RF Output</b>					
Signal	HCMOS				
Load	13.5	15	16.5	pF	
Rise/Fall Time			5	ns	10% - 90%
Duty cycle	40		60	%	@ (Voh-Vol)/2
Signal	Sinewave				3.0 to 100 MHz
Load		50		ohm	
Output Power (Standard)	0.0	+3.0	+6.0	dBm	
Harmonics			-30	dBc	
Spurious			-30	dBc	If applicable
Signal (custom number required)	PECL				
Load			50	ohm	Into Vcc-2V or there in equivalent
Signal Level (Vol)			Vs -1.62	V	-40...+85°C operating temp
Signal Level (Voh)	Vs -1.025			V	-40...+85°C operating temp
Rise & Fall Times (measured @ 20%)			1000 600	ps ps	<100 MHz >= 100 MHz
Duty cycle	45		55	%	@ 50 % Vcc
<b>Frequency Tuning (EFC)</b>					
Tuning Range	Fixed; No adjust				
Tuning Range	±8.0	±12.0	±20.0	ppm	
Linearity			20	%	
Tuning Slope	Positive				
Control Voltage Range (nominal frequency to occur at Typ ± 0.5V)	0.3 0.5	1.65 2.5	3.0 4.5	VDC VDC	with Vs=3.3VDC with Vs=5.0VDC
Freq. control input impedance	10			kohm	
<b>Additional Parameters<sup>1</sup></b>					
Phase Noise <sup>3</sup> (Stratum 3 TCXO @12.8 MHz)			-115 -130 -140	dBc/Hz dBc/Hz dBc/Hz	100 Hz 1 kHz 10 kHz
Allan Variance		1		ppb	Tau= 1 sec
Weight			9.0	g	
Processing & Packing	Handling & processing note				
<b>Absolute Maximum Ratings</b>					
Supply voltage (Vs)			6	V	
Control Voltage			6	V	
Maximum output load @ CMOS			40	pF	
Operable temperature range	-40		+85	°C	
Storage temperature range	-55		+125	°C	

## Standard Shipping Method



Enclosure Type	Tape width W [mm]	Quantity per meter	Quantity per reel	Dimension P
25X29 mm	44	31.25	200	32 mm

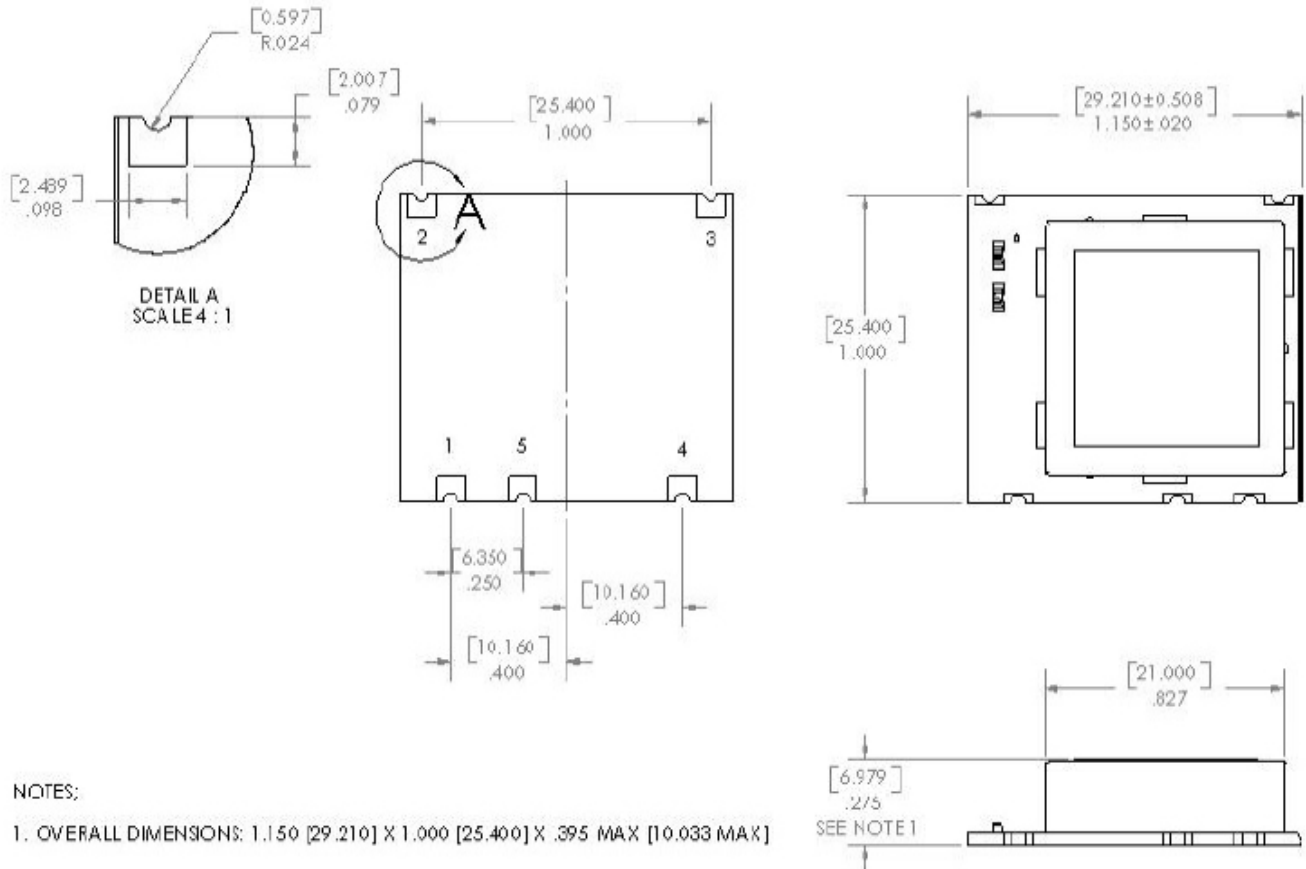
### Solderprofile:



Profile Feature	Pb-Free Assembly /Sn-Pb Assembly	Profile Feature	Pb-Free Assembly /Sn-Pb Assembly
Average ramp-up rate ( $T_L$ to $T_p$ )	3°C/second max.	Time 25°C to Peak Temperature	8 minutes max.
Preheat -Temperature Min $T_{s\min}$ -Temperature Min $T_{s\max}$ -Time (min to max) ( $t_s$ )	150°C 200°C 60-180 seconds	Time maintained above - Temperature ( $T_L$ ) - Time ( $t_L$ )	217°C 60-150 seconds
$T_{s\max}$ to $T_L$ - Ramp-up Rate	3°C/second max.		
Time maintained above - Temperature ( $T_L$ ) - Time ( $t_L$ )	217°C 60-150 seconds	Time within 5°C of actual Peak Temperature ( $t_p$ )	20-40 seconds
Peak Temperature ( $T_p$ )	max 260°C	Ramp-down Rate	6°C/second max.

Note: All temperatures refer to topside of the package, measured on the package body surface.

# Outline Drawing / Enclosure

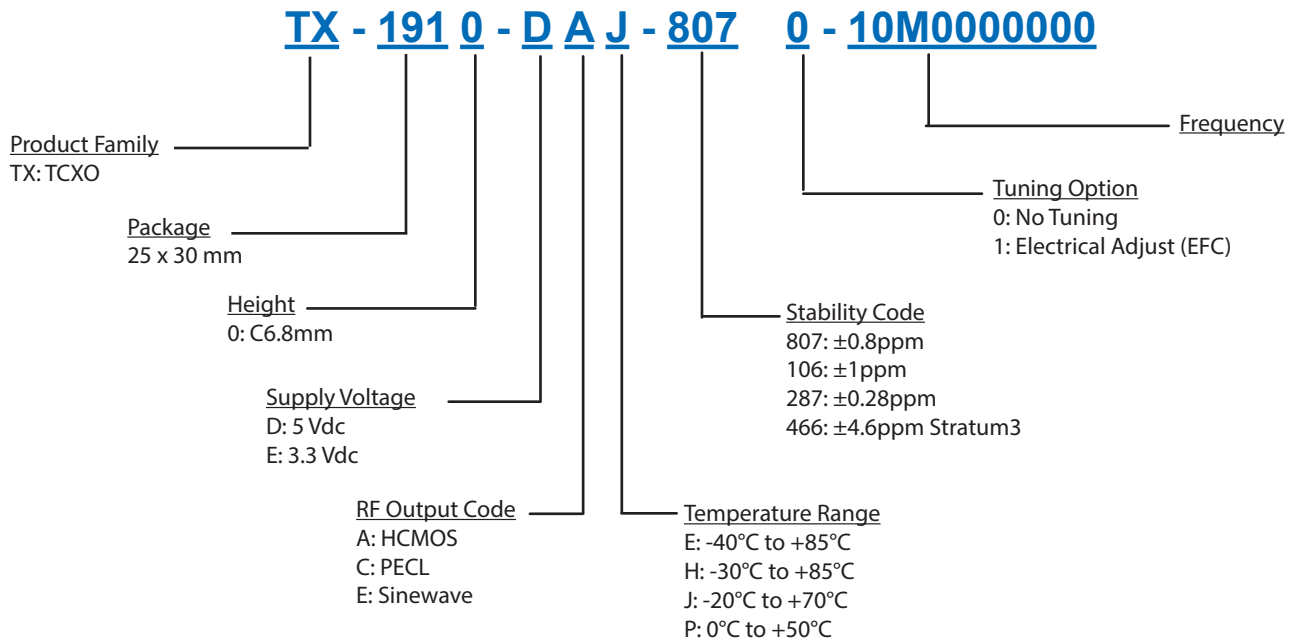


Dimensions in mm (inches)

Code	Height "H"	Pin Length "L"
0	6.8	NA

Pin Connections	
1	Output
2	Supply
3	Ground (Case)
4	Freq. Adjust / No Connect
5	Ground or Comp Ouput

## Ordering Information



### Notes:

1. Contact factory for improved stabilities or additional product options. Not all options and codes are available at all frequencies.
2. Unless other stated all values are valid after warm-up time and refer to typical conditions for supply voltage, frequency control voltage, load, temperature (25°C).
3. Phase noise degrades with increasing output frequency.
4. Subject to technical modification.
5. Contact factory for availability.

## For Additional Information, Please Contact

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