



frequency control solutions

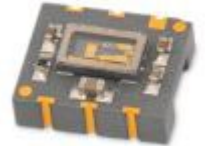
# tcxo

## T1307

ULTRA-LOW ACCELERATION SENSITIVITY  
MINIATURE SMT PACKAGE

### Product Description

Greenray Industries' T1307 TCXO offers ultra-low acceleration sensitivity for vibration and shock sensitive applications. When operating under random vibration, the T1307 can offer phase noise improvements of more than 40dB compared to conventional TCXOs - and better performance than most OCXOs.



### Features

- Proprietary crystal & oscillator design for optimal performance
- Frequency: 10 - 50MHz
- EFC for precise tuning or phase locking apps
- 9.1 x 7.5mm, ruggedized package
- +3.3 or 5VDC Supply
- CMOS or Clipped Sine output
- g-Sensitivity of <0.07 ppb/g
- Relatively impervious to effects of shock and vibration
- 100% screened for g-Sensitivity performance

### Applications

- Telecommunications
- High-shock electronics
- Mobile radio
- Mobile instrumentation
- Airborne communications
- Wireless communications
- Microwave receivers

Rev. D



ISO 9001  
Quality

**Greenray Industries, Inc., 840 West Church Road, Mechanicsburg, PA 17055**  
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10 MHz to 50 MHz



## Electrical Characteristics

Frequency Characteristics						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	+25°C	10		50	MHz	
Frequency Stability (other stability available)	-20°C to +70°C		± 0.5		ppm	N57
	-40°C to +85°C		± 1		ppm	T16
Aging	1 <sup>st</sup> year, after 14 days of operation			± 0.5	ppm	
Acceleration Sensitivity	(note 1)			0.7	ppb/g	SD
				0.1	ppb/g	LG
				0.07	ppb/g	ULG
Frequency vs Voltage	For a 5% change			± 0.1	ppm	
Frequency vs Load	For a 10% change			± 0.1	ppm	
Electronic Frequency Control	EFC = 0 to V <sub>DD</sub> Positive slope		± 7		ppm	
Warm-up time	Within ± 1 ppm			10	msec	
Phase Noise Performance						
Parameter	Frequency Offset (Hz)	Min	Typical	Max	Units	Ordering Code
Phase Noise (static) @ 10 MHz nominal Frequency	10		-95		dBc/Hz	
	100		-123		dBc/Hz	
	1k		-145		dBc/Hz	
	10 k		-155		dBc/Hz	
	100 k		-157		dBc/Hz	
DC Supply						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Supply Voltage V <sub>DD</sub>		3.0	3.3	3.6	VDC	3.3
		4.75	5.0	5.25	VDC	5.0
Supply Current				6	mA	
RF Outputs: Clipped Sine and CMOS						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
CMOS Output						C
Load	CMOS		15		pF	
Level	15 pF load, 3.3V	+2.8 "1" level		+0.2 "0" level	V	
	15 pF load, 5.0V	+4.5 "1" level		+0.2 "0" level	V	
Symmetry	CMOS	40	50	60	%	
Clipped Sine Output						S
Load			10 pF//10 kΩ			
Level		+0.8			V p-p	

(1) Acceleration Sensitivity is worst axis tested at 90 Hz, 10 g



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## Environmental and Mechanical Specifications

Screenings			
Screening	Standard	Method, Condition	Description
Vibration	MIL-STD-883	2007, Cond A	50 g, 20 to 2,000 Hz, swept sine
Shock	MIL-STD-883	2002, Cond B	1,500 g, 0.5 ms half-sine

## Recommendation and General Information

Conditions	
Parameter	Notes
Operating Temperature	-40°C to +85°C
Storage Temperature	-45°C to +90°C
Terminal Finish	Gold is standard. SnPb 63/37 is available
Package Weight	3 grams
Soldering Instruction	Hand solder and solder reflow
Shipping	Tray pack and Tape & Reel

## Ordering Example

<b>T1307</b>	-	<b>N57</b>	-	<b>C</b>	-	<b>3.3</b>	-	<b>SD</b>	-	<b>10.0MHz</b>	-	<b>E</b>
Model		Stability Code		Output Code		Supply Voltage		G-Sensitivity Code		Frequency in MHz		Termination finish
		Refer to Electrical Specs Table* N57 (-20 to +70°C) T16 (-40 to +85°C)		C: CMOS S: Clipped Sinewave		3.3: 3.3V 5.0: 5.0V		SD: < 0.7 ppb/g LG: < 0.1 ppb/g ULG: < 0.07 ppb/g HG: Customer-specific		From 10 to 50 MHz		E: Gold plated (RoHS), Standard PB: SnPb 63/37 (non-RoHS) LF: SnAg 96.5/3.5 (Lead-free)

\*other frequency stabilities available, please contact factory



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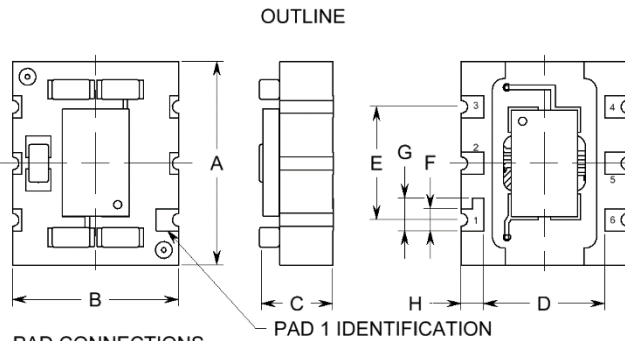


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## Package dimensions and Pad Connections



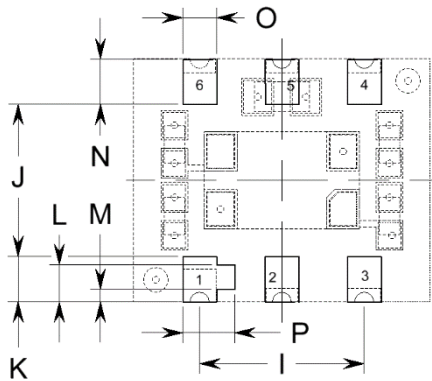
### PAD CONNECTIONS

1. EFC
2. NC
3. 0V & CASE GND
4. OUTPUT
5. NC
6. SUPPLY

### LAND PATTERN DIMENSIONS

DIM	TYP.		MAX.	
	inches	mm	inches	mm
I	0.200	5.08	0.210	5.33
J	0.185	4.70	0.195	4.95
K	0.055	1.40	NA	NA
L	0.045	1.14	NA	NA
M	0.015	0.38	NA	NA
N	0.055	1.40	NA	NA
O	0.041	1.04	NA	NA
P	0.063	1.60	NA	NA

### RECOMMEND LAND PATTERN



### LAND PATTERN DIMENSIONS

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