



frequency control solutions

texo

## T1254

RADIATION TOLERANT  
ULTRA-LOW ACCELERATION SENSITIVITY

### Product Description

Greenray Industries' T1254 TCXO offers excellent performance in high shock and vibration environments in a rugged, radiation tolerant package.



### Features

- 30 krad (Si) total ionizing dose
- Rugged, radiation tolerant 20.3 x 12.7mm package
- Frequency: 10 to 100 MHz
- Stability:  $\pm 1.0$ ppm (-20°C to +70°C)
- Ultra-low acceleration sensitivity < 0.07 ppb/g
- 3.3 VDC and 5 VDC supply
- CMOS output

### Applications

- High orbit transponders
- Low orbit satellites (nano/micro satellites)
- RF telemetry systems
- Multiband terminal
- Upconverter

Rev. D



ISO 9001  
Quality

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**T1254 SERIES**  
10 MHz to 100 MHz



## Electrical Characteristics

Electrical Characteristics						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	+25°C	10		100	MHz	
Frequency Stability	-20°C to +70°C		± 1		ppm	N16
	-40°C to +85°C		± 5		ppm	T56
	-55°C to +125°C		± 7		ppm	X76
Aging	1 <sup>st</sup> year			± 1	ppm	
Acceleration	(Note 1)			0.7	ppb/g	SD
Sensitivity				0.07	ppb/g	LG
Frequency vs Voltage	For a 2% change			0.3	ppm	
Electronic Frequency Control	EFC = V <sub>DD</sub> to 0 Negative slope		± 7		ppm	
Short Term	For a 1 sec tau			1	ppb	
Phase Noise Performance						
Parameter	Frequency Offset (Hz)	Min	Typical	Max	Units	
Phase Noise (static) @ 10 MHz Nominal Frequency	10		-90		dBc/Hz	
	100		-120		dBc/Hz	
	1k		-145		dBc/Hz	
	10 k		-150		dBc/Hz	
	100 k		-155		dBc/Hz	
DC Supply						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Supply Voltage (V <sub>DD</sub> )	± 5%	3.0	3.3	3.6	VDC	3.3
	± 5%	4.75	5.0	5.25	VDC	5.0
Supply Current	CMOS			35	mA	
RF Output: CMOS						
Parameter	Conditions	Min	Typical	Max	Units	
Load			15		pF	
Level	V <sub>DD</sub> =3.3V	+2.8 ("1" level)		+0.2 ("0" level)	V	
	V <sub>DD</sub> =5.0V	+4.5 ("1" level)		+0.2 ("0" level)	V	
Symmetry	CMOS	40	50	60	%	

(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

## Recommendations and General Information

Conditions	
Parameter	Notes
Operating Temperature	-55°C to +125°C
Storage Temperature	-65°C to +125°C
Radiation	Unit shall continue to operate during exposure to 30 krad (Si)
Terminal Finish	Lead Free or SnPb
Package Finish	Stainless Steel and Nickel-plated Kovar
Package Weight	3 grams
Soldering Instruction	Hand solder only
Shipping	Tray pack
Marking	Line 1: Greenray logo Line 2: Model Line 3: Frequency Line 4: Serial Number + Date Code (YYWW)

## Ordering Example

<b>T1254</b>	-	<b>T56</b>	-	<b>3.3</b>	-	<b>LG</b>	-	<b>10.0MHz</b>	-	<b>E</b>
Model		Stability Code		Supply Voltage		G-Sensitivity Code		Frequency in MHz		Termination finish
		<a href="#">Refer to Electrical Specs Table*</a> N16 (-20°C to +70°C) T56 (-40°C to +85°C) X76 (-55°C to +125°C)		3.3: 3.3V 5.0: 5.0V		SD: < 0.7 ppb/g LG: < 0.07 ppb/g HG: Customer-specific		From 10 to 100 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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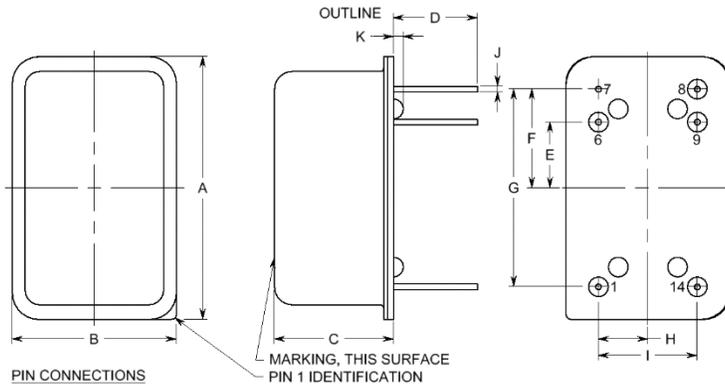


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### Package dimensions and Pad Connections



- PIN CONNECTIONS**
- 1. EFC
  - 6. SDA (INTERNAL USE ONLY)
  - 7. 0V & CASE GND
  - 8. OUTPUT
  - 9. SCLK (INTERNAL USE ONLY)
  - 14. SUPPLY

#### PART DIMENSIONS

DIM	TYP.		MAX.	
	inches	mm	inches	mm
A	0.80	20.32	0.82	20.83
B	0.50	12.70	0.52	13.21
C	NA	NA	0.400	10.16
D	NA	NA	0.27	6.86
E	0.200	5.08	0.210	5.33
F	0.300	7.62	0.310	7.87
G	0.600	15.24	0.610	15.49
H	0.150	3.81	0.160	4.06
I	0.300	7.62	0.310	7.87
J	ø0.018	ø0.46	ø0.021	ø0.53
K	NA	NA	0.030	0.76



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