



frequency control solutions

texo

T1220

DUAL COMPENSATION
TIGHT TEMPERATURE STABILITY

Product Description

Greenray Industries' T1220 TCXO offers OCXO-like frequency vs. temperature stability performance in a smaller, rugged package. In addition, the T1220 performs over a wide temperature range with low power consumption.



Features

- 14-pin full DIP package
- 3.3 or 5 VDC supply
- CMOS or clipped Sine output
- Temperature Stability to ± 0.03 ppm (-40°C to $+85^{\circ}\text{C}$)
- Extended, long-term stability performance

Applications

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

Rev. I



ISO 9001
Quality

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AS9100
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frequency control solutions

T1220 SERIES
10 MHz to 50 MHz



Electrical Characteristics

Frequency Characteristics						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	CMOS Squarewave	10		50	MHz	T1220
	Clipped Sinewave					T1221
Frequency Stability (other stability available)	-20°C to +70°C		± 50		ppb	N58
	-40°C to +85°C		± 100		ppb	T17
Aging	1 st year, after 14 days of operation			± 0.5	ppm	
Acceleration Sensitivity	(note 1)			2.5	ppb/g	SD
				0.7	ppb/g	LG
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 _{DD} Positive slope		± 7		ppm	
Warm-up time	Within ± 1 ppm			10	msec	
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		-140		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 _{DD})		3.0	3.3	3.6	VDC	3.3
		4.75	5.0	5.25	VDC	5.0
Supply Current				25	mA	
RF Outputs: Clipped Sine and CMOS						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
CMOS Output						T1220
Load	CMOS		15		pF	
Level	15 pF load, 3.3V	+2.8		+0.2	V	
		"1" level		"0" level		
	15 pF load, 5.0V	+4.5		+0.2	V	
		"1" level		"0" level		
Symmetry	CMOS		50	60	%	
Clipped Sine Output						T1221
Load			10 pF//10 kΩ			
Level		+0.8V			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
Random Vibration	MIL-STD-202	214, Cond I-J	1 PSD, 37.80 rms G
Sine Vibration	MIL-STD-202	204, Cond D	20 g, 20 to 2,000 Hz,
Shock	MIL-STD-202	213, Cond F	1,500 g, 0.5 ms half-sine

Recommendation and General Information

Conditions	
Parameter	Notes
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +95°C
Terminal Finish	SnAg Std, SnPb (PB) is available
Package Weight	3 grams
Soldering Instruction	Solder by hand
Shipping	Tray package
Marking	Line 1: Greenray logo + Model Line 2: Frequency Line 3: Serial number + Data code (YYWW)

Ordering Example

T1220	-	N58	-	3.3	-	LG	-	10.0MHz	-	LF
Model		Stability Code		Supply Voltage		G-Sensitivity Code		Frequency in MHz		Termination finish
T1220: HCMOS T1221: Clipped Sine		Refer to Electrical Specs Table* N58 (-20 to +70°C) T17 (-40 to +85°C)		3.3: 3.3V 5.0: 5.0V		SD: < 2.5 ppb/g LG: < 0.7 ppb/g HG: Customer-specific		From 10 to 50 MHz		PB: SnPb 63/37 (non-RoHS) LF: SnAg (Lead-free)

*other frequency stabilities available, please contact factory



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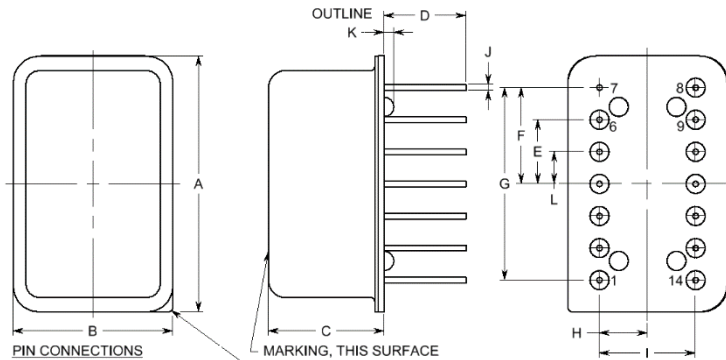


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Package dimensions and Pad Connections



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

ALL OTHER PINS ARE NC

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	∅0.018	∅0.46	∅0.021	∅0.53
K	NA	NA	0.030	0.76
L	0.100	2.54	0.110	2.79



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