GREENRAY
frequency control solutions

T1220

tcxo

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°C)
- Extended, long-term stability performance

Applications

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

REV: K

Greenray Industries, Inc., 840 West Church Road, Mechanicsburg, PA 17055
TEL: 717-766-0223 FAX: 717-790-9509 e-mail: sales@greenrayindustries.com
www.greenrayindustries.com

GREENRAY
frequency control solutions

T1220 SERIES
10 MHz to 50 MHz

tcxo

Electrical Characteristics

Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	@ +25°C	10		50	MHz	(FREQ.)
Frequency Stability	-20°C to +70°C			± 0.05	ppm	N58
	-40°C to +85°C			± 0.1	ppm	T17
Aging	1st year			± 1.0	ppm	
	10 years			± 5.0	ppm	
Acceleration Sensitivity	Worst axis tested @ 90 Hz, 10 g			3.0	ppb/g	SG
				2.5	ppb/g	LG
				0.7	ppb/g	ULG
Frequency vs Voltage	For a 5% Change			± 0.1	ppm	
Frequency vs Load	For a 10% Change			± 0.1	ppm	
Voltage Control (EFC)	0 to Supply, Positive Slope		± 7.0		ppm	
Warm-up Time	Within ± 1 ppm			10	mSec	

Phase Noise Performance

Parameter	Frequency Offset (Hz)	Min	Typical	Max	Units	Ordering Code
Static @ 10 MHz Nom. Freq.	10		-90		dBc/Hz	
	100		-120		dBc/Hz	
	1 k		-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		3.0	3.3	3.6	Vdc	B
		4.75	5.0	5.25	Vdc	E
Supply Current				25	mA	

RF Output

Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
CMOS	T1220					C
Load			15		pF	
Level		0.8 Vdd "1" Level		0.2 Vdd "0" Level	V	
Symmetry		40	50	60	%	
Clipped Sine	T1221					CS
Load			10 pF // 10 kΩ			
Output Voltage		+ 0.8 V			V p-p	

Greenray Industries, Inc., 840 West Church Road, Mechanicsburg, PA 17055
TEL: 717-766-0223 FAX: 717-790-9509 e-mail: sales@greenrayindustries.com
www.greenrayindustries.com

GREENRAY
frequency control solutions

T1220 SERIES
10 MHz to 50 MHz

tcxo

Environmental and Mechanical Specifications				
Test	Standard	Method	Condition	Description
Vibration (Random)	MIL-STD-202	214	I-J	1 PSD, 37.80 rms G
Vibration (Sine)	MIL-STD-202	204	D	20 g, 20 to 2,000 Hz
Shock	MIL-STD-202	213	F	1,500 g, 0.5 ms half-sine

Recommendations and General Information	
Parameter	Notes
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +95°C
Terminal Finish	SnAg 96.5/3.5(Lead-free), SnPb 63/37 (non-RoHS)
Package Weight	3 grams
Soldering Instruction	Hand Solder
Shipping	Tray Pack
Marking	GRI Logo, Model #, Frequency, Serial #, Date Code Addition marking upon request if space is available

Ordering Example

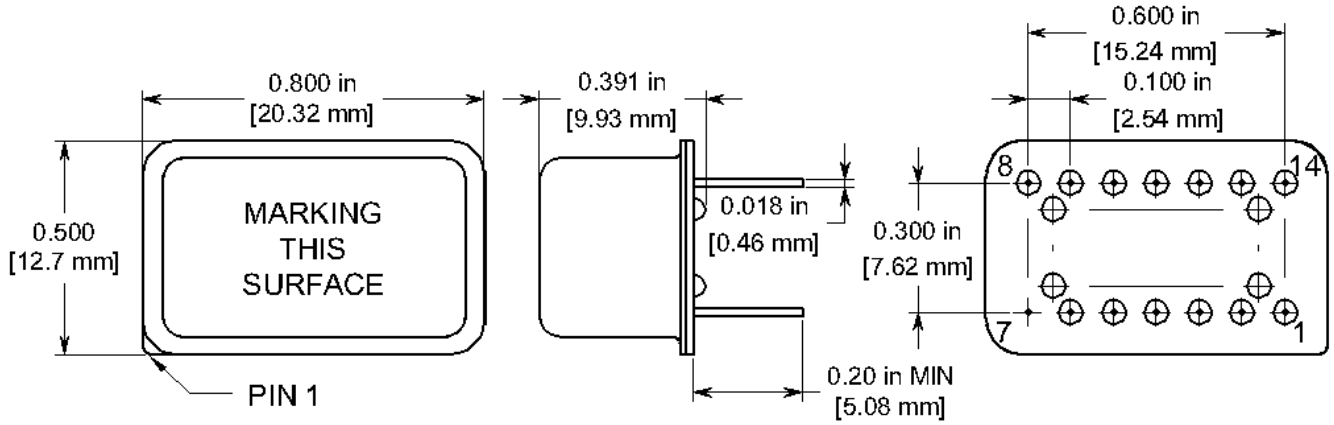
T1220	-	N	58	-	B	-	SG	-	10.0 MHz	-	LF
Model		Temp. Range	Stability		Supply Voltage		G-Sensitivity		Freq. (MHz)		Term. Finish
T1220: CMOS T1221: Clipped Sine		N: -20 to +70°C T: -40 to +85°C	58: ±0.05ppm 17: ±0.1ppm		B: 3.3V E: 5V		SG: < 3.0 ppb/g LG: < 2.5 ppb/g ULG: < 0.7 ppb/g HG: Customer-specific		10 to 50		LF: SnAg 96.5/3.5(Lead-free) PB: SnPb 63/37 (non-RoHS)

The Order ID (T1220-N58-B-SG-10.0MHz-LF) is only used to issue the preliminary quote. The Part Number (T1220-1) for the quoted Electrical Characteristics, Screenings, and other options, will be provided with the Greenray Sales Order.

Other specification options are available, please use the contact information below for more information.

Greenray Industries, Inc., 840 West Church Road, Mechanicsburg, PA 17055
TEL: 717-766-0223 FAX: 717-790-9509 e-mail: sales@greenrayindustries.com
www.greenrayindustries.com

Package Information



PIN CONNECTIONS	
1	CONTROL VOLTAGE
6	NO CONNECT (NC)
7	GND
8	OUTPUT
14	SUPPLY VOLTAGE
ALL OTHER PINS ARE NO CONNECT (NC)	

(NC Pins may have internal connections and should be isolated)

Greenray Industries, Inc., 840 West Church Road, Mechanicsburg, PA 17055
TEL: 717-766-0223 FAX: 717-790-9509 e-mail: sales@greenrayindustries.com
www.greenrayindustries.com