



frequency control solutions



T1215

HERMETIC TCXO
TIGHT TEMPERATURE STABILITY

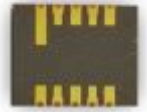
Product Description

Greenray Industries' T1215 TCXO offers outstanding, reliable performance under high shock & vibration conditions



Features

- 9.1 x 7.5mm, ruggedized, hermetic package
- 3.3 or 5VDC Supply
- Wide Frequency Range from 750 kHz to 800 MHz
- CMOS, Clipped Sine, LVPECL or LVDS output
- MIL Screening to MIL-PRF-55310 available
- High reliability and long-term stability performance
- Reduced Acceleration Sensitivity to 0.7 ppb/g



Applications

- Telecommunications
- RF telemetry systems
- Multiband terminal
- Upconverter
- GNSS
- Satellite communications
- Instrumentation

Rev. G



ISO 9001
Quality

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T1215 SERIES
750 KHz to 800 MHz



Electrical Characteristics

Frequency Characteristics						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency		10		50	MHz	CS or CL
		0.75		150	MHz	C
		20		800	MHz	PE or DS
Frequency Stability (other stability available)	-40°C to +85°C		± 0.5		ppm	T57
	-40°C to +85°C		± 1.0		ppm	T16
	-55°C to +85°C		± 2.0		ppm	U26
	-55°C to +95°C		± 3.0		ppm	V36
Aging	1 st year		± 0.5	± 1	ppm	
	10 years		± 4	± 6	ppm	
	20 years			± 10	ppm	
Acceleration Sensitivity	(Note 1)			2.5	ppb/g	SD
				0.7	ppb/g	LG
Frequency vs Voltage	± 2%			0.3	ppm	
Electronic Frequency Control	EFC = 0 to V _{DD} Positive slope		± 7		ppm	
DC Supply						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Supply Voltage (V _{DD}) (Note 2)	± 5%	2.7	3.3	3.6	VDC	3.3
	± 5%	4.75	5.0	5.25	VDC	5.0
Supply Current	CMOS, Clipped Sine			6	mA	CS, CL
	CMOS, 750 kHz to 150 MHz			45	mA	C
	LVDS			65	mA	DS
	LVPECL			80	mA	PE
Available RF Outputs: CMOS, Clipped Sine, LVDS, LVPECL						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
CMOS Output	3.3V, 750 kHz to 150 MHz					C
	5.0V, 10 MHz to 50 MHz					CS
Load	CMOS		15		pF	
Logic Levels	15 pF load	V _{DD} -0.3 "1" level		0.3 "0" level	V	
Rise/Fall Time			2.4	4	nSec	
Symmetry		45	50	55	%	
Clipped Sine Output						CL
Output Voltage	Into 10 kΩ // 10 pF	0.3	1.0		Vp-p	
LVDS Output						DS
Differential Output Voltage	Load 100Ω, 5 pF, (See fig. 1)	250	350	450	mV	
Offset Voltage	LVDS Compatible	1.125	1.250	1.375	V	
Rise / Fall Time			0.8	1.5	nSec	
Symmetry		45	50	55	%	
LVPECL Output						PE
Output Voltage	Load 50Ω to V _{DD} (or equivalent)	V _{DD} -1.025 "1" level		V _{DD} -1.620 "0" level	V	
Rise / Fall Time			0.7	1.0	nSec	
Symmetry		45	50	55	%	

- (1) Acceleration Sensitivity is worst axis tested at 90 Hz, 10 g
 (2) +5.0V supply is only available for CS and CL outputs from 10 MHz to 50 MHz



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Environmental and Mechanical Specifications

Screenings			
Screening	Standard	Method, Condition	Description
Vibration random	MIL-STD-202	214, Cond II-A	0.2 PSD, 6.21 gRMS
Shock	MIL-STD-202	213, Cond C	100 g, 11 ms duration, half-sine
Fine Leak	MIL-STD-202	112, Cond C	

Recommendations and General Information

Conditions	
Parameter	Notes
Operating Temperature	-55°C to +95°C
Storage Temperature	-55°C to +125°C
Terminal Finish	Gold plated (E) is standard. SnPb 63/37 (PB) and SnAg (LF) also available
Package	Ceramic + metal lid
Package Weight	0.5 grams
Soldering Instruction	Reflow
Shipping	T&R or tray pack
Marking	Line 1: Greenray logo Line 2: Model Line 3: Frequency Line 4: Serial Number + Date Code (YYWW)

Ordering (Example)

T1215	-	T57	-	PE	-	5.0	-	LG	-	B	-	300MHz	-	E
Model		Stability Code		Output Code		Supply Voltage		G-Sensitivity Code		Screening Code		Frequency in kHz or MHz		Termination finish
		Refer to Electrical Specs Table* T57 (-40 to +85°C) T16 (-40 to +85°C) U26 (-55 to +85°C) V36 (-55 to +95°C)		C: CMOS CS: CMOS, 10 MHz to 50 MHz CL: Clipped Sine PE: LVPECL DS : LVDS		3.3: 3.3V 5.0: 5.0V (see note 2)		SD: < 2.5 ppb/g LG: < 0.7 ppb/g HG: Customer-specific		X: No Screening B: MIL-PRF-55310, Class 3 Level B		- From 750kHz to 150 MHz: C - From 10 MHz to 50 MHz: CL or CS - From 20 MHz to 800 MHz: PE or DS		E: Gold plated (RoHS), Standard PB: SnPb 63/37 (non-RoHS) LF: SnAg 6.5/3.5 (Lead-free)

*other frequency stabilities available, for further information please contact factory



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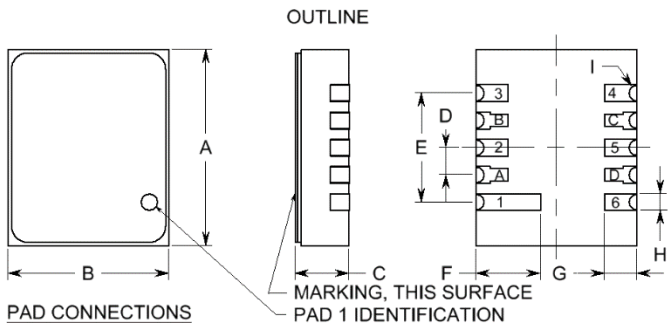


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Package Dimensions and Pad Connections

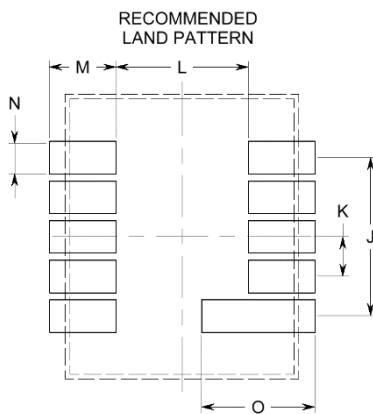
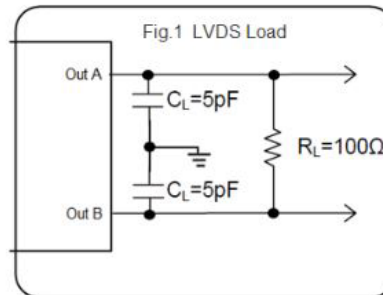


PAD CONNECTIONS

1. EFC/NC
2. VREF/NC
3. 0V & CASE GND
4. OUTPUT
5. SCLK/NC (INTERNAL USE ONLY)
6. SUPPLY
- A. CS (INTERNAL USE ONLY)
- B. TRI-STATE/NC (INTERNAL USE ONLY)
- C. COMP. OUTPUT/NC (INTERNAL USE ONLY)
- D. DIO (INTERNAL USE ONLY)

PART DIMENSIONS

DIM	TYP.		MAX.	
	inches	mm	inches	mm
A	0.360	9.14	0.370	9.40
B	0.295	7.49	0.305	7.75
C	NA	NA	0.115	2.92
D	0.050	1.27	0.060	1.52
E	0.200	5.08	0.210	5.33
F	0.118	3.00	NA	NA
G	0.059	1.50	NA	NA
H	0.031	0.79	NA	NA
I	R0.015	R0.38	NA	NA



LAND PATTERN DIMENSIONS

DIM	TYP.		MAX.	
	inches	mm	inches	mm
J	0.200	5.08	NA	NA
K	0.050	1.27	NA	NA
L	0.167	4.24	NA	NA
M	0.084	2.13	NA	NA
N	0.041	1.04	NA	NA
O	0.143	3.63	NA	NA



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