GREENRAY
frequency control solutions

ZT600

tcxo

SMT PACKAGE
TIGHT TEMPERATURE STABILITY

Product Description

Greenray Industries' ZT600 TCXO features surface mount technology and tight temperature stability.

Features

- Temperature Stability as low as ±0.5ppm
- Available from 10.00 MHz to 500 MHz with either 3.3V or 5.0V supply
- 29.2 x 25.4mm, SMT package
- Squarewave CMOS or Sinewave (Model ZT601) Output
- Ideal for Communications applications that require low phase noise and tight stability performance

Applications

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

Rev. G

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ISO 9001 Quality

AS9100 Aerospace

Electrical Characteristics

Frequency Characteristics						
Parameter	**Conditions**	**Min**	**Typical**	**Max**	**Units**	**Ordering Code**
Nominal Frequency	Sinewave	10		500	MHz	ZT601
	CMOS	10		125	MHz	ZT600
Frequency Stability (other stability available, please contact factory)	-10°C to +60°C		± 0.2		ppm	G27
	-20°C to +70°C		± 0.5		ppm	N57
	-40°C to +85°C		± 0.5		ppm	T57
	-40°C to +85°C		± 1		ppm	T16
Aging	1st year		± 0.5	± 1	ppm	
Acceleration Sensitivity	(Note 1)			2.5	ppb/g	
Frequency vs Supply	±1% change			0.1	ppm	
Electronic Frequency Control	EFC = 0 to V_{DD} positive slope		± 5		ppm	
Phase Noise Performances						
Parameter	**Frequency Offset (Hz)**	**Min**	**Typical**	**Max**	**Units**	
Phase Noise (static) @ 10 MHz nominal Frequency	10		-95		dBc/Hz	
	100		-125		dBc/Hz	
	1k		-140		dBc/Hz	
	10 k		-150		dBc/Hz	
	100 k		-155		dBc/Hz	
DC Supply						
Parameter	**Conditions**	**Min**	**Typical**	**Max**	**Units**	
Supply Voltage (V_{DD})		3.0	3.3	3.6	VDC	
		4.75	5.0	5.25	VDC	
Input Current				35	mA	
RF Output: CMOS and Sinewave						
Parameter	**Conditions**	**Min**	**Typical**	**Max**	**Units**	
CMOS Output						
Load			15		pF	
Level		V_{DD}-0.5 "1" Level		+0.2 "0" level	V	
Rise/Fall Time				3	ns	
Symmetry		40	50	60	%	
Sine wave Output						
Load			50		Ω	
Power level	50Ω load	20			dBm	
Harmonics			-20		dBc	

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

Environmental Screenings

Environmental			
Screening	**Conditions**	**Method, Condition**	**Notes**
Vibration	MIL-STD-202G	214,I.A	0.2 PSD, 5.35 g RMS
Shock	MIL-STD-202G	213, C	100 g, 6ms, 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 plated is standard (E), other options available (Sn63Pb37 or SnAg)
Package Weight	3 grams
Soldering Instruction	Hand or wave soldering
Shipping	Type of package (T&R, Tray pack)
Marking	Line 1: Greenray logo Line 2: Model Line 3: Frequency Line 4: Serial Number Line 5: Data code (YYWW)

Ordering Example

ZT600	-	**T16**	-	**5.0**	-	**10.0MHz**	-	**E**
Model		Stability Code		Input Voltage Code		Frequency in MHz		Termination finish
Model: Output ZT600: CMOS ZT601: Sine wave		Refer to Electrical Specs Table* G27 (-10 to +60°C) N57 (-20 to +70 °C) T57 (-40 to +85 °C) T16 (-40 to +85 °C)		3.3: 3.3 VDC 5.0: 5.0 VDC		-From 10 MHz to 125MHz: ZT600 -From 10 MHz to 500 MHz: ZT601		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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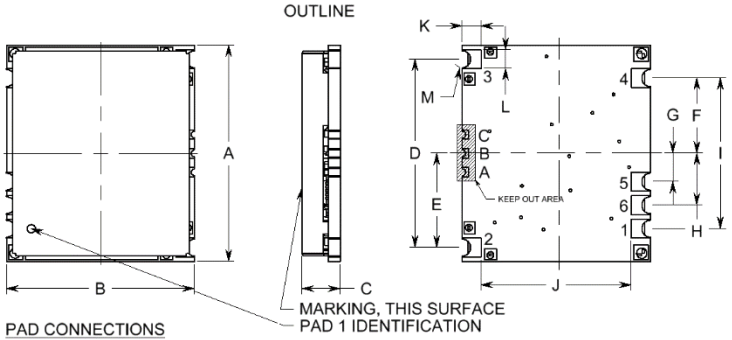
Package information



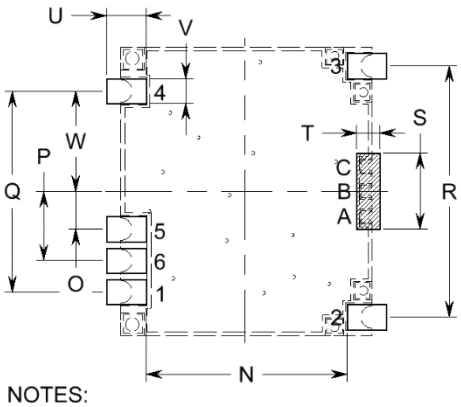
PART DIMENSIONS

	TYP.		MAX.	
DIM	inches	mm	inches	mm
A	1.150	29.21	1.170	29.72
B	1.000	25.40	1.020	25.91
C	0.200	5.08	.220	5.59
D	1.000	25.40	1.020	25.91
E	0.500	12.70	0.520	13.21
F	0.400	10.16	0.420	10.67
G	0.150	3.81	0.170	4.32
H	0.275	6.99	0.295	7.49
I	0.800	20.32	0.820	20.83
J	0.800	20.32	0.820	20.83
K	0.100	2.54	NA	NA
L	0.100	2.54	NA	NA
M	Ø0.090	Ø2.29	NA	NA

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

A. SCLK (INTERNAL USE ONLY)
B. DIO (INTERNAL USE ONLY)
C. CS (INTERNAL USE ONLY)

RECOMMEND
LAND PATTERN



LAND PATTERN DIMENSIONS

	TYP.		MAX.	
DIM	inches	mm	inches	mm
N	0.800	20.32	0.820	20.83
O	0.150	3.81	0.170	4.32
P	0.275	6.99	0.295	7.49
Q	0.800	20.32	0.820	20.83
R	1.000	25.40	1.020	25.91
S	0.303	7.70	0.323	8.20
T	0.091	2.31	0.111	2.82
U	0.158	4.01	0.178	4.52
V	0.100	2.54	0.120	3.05

NOTES:
1. AREA WHICH IS SHADED AROUND PADS A, B, & C ARE NC AND SHOULD NOT HAVE ANY METALIZATION IN THIS AREA.
2. LANDING PADS SHOULD NOT EXTEND ANY FURTHER UNDERNEATH PCB THAN SHOWN.

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