GREENRAY
frequency control solutions

T56

WIDE TEMPERATURE RANGE
LOW ACCELERATION SENSITIVITY

tcxo

Product Description

Greenray Industries' T56 Series TCXO has been developed as a reference oscillator for timing applications requiring low power draw, tight stability over military temperature range, and a compact footprint.

Features

- Wide temperature range –55 °C to +125 °C
- Small and rugged 5.0 x 3.2 mm package
- Tight temperature stability as low as ± 1 ppm over −55 °C to +125°C
- Excellent long-term aging < 4 ppm over 10 years
- Acceleration sensitivity as low as 0.5 ppb/g
- Low power consumption

Applications

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

REV: E

Greenray Industries, Inc., 840 West Church Road, Mechanicsburg, PA 17055
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www.greenrayindustries.com

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T56 SERIES
10 MHz to 52 MHz

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Electrical Characteristics

Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	@ +25°C	10		52	MHz	
Frequency Stability	-45°C to +105°C		± 0.5	± 2.0	ppm	J26
	-55°C to +125°C		± 1.0	± 5.0	ppm	X56
Aging	1st year			± 1.0	ppm	
	10 years			± 4.0	ppm	
Acceleration Sensitivity	Worst axis tested @ 90 Hz, 10 g			2.5	ppb/g	SG
				1.0	ppb/g	LG
			0.5	0.7	ppb/g	ULG
Frequency vs Reflow	After 24 hrs recovery			1.0	ppm	
Frequency vs Voltage	± 5%			0.2	ppm	
Frequency vs Load	± 10%			0.1	ppm	
Voltage Control (EFC)	0 to Supply, Positive Slope		± 8.0		ppm	

Phase Noise Performance

Parameter	Frequency Offset (Hz)	Min	Typical	Max	Units	
Static @ 20 MHz Nom. Freq.	10		-80		dBc/Hz	
	100		-112		dBc/Hz	
	1 k		-133		dBc/Hz	
	10 k		-145		dBc/Hz	
	100 k		-149		dBc/Hz	
	Floor		-150		dBc/Hz	

DC Supply

Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Supply Voltage		3.0	3.3	3.6	Vdc	B
Supply Current	CMOS			6	mA	
	Clipped Sine			3	mA	

RF Output

Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
CMOS						C
Load			15		pF	
Level		0.8 Vdd "1" Level		0.2 Vdd "0" Level	V	
Symmetry		40	50	60	%	
Clipped Sine						CS
Load			10 pF// 10 kΩ			
Output Voltage		+ 0.8	+ 1.9	+ 3.0	V p-p	

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Environmental and Mechanical Specifications				
Test	Standard	Method	Condition	Description
Vibration	MIL-STD-202G	204	D	20 g, 20 to 2,000 Hz, swept sine
Shock	MIL-STD-202G	213	I	100 g, 11 ms, half-sine

Recommendations and General Information	
Parameter	Notes
Operating Temperature	-55°C to +125°C
Storage Temperature	-60°C to +125°C
Terminal Finish	Au (RoHS) (SnPb 63/37 (non-RoHS) Available upon request)
Package Weight	< 0.1 gram
Soldering Instruction	Reflow
Shipping	Tray Pack, Tape & Reel
Marking	NONE

Ordering Example

T56 - X 56 - CS - SG - 10.0 MHz

Model	Temp. Range	Stability	Output	G-Sensitivity	Freq. (MHz)
	J: -45 to +105°C X: -55 to +125°C	16: ±1ppm 26: ±2ppm 36: ±3ppm 56: ±5ppm	C: CMOS CS: Clipped Sine	SG: < 2.5 ppb/g LG: < 2 ppb/g ULG: < 0.7 ppb/g HG: Customer-specific	10 to 52

The Order ID (T56-X56-C-SG-10.0MHz) is only used to issue the preliminary quote. The Part Number (T56-1) 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.

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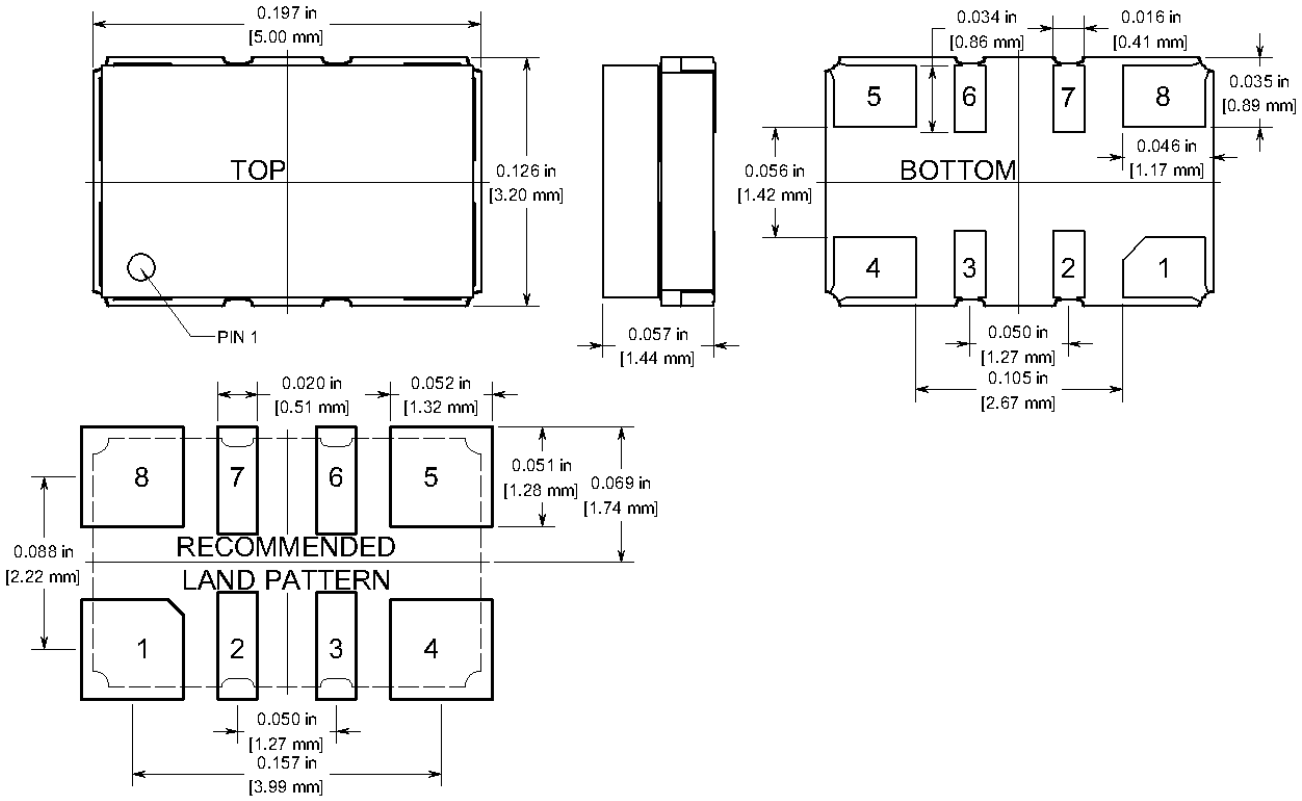
Package Information



PAD CONNECTIONS	
1	CONTROL VOLTAGE
2	NO CONNECT (NC)
3	NO CONNECT (NC)
4	GND
5	OUTPUT
6	NO CONNECT (NC)
7	NO CONNECT (NC)
8	SUPPLY VOLTAGE

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

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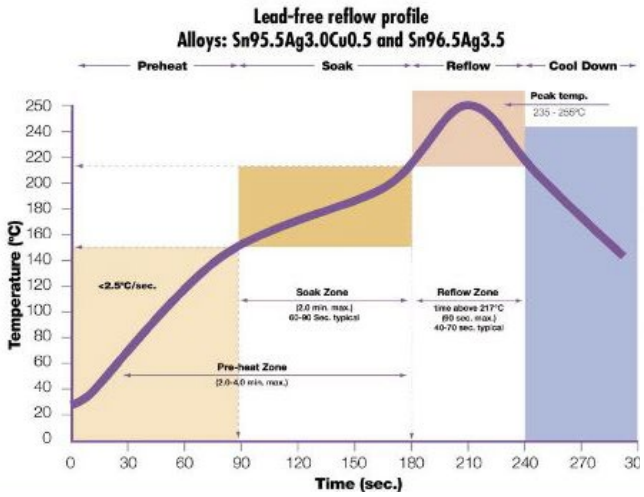
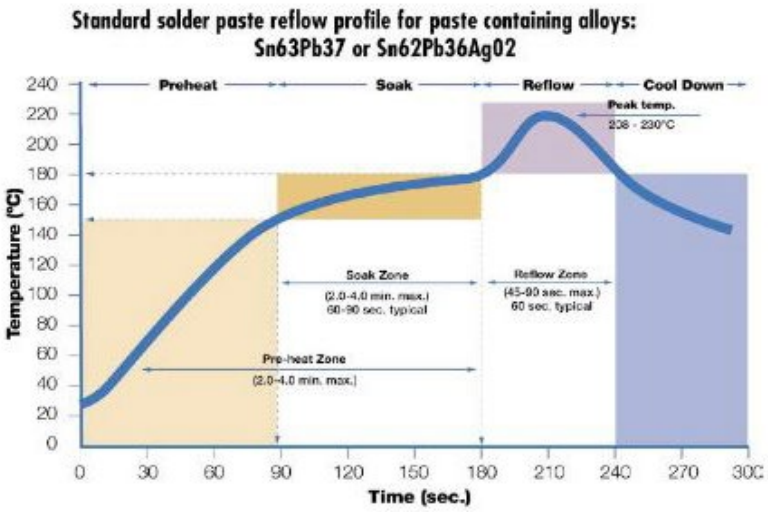
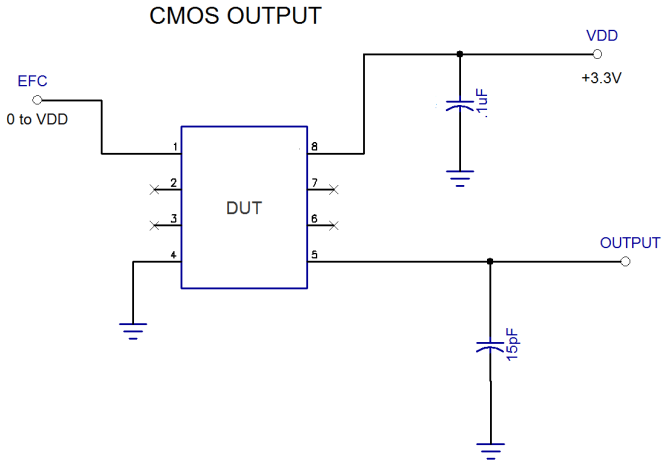
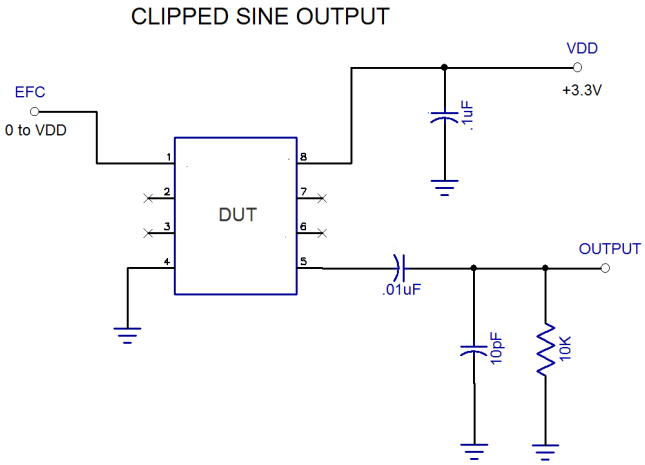
Recommended Solder Reflow Profiles





Recommended Configuration





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