



frequency control solutions

## T52

TIGHT TEMPERATURE STABILITY  
LOW G-SENSITIVITY OPTION  
30,000g SHOCK OPTION



### Product Description

Greenray Industries' T52 Series TCXO offers +5V operation for applications that require this voltage, that is higher than that currently available on typical miniature TCXOs. The T52 has been developed as a reference oscillator for timing applications requiring low noise, low power draw, tight stability over temperature, and a compact footprint.

### Features

- +5Vdc  $\pm 5\%$  Operation
- Small and rugged 5.0 x 3.2 mm package
- Withstand vibration, and high shock
- Excellent long-term aging  $< 5$  ppm over 10 years
- Low acceleration sensitivity as low as 0.5 ppb/g
- Low power consumption, as low as 2 mA

### Applications

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

REV: G



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**T52 SERIES**  
10 MHz to 52 MHz



### Electrical Characteristics

Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	@ +25°C	10		52	MHz	(FREQ.)
Frequency Stability	-40°C to +85°C		± 0.5	± 1.0	ppm	T15
	-20°C to +70°C		± 0.3	± 0.5	ppm	N57
Aging	1 <sup>st</sup> year		± 1.0	± 3.0	ppm	
	10 years		± 5.0		Ppm	
Acceleration Sensitivity	Worst axis tested @ 90 Hz, 10 g			2.5	ppb/g	SG
				1.0	ppb/g	LG
				0.5	ppb/g	ULG
Frequency vs Reflow	After 24 hrs recovery			1.0	ppm	
Voltage Control (EFC)	0 to Supply, Positive Slope		± 8		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		4.75	5.0	5.25	Vdc	5.0
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
Output Voltage		+ 0.8			V p-p	
Load			10 pF // 10k Ω			



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### Environmental and Mechanical Specifications

Test	Standard	Method	Condition	Description
Vibration	MIL-STD-202G	204	D	20g, 20Hz to 2kHz, Swept Sine
Shock	MIL-STD-202G	213	D	Shock available up to 30,000

### Recommendations and General Information

Parameter	Notes
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +105°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

T52	-	N	57	-	CS	-	SG	-	10.0 MHz
Model	Temp. Range	Stability	Output	G-Sensitivity	Freq. (MHz)				

**Model:** T52  
**Temp. Range:** N: -20 to +70°C  
T: -40 to +85°C  
**Stability:** 57: ±0.5ppm  
16: ±1ppm  
26: ±2ppm  
**Output:** C: CMOS  
CS: Clipped Sine  
**G-Sensitivity:** SG: < 2.5 ppb/g  
LG: < 2.0 ppb/g  
ULG: < 0.7 ppb/g  
HG: Customer-specific  
**Freq. (MHz):** 10 to 52

The Order ID (T52-N57-CS-SG-10.0MHz) is only used to issue the preliminary quote. The Part Number (T52-1) 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

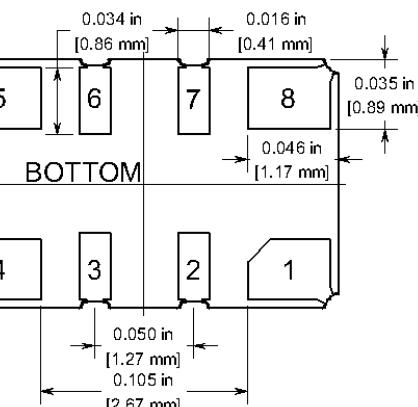
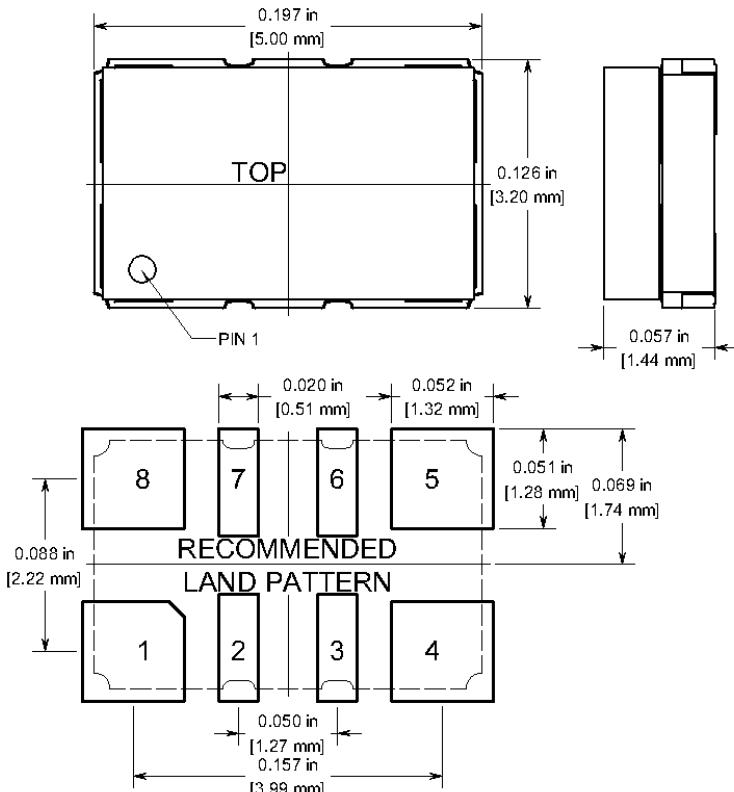


TABLE 1: TRI-STATE FUNCTION

PAD 6	ENABLE/DISABLE FUNCTION
HIGH (SUPPLY)	OUTPUT ENABLED
OPEN (NC)	OUTPUT ENABLED
LOW (GND)	HIGH IMPEDANCE DISABLED

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

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

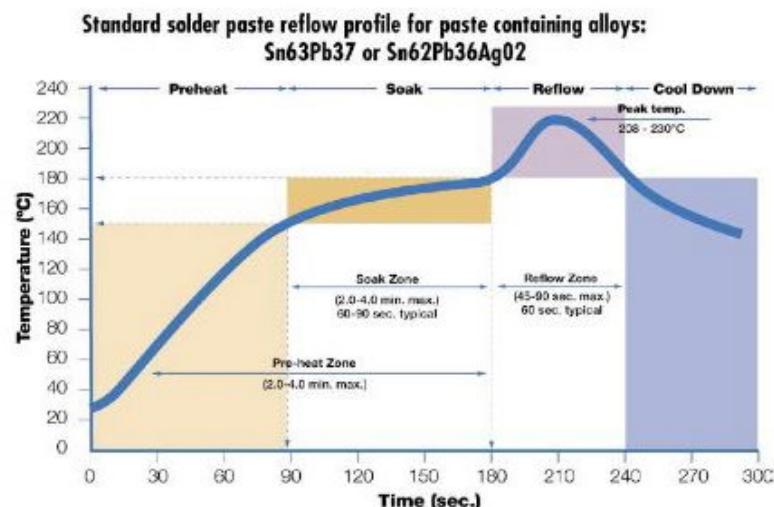
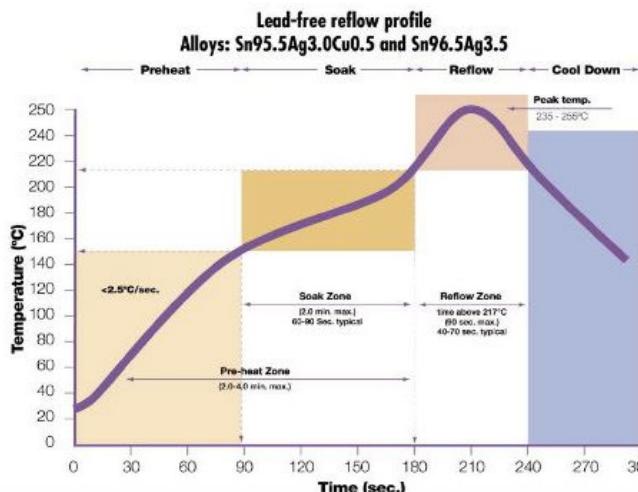


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## Recommended Solder Reflow Profiles



## Recommended Configuration

