



frequency control solutions

T52

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

tcxo



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

Other specification options are available, please use the contact the factory for more information regarding your specific requirements.

REV: G



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T52 SERIES
10 MHz to 52 MHz



Electrical Characteristics

Electrical Characteristics						
Parameter	Conditions	Min	Typical	Max	Units	Ordering Code
Nominal Frequency	+25°C	10		52	MHz	
Frequency Stability	-40°C to +85°C		± 0.5	±1	ppm	T16
	-20°C to +70°C		± 0.3	± 0.5	ppm	N57
Aging	1 st year		± 1	± 3	ppm	
Acceleration Sensitivity	Worst axis tested @ 90 Hz, 10 g			2	ppb/g	SG
				0.7	ppb/g	LG
Frequency vs Reflow	After 24hrs recovery			1	ppm	
Voltage Control	VC=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	
Levels	+ 5.0V Supply	+4.2 "1" Level		+0.2 "0" level	V	
Symmetry		40	50	60	%	
Clipped Sine						CS
Load			10 pF // 10k Ω			
Level		+0.8			V p-p	



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Environmental and Mechanical Specifications

Screenings			
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

Information	
Parameter	Notes
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +105°C
Terminal Finish	ENIG STD., SnPb 63/37 (non-RoHS) available
Package Weight	<0.1 gram
Soldering Instruction	Reflow
Shipping	Tray Pack, Tape & Reel
Marking	None

Ordering Example

T52	-	N	-	16	-	C	-	5.0	-	SD	-	20.0 MHz	-	E
Model		Temperature Range		Stability		Output		Supply Voltage		G-Sensitivity		Freq. (MHz)		Term. Finish
		N: -20°C to +70°C T: -40°C to +85°C		57: ±0.5ppm 16: ±1ppm 26: ±2ppm		CS: Clipped Sine C: CMOS		5.0: 5.0V		SG: < 2 ppb/g LG: < 0.7 ppb/g		10 MHz to 52 MHz		E: Au PB: SnPb, <97% Sn

The Order ID (T52-N16-C-5.0-SD-20MHz-E) is only used to issue the preliminary quote. The Part Number (T52-X) for the quoted Electrical Characteristics, Screenings, and other options, will be provided with the Greenray Sales Order.



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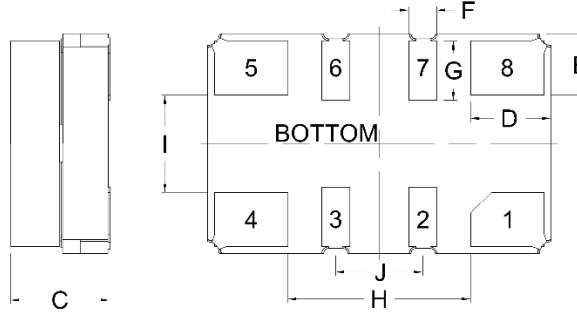
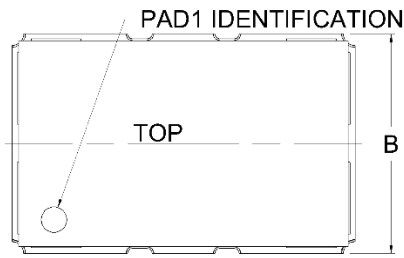


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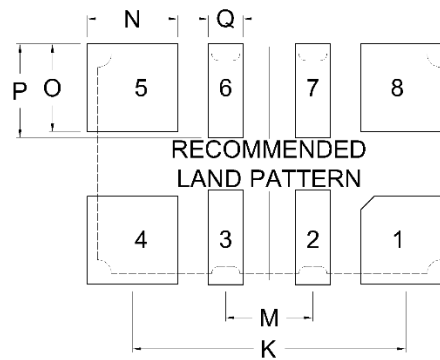
Package information



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

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

DIM	Part Dimensions			
	Typical		MAX	
	Inches	MM	Inches	MM
A	0.197	5.00	0.207	5.25
B	0.126	3.20	0.136	3.45
C	NA	NA	0.079	2.00
D	0.046	1.17	NA	NA
E	0.035	0.89	NA	NA
F	0.016	0.41	NA	NA
G	0.038	0.97	NA	NA
H	0.105	2.67	0.115	2.92
I	0.056	1.42	0.066	1.68
J	0.050	1.27	0.060	1.52



DIM	Land Pattern Dimensions			
	Typical		MAX	
	Inches	MM	Inches	MM
K	0.147	3.73	0.157	3.99
L	0.126	3.20	0.136	3.45
M	0.047	1.19	NA	NA
N	0.049	1.25	NA	NA
O	0.47	1.19	NA	NA
P	0.051	1.30	NA	NA
Q	0.019	0.48	NA	NA

TABLE 1: TRI-STATE FUNCTION	
PAD 6	ENABLE/DISABLE FUNCTION
HIGH (SUPPLY)	OUTPUT ENABLED
OPEN (NC)	OUTPUT ENABLED
LOW (GND)	HIGH IMPEDANCE DISABLED



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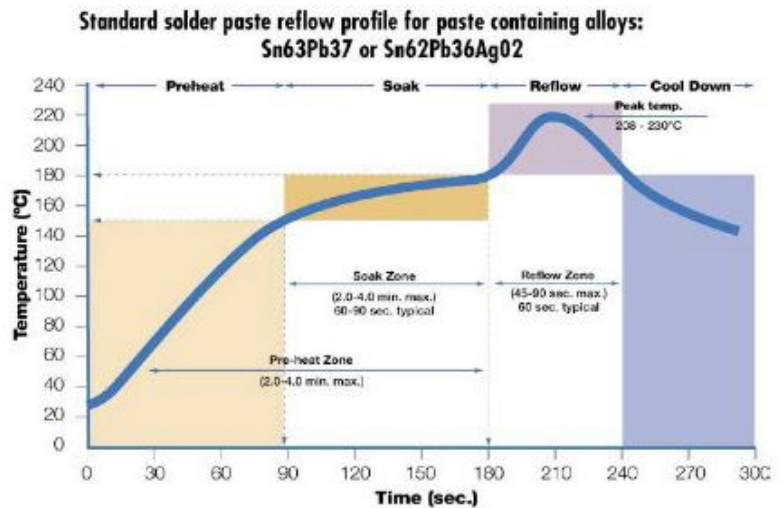
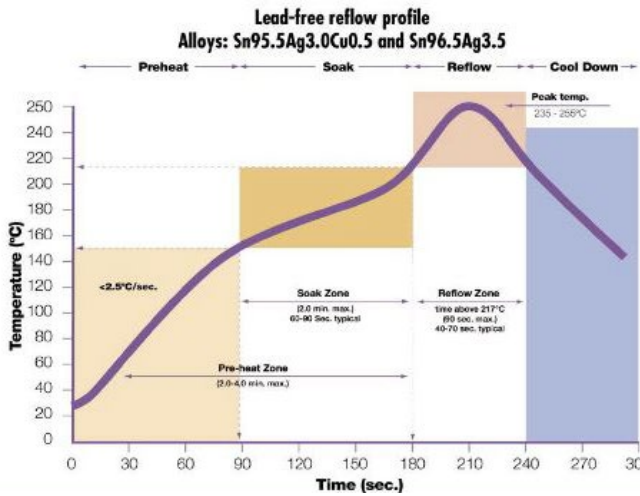


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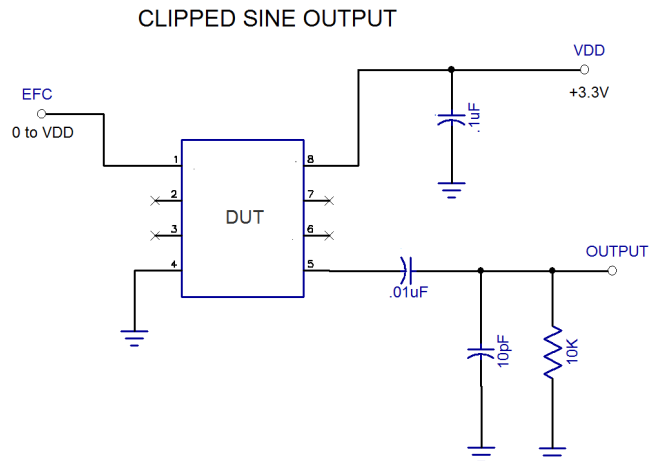
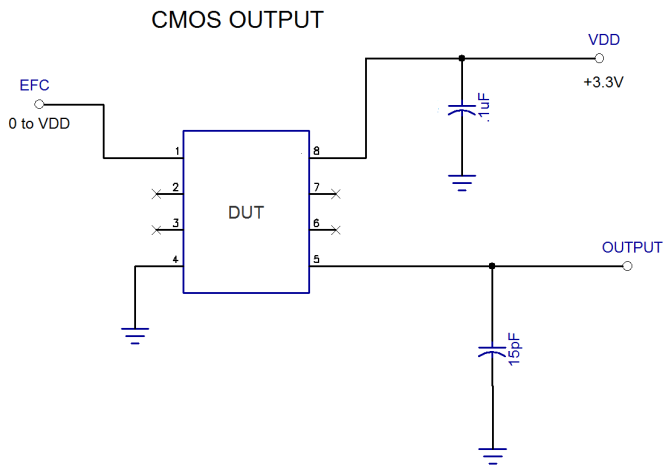
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Recommended Solder Reflow Profiles



Recommended Configuration



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