



Features and Benefits

- High frequency stability(up to ± 1 ppm over -40°C to $+85^{\circ}\text{C}$)
- Low power consumption (up to 3.3 mA)
- Compact SMD design
- 3.3V with CMOS output

Typical Applications

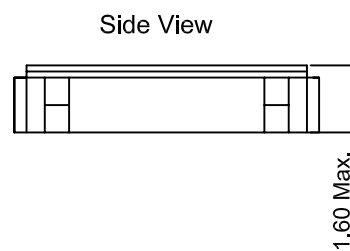
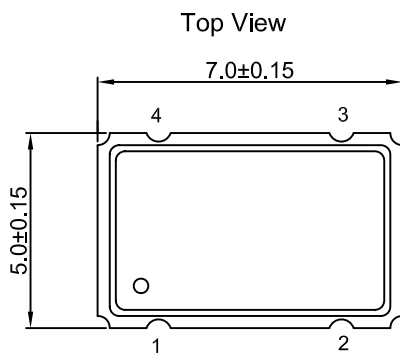
- Microwave Communication
- Mobile Devices

Description

TCXO7500DG-10.23MHz-A-V offers high frequency stability and low power consumption in compact SMD package best suited for mobile devices and microwave communication.

Mechanical Drawing & Pin Connections

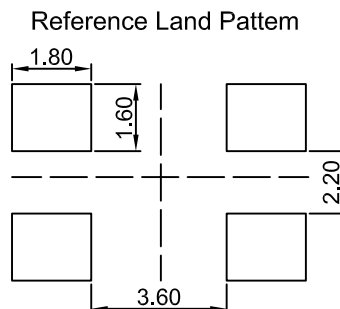
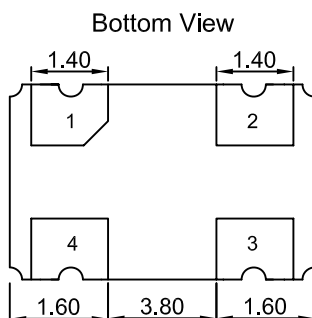
Drawing No: **MD170042-1**



Pin Connection

Pad 1	Control Voltage
Pad 2	GND
Pad 3	Output
Pad 4	Supply Voltage

Unit in mm
1mm = 0.0394 inches





Specifications

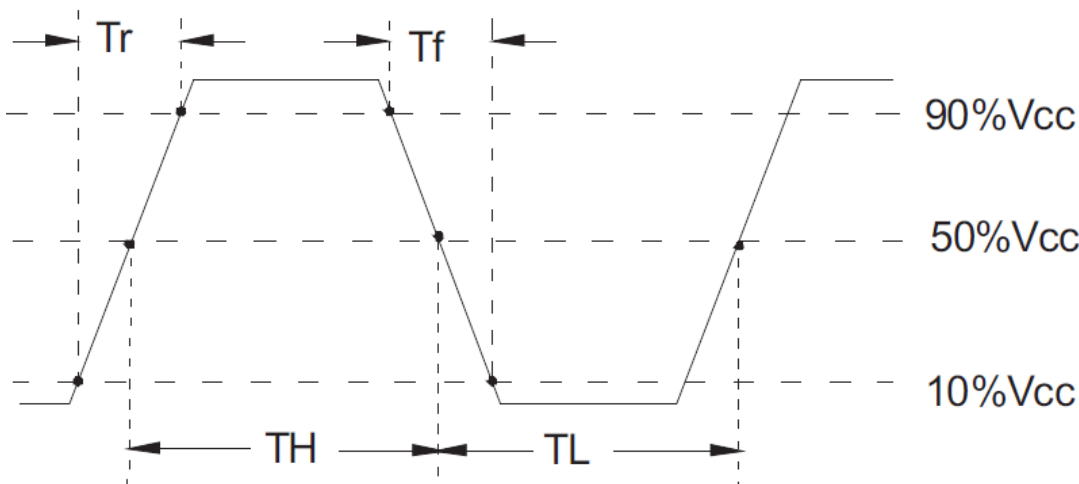
Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Frequency Range	F ₀		10.23			MHz	
Output Waveform			CMOS				
Output Low Voltage Level "0"					10% V _{cc}	V	
Output High Voltage Level "1"			90% V _{cc}			V	
Duty Cycle			45		55	%	
Rise / Fall Time	T _r / T _f				7	ns	
Output Load				10		pF	
Start Time					2	ms	
Power Supply							
Supply Voltage	V _{CC}	±5%		3.3		V	
Input Current on Load	I _{CC}				3.3	mA	
Control Voltage							
Control Voltage Range	V _{control}	±1.5V		1.65		V	
Absolute Pulling Range			±5.0			ppm	
Frequency Stability							
Frequency Tolerance	ΔF / F ₀	@ +25°C±3°C			±1.0	ppm	
Vs Operating Temperature	ΔF / F ₀				±1.0	ppm	
Vs Supply Voltage Changes	V _{CC}				±0.2	ppm	
Vs Load Changes		±10%			±0.2	ppm	
Aging – First Year					±1.0	ppm	
Phase Noise		@ 100Hz			-115	dBc / Hz	
		@ 1 kHz			-135		
		@ 10 kHz			-148		
Environmental Conditions							
Operating Temperature Range			-40		+85	°C	
Storage Temperature Range			-55		+125	°C	

Note:

1. Measurements and tests were made under the following conditions, unless otherwise specified:
 - a. Ambient temperature: +25°C ±3°C
 - b. Relative humidity: 30% to 80%
 - c. Air pressure: 860hPa to 1060hPa

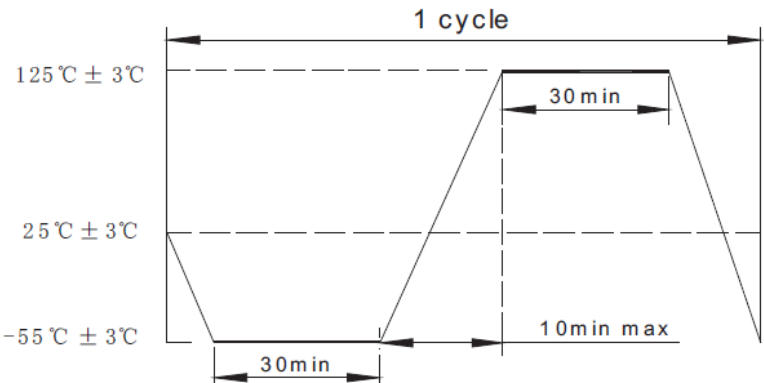
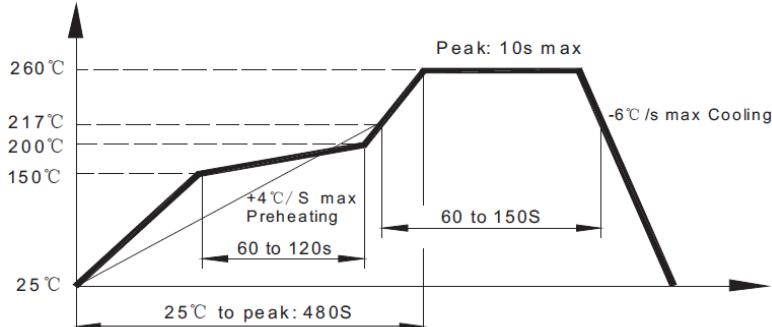
Output Waveform

$$\text{Duty}(\eta) = [TH / (TH + TL)] \times 100\%$$





Environmental Conditions

Test	Specifications	Test Conditions
Terminal Tensile Strength	No fracture	From the body 2.5mm ±0.5mm, load 5N, bending 3 times
Solderability	Coating ≥ 90%	Pre-heat: temperature +150°C, time: 60~120S; peak temperature +240°C ±5°C Soldering: temperature over +215°C, test time: 10~30S
Vibration	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	The entire frequency range from 10Hz to 55Hz and return to 10Hz, shall be trans versed in 1 min. Amplitude (total excursion) 1.52mm. This motion shall be applied for a period of 2h each of 3 mutually perpendicular axes.
Drop	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	From 150cm height, 3 times onto 30mm hard wooden floor
Shock	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Devices are shocked to half sine wave (1000G) 3 mutually perpendicular axes
Humidity	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Devices are left in temperature at +85°C ±2°C with relative humidity of 80% to 90% for 500h
Cold	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Leave at -40°C ±2°C for 500h
Heat	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Leave at +85°C ±2°C for 500h
Aging	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Leave at +85°C ±2°C for 1000h
Thermal Shock	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Devices are left into the following temperature cycle as shown below for 100 consecutive cycles  <p>The graph shows a temperature cycle with three levels: 125°C ± 3°C, 25°C ± 3°C, and -55°C ± 3°C. The cycle duration is 100 consecutive cycles. The time spent at 125°C is 30 min, and the time spent at -55°C is 30 min. The time spent at 25°C is 10 min max.</p>
Resistance to Soldering Heat	$\Delta F \leq \pm 5 \text{ppm}$ $\Delta R_S \leq 4\Omega$	Reflow Soldering Remark: Solder ironing method: Bit temperature: +350°C ±10°C Application time of soldering iron: 5S max  <p>The graph shows a reflow soldering temperature profile. The temperature starts at 25°C, rises to 150°C (60 to 120s), then to 217°C (44°C/S max Preheating), then to 260°C (Peak: 10s max), and finally cools down at -6°C/s max Cooling. The total time from 25°C to peak is 480S, and the time at peak is 60 to 150S.</p>