

Temperature Compensated Crystal Oscillator (TCXO)

TG-5006CG- 11L 26 MHz

- Reflowable and high density mounting type ultra small size SMD (2.5 × 2.0 × 0.8 mm Typ.).
- Using the heat-resisting type AT cut quartz crystal
allows almost the same temperature soldering as universal SMD IC.
- Operating supply voltage : 2.8 V.

■ Specifications

1. Absolute maximum ratings

Parameter	Symbol	Value	Unit	Note
Supply voltage	V _{CC-GND}	-0.3 to 4.0	V	
Storage temperature range	T _{STG}	-40 to +85	°C	

2. Operating range

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power voltage	V _{CC}	2.52	2.80	3.08	V	V _{CC} =2.8V +/- 0.28V
	GND	0.0		0.0	V	V _c Terminal
Operating temperature range	T _{use}	-40	+25	+85	°C	
Output load	Load _R	9	10	11	kΩ	
	Load _C	9	10	11	pF	
DC-cut capacitor	C _C	0.01			μF	

DC-cut capacitor is not included in our TCXO. Please insert DC-cut capacitor in output line.

3. Frequency characteristics

1) Output frequency 26.000000 MHz

2) Frequency characteristics

(V_{CC} = 2.8 V, Load 10 kΩ // 10 pF(DC cut), T_{use} = +25°C)

Parameter	Symbol	Value	Unit	Note
Frequency tolerance	f_tol(OSC)	+/- 0.8 × 10 ⁻⁶ Max.	-	T _{use} = +25°C +/-2°C Before Reflow
	f_tol	+/- 2.0 × 10 ⁻⁶ Max. *1	-	T _{use} = +25°C +/-2°C Reflow cycles : 2 times.*2
Frequency / temperature characteristics	fo-Tc	+/- 2.0 × 10 ⁻⁶ Max.	-	T _{use} = -30°C to +85°C Based on frequency at +25°C
		+/- 3.0 × 10 ⁻⁶ Max.	-	T _{use} = -40°C to -30°C Based on frequency at +25°C
Frequency / temperature change	fo-Tc/°C	+/- 0.10 × 10 ⁻⁶ Max.	/°C	T _{use} = -30°C to +85°C
		+/- 0.35 × 10 ⁻⁶ Max.		T _{use} = -40°C to -30°C
Static temperature hysteresis	-	+/- 0.6 × 10 ⁻⁶ Max.	-	T _{use} = +25°C
Frequency / load coefficient	fo-Load	+/- 0.1 × 10 ⁻⁶ Max.	-	Load :10kΩ//10pF +/-5% each
Frequency / voltage coefficient	fo-Vcc	+/- 0.1 × 10 ⁻⁶ Max.	-	V _{CC} =2.8 +/- 5 %
Frequency aging	f_age	+/- 1.0 × 10 ⁻⁶ Max.	-	First year T _{use} = +25°C
		+/- 1.5 × 10 ⁻⁶ Max.	-	2 years T _{use} = +25°C
		+/- 2.5 × 10 ⁻⁶ Max.	-	5 years T _{use} = +25°C
		+/- 5.0 × 10 ⁻⁶ Max.	-	10 years T _{use} = +25°C

*1 Include initial frequency tolerance and frequency deviation after reflow cycles.

*2 Measurement of frequency deviation is made 1h after reflow soldering.

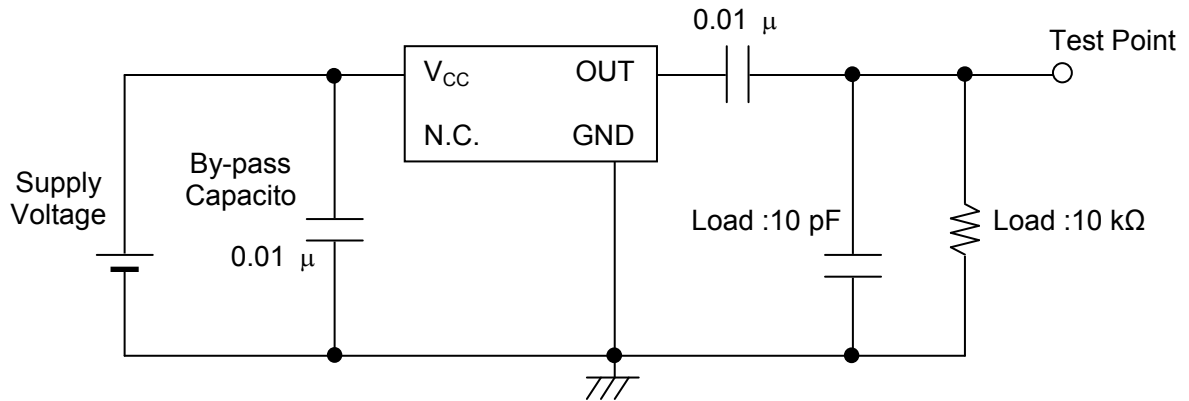
4. Electrical characteristics

($V_{CC} = 2.8\text{ V}$, Load $10\text{ k}\Omega // 10\text{ pF}$ (DC cut), $T_{use} = +25^\circ\text{C}$)

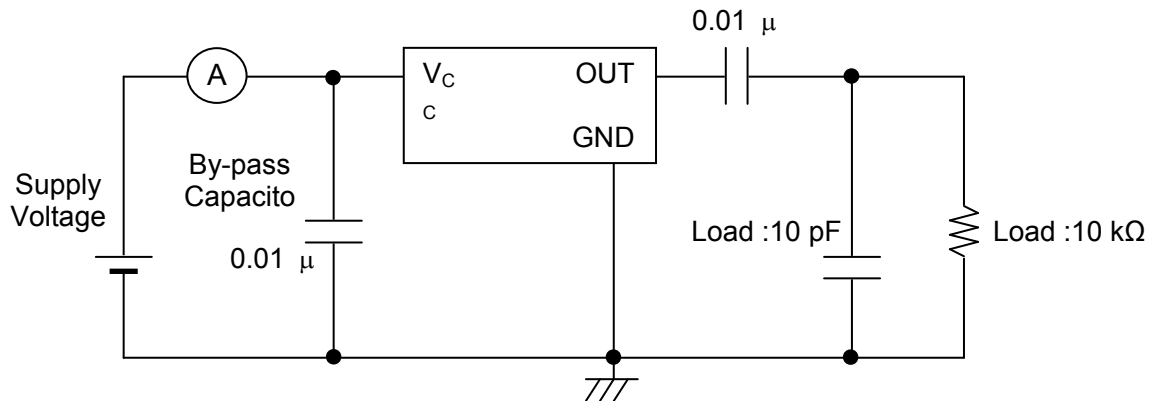
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Current consumption	Icc			1.5	mA	
Output level	Vpp	0.8		1.5	V	Peak to peak voltage Clipped sine wave
Symmetry	SYM	40		60	%	$T_{use} = -30^\circ\text{C}$ to $+85^\circ\text{C}$ GND Level
		45		55		$T_{use} = +25^\circ\text{C}$ GND Level
Harmonics	-			-8	dBc	All harmonics
Start up time	tosc			2.0	ms	Until output signal has been reached min90% of final amp.
				2.0		Until frequency has been reached within +/-0.5 ppm of final frequency.
SSB Phase noise	L(f)			-50	dBc/Hz	Offset :1 Hz
				-80		Offset :10 Hz
				-105		Offset :100 Hz
				-130		Offset :1 kHz
				-148		Offset :10 kHz
				-150		Offset :100 kHz
R.A.V	-			0.3	ppb	$\tau = 1\text{ sec}$ $n=100$ $T_{use} = +25^\circ\text{C}$

5. Test circuit

1) Output Load : 10 kΩ//10 pF



2) Current consumption



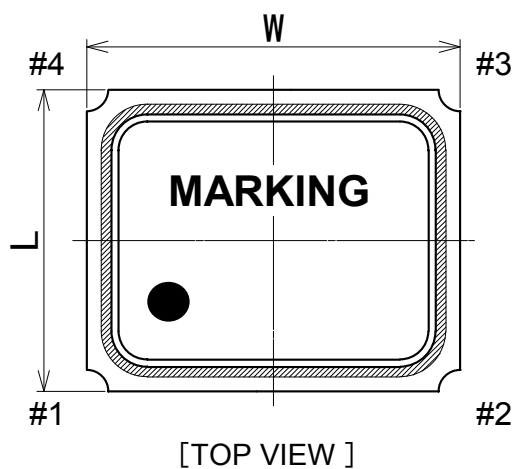
3) Conditions

- | | | |
|-------------------|-------------------|--------------|
| 1. Oscilloscope : | Impedance | Min. 1 MΩ |
| | Input capacitance | Max. 10 pF |
| | Band width | Min. 300 MHz |

Impossible to measure both frequency and wave form at the same time.(In case of using oscilloscope's amplifier output, possible to measure both at the same time.)

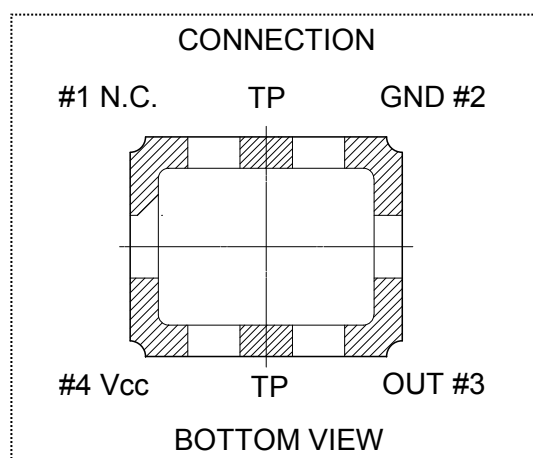
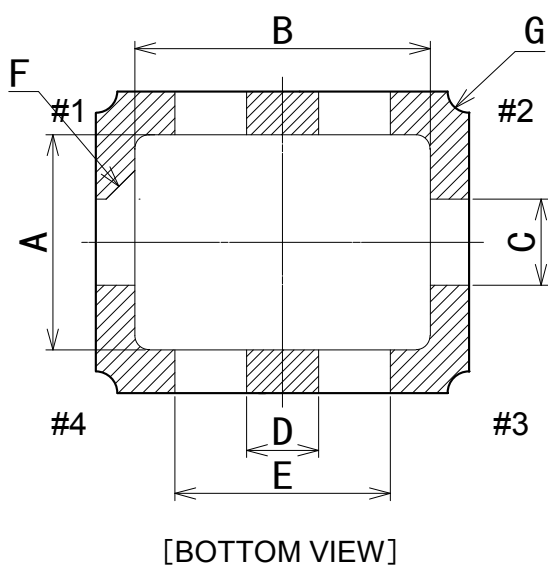
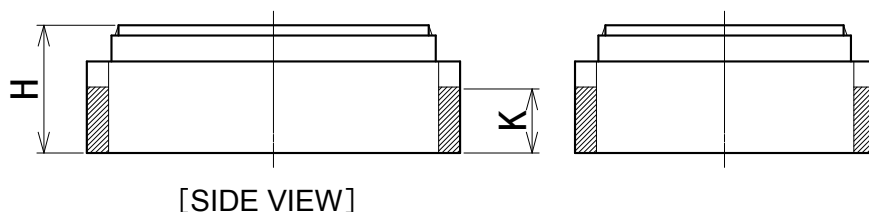
2. Load_C includes probe capacitance.
3. A capacitor (By-pass:0.01 μF) is placed between V_{CC} and GND,and closely to TCXO.
4. Use the current meter whose internal impedance value is small.
5. Power Supply
Impedance of power supply should be as lowest as possible.
6. GND should apply one point earth.

6. OUTLINE DRAWING



Marking
TBD

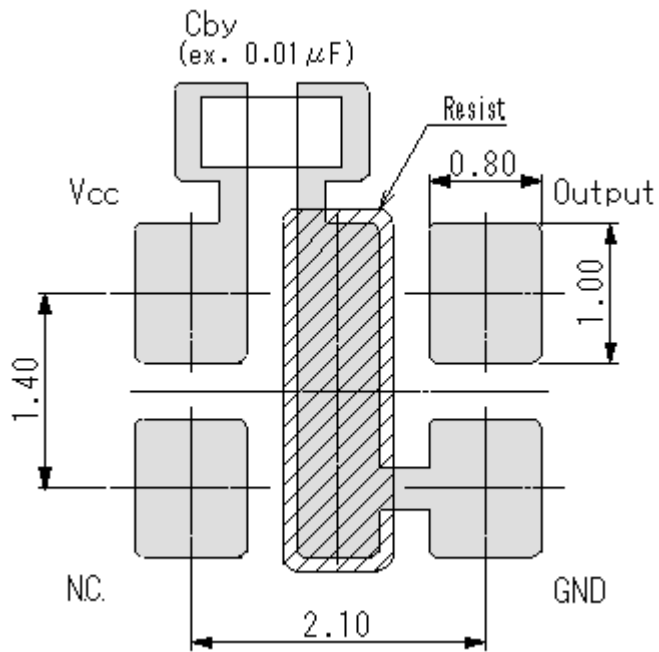
Material
Ceramics (base)
Au coated nickel (terminal)
Fe-Ni-Co (lid)



(unit : mm)

DIM.	MIN.	TYP.	MAX.	DIM.	MIN.	TYP.	MAX.
W	2.30	2.50	2.70	D	0.40	0.50	0.60
L	1.80	2.00	2.20	E	1.35	1.50	1.65
H	0.70	0.80	0.90	F	---	C0.2	---
A	1.35	1.50	1.65	G	---	R0.15	---
B	1.95	2.10	2.25	K	---	0.45	---
C	0.50	0.60	0.70				

7. Recommendation Foot pattern



(unit : mm)

- * Please connect Cby(bypass capacitor) quite near by "Vcc" terminal.
- * It is desirable to draw GND pattern under TCXO.