

Temperature Compensated Crystal Oscillator (TCXO)

TG-5025CG-16G 16.369MHz

- Reflowable and high density mounting type ultra small size SMD (2.5×2.0×0.9 mm).
- Using the heat-resisting type AT cut quartz crystal
allows almost the same temperature soldering as universal SMD IC.
- Operating supply voltage : 1.8 V.

■ Specifications

1. Absolute maximum ratings

Parameter	Symbol	Value	Unit	Note
Supply voltage	V _{CC} -GND	-0.3 to 4.5	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}	1.70	1.80	1.90	V	1.8V +/- 0.1V
Power voltage	GND	0.0		0.0	V	
Operating temperature range	T _{use}	-40		+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.

DO NOT COPY

3. Frequency characteristics

1) Output frequency 16.369000 MHz

 2) Frequency characteristics ($V_{CC}=1.8\text{ V}$, $GND=0.0\text{ V}$, Load $10\text{ k}\Omega // 10\text{ pF}$ (DC cut), $T_{use}=+25\text{ }^{\circ}\text{C}$)

Parameter	Symbol	Value	Unit	Note
Frequency tolerance	f_tol	+/- 2.0×10^{-6} Max.	-	$T_{use}=+25\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ After 2 times reflow soldering *1
Frequency / temperature coefficient	Fo-Tc	+/- 0.5×10^{-6} Max. +/- 3.0×10^{-6} Max.	-	$T_a = -30\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ $T_a = -40\text{ }^{\circ}\text{C}$ to $-30\text{ }^{\circ}\text{C}$ Based on frequency at $+25\text{ }^{\circ}\text{C}$
Frequency / temperature slope	Fo-Tc/Tc	+/- 0.2×10^{-6} Max. +/- 0.1×10^{-6} Max. +/- 0.2×10^{-6} Max. +/- 0.3×10^{-6} Max.	$/^{\circ}\text{C}$	$+70^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ -20°C to $+70^{\circ}\text{C}$ -30°C to -20°C -40°C to $+30^{\circ}\text{C}$
Frequency jump	f_jump	+/- 5×10^{-9} /5s Max.	-	+/- $0.025^{\circ}\text{C} /5\text{s}$ $+70^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ +/- $0.050^{\circ}\text{C} /5\text{s}$ -20°C to $+70^{\circ}\text{C}$ +/- $0.025^{\circ}\text{C} /5\text{s}$ -30°C to -20°C +/- $0.017^{\circ}\text{C} /5\text{s}$ -40°C to -30°C
Frequency / Load coefficient	Fo-Load	+/- 0.1×10^{-6} Max.	-	Load : $10\text{ k}\Omega // 10\text{ pF}$ +/-10 % each
Frequency / voltage coefficient	Fo-Vcc	+/- 0.1×10^{-6} Max.	-	$V_{CC}=1.8 \pm 0.1\text{ V}$
Frequency aging	f_aging	+/- 1.0×10^{-6} Max. +/- 3.0×10^{-6} Max.	-	First year 3 years after $T_{use}=+25\text{ }^{\circ}\text{C}$

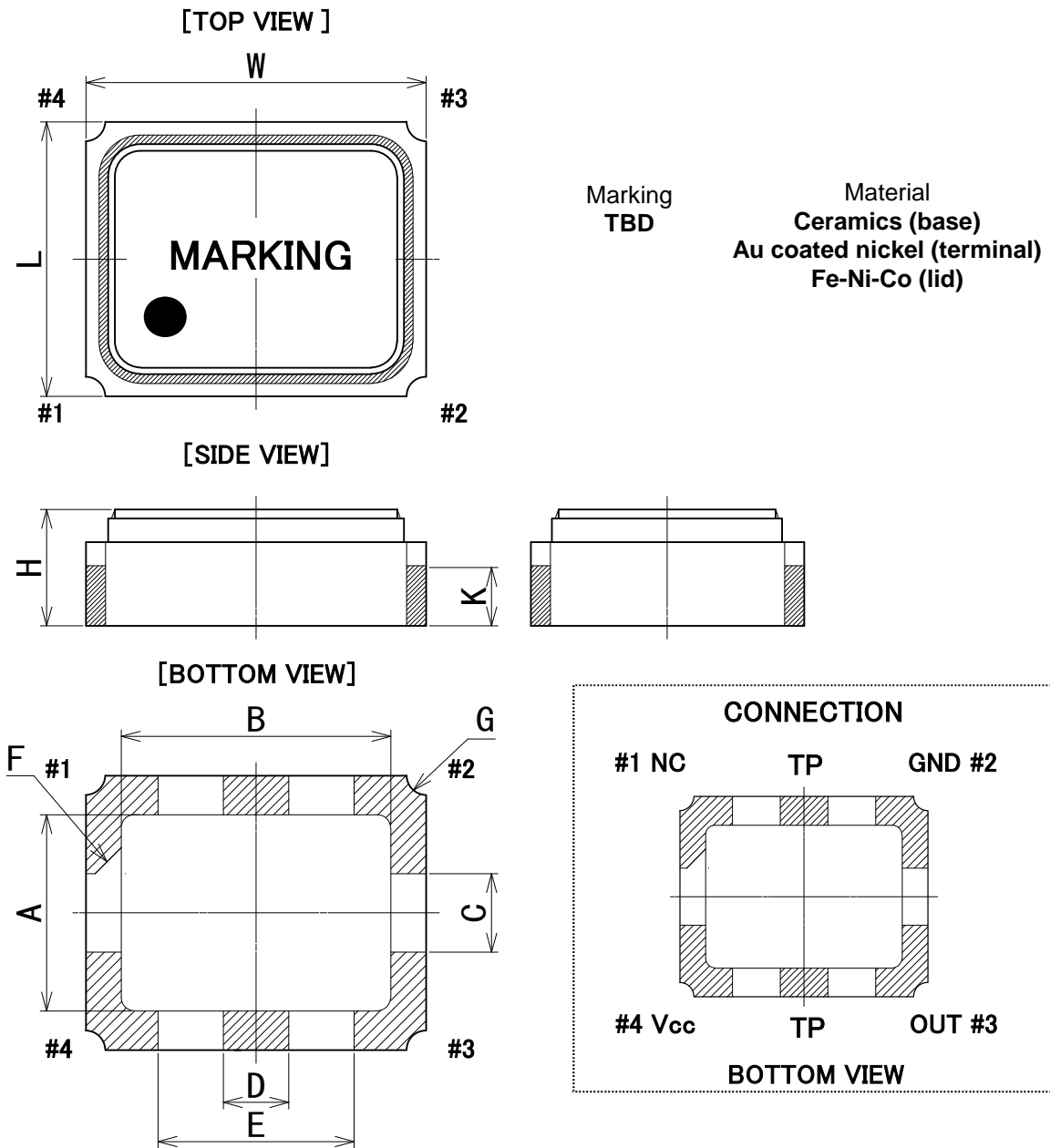
*1 Measurement of frequency deviation is made 1h after reflow soldering.

4. Electrical characteristics

(V_{CC}=1.8 V, GND=0.0 V, Load 10 kΩ // 10 pF (DC cut), T_{use} = +25 °C)

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Current consumption	I _{cc}			1.5	mA	
Output level	V _{pp}	0.8			V	Peak to peak voltage Clipped sinewave
Symmetry	SYM	40		60	%	GND Level
Start up time	t _{str}			30	ms	Until frequency has been reached within +/-500 ppb/s of final frequency.
				1000		Until frequency has been reached within +/-200 ppb/s of final frequency.
				3000		Until frequency has been reached within +/-5 ppb/s of final frequency.
				2.0		Until output signal has been reached min90% of final amp.
G sensitivity	-			3 × 10 ⁻⁹	1/g	Vibration frequency : 500Hz max.
Allan variance	-			0.5 × 10 ⁻⁹	-	Tau=100ms
Harmonics	-			-8	dBc	
SSB Phase noise	L(f)			-54	dBc/Hz	Offset:1 Hz
				-79		Offset:10 Hz
				-110		Offset:100 Hz
				-132		Offset:1 kHz
				-147		Offset:10 kHz

5. OUTLINE DRAWING



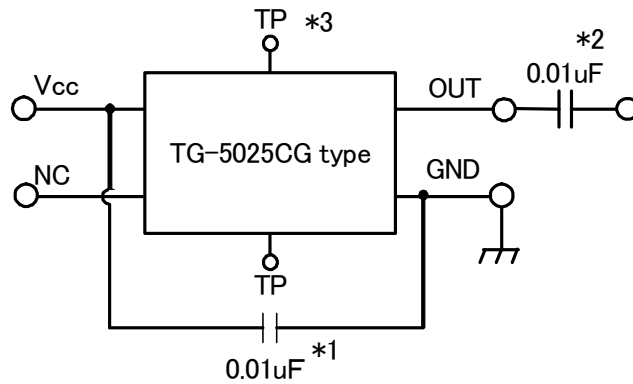
Marking
TBD

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

(unit : mm)

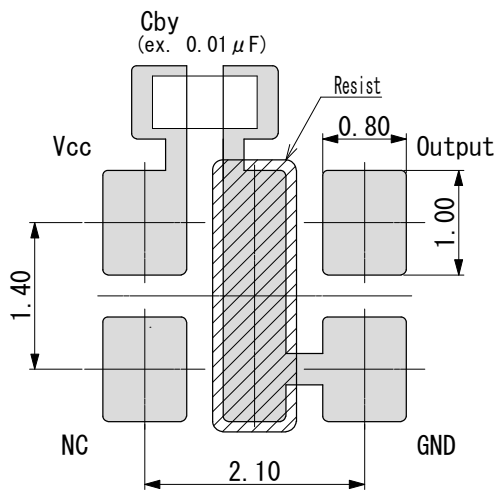
DIM.	MIN.	TYP.	MAX.	DIM.	MIN.	TYP.	MAX.
W	2.30	2.50	2.70	D	0.40	0.50	0.60
L	1.80	2.00	2.20	E	1.35	1.50	1.65
H	0.70	0.80	0.90	F	---	C0.2	---
A	1.35	1.50	1.65	G	---	R0.15	---
B	1.95	2.10	2.25	K	---	0.45	---
C	0.50	0.60	0.70				

6. CONNECTION



- *1 Please connect capacitor(recommendation:0.01 μ F) between "Vcc" and "GND" terminal.
- *2 Please connect capacitor(recommendation:0.01 μ F) between "OUT" terminal and load.
- *3 Do not connect "TP" terminal.
- *4 This product has one chip LSI. Do not supply over +4.5V or negative voltage under -0.3 V to "Vcc" terminal. Do not supply over $V_{cc}+0.3$ V or negative voltage under -0.3 V to "NC" terminal. Do not supply any voltages to "OUT" terminal.
- *5 Do not supply any voltages in any way which differs from the above connection figure.
- *6 Please make the NC pin GND connection or OPEN connection.

7. Recommended soldering pattern



Except for this recommended soldering pattern, please contact us for inquiries.

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