

Temperature Compensated Crystal Oscillator (TCXO )

# TG-5035CE 16.368 MHz

- TG-5005CE-21G 16.368MHz upper compatible.
- Reflowable and high density mounting type ultra small size SMD (3.2×2.5×0.9 mm).
- Using the heat-resisting type AT cut quartz crystal  
allows almost the same temperature soldering as universal SMD IC.
- Operating supply voltage : Vcc = 2.85 V

■ Specifications

1. Absolute maximum ratings

Parameter	Symbol	Value	Unit	Note
Supply voltage	V <sub>CC-GND</sub>	-0.3 to 4.5	V	
Storage temperature range	T <sub>STG</sub>	-40 to +85	°C	

2. Operating range

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power voltage	V <sub>CC</sub>	2.65	2.85	3.05	V	V <sub>CC</sub> =2.65 V to 3.05 V
Power voltage	GND	0.0	0.0	0.0	V	
Operating temperature range	T <sub>use</sub>	-30	+25	+85	°C	
Output load	Load_R	9	10	11	kΩ	
	Load_C	9	10	11	pF	
	DC-cut capacitor	C <sub>C</sub>	0.01			μF

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

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### 3. Frequency characteristics

1) Output frequency 16.368 000 MHz

#### 2) Frequency characteristics

(Condition :  $V_{CC}=2.85$  V,  $GND=0.0$  V, Load  $10k\Omega//10pF$ (DC cut),  $T_{use}=+25^{\circ}C$ )

Parameter	Symbol	Value	Unit	Note
Frequency tolerance	F_tol	+/- $0.5 \times 10^{-6}$ Max.	-	$T_{use}=+25^{\circ}C$ +/- $2^{\circ}C$ Before reflow soldering
Reflow soldering tolerance	-	+/- $1.0 \times 10^{-6}$ Max.	-	$T_{use}=+25^{\circ}C$ +/- $2^{\circ}C$ Reflow cycles : 2 times.*1
Frequency / temperature coefficient	Fo-Tc	+/- $0.5 \times 10^{-6}$ Max.	-	$T_{use}=-30^{\circ}C$ to $+85^{\circ}C$ Based on frequency at $+25^{\circ}C$
Frequency slope vs. Temp.	-	+/- $0.1 \times 10^{-6}$ Max.	$^{\circ}C$	- $20^{\circ}C$ to $+70^{\circ}C$
		+/- $0.2 \times 10^{-6}$ Max.	$^{\circ}C$	- $30^{\circ}C$ to $+85^{\circ}C$
Frequency / Load coefficient	Fo-Load	+/- $0.1 \times 10^{-6}$ Max.	-	Load : $10k\Omega//10 pF$ +/- $10\%$ each
Frequency / voltage coefficient	Fo-Vcc	+/- $0.1 \times 10^{-6}$ Max.	-	Vcc: $2.65$ V to $3.05$ V ( $2.85V$ center)
Frequency aging	F_aging	+/- $1.0 \times 10^{-6}$ Max.	-	$T_{use}=+25^{\circ}C$ First year

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

### 4. Electrical characteristics

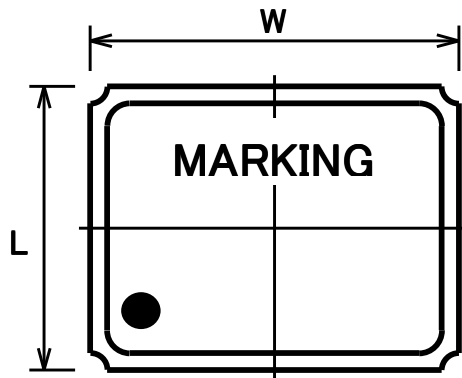
(Condition :  $V_{CC}=2.85$  V,  $GND=0.0$  V, Load  $10k\Omega//10pF$ (DC cut),  $T_{use}=+25^{\circ}C$ )

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Current consumption	Icc			1.5	mA	
Output level	Vpp	0.3		1.2	V	Peak to peak voltage
Start-up time	-			2.0	ms	within $\pm 0.5ppm$ of final frequency
				1.5	ms	to 90% of final amplitude
Drift rate	-			+/- $5 \times 10^{-9}$	/sec	- $10^{\circ}C$ to $+60^{\circ}C$
				+/- $10 \times 10^{-9}$	/sec	- $30^{\circ}C$ to $+85^{\circ}C$
G sensitivity				$3.0 \times 10^{-9}$	/g	Vibration frequency : 500Hz max.
SSB Phase noise	L(f)			-23	dBc/Hz	Offset: 0.1 Hz
				-53		Offset: 1 Hz
				-78		Offset: 10Hz
				-106		Offset: 100Hz
				-128		Offset: 1 kHz
				-148		Offset: 10 kHz

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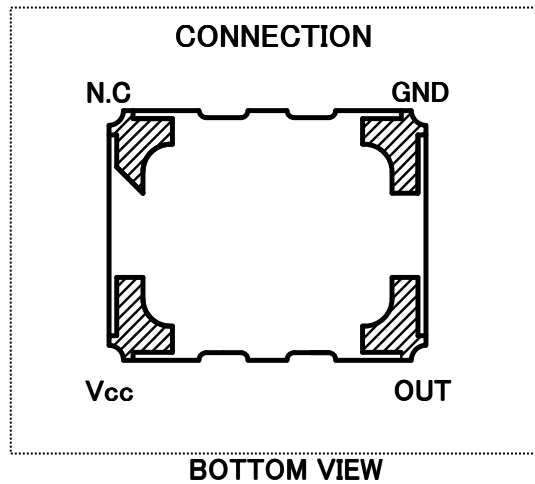
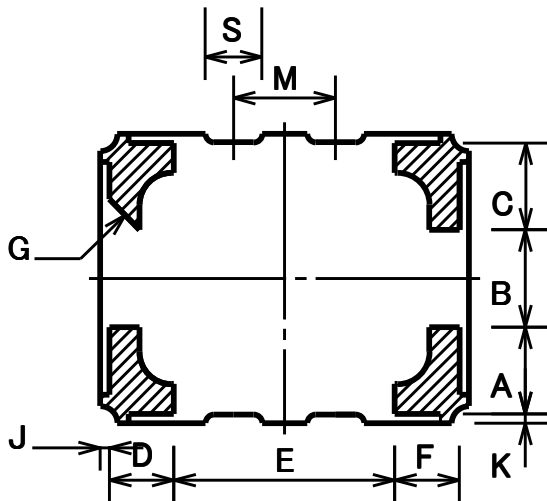
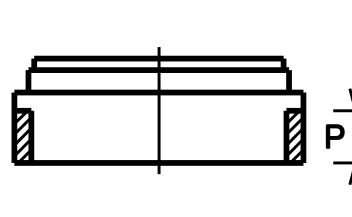
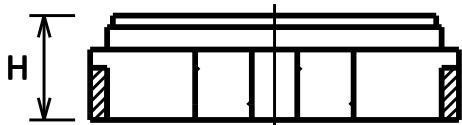
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5. OUTLINE DRAWING



Marking  
TBD

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



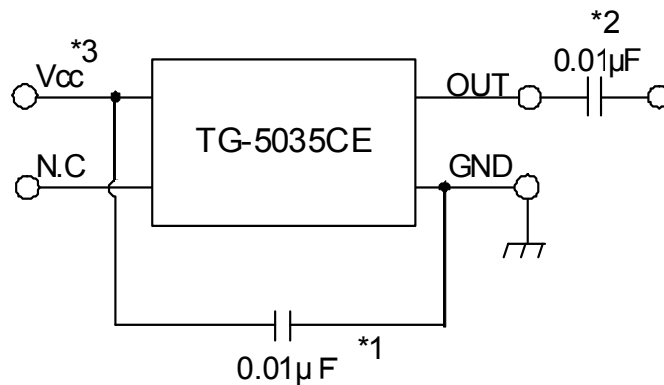
(unit : mm)

DIM.	MIN.	TYP.	MAX.	DIM.	MIN.	TYP.	MAX.
W	3.00	3.20	3.40	F	—	0.57	—
L	2.30	2.50	2.70	G	—	C 0.27	—
H	0.80	0.90	1.00	J	—	0.08	—
A	—	0.765	—	K	—	0.08	—
B	0.76	0.86	0.96	M	0.80	0.90	1.00
C	—	0.765	—	P	0.41	0.46	0.51
D	—	0.57	—	S	0.40	0.50	0.60
E	1.85	1.95	2.05				

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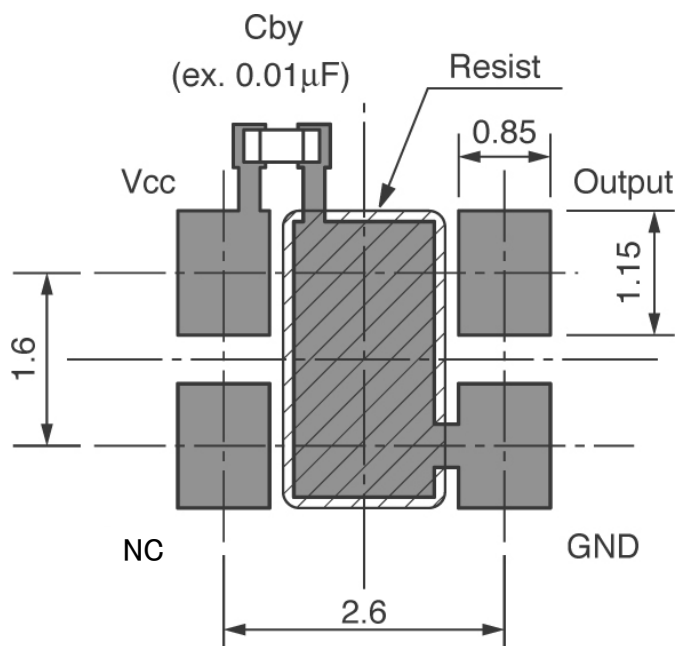
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## 6. CONNECTION



- \*1 Please connect capacitor(recommendation:0.01µF) between "Vcc" and "GND" terminal.
- \*2 Please connect capacitor(recommendation:0.01µF) between "OUT" terminal and load.
- \*3 This product has one chip LSI. Do not supply over +4.5V or negative voltage under -0.3V to "Vcc" terminal. Do not supply over Vcc+0.3V or negative voltage under -0.3V to "Vc" terminal. Do not open "Vc" terminal. Do not supply any voltages to "OUT" terminal.
- \*4 Do not supply any voltages in any way which differs from the above connection figure.

## 7. Recommended soldering pattern



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

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