SEIKO EPSON CORPORATION

# Programmable Clock OSC SG-8101CG

Product name SG-8101CG 2.048000 MHz TCHPA
Product Number / Ordering code X1G0051810047xx
Please refer to the 8.Packing information about xx (last 2 digits)

Output waveform CMOS
Pb free / Complies with EU RoHS directive
Reference weight Typ. 13 mg

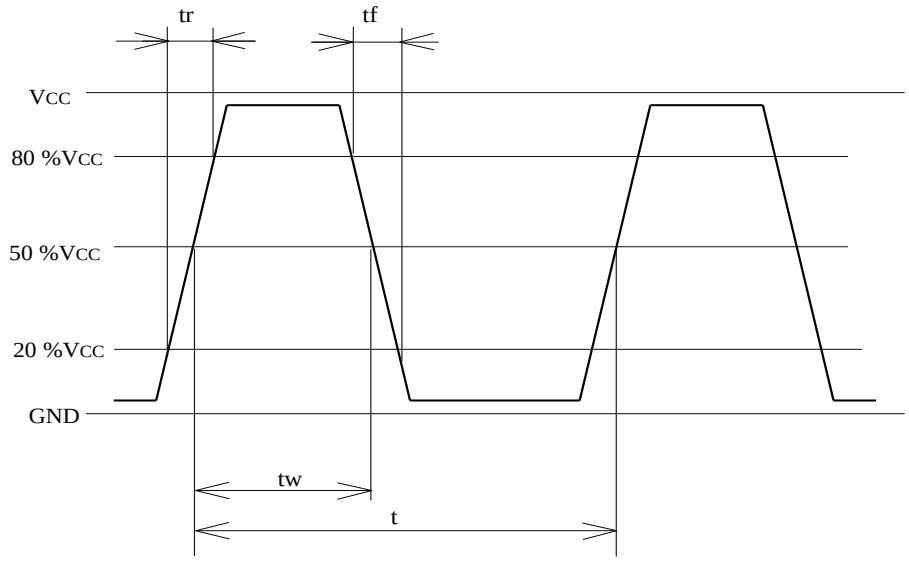
**1.Absolute maximum ratings**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|---|---|---|---|---|---|---|
| Maximum supply voltage | Vcc-GND | -0.3 | - | +4.0 | V | - |
| Storage temperature | T_stg | -40 | - | +125 | ºC | Stored as bare product after unpacking |
| Input voltage | Vin | GND-0.5 | - | Vcc+0.3 | V | ST or OE terminal |

**2.Specifications(characteristics)**

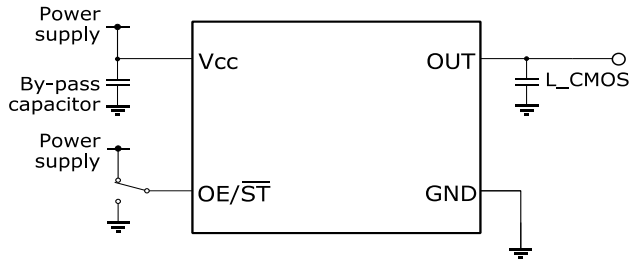
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|---|---|---|---|---|---|---|
| Output frequency | f0 | | 2.048000 | | MHz | |
| Supply voltage | Vcc | 1.62 | - | 3.63 | V | Typ. 1.8V / 2.5V / 3.3V |
| Operating temperature | T_use | -40 | - | +105 | ºC | - |
| Frequency tolerance | f_tol | -20 | - | +20 | $x10^{-6}$ | T_use : -40 to +105℃ |
| Current consumption | Icc | - | - | 3.5 | mA | Vcc=3.3V Typ., No load |
| Stand-by current | I_std | - | - | - | µA | - |
| Disable current | I_dis | - | - | 3.5 | mA | Vcc=3.3V Typ., OE=GND |
| Symmetry | SYM | 45 | - | 55 | % | 50%Vcc, L_CMOS=<15pF |
| Output voltage | $V_{OH}$ | 90%Vcc | - | - | V | - |
| | $V_{OL}$ | - | - | 10%Vcc | V | - |
| Output load condition | L_CMOS | - | - | 15 | pF | CMOS Load |
| Input voltage | $V_{IH}$ | 70%Vcc | - | - | V | OE Terminal |
| | $V_{IL}$ | - | - | 30%Vcc | V | OE Terminal |
| Rise time | $t_r$ | - | - | 6 | ns | 20% to 80%Vcc,L_CMOS=15pF |
| Fall time | tf | - | - | 6 | ns | 20% to 80%Vcc,L_CMOS=15pF |
| Disable time | t_stp | - | - | 1 | µs | Measured from the time OE or ST pin crosses 30%Vcc |
| Enable time | t_sta | - | - | 1 | µs | Measured from the time OE pin crosses 70%Vcc |
| Resum time | t_res | - | - | - | ms | - |
| Start-up time | t_str | - | - | 3 | ms | Measured from the time Vcc reaches its rated minimum value, 1.62V |
| Frequency aging | f_age | - | - | - | $x10^{-6}$/Year | Included in Frequency tolerance First year |

## 3.Timing chart

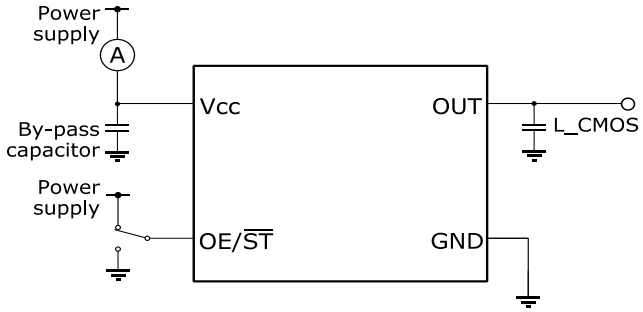



## 4.Test circuit

1) Waveform observation




2) Current consumption

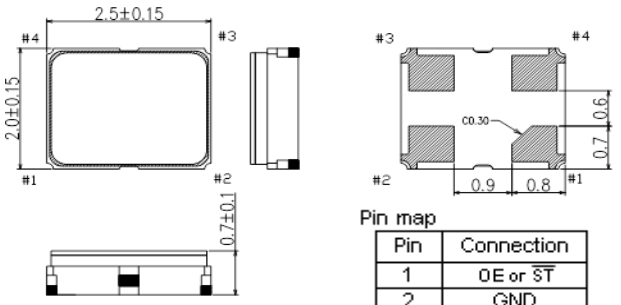



* Current consumption under the disable function should be OE = GND
Current consumption under the standby function should be ST = GND.

3) Measurement conditions

(1) L_CMOS includes probe capacitance.
(2) Mount a by-pass capacitor (approx. 0.01 to 0.1 µF) near the mains terminals of the oscillator (between Vcc and GND)

## 5.External dimensions (Unit: mm)

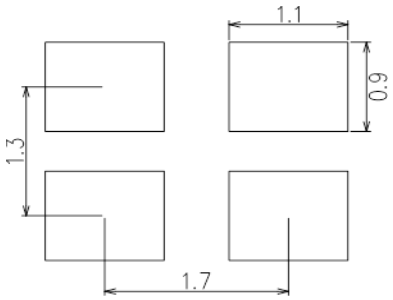



Pin map

| Pin | Connection |
|---|---|
| 1 | OE or $\overline{ST}$ |
| 2 | GND |
| 3 | OUT |
| 4 | Vcc |

OE Pin = "H" : Specified frequency output.
OE Pin = "L" : Output is low level (weak pull - down)
ST Pin = "H" : Specified frequency output.
ST Pin = "L" : Output is low level (weak pull - down), oscillation stops.

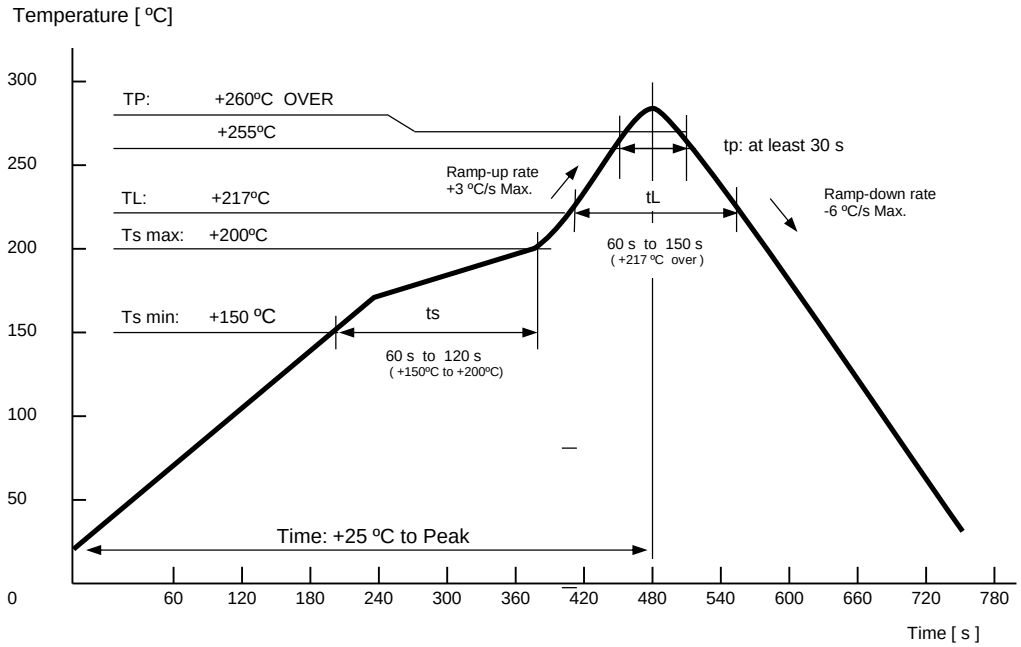
## 6.Footprint(Recommended) (Unit: mm)




In order to achieve optimum jitter performance, the 0.1 µF capacitor between VCC and GND should be placed. It is also recommended that the capacitors are placed on the device side of the PCB, as close to the device as possible and connected together with short wiring pattern.

## 7.Reflow profile

Reflow condition (Follow of JEDEC STD-020D.1)




## 8.Packing information

[ 1 ]Product number last 2 digits code(xx) description The recommended code is "00"

X1G0051810047xx

| Code | Condition | Code | Condition |
|---|---|---|---|
| 01 | Any Q'ty vinyl bag(Tape cut) | 14 | 1000pcs / Reel |
| 11 | Any Q'ty / Reel | 15 | 2000pcs / Reel |
| 12 | 250pcs / Reel | 00 | 3000pcs / Reel |

[ 2 ] Taping specification

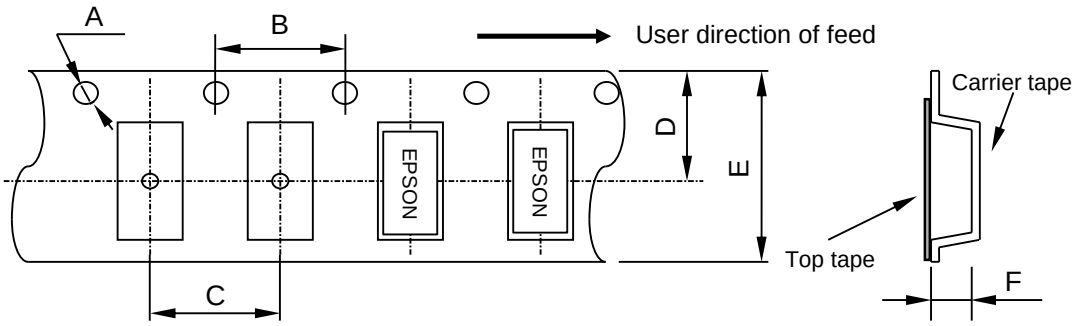
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET

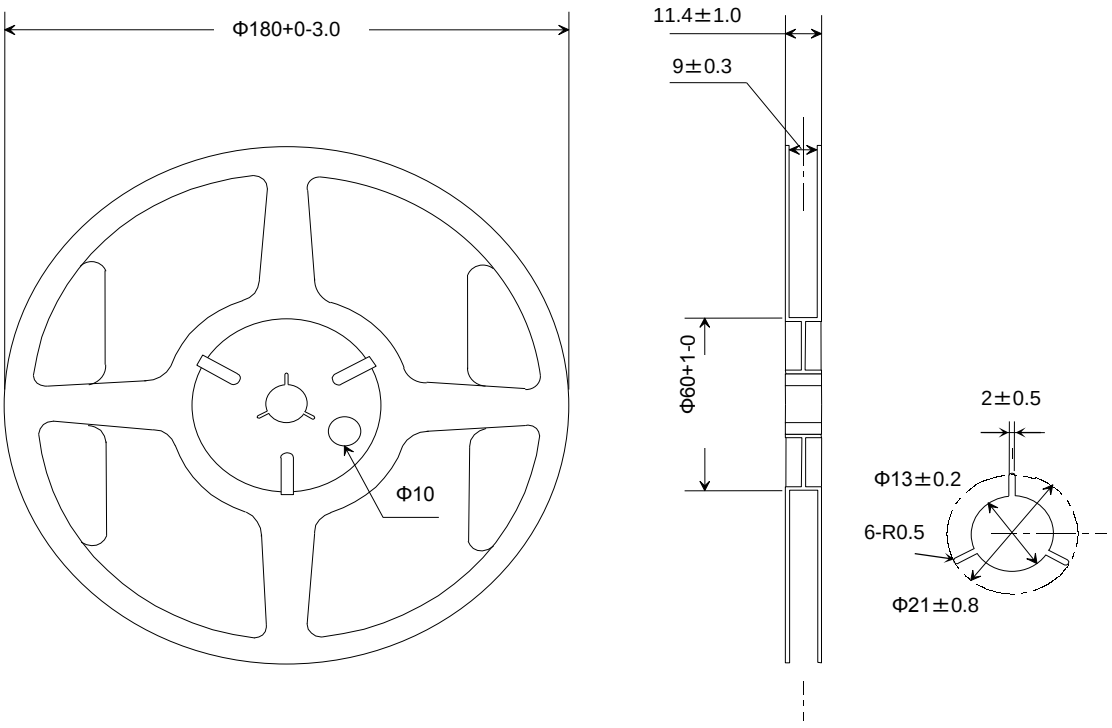
Unit: mm




| Symbol | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| Value | Φ1.5 | 4.0 | 4.0 | 5.25 | 8.0 | 1.15 |

(2) Reel dimensions

Material of the Reel : PS




Form and Size of reel window shows are one of the example

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