

Clock OSC

SG5032CBN

SEIKO EPSON CORPORATION

Product name SG5032CBN 133.33000MHz TJGA

Product Number / Ordering code X1G0044610004xx

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. 52 mg

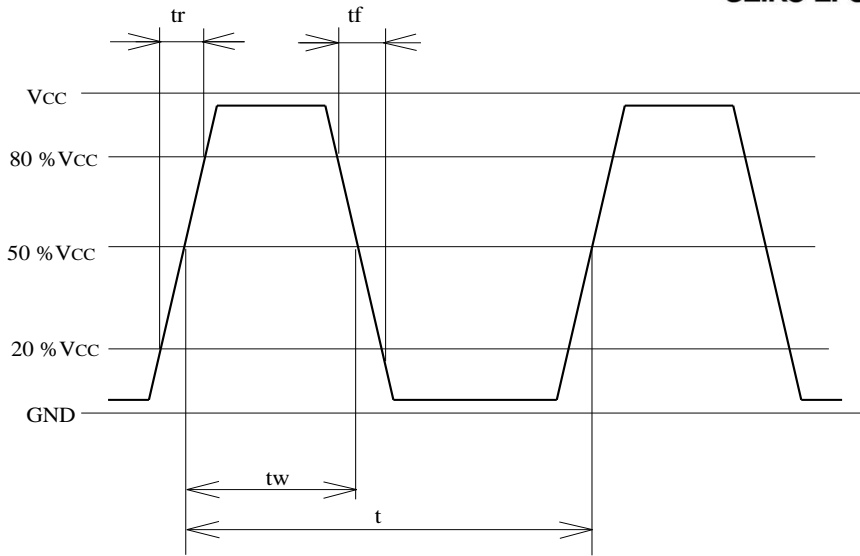
1.Absolute maximum ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|------------------------|----------------------|------|------|----------------------|------|---------------------------|
| Maximum supply voltage | V _{cc} -GND | -0.3 | - | 5 | V | - |
| Storage temperature | T _{stg} | -40 | - | +125 | °C | Storage as single product |
| Input voltage | V _{in} | -0.3 | - | V _{cc} +0.3 | V | ST terminal |

2.Specifications(characteristics)

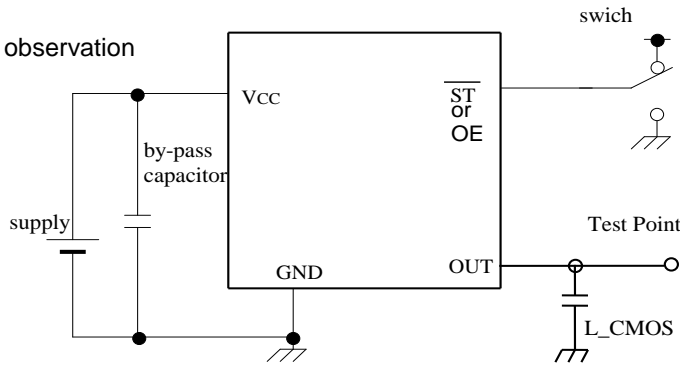
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Conditions / Remarks |
|-----------------------|-------------------|----------------------|----------|--------------------|-------------------|--|
| Output frequency | f ₀ | | 133.3300 | | MHz | |
| Supply voltage | V _{cc} | 1.6 | - | 3.6 | V | - |
| Operating temperature | T _{use} | -40 | - | +85 | °C | - |
| Frequency tolerance | f _{tol} | -50 | - | 50 | x10 ⁻⁶ | T _{use} |
| Current consumption | I _{cc} | - | - | 11 | mA | No load condition |
| Stand-by current | I _{std} | - | - | 10.0 | μA | ST = GND |
| Disable current | I _{dis} | - | - | - | mA | - |
| Symmetry | SYM | 45 | - | 55 | % | 50% V _{cc} Level L _{CMOS} =<15pF |
| Output voltage | V _{OH} | V _{cc} -0.4 | - | - | | - |
| | V _{OL} | - | - | 0.4 | | - |
| Output load condition | L _{CMOS} | - | - | 15 | pF | CMOS Load |
| Input voltage | V _{IH} | 0.8V _{cc} | - | - | | ST terminal |
| | V _{IL} | - | - | 0.2V _{cc} | | ST terminal |
| Rise time | t _r | - | - | 3 | ns | V _{cc} 1.6V : 0.2V _{cc} to 0.8V _{cc} Level, L _{CMOS} =15pF |
| Fall time | t _f | - | - | 3 | ns | V _{cc} 1.6V : 0.2V _{cc} to 0.8V _{cc} Level, L _{CMOS} =15pF |
| Start-up time | t _{str} | - | - | 5 | ms | t = 0 at 0.9V _{cc} |
| Jitter | t _{DJ} | - | 0 | - | ps | Deterministic Jitter V _{cc} =3.3V |
| | t _{RJ} | - | 2.1 | - | ps | Random Jitter V _{cc} =3.3V |
| | t _{RMS} | - | 2.1 | - | ps | σ(RMS of total distribution) V _{cc} =3.3V |
| | t _{p-p} | - | 17.8 | - | ps | Peak to Peak V _{cc} =3.3V |
| | t _{acc} | - | - | - | ps | - |
| Phase jitter | t _{PJ} | - | 0.3 | - | ps | Off set Frequency: 12kHz to 20MHz V _{cc} =3.3V |
| Phase noise | L(f) | - | - | - | dBc/Hz | - |
| | | - | -57 | - | dBc/Hz | Off set 10Hz V _{cc} =3.3V |
| | | - | -86 | - | dBc/Hz | Off set 100Hz V _{cc} =3.3V |
| | | - | -115 | - | dBc/Hz | Off set 1kHz V _{cc} =3.3V |
| | | - | -128 | - | dBc/Hz | Off set 10kHz V _{cc} =3.3V |
| | | - | -137 | - | dBc/Hz | Off set 100kHz V _{cc} =3.3V |
| Frequency aging | f _{age} | -5 | - | 5 | x10 ⁻⁶ | @+25°C first year |
| | | - | - | - | | - |

3. Timing chart

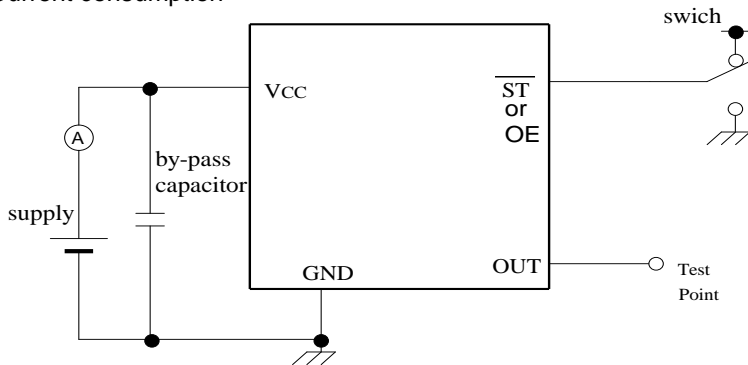


4. Test circuit

1) Waveform observation



2) Current consumption



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

3) Condition

(1) Oscilloscope

- Band width should be minimum 5 times higher (wider) than measurement frequency.
- Probe earth should be placed closely from test point and lead length should be as short as possible

* Recommendable to use miniature socket. (Don't use earth lead.)

(2) L_CMOS also includes probe capacitance.

(3) By-pass capacitor (0.01 μ F to 0.1 μ F) is placed closely between VCC and GND.

(4) Use the current meter whose internal impedance value is small.

(5) Power supply

- Start up time (0 %VCC to 90 %VCC) of power source should be more than 150 μ s.
- Impedance of power supply should be as lowest as possible.

5.External dimensions (Unit: mm)

Pin map

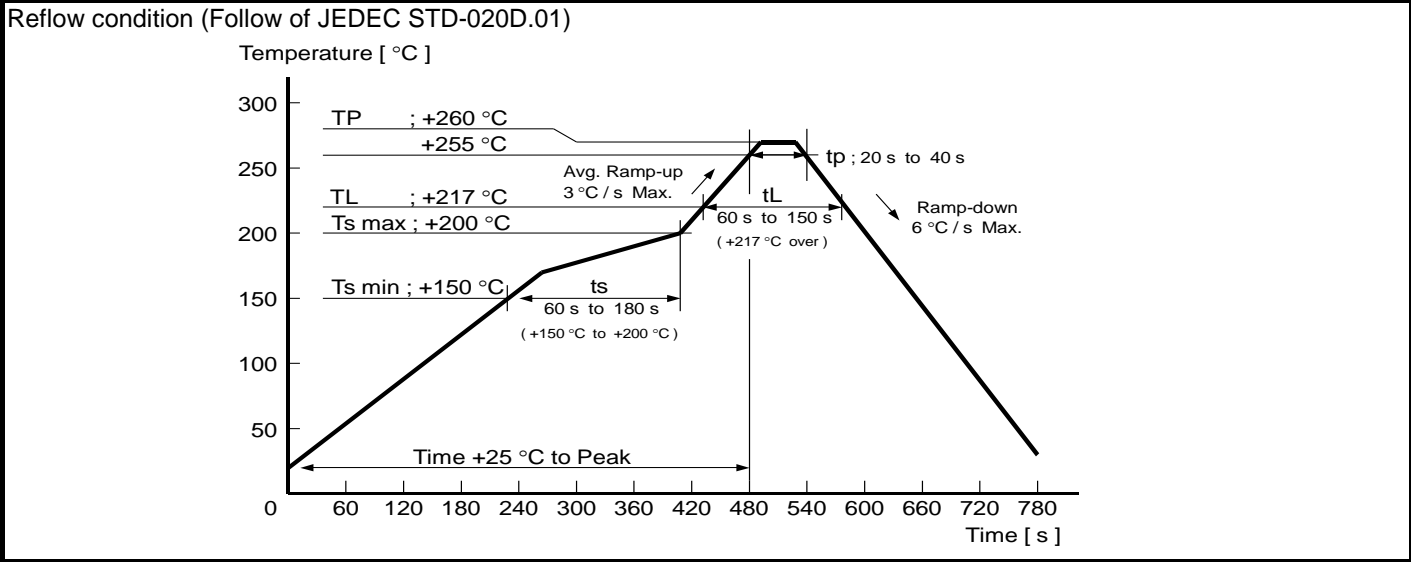
| Pin | Connection |
|-----|------------|
| 1 | OE or ST |
| 2 | GND |
| 3 | OUT |
| 4 | Vcc |

Note.
 OE pin = "H" or "open" : Specified frequency output.
 OE pin = "L" : Output is high impedance.
 ST pin = "H" or "open" : Specified frequency output.
 ST pin = "L" : Output is high impedance, oscillation stops.

6.Footprint(Recommended) (Unit: mm)

To maintain stable operation, provide a 0.01µF to 0.1µF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between Vcc - GND).

7.Reflow profile



8.Packing information

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

X1G0044610004xx

| Code | Condition | Code | Condition |
|------|------------------------------|------|----------------|
| 01 | Any Q'ty vinyl bag(Tape cut) | 13 | 500pcs / Reel |
| 11 | Any Q'ty / Reel | 00 | 1000pcs / Reel |
| 12 | 250pcs / Reel | | |

[2] Taping specification

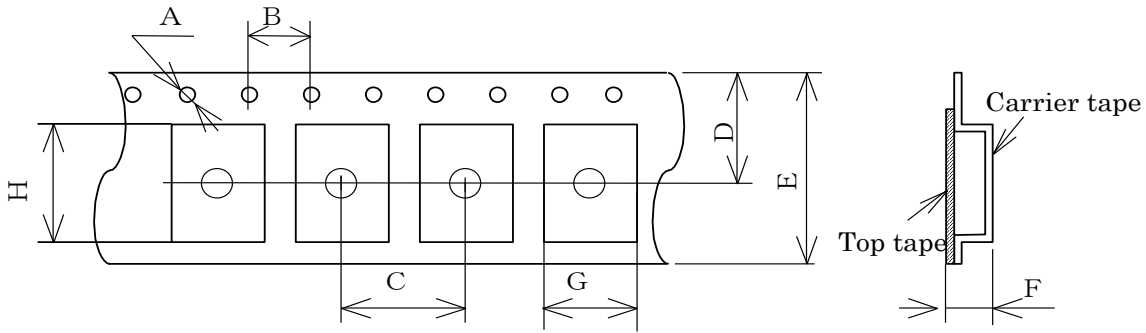
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm

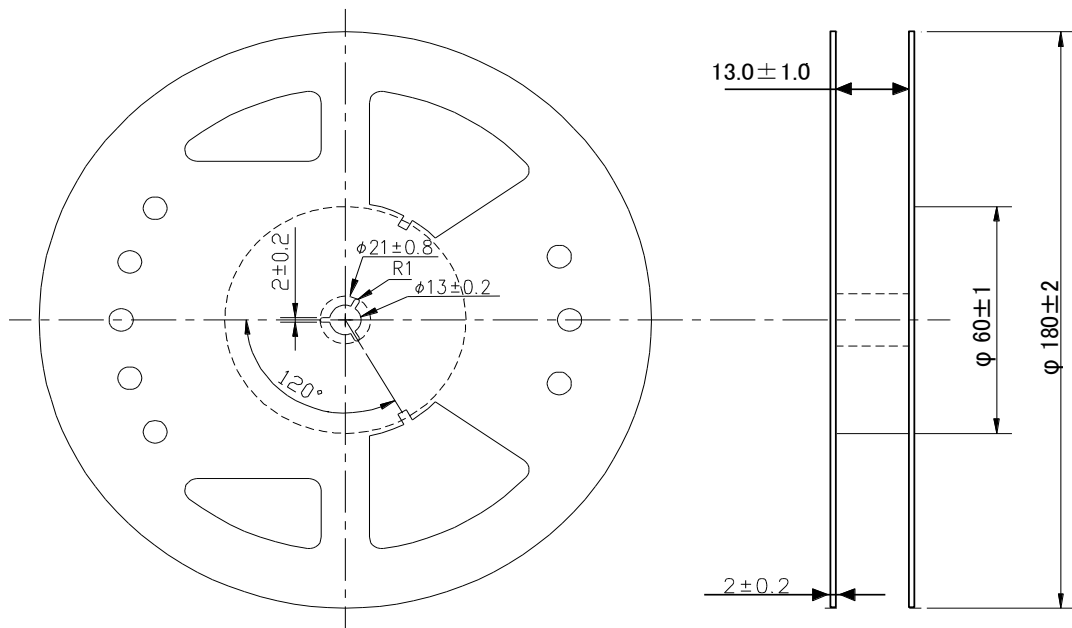


| Symbol | A | B | C | D | E | F | G | H |
|--------|-------------------------|---------------|---------------|----------------|----------------|----------------|---------------|---------------|
| Value | $\phi 1.5$ $+0.1/-0$ | 4.0 ± 0.1 | 8.0 ± 0.1 | 7.25 ± 0.2 | 12.0 ± 0.2 | 1.40 ± 0.1 | 3.5 ± 0.1 | 5.4 ± 0.1 |

(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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