

## Clock OSC

## SG5032CCN

SEIKO EPSON CORPORATION

Product name SG5032CCN 15.200000 MHz HJGA

Product Number / Ordering code X1G0044710064xx

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

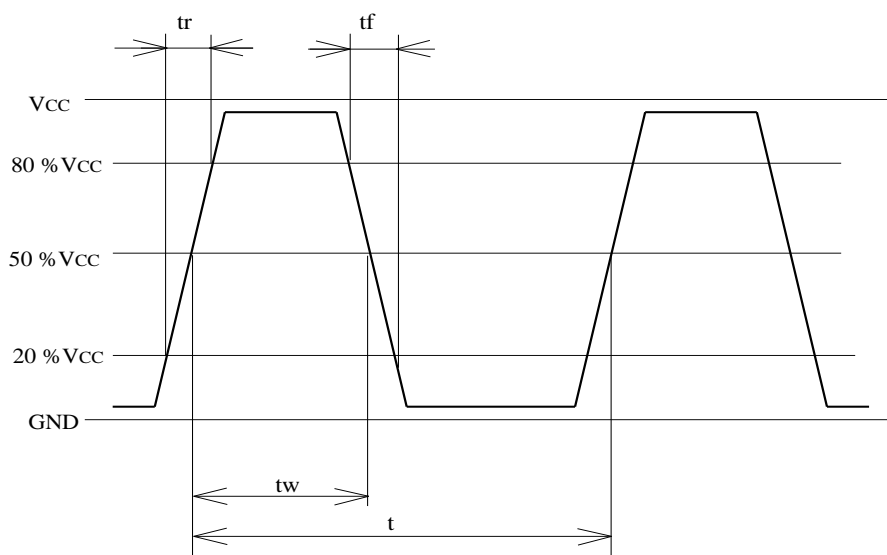
**1.Absolute maximum ratings**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	V <sub>cc-GND</sub>	-0.3	-	+7	V	-
Storage temperature	T <sub>stg</sub>	-40	-	+125	°C	Storage as single product
Input voltage	V <sub>in</sub>	-0.5	-	V <sub>cc</sub> +0.5	V	OE terminal

**2.Specifications(characteristics)**

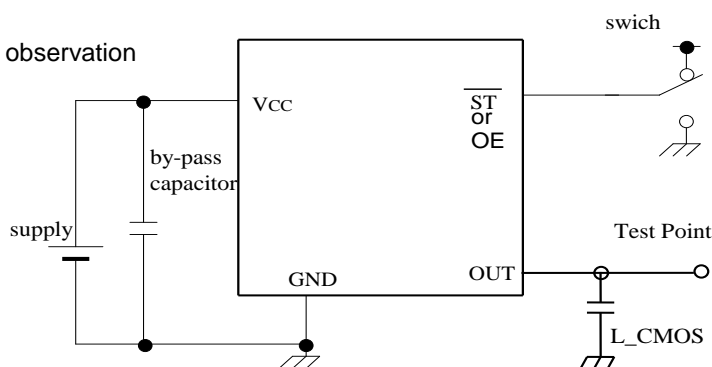
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f <sub>0</sub>		15.200000		MHz	
Supply voltage	V <sub>cc</sub>	4.5	5	5.5	V	-
Operating temperature	T <sub>use</sub>	-40	-	+85	°C	-
Frequency tolerance	f <sub>tol</sub>	-50	-	50	x10 <sup>-6</sup>	T <sub>use</sub>
Current consumption	I <sub>cc</sub>	-	-	20	mA	No load condition
Stand-by current	I <sub>std</sub>	-	-	-	μA	-
Disable current	I <sub>dis</sub>	-	-	10.0	mA	OE = GND
Symmetry	SYM	40	-	60	%	50% V <sub>cc</sub> Level L <sub>CMOS</sub> ≤50pF
Output voltage	V <sub>OH</sub>	V <sub>cc</sub> -0.4	-	-		-
	V <sub>OL</sub>	-	-	0.4		-
Output load condition	L <sub>CMOS</sub>	-	-	50	pF	CMOS Load
Input voltage	V <sub>IH</sub>	0.8V <sub>cc</sub>	-	-		OE terminal
	V <sub>IL</sub>	-	-	0.2V <sub>cc</sub>		OE terminal
Rise time	t <sub>r</sub>	-	-	5	ns	0.2V <sub>cc</sub> to 0.8V <sub>cc</sub> Level, L <sub>CMOS</sub> =50pF
Fall time	t <sub>f</sub>	-	-	5	ns	0.2V <sub>cc</sub> to 0.8V <sub>cc</sub> Level, L <sub>CMOS</sub> =50pF
Start-up time	t <sub>str</sub>	-	-	5	ms	t = 0 at 0.9V <sub>cc</sub>
Jitter	t <sub>DJ</sub>	-	-	-	ps	Deterministic Jitter
	t <sub>RJ</sub>	-	-	-	ps	Random Jitter
	t <sub>RMS</sub>	-	-	-	ps	σ(RMS of total distribution)
	t <sub>p-p</sub>	-	-	-	ps	Peak to Peak
	t <sub>acc</sub>	-	-	-	ps	Accumulated Jitter(σ), n = 2 to 50 000 cycles
Phase jitter	t <sub>pJ</sub>	-	-	-	ps	Offset Frequency: 12 kHz to 20 MHz
Phase noise	L(f)	-	-	-	dBc/Hz	Offset 1 Hz
		-	-	-	dBc/Hz	Offset 10 Hz
		-	-	-	dBc/Hz	Offset 100 Hz
		-	-	-	dBc/Hz	Offset 1 kHz
		-	-	-	dBc/Hz	Offset 10 kHz, V <sub>cc</sub> = 3.3 V
		-	-	-	dBc/Hz	Offset 100 kHz
		-	-	-	dBc/Hz	Offset 1 MHz
Frequency aging	f <sub>age</sub>	-5	-	5	x10 <sup>-6</sup>	@+25°C first year
		-	-	-		-

### 3. Timing chart

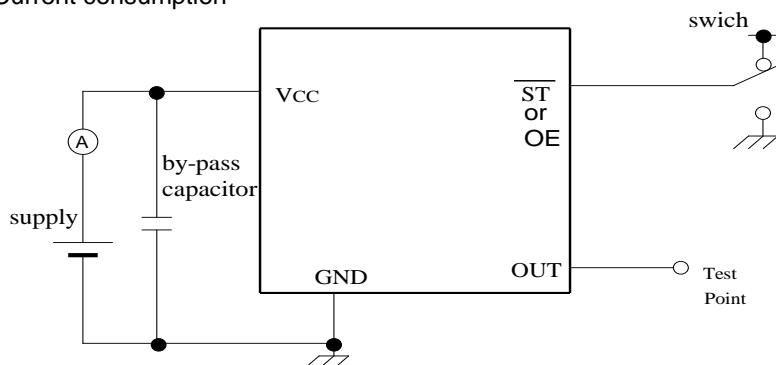


### 4. Test circuit

#### 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.)

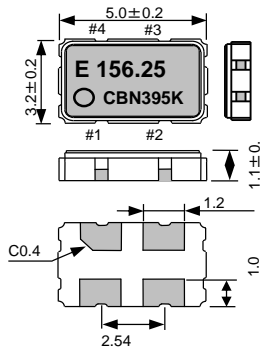
##### (2) L\_CMOS also includes probe capacitance.

(3) By-pass capacitor (0.01  $\mu$ F to 0.1  $\mu$ 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  $\mu$ s.
- Impedance of power supply should be as lowest as possible.

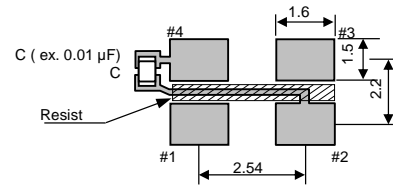
**5.External dimensions (Unit: mm)**

Pin map

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

\*OE function is only available SOxxxxC M

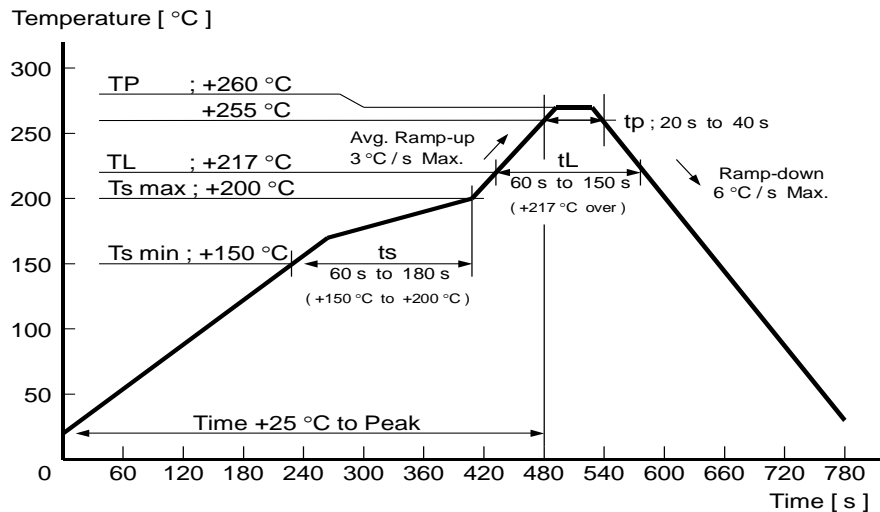
Note.  
 OE pin = "H" or "open" : Specified frequency output.  
 OE pin = "L" : Output is high impedance.  
 ST pin = "H" or "open" : Specified frequency output.  
 ST pin = "L" : Output is high impedance, oscillation stops.

**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**

Reflow condition (Follow of JEDEC STD-020D.01)

**8.Packing information**

[ 1 ] Product number last 2 digits code(xx) description

The recommended code is "00"

X1G0044710064xx

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

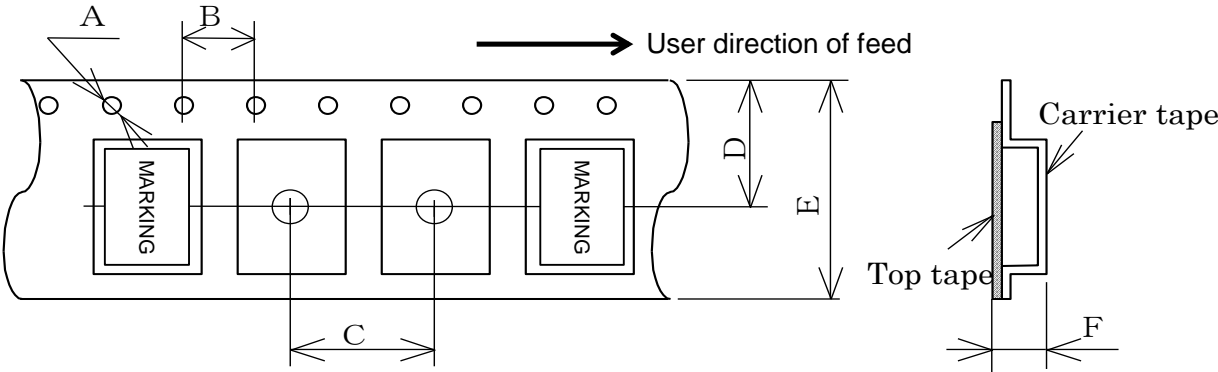
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm

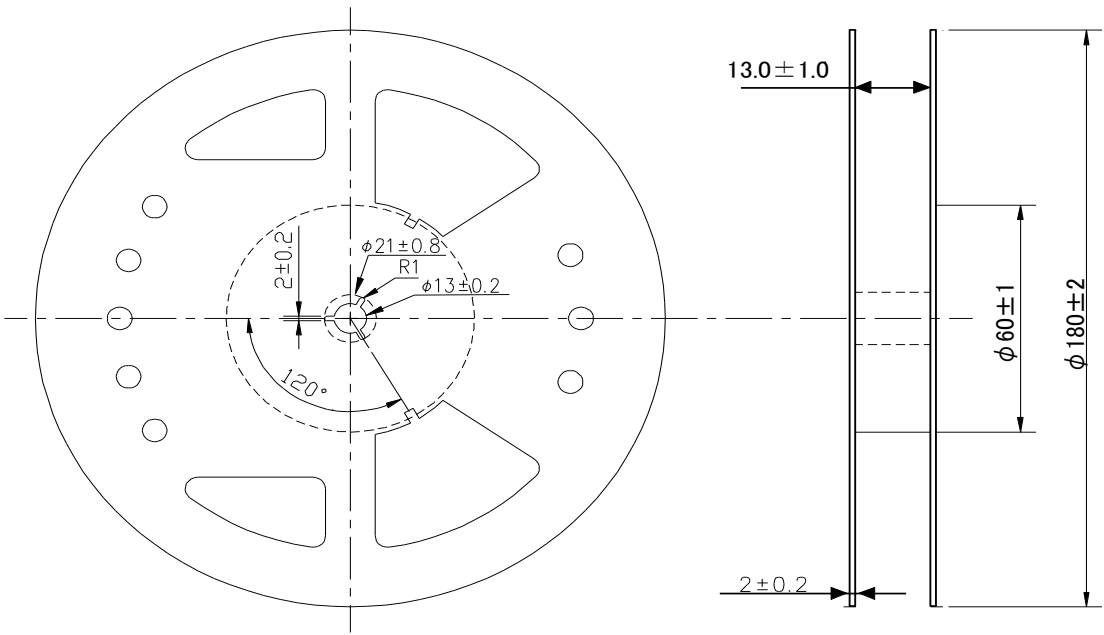


Symbol	A	B	C	D	E	F	G	H
Value	$\phi 1.5$ $+0.1/-0$	$4.0 \pm 0.1$	$8.0 \pm 0.1$	$7.25 \pm 0.2$	$12.0 \pm 0.2$	$1.40 \pm 0.1$	$3.5 \pm 0.1$	$5.4 \pm 0.1$

(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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