

Clock OSC

SG7050CAN

SEIKO EPSON CORPORATION

Product name SG7050CAN 19.440000 MHz TJGA
 Product Number / Ordering code X1G0044810103xx

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. 147 mg

1.Absolute maximum ratings

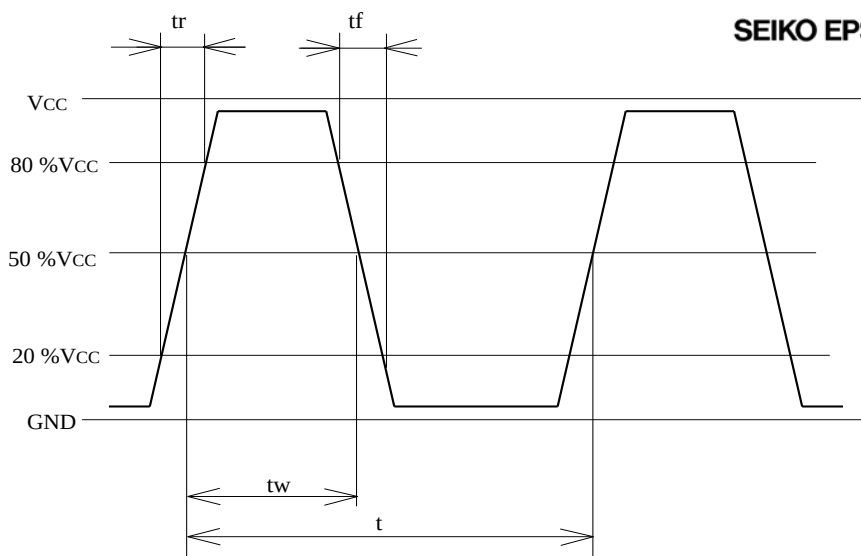
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	V _{CC} -GND	-0.3	-	4	V	-
Storage temperature	T _{stg}	-40	-	+125	°C	Storage as single product
Input voltage	V _{in}	-0.3	-	V _{CC} +0.3	V	ST terminal

2.Specifications(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f ₀		19.4400		MHz	
Supply voltage	V _{CC}	1.6	-	3.63	V	-
Operating temperature	T _{use}	-40	-	+85	°C	-
Frequency tolerance	f _{tol}	-50	-	50	x10 ⁻⁶	T _{use}
Current consumption	I _{CC}	-	-	3	mA	No load condition
Stand-by current	I _{std}	-	-	2.7	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	-	-	4	ns	V _{CC} 1.6V : 0.2V _{CC} to 0.8V _{CC} Level, L _{CMOS} =15pF
Fall time	t _f	-	-	4	ns	V _{CC} 1.6V : 0.2V _{CC} to 0.8V _{CC} Level, L _{CMOS} =15pF
Start-up time	t _{str}	-	-	3	ms	t = 0 at 0.9V _{CC}
Jitter	t _{DJ}	-	0	-	ps	Deterministic Jitter V _{CC} =3.3V
	t _{RJ}	-	2.4	-	ps	Random Jitter V _{CC} =3.3V
	t _{RMS}	-	2.3	-	ps	δ(RMS of total distribution) V _{CC} =3.3V
	t _{p-p}	-	20	-	ps	Peak to Peak V _{CC} =3.3V
	t _{acc}	-	2.5	-	ps	Accumulated Jitter(δ) n=2 to 50000 cycles, V _{CC} =3.3V
Phase jitter	t _{pJ}	-	0.51	-	ps	Off set Frequency: 12kHz to 20MHz, V _{CC} =3.3V
Phase noise	L(f)	-	-	-	dBc/Hz	-
		-	-96	-	dBc/Hz	Off set 10Hz V _{CC} =3.3V
		-	-125	-	dBc/Hz	Off set 100Hz V _{CC} =3.3V
		-	-146	-	dBc/Hz	Off set 1kHz V _{CC} =3.3V
		-	-155	-	dBc/Hz	Off set 10kHz V _{CC} =3.3V
		-	-158	-	dBc/Hz	Off set 100kHz V _{CC} =3.3V
		-	-159	-	dBc/Hz	Off set 1MHz V _{CC} =3.3V
Frequency aging	f _{age}	-3	-	3	x10 ⁻⁶	@+25°C first year
		-	-	-		-

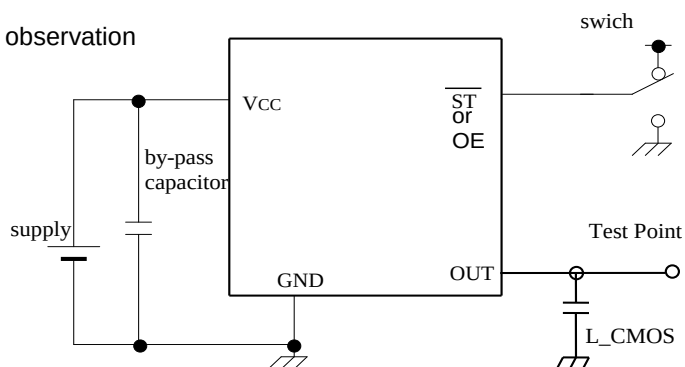
3. Timing chart

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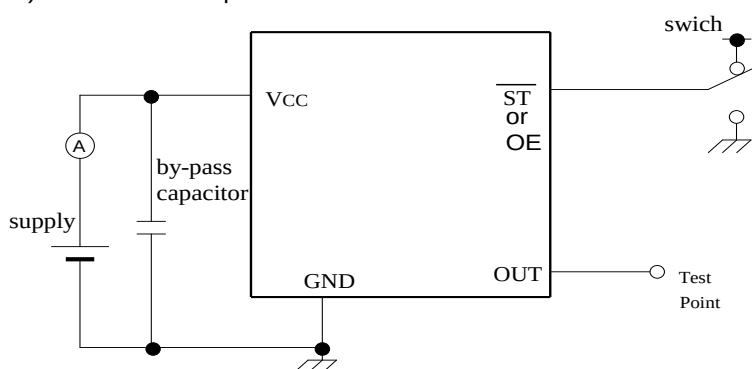


4. Test circuit

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.)

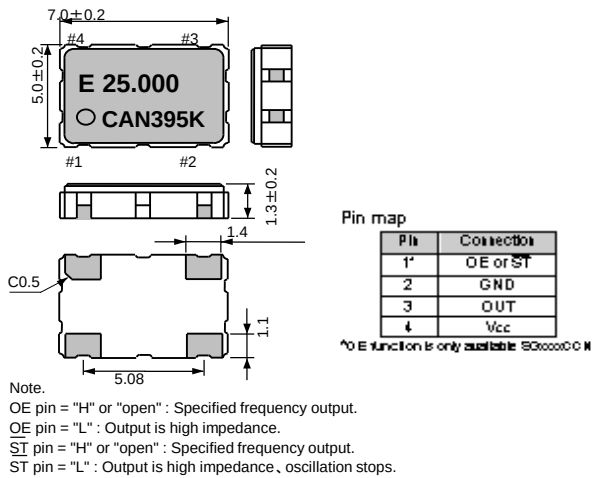
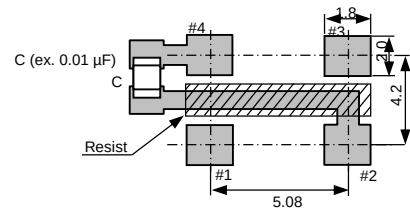
(2) L_CMOS also includes probe capacitance.

(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

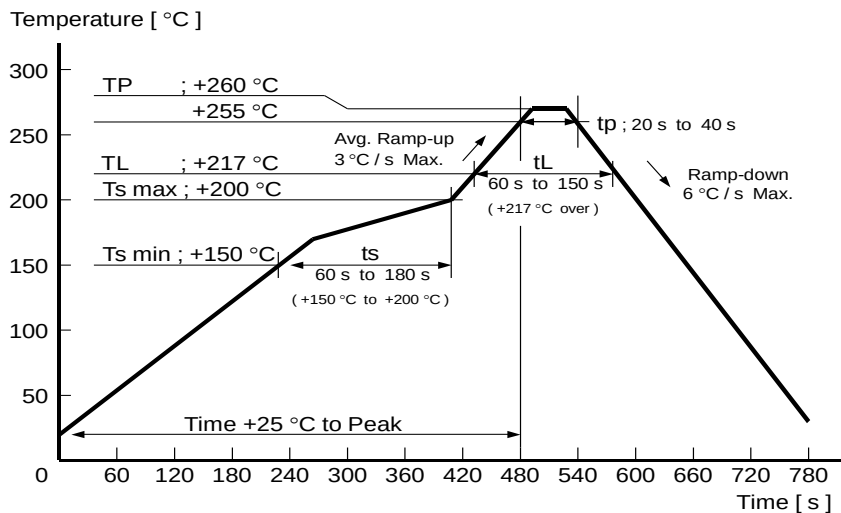
- Start up time (0 %VCC to 90 %VCC) of power source should be more than 150 μ s.
- Impedance of power supply should be as lowest as possible.

5.External dimensions (Unit: mm)**6.Footprint(Recommended) (Unit: mm)**

To maintain stable operation, provide a 0.01 μ F to 0.1 μ F 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"

X1G0044810103xx

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

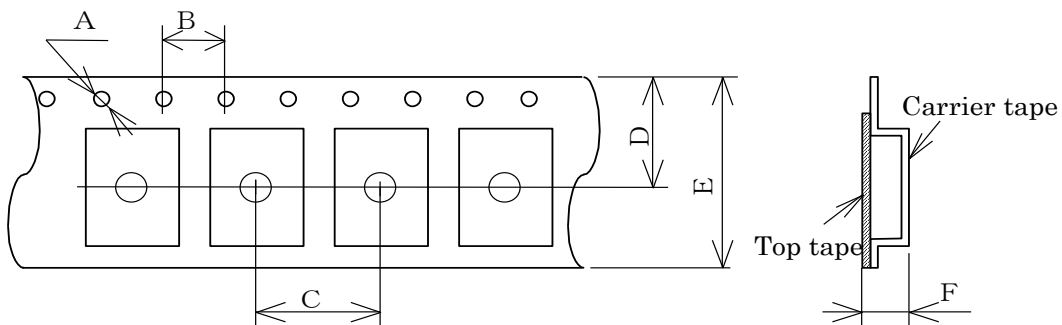
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

Unit: mm

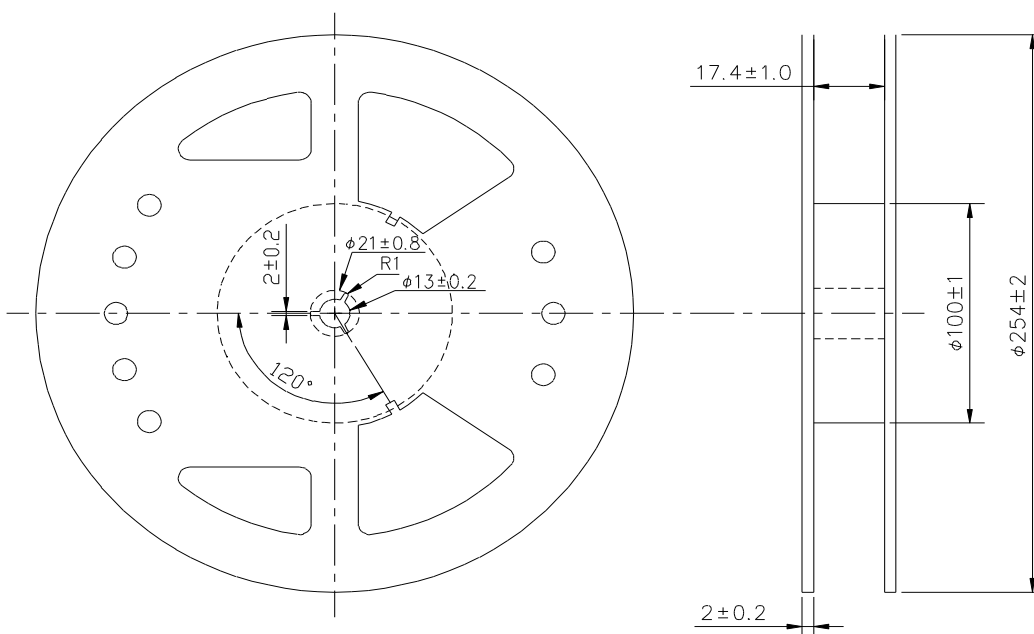


Symbol	A	B	C	D	E	F
Value	$\phi 1.5$	4	8	9.25	16	2.3

(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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