SPXO SG-3030CM

Product name SG-3030CM 32.768000 kHz B
Product Number / Ordering code X1B000211000100
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

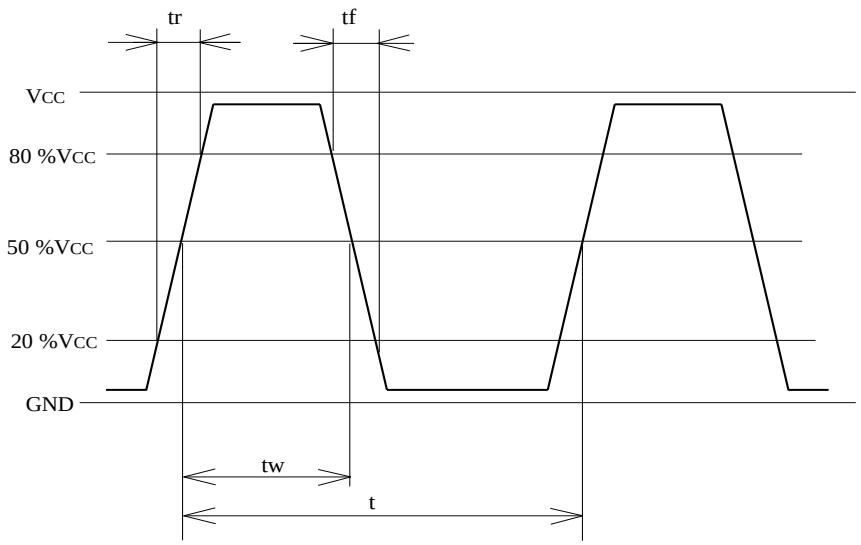
1.Absolute maximum ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	Vcc-GND	-0.3	-	7	V	Vcc Pin
Storage temperature	T_stg	-55	-	125	ºC	Storage as single product

2.Specifications(characteristics)

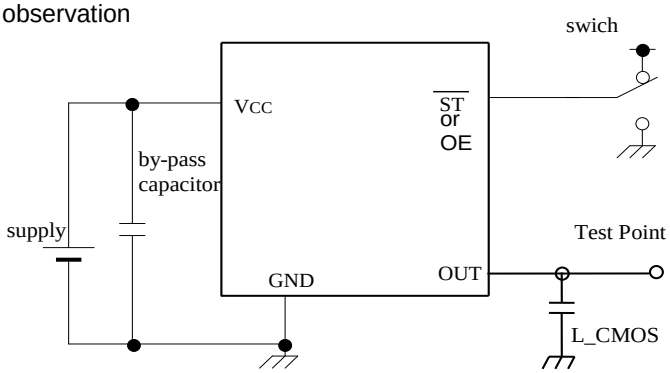
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f0	-	32.7680	-	kHz	
Supply voltage	Vcc	1.5	-	5.5	V	Vcc Pin
Interface power supply voltage	V_{IO}	1.5	-	5.5		VIO Pin
Operating temperature	T_use	-40	-	85	ºC	No condensation
Frequency tolerance	f_tol	-18	-	28	$x10^{-6}$	@+25℃, Vcc=3.3V , 5+/-23x10^-6
Frequency temperature coefficient	f0-Tc	-120	-	10	$x10^{-6}$	-20℃ to 70℃ (+25℃ is reference)
Frequency voltage coefficient	f0-Vcc	-2	-	2	$x10^{-6}$/V	`@+25℃ Vcc=1.5V to 5.5V
Current consumption	Icc	-	-	2	mA	Vcc=3.3V No load condition
Symmetry	SYM	45	50	55	%	1/2Vcc(VIO） Level
Output voltage	V_{OH}	VIO-0.4	-	-		IOH=-400μA
	V_{OL}	-	-	GND+0.4		IOL=400μA
Output load condition	L_CMOS	-	-	15	pF	CMOS Load
Input voltage	V_{IH}	80%Vcc	-	-		-
	V_{IL}	-	-	20%Vcc		-
Rise time	t_r	-	-	200	ns	20%VIO ⇔ 80%VIO 15pF VIO=1.5V to 5.5V
Fall time	tf	-	-	200	ns	20%VIO ⇔ 80%VIO 15pF VIO=1.8V to 5.5V
Start-up time	t_str	-	-	1	s	Vcc=2.0V to 5.0V
Frequency aging	f_age	-5	-	5	$x10^{-6}$	@+25℃ Vcc=3.3V First year

3.Timing chart

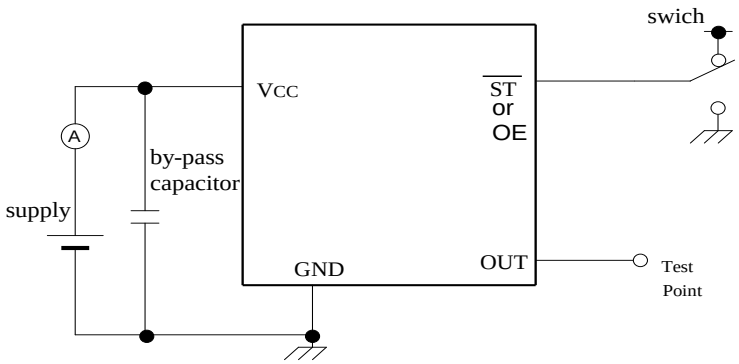


4.Test circuit

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 mF to 0.1 mF) is placed closely between VCC and GND.

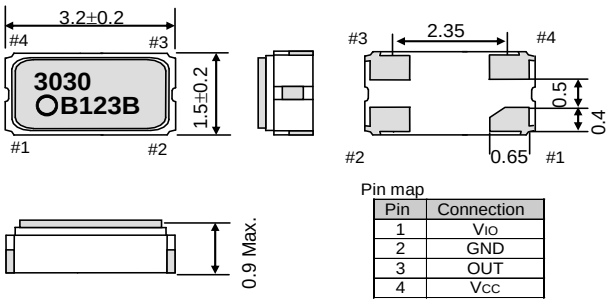
(4) Use the current meter whose internal impedance value is small.

(5) Power supply

· Start up time (0 %VCC ® 90 %VCC) of power source should be more than 150 ms.

· Impedance of power supply should be as lowest as possible.

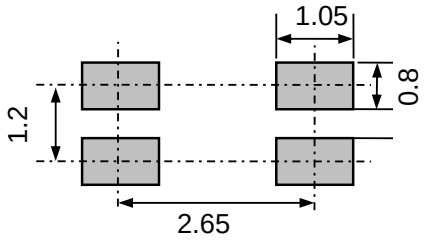
5.External dimensions (Unit: mm)



Pin map

Pin	Connection
1	VIO
2	GND
3	OUT
4	VCC

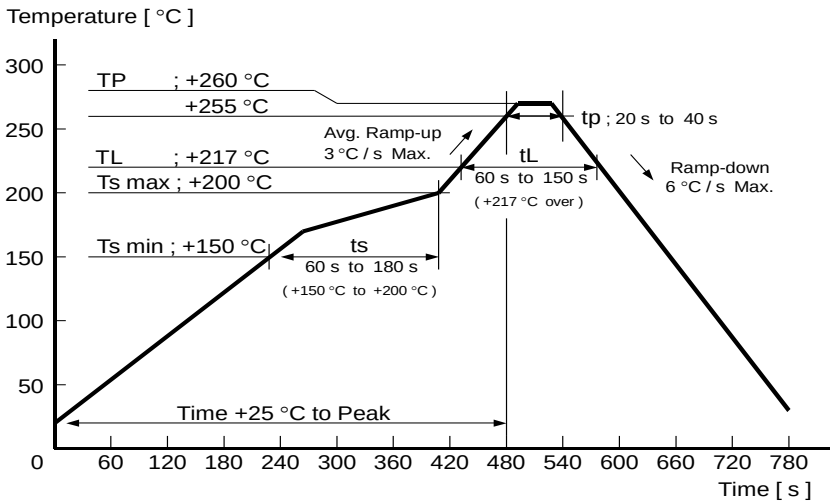
6.Footprint(Recommended) (Unit: mm)



To maintain stable operation, provide a 0.01uF to 0.1uF 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"

X1B0002110001xx

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

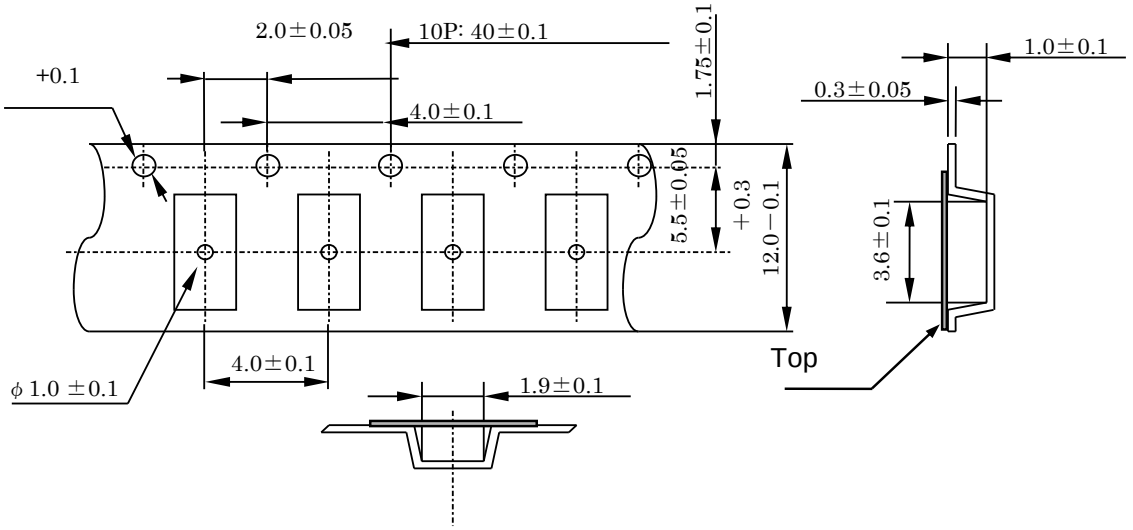
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

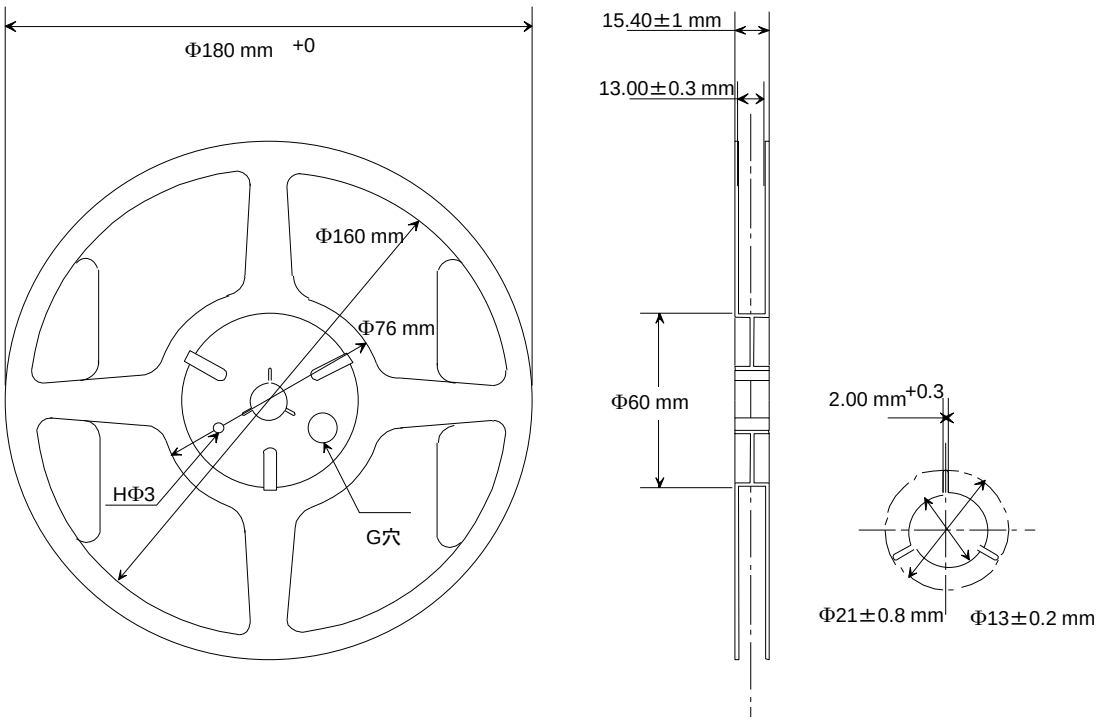
Unit: mm



(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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