Clock OSC SG3225HBN

Product name SG3225HBN 250.000000MHz CJGA
Product Number / Ordering code X1G0051410604xx
Please refer to the 8.Packing information about xx (last 2 digits)

Output waveform HCSL
Pb free / Complies with EU RoHS directive
Reference weight Typ. 26 mg

1.Absolute maximum ratings

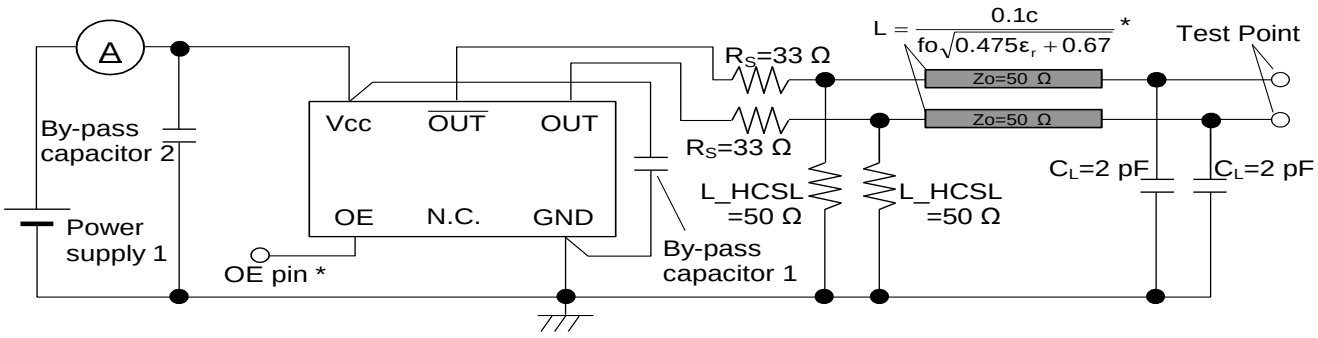
Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Maximum supply voltage	Vcc-GND	-0.5	-	4	V	-
Storage temperature	T_stg	-55	-	125	ºC	Storage as bare product
Input voltage	Vin	-0.3	-	Vcc+0.3	V	OE Terminal

2.Specifications(characteristics)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions / Remarks
Output frequency	f0	-	250.0000	-	MHz	
Supply voltage	Vcc	3.135	3.3	3.465	V	-
Operating temperature	T_use	-40	-	85	ºC	-
Frequency tolerance	f_tol	-50	-	50	$x10^{-6}$	-
Current consumption	Icc	-	25	35	mA	-
Disable current	I_dis	-	-	15.0	mA	OE = GND
Symmetry	SYM	45	50	55	%	at outputs crossing point
Output voltage(HCSL)	VOH	0.57	-	0.77	V	DC level
	VOL	-0.15	-	0.15	V	DC level
Crossing voltage	VCR	0.25	-	0.55	V	-
Output load condition	L_HCSL	-	50	-	Ω	-
	RS	-	33	-	Ω	-
Input voltage	VIH	70% Vcc	-	-		OE Terminal
	VIL	-	-	30% Vcc		
Differential output rise slew rate / fall slew rate	Rr	1	-	4	V/ns	Between -0.15 V and 0.15 V of differential output
	Rf	1	-	4	V/ns	
Start-up time	t_str	-	-	10	ms	Time at minimum supply voltage to be 0 s
Jitter	t_{DJ}	-	1.6	-	ps	Deterministic Jitter
	T_{RJ}	-	1.2	-	ps	Random Jitter
	t_{RMS}	-	1.3	-	ps	σ(RMS of total distribution)
	t_{p-p}	-	11.9	-	ps	Peak to Peak
	t_{acc}	-	1.3	-	ps	Accumulated Jitter(σ) n=2 to 50 000 cycles
Phase jitter	t_{PJ}	-	76.4	110	fs	Offset Frequency: 12 kHz to 20 MHz
Phase noise	L(f)	-	-10.1	-	dBc/Hz	Offset 1 Hz
		-	-43.2	-	dBc/Hz	Offset 10 Hz
		-	-76.5	-	dBc/Hz	Offset 100 Hz
		-	-108.6	-	dBc/Hz	Offset 1 kHz
		-	-141.2	-	dBc/Hz	Offset 10 kHz
		-	-152.0	-	dBc/Hz	Offset 100 kHz
		-	-154.0	-	dBc/Hz	Offset 1 MHz
Frequency aging	f_age	-	-	-	$x10^{-6}$/Year	Included in Frequency tolerance 10 years

3.Test circuit

1) To observe waveform and current



* Each output line is same length.

* To measure the disable current, OE pin is connected to GND.

2) Measurement condition

(1) Oscilloscope

- Bandwidth should be 5 times higher than DUT's output frequency (4 GHz).
- Probe ground should be placed closely from test point and lead length should be as short as possible.

(2) By-pass capacitor 1 (approx. 0.01 µF to 0.1 µF) places closely between Vcc and GND.

(3) By-pass capacitor 2 (approx. 10 µF) places closely between power supply terminals on the board.

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

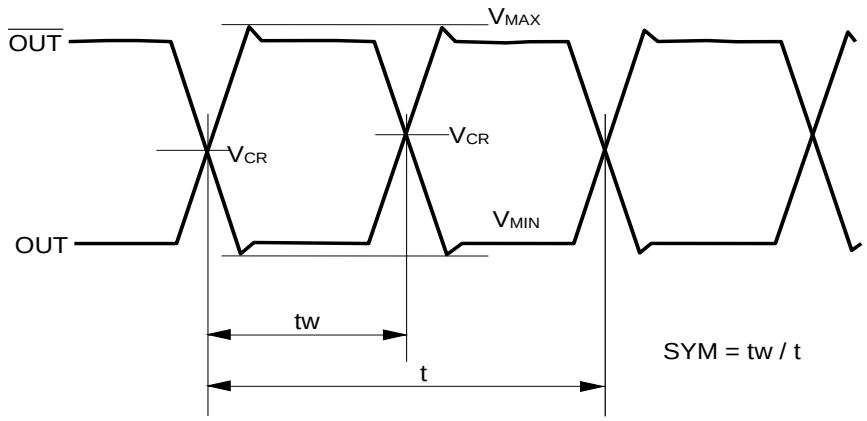
(5) Power supply

- Start up time (0 V→90 %Vcc) of power source should be more than 150 µs
- Impedance of power supply should be as low as possible.

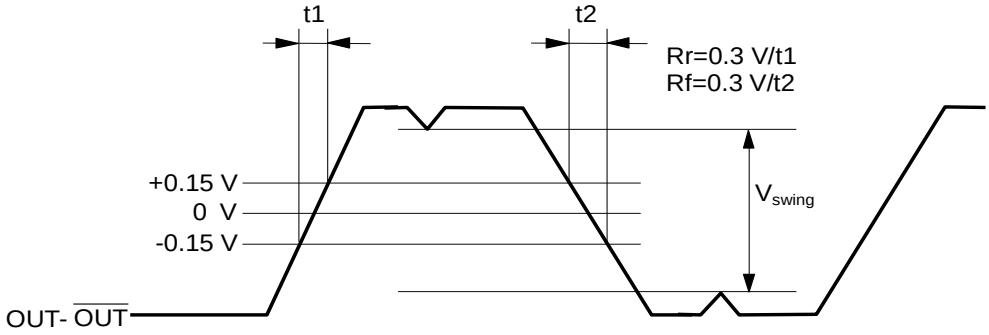
4.Timing chart

1) Output waveform and level

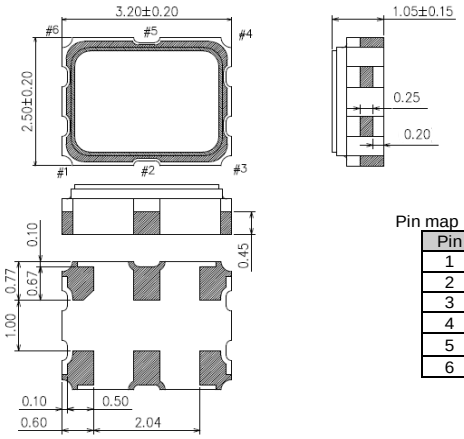
• OUT and $\overline{OUT}$



• OUT-$\overline{OUT}$



5.External dimensions (Unit: mm)

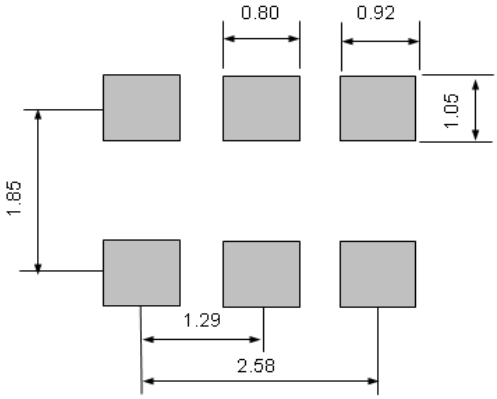


Pin map

Pin	Connection
1	OE
2	N.C.
3	GND
4	OUT
5	$\overline{OUT}$
6	Vcc

Note:
OE pin = HIGH or "Open" : Specified frequency output.
OE pin = LOW : Output is high impedance

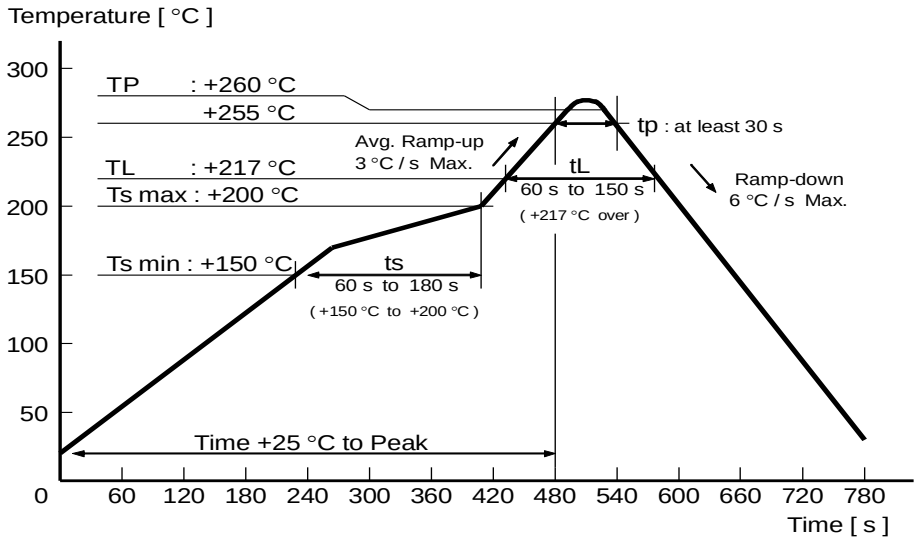
6.Footprint(Recommended) (Unit: mm)



In order to achieve optimum jitter performance, it is recommended that the capacitor (0.1 µF + 10 µF) between Vcc and GND pin should be placed as close to the Vcc pin as possible.

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"

X1G0051410604xx

Code	Condition	Code	Condition
01	Any Q'ty vinyl bag(Tape cut)	13	500pcs / Reel
11	Any Q'ty / Reel	14	1000pcs / Reel
12	250pcs / Reel	00	2000pcs / Reel

[2] Taping specification

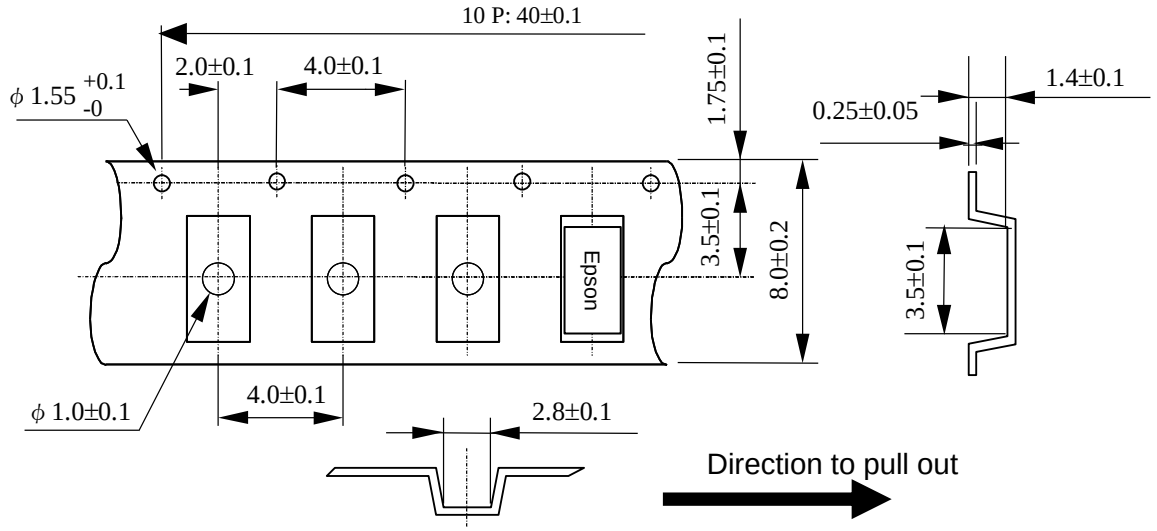
Subject to EIA-481 & IEC-60286

(1) Tape dimensions

Material of the Carrier Tape : PS

Material of the Top Tape : PET+PE

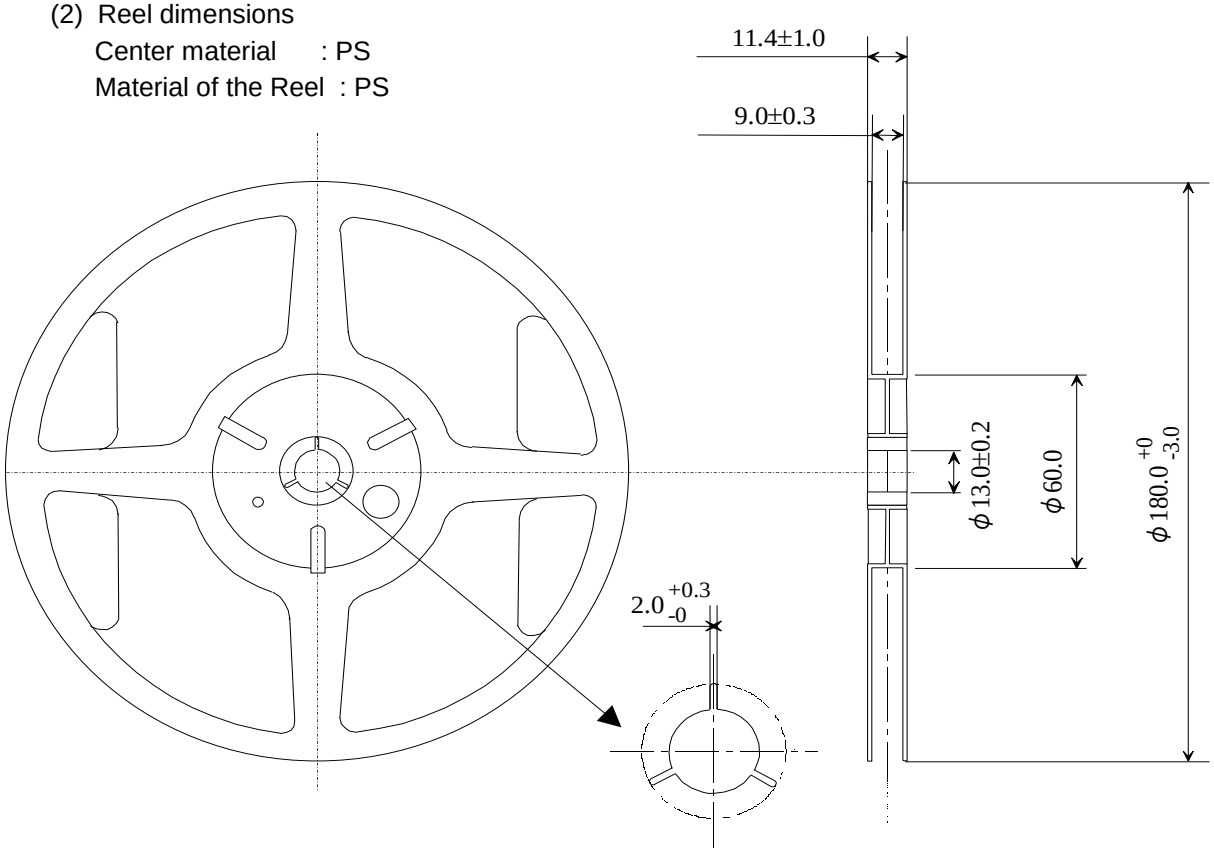
Unit: mm



(2) Reel dimensions

Center material : PS

Material of the Reel : PS



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