

# 产品规格书

## Product Specification

CUSTOMER 客户: \_\_\_\_\_

CUSTOMER PN 客户 PN: \_\_\_\_\_

HANG CRYSTAL P/N 杭晶物料编码: CO75H4-50.000-33GDTST

MODEL 产品型号: Oscillator SMD 7x5, HCMOS, 3.3V

NOMINAL FREQUENCY 频率: 50.000MHz

ISSUE DATE 日期: 2021 / 11 / 18

### CUSTOMER'S APPROVAL

客户确认

(PLEASE RETURN A COPY WITH APPROVAL)  
(请将确认的复印件返回我司)

APPROVED

QA

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Revision	Description / ECN	Prepared	Approved	Date
1	Initial release	MB	James Jiang	2021-11-18
2	Not issued			
3	Not issued			
4	Not issued			

**1. MAXIMUM RATINGS, OPERATING AND STORAGE CONDITIONS**

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Maximum voltage range	V <sub>MAX</sub>	-0.5		+5	V <sub>DC</sub>	Between V <sub>CC</sub> and GND
2	Nominal supply voltage	V <sub>CC</sub>	2.97	3.3	3.63	V <sub>DC</sub>	--
3	Output load capacitance	CL		15		pF	HCMOS 15PF
4	Operating temperature range	T <sub>OP</sub>	-40	+25	+85	°C	--
5	Storage temperature range	T <sub>ST</sub>	-55		125	°C	--
6	Enable / Disable function (→ Output TRISTATE)	E/D	Pin 1 = HIGH		→	Output pin 3 is enabled	
		Note 1	Pin 1 = LOW		→	Output pin 3 is disabled (high impedance)	

Note 1: Output pin 3 is enabled when E/D input pin 1 is left open (floating).

**2. ELECTRICAL PARAMETER LIMITS**

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Nominal frequency	F <sub>N</sub>	50.000			MHz	--
2	Frequency tolerance	Δf/F <sub>N</sub>	-20		+20	ppm	Offset from F <sub>N</sub> at +25°C
3	Frequency stability (overall)	Δf/F <sub>N</sub>	-50		+50	ppm	Note 1
4	Aging first year	Δf/F <sub>A1</sub>	-3.0		+3.0	ppm	at +25°C
5	Output voltage level HIGH	V <sub>OH</sub>	2.97			V <sub>DC</sub>	HCMOS level 90%V <sub>CC</sub> MIN
6	Output voltage level LOW	V <sub>OL</sub>			0.33	V <sub>DC</sub>	HCMOS level 10%V <sub>CC</sub> MAX
7	Output amplitude rise time	t <sub>R</sub>			6.0	ns	At 20~80%V <sub>CC</sub> / +25°C
8	Output amplitude fall time	t <sub>F</sub>			6.0	ns	At 80~20%V <sub>CC</sub> / +25°C
9	Output amplitude symmetry	DC	45		55	%	At 50%V <sub>CC</sub> / 15pF / +25°C
10	Phase Jitter RMS	j <sub>RMS</sub>			0.5	ps	At 20kHz~20MHz / +25°C
11	Current consumption	I <sub>CC</sub>			10	mA	With output load CL ±10%
12	Standby current	I <sub>STB</sub>			10	μA	Output disabled (pin 1 = LOW)
13	Startup time	t <sub>STRT</sub>			5	ms	V <sub>P-P</sub> reach >90% of amplitude

Note 1: Including tolerance at +25°C, deviations over operating temperature range, input voltage changes, output load changes, shock and vibration.

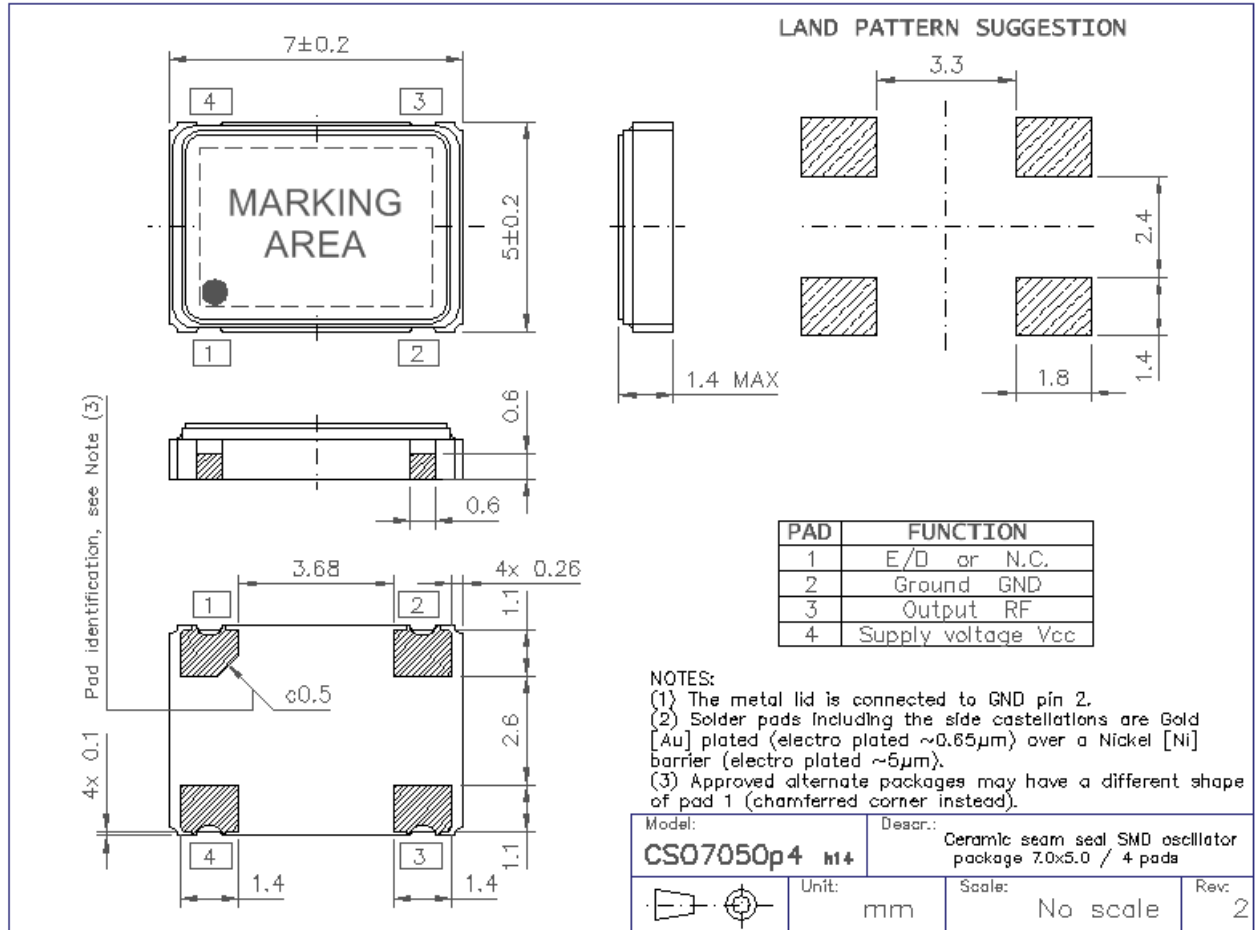
**3. PRODUCT MARKING**

1	<b>FF.fff</b>	Nominal frequency in MHz (three digits after decimal point)											HCI YM .FF.fff
2	<b>HCI</b>	Company logo											
3	<b>Y</b>	Year code of manufacturing (see table below)											
	<b>Year</b>	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	<b>Code</b>	V	W	X	Y	Z	A	B	C	D	E	F	G
4	<b>M</b>	Month code of manufacturing (see table below)											
	<b>Month</b>	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Code	A	B	C	D	E	F	G	H	J	K	L	M
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4. OUTLINE DRAWING

Package descriptions	Package model	Remarks
1 Ceramic seam seal SMD package 7x5mm with 4 pads for Oscillator	CSO7050p4 h14	With E/D function on pin 1



5. RELIABILITY TEST INFORMATION

Test item	Test method	Criteria
1 Temperature Cycle (GB/T2423.22-2002, Method Nb)	10 cycles from -55°C to +125°C. Tested after 24±2h at room temperature.	±5.0ppm
2 Low Temperature Storage (GB/T 2423.1-2001, Method Aa)	72h at -55°C±3°C constant temperature. Tested after 24±2h at room temperature.	±5.0ppm
3 High Temperature Storage(GB/T 2423.2-2001, Method Ba)	72h at +125°C±3°C constant temperature. Tested after 24±2h at room temperature.	±5.0ppm
4 Humidity (GB/T 2423.3-2006, Method Cab)	96h at +40 °C ± 3 °C, with 90± 3% RH. Tested after 24±2h at room temperature.	±5.0ppm
5 Vibration (GB/T 2423.10-1995, Method Fc)	Apply 0.75mm vibration at frequency 10~500 Hz, for 2h. 10 cycles in each direction of 3 axis, test after 1h.	±5.0ppm
6 Shock (GB/T 2423.5-1995, Method Ea)	Peak 1000m/s <sup>2</sup> , with 6ms half sine wave, 3.7m/s, in 3 perpendicular axis, 3 cycles /direction, test after 1h.	±5.0ppm
7 Drop (GB/T 2423.8-1995, M. Ed)	Free drop onto wooden plate from 1.0 m height for 3times.	±5.0ppm
8 Solderability (GB/T2423.28-2005, Method Tc)	Dip into 245 ± 5°C solder bath for 2 ± 0.5 seconds. Inspection under 8-12X magnifier.	>95% cover.
9 Terminal Strength (JIS-C-6429 Method 1 & 2)	Mount on a glass-epoxy board (100x50x1.6mm), then bend to 2mm displacement (velocity 1mm/sec) and keep for 5 seconds. or pulling force 0.5 kg for at least 60seconds	No damage

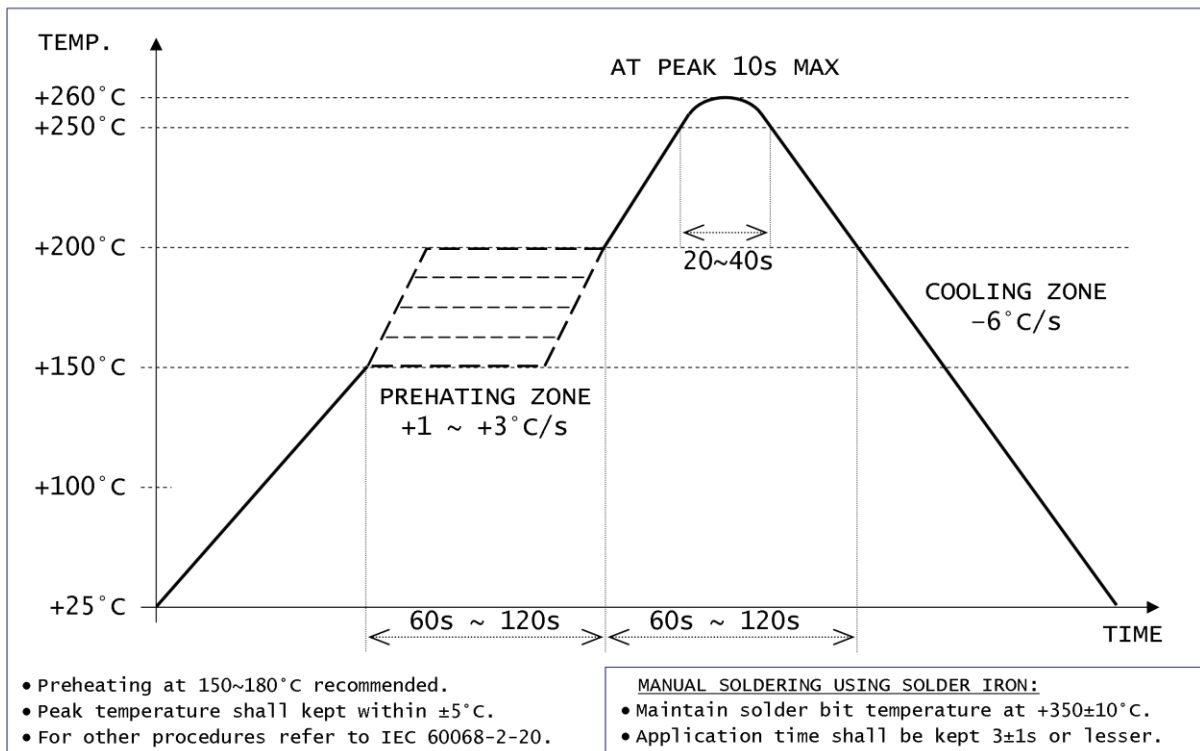
10	Resistance to Solder Heat (GB/T 2423.28-2005, Test Tb Meth. 1B)	Reflow at Preheat to 150°C±5°C for 60 to 120sec, and peak 265°C±5°C for 10s±3sec, Tested after 24±2h at room temp.	±5.0ppm
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**6. ENVIRONMENTAL COMPLIANCE INFORMATION**

		Compliance information
1	RoHS	This product is fully RoHS compliant, 6/6 compliant per EU legislation.
2	RoHS 2	This product is RoHS compliant per DIRECTIVE 2015/863 (also called RoHS10). In regards of CE marking directive for finished products, we can provide RoHS test reports and MDS to show compliance, but since our product is not a final application we have no CE mark.
3	Lead-Free	This product is considered Lead-Free, Lead (Pb) contamination is controlled to be below 200ppm.
4	Halogen-Free	This product is compliant to IEC 61249-2-21:2003 (Br<800ppm / Cl<800ppm).
5	REACH (SVHC)	This product does not contain substances (SVHC) listed by REACH, we continuously monitor updates of the list of SVHC's
6	PFOS / PFOA Free	This product is free of any PFOS / PFOA.
7	Electrostatic Discharge (ESD) sensitivity	This product is ESD sensitive and requires precautions for handling and storage. Follow JEITA EIAJ ED-4701 or JSD22 or ANSI-ESD-S20-20 or IEC 61000-4-2.
8	Moisture Sensitivity	This product is hermetically sealed and does NOT fall under the classification of moisture sensitivity per J-STD-020C (Standard is for non-hermetically sealed components). If required we suggest to use LEVEL 1

**7. RECOMMENDED SOLDERING INFORMATION**

**RECOMMENDED REFLOW SOLDER PROFILE – PEAK TEMPERATURE UP TO +260°C**



DWG\_ReflowProfile\_260

HCI QE 2014/10

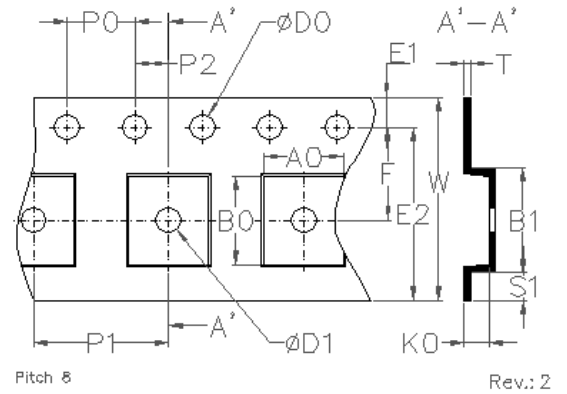
NO SCALE

Rev.: 1

8. PACKAGING

Carrier

Parameter	STANDARD PACKAGING	ALTERNATE PACKAGING
1 A0	5.5±0.1	
2 B0	7.5±0.1	
3 K0	1.4±0.1	
4 B1	8.1±0.1	
5 P0	4.0±0.1	
6 P1	8.0±0.1	
7 T	0.3±0.05	
8 W	16.0±0.2	



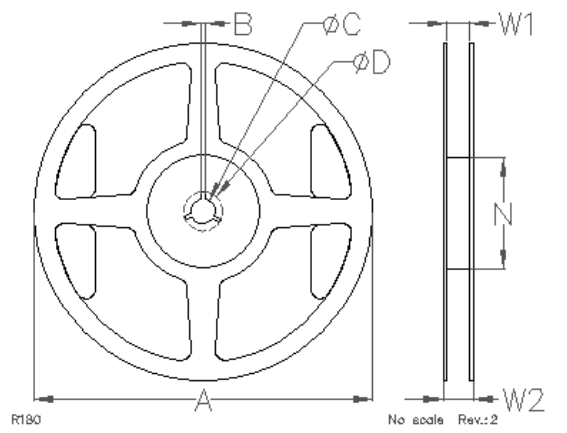
Note 1: All dimensions in [mm].

Note 2: All dimensions not specified or not being shown follow EIA-481 standard.

Reel

QTY per reel: 1,000pcs MAX

Parameter	STANDARD PACKAGING	ALTERNATE PACKAGING
9 A	178 <sup>+0</sup> <sub>-1.5</sub>	
10 B	2.0±0.5	
11 ØC	13.2±0.2	
12 ØD	21±0.8	
13 N	62±2	
14 W1	16.8 <sup>+2.0</sup> <sub>-0</sub>	
15 W2	19.2 <sup>+2.0</sup> <sub>-0</sub>	



Note 1: All dimensions in [mm]. Dimension W1 is measured near the Hub (N).

Note 2: All dimensions not specified or not being shown follow EIA-481 standard.

Unreeling information

Oscillator product's orientation

16	This product is a polarized component which requires a certain orientation; Pin 1 is identified on top side marking with a DOT. In the carrier tape is the component oriented with pin 1 towards the sprocket holes. (per EIA-481)
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