

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: HHSVD7776033JDT1L

MODEL 产品型号: VCXO DIP-8 , HCMOS, 3.3V

NOMINAL FREQUENCY 频率: 77.760MHz

ISSUE DATE 日期: 2023 - 03 - 13

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

*M.B.**James Jiang*

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Revision	Description / ECN	Prepared	Approved	Date
A	Initial release	<i>MB</i>	<i>James Jiang</i>	2023-03-13
B	Not issued			
C	Not issued			
D	Not issued			

1. MAXIMUM RATINGS, OPERATING AND STORAGE CONDITIONS

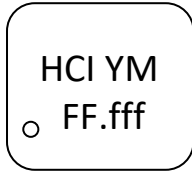
	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Maximum voltage range	V _{MAX}	-0.5		+5.0	V _{DC}	Between V _{CC} and GND
2	Operating supply voltage	V _{CC}	3.135	3.30	3.465	V _{DC}	--
3	Control voltage range / center	V _C	0.3	1.65	3.0	V _{DC}	Pin 1
4	Control voltage input impedance	Z _{PIN1}		5		MΩ	Pin 1
5	Output load capacitance	CL		15		pF	HCMOS
6	Operating temperature range	T _{OP}	-40	+25	+85	°C	--
7	Storage temperature range	T _{ST}	-55		+125	°C	--

2. ELECTRICAL PARAMETER LIMITS

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Nominal frequency	F _N	77.760			MHz	--
2	Frequency tolerance	Δf/F _N	-15		+15	ppm	Offset from F _N at +25°C
3	Frequency stability	Δf/F _N	-20		+20	ppm	Note 1
4	Aging first year	Δf/F _{A1}	-3.0		+3.0	ppm	at +25°C
5	Frequency pulling range	Δf/V _C	± 80			ppm	Min. over control volt. range
6	Linearity of frequency pulling	LIN			10	%	At 15pF / +25°C
7	Modulation bandwidth	BW ₃	10			kHz	Measured at 3dB
8	Output voltage level HIGH	V _{OH}	2.97			V _{DC}	HCMOS level 90%V _{CC} MIN
9	Output voltage level LOW	V _{OL}			0.33	V _{DC}	HCMOS level 10%V _{CC} MAX
10	Output amplitude rise time	t _R			5.0	ns	At 10~90%V _{CC} / 15pF / +25°C
11	Output amplitude fall time	t _F			5.0	ns	At 90~10%V _{CC} / 15pF / +25°C
12	Output amplitude symmetry	DC	40		60	%	At 50%V _{CC} / 15pF / +25°C
13	Phase Jitter RMS	j _{RMS}			1.0	ps	At 20kHz~20MHz / +25°C
14	Current consumption	I _{CC}			25	mA	With output load CL ±10%
15	Startup time	t _{STRT}			10	ms	V _{P-P} reach >90% of amplitude

Note 1: Stability is the deviation over operating temperature range in reference to frequency @+25°C.

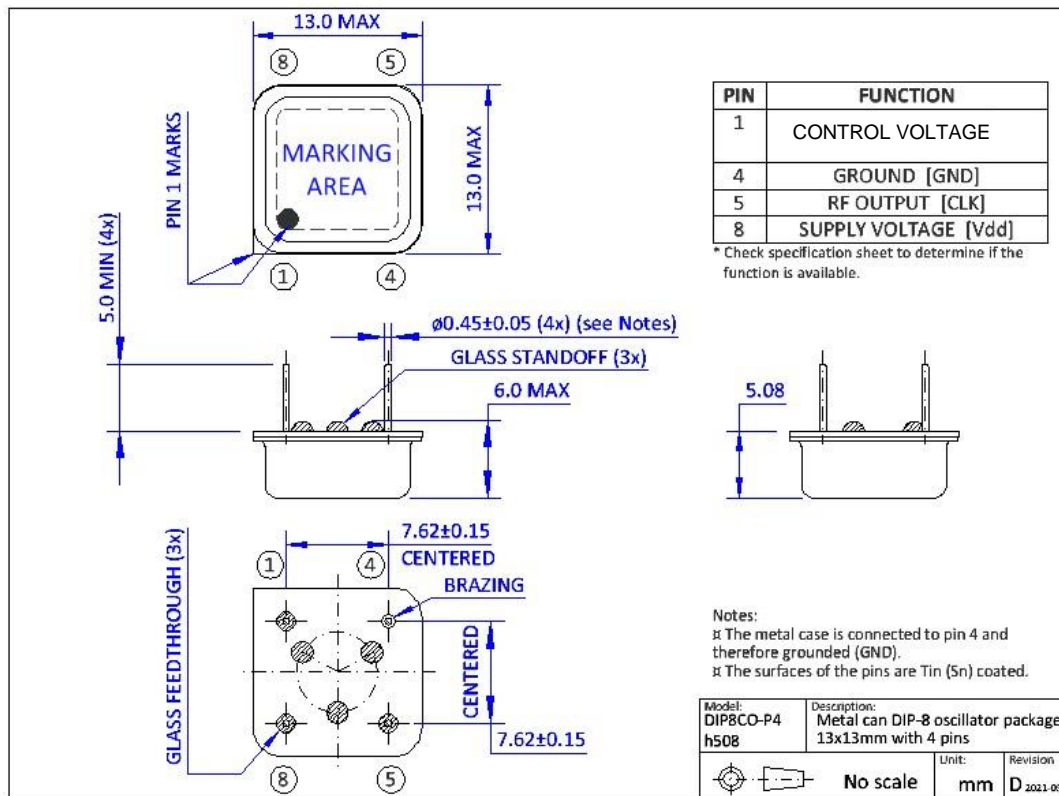
3. PRODUCT MARKING

1	FF.fff	Nominal frequency in MHz (three digits after decimal point)											
2	HCI	Company logo											
3	Y	Year code of manufacturing (see table below)											
	Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
	Code	V	W	X	Y	Z	A	B	C	D	E	F	G

4	M	Month code of manufacturing (see table below)											
	Month	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

4. OUTLINE DRAWING

	Package descriptions	Package model	Remarks
1	Metal can DIP-8 package 13x13mm with 4 pins for VCXO	VD08P4H5	



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 \pm 2h at room temperature.	\pm 5.0ppm
2	Low Temperature Storage (GB/T 2423.1-2001, Method Aa)	72h at -55°C \pm 3°C constant temperature. Tested after 24 \pm 2h at room temperature.	\pm 5.0ppm
3	High Temperature Storage(GB/T 2423.2-2001, Method Ba)	72h at +125°C \pm 3°C constant temperature. Tested after 24 \pm 2h at room temperature.	\pm 5.0ppm
4	Humidity (GB/T 2423.3-2006, Method Cab)	96h at +40 °C \pm 3 °C, with 90 \pm 3% RH. Tested after 24 \pm 2h at room temperature.	\pm 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.	\pm 5.0ppm
6	Shock (GB/T 2423.5-1995, Method Ea)	Peak 1000m/s ² , with 6ms half sine wave, 3.7m/s, in 3 perpendicular axis, 3 cycles /direction, test after 1h.	\pm 5.0ppm
7	Drop (GB/T 2423.8-1995, M. Ed)	Free drop onto wooden plate from 1.0 m height for 3times.	\pm 5.0ppm
8	Solderability (GB/T2423.28-2005, Method Tc)	Dip into 245 \pm 5°C solder bath for 2 \pm 0.5 seconds. Inspection under 8-12X magnifier.	>95% cover.

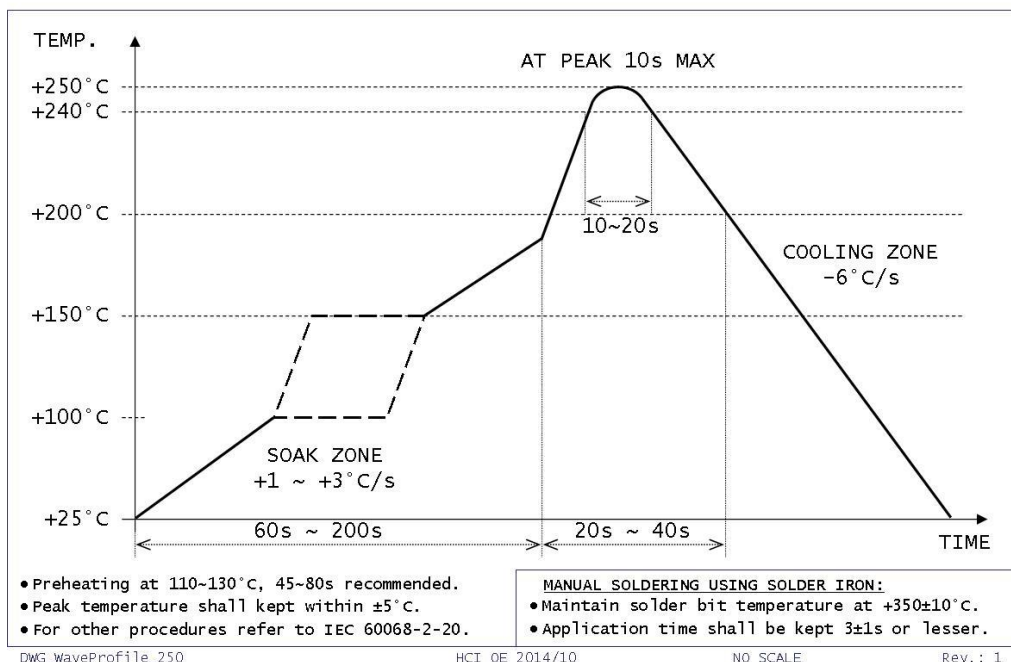
9	Terminal Strength (JIS-C-6429 Method 1 & 2)	Mount on a glass-epoxy board (100x50x1.6mm), then bend to 2mm displacement (velocity 1mm/sec) and keep for 5 seconds. or pulling force 0.5 kg for at least 60seconds	No damage
10	Resistance to Solder Heat (GB/T 2423.28-2005, Test Tb Meth. 1B)	Reflow at Preheat 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

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 WAVE SOLDER PROFILE – PEAK TEMPERATURE UP TO +250 °C



8. PACKAGING

Oscillator product's packaging and orientation	
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1	Packaging in antistatic trays, QTY = 50pcs per tray. All parts are oriented in same direction.
2	Alternate packaging for small QTYs by utilizing antistatic foam.
3	This product is a polarized component which requires a certain orientation; pay attention to the markup of Pin 1 when using the product.