

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: V714H-122.880L33DT0DL

MODEL 产品型号: VCXO SMD 14.0x9.0, HCMOS, 3.3V

NOMINAL FREQUENCY 频率: 122.880MHz

ISSUE DATE 日期: 2022 / 07 / 10

CUSTOMER'S APPROVAL

客户确认

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APPROVED

MB

QA

J Jiang

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Revision	Description / ECN	Prepared	Approved	Date
1	Initial release	MB	James Jiang	2022-07-10
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_{MAX}	-0.5		+5.0	V_{DC}	Between V_{CC} and GND
2	Nominal supply voltage	V_{CC}	3.135	3.30	3.465	V_{DC}	--
3	Control Voltage Range	V_{con}	+1.65±1.65			V	
4	Output load capacitance	CL		15		pF	HCMOS
5	Operating temperature range	T_{OP}	-40	+25	+85	°C	--
6	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	122.880			MHz	--
2	Frequency stability (overall)	$\Delta f/F_N$	-20		+20	ppm	V_c 1.65 V_{DC} , Note 1
3	Pulling Range (APR)	$\Delta f-PULL$	±10			ppm	V_c 1.65±1.65 V_{DC}
4	Linearity	Line			±10	%	
5	Aging first year	$\Delta f/F_{A1}$	-1.0		+1.0	ppm	at +25°C
6	Output voltage level HIGH	V_{OH}	2.97			V_{DC}	HCMOS level 90% V_{CC} MIN
7	Output voltage level LOW	V_{OL}			0.33	V_{DC}	HCMOS level 10% V_{CC} MAX
8	Output amplitude rise time	t_R			5.0	ns	At 20~80% V_{CC} / 15pF / +25°C
9	Output amplitude fall time	t_F			5.0	ns	At 80~20% V_{CC} / 15pF / +25°C
10	Output amplitude symmetry	DC	45		55	%	At 50% V_{CC} / 15pF / +25°C
11	Phase Jitter RMS	j_{RMS}		100		fs	At 20kHz~20MHz / +25°C
12	Phase Noise			-84		dBc/Hz	@10Hz
				-116		dBc/Hz	@100Hz
				-142		dBc/Hz	@1kHz
				-162		dBc/Hz	@10kHz
				-170		dBc/Hz	@100kHz
				-173		dBc/Hz	@1MHz
13	Current consumption	I_{CC}			25	mA	With output load CL ±10%
14	Standby current	I_{STB}				μA	NA
15	Startup time	t_{STRT}			10.0	ms	V_{P-P} reach >90% of amplitude

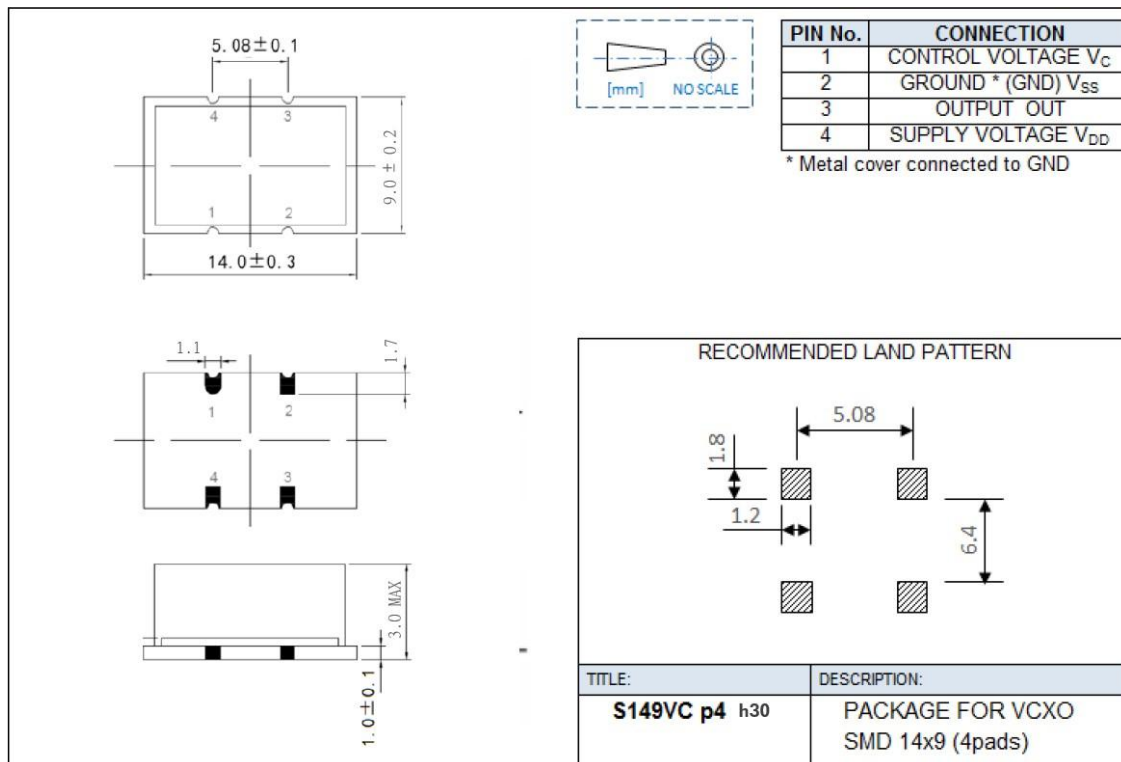
Note 1: Including tolerance at +25°C, deviations over operating temperature range, input voltage changes, output load changes, shock and vibration.

3. PRODUCT MARKING

TBA

4. OUTLINE DRAWING

	Package descriptions	Package model	Remarks
1	PCB based SMD package 14.0x9.0mm with 6 pads for Oscillator	CSO1409p4	



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 ² , 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

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

