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：	**9714S6-100.000NQ50DT0QL**
MODEL	产品型号：	**VCTCXO SMD 14x9 , Sine Wave, 5.0V**
NOMINAL FREQUENCY	频率：	**100.000 MHz**
ISSUE DATE	日期：	**2023 / 04 / 18**

CUSTOMER'S APPROVAL

客户确认

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

APPROVED	QA
MB.	James J

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Revision	Description / ECN	Prepared	Approved	Date
1	Initial release	MB	James Jiang	2023-04-18
2	Not issued			
3	Not issued			
4	Not issued			

1. NOMINAL AND MAXIMUM RATINGS, OPERATING AND STORAGE CONDITIONS

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Nominal frequency	F_N		**100.000**		MHz	--
2	Maximum supply voltage	V_{MAX}	–0.3		+6.0	V_{DC}	Between V_{CC} and GND
3	Operating supply voltage range	V_{CC}	4.75	5.0	5.25	V_{DC}	
4	Output load	CL		50		Ω	Sine Wave
5	Operating temperature range	T_{OP}	–40	+25	+85	°C	Note 1
6	Storage Temperature Range	T_{ST}	–55		+105	°C	--

Note 1: over the whole range, the unit stays within all relevant parameter limits as specified under point 2.

2. ELECTRICAL PARAMETER LIMITS

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Frequency calibration	$\Delta f/F_N$	–1.0		+1.0	ppm	V_{CC}=1.65V， at +25°C
2	Frequency stability	$\Delta f/F_{RFL}$	–0.5		+0.5	ppm	Note 1
3	Frequency VS voltage changes	$\Delta f/F_V$	–0.1		+0.1	ppm	Vcc ±5% at +25°C
4	Frequency VS load changes	$\Delta f/F_L$	–0.1		+0.1	ppm	
5	Aging first year	$\Delta f/F_{A1}$	–1.0		+1.0	ppm	at +25°C
6	Output level		+8			dBm	50Ω Load
7	Harmonic				-35	dBc	
8	Spurious				-80	dBc	
9	Control Voltage Range	Vcon	0	2.5	5.0	V_{DC}	2.5±2.5V
10	Frequency tuning range	ARP	±6			ppm	
11	Linearity				10	%	
12	Phase noise	L_{RMS}		-80	-75	dBc/Hz	at 10Hz offset / at +25°C
				-117	-112		at 100Hz offset / at +25°C
				-143	-138		at 1kHz offset / at +25°C
				-165	-160		at 10kHz offset / at +25°C
				-170	-165		at 100KHz offset / at +25°C
13	Startup time	t_{STRT}			10	ms	V_{P-P} reach >90% of amplitude
14	Current consumption	I_{CC}		18	25	mA	Under load RL ±10%

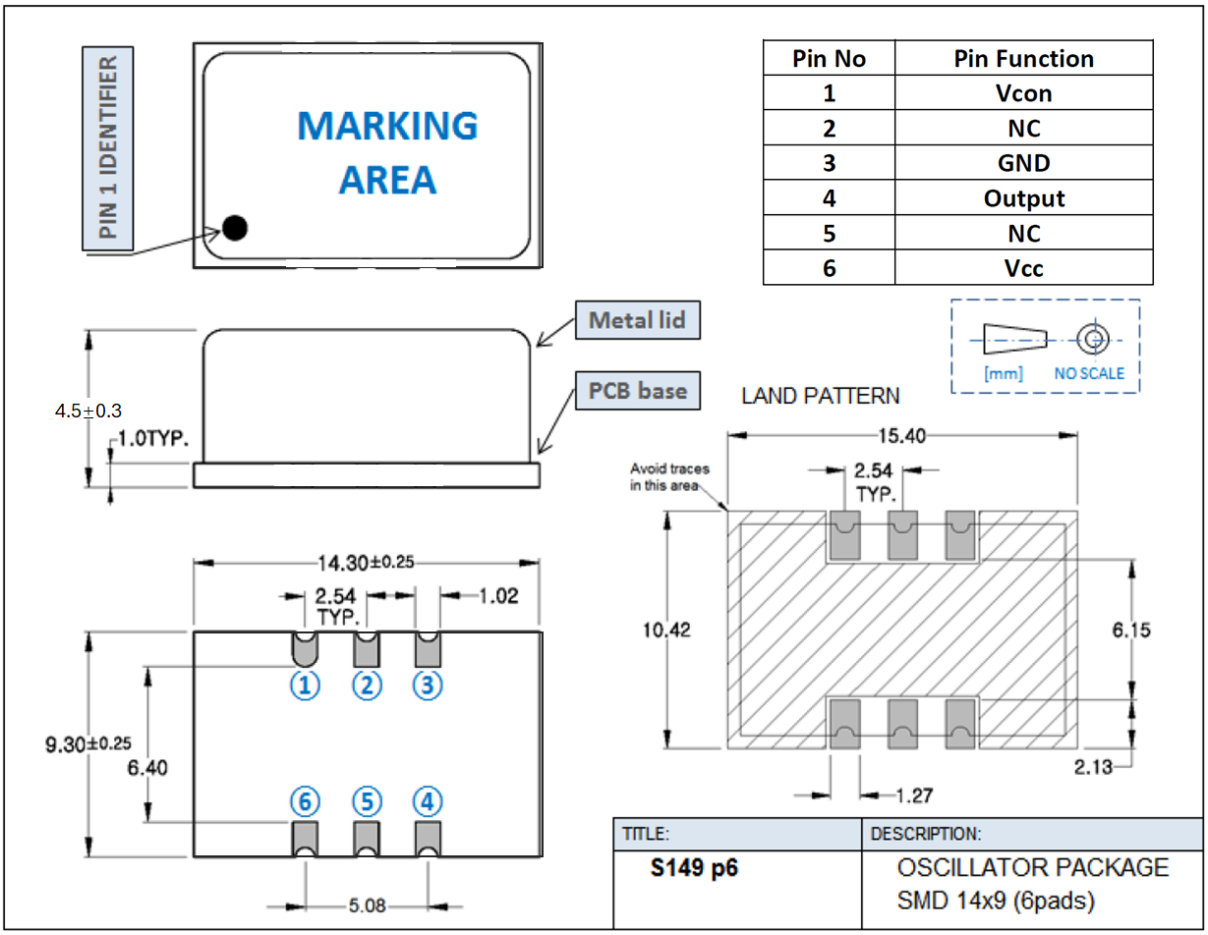
Note 1: Frequency stability is the frequency deviation over operating temperature range T_{OP} in reference to the frequency reading at +25°C..

3. PRODUCT MARKING

To be defined.

4. OUTLINE DRAWING

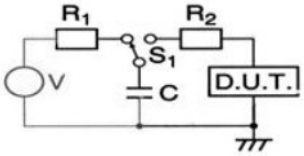
	Package description	Package model	Remarks
1	SMD PCB metal can package 14x9mm with 6 pads	0914p6h45	--



Pin No	Pin Function
1	Vcon
2	NC
3	GND
4	Output
5	NC
6	Vcc

5. RELIABILITY TEST INFORMATION

	Test item	Test conditions	Criteria
1	High temperature storage	Temperature: +105°C ±5°C Time: 240 ±4 Hours Tested after 4 to 12h at room temperature.	±1.0ppm
2	Low temperature storage	Temperature: –55°C ±5°C Time: 240 ±4 Hours Tested after 4 to 12h at room temperature.	±1.0ppm
3	Temperature humidity bias THB	Temperature: +85°C ±5°C Humidity: 85% ±5% RH Time: 240 ±4 Hours BIAS: Supply Voltage Tested after 4 to 12h at room temperature.	±1.0ppm
4	Temperature cycling	Low Temp. cycle: –55°C ±2°C High Temp. cycle: +85°C ±5°C Time: 30min each cycle Number of cycles: 1,000 Tested after 4 to 12h at room temperature.	±1.0ppm

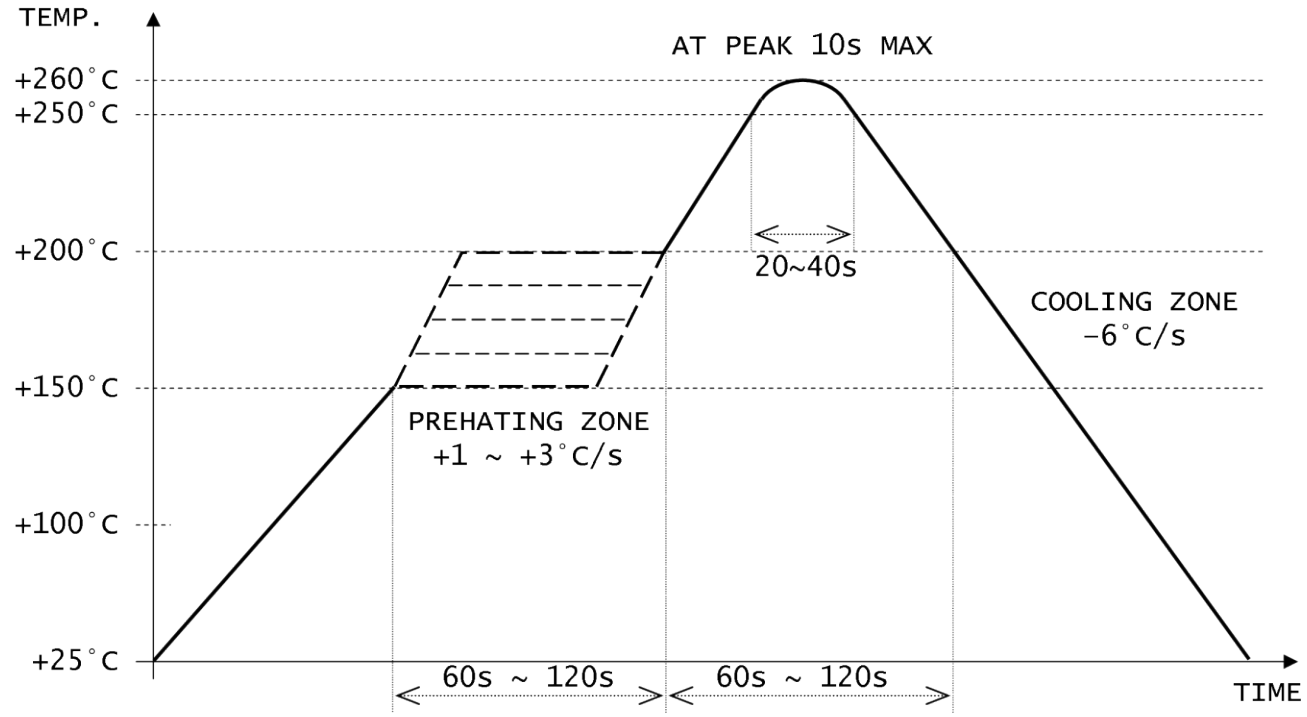
5	Aging	Temperature: +85°C ±5°C Time: 30d Tested after 4 to 12h at room temperature.	±1.0ppm
6	Resistance to solder heat	Reflow peak temp.: +260°C ±5°C (refer to rec. profile) Number of cycles: 3 times Tested after 4 to 12h at room temperature.	±1.0ppm
7	Solderability (MIL-STD-883E)	Dip in flux: 5~10 Seconds Temperature: 230℃±10℃ Time: 5 Seconds Tested after 4 to 12h at room temperature.	>95% cover.
8	Drop test	Drop height: 120cm Number of cycles: 12 times Drop height: 150cm Number of cycles: 9 times With jig (120~150g) onto iron plate Tested after 24h at room temperature.	±1.0ppm
9	Vibration	Frequency Range: 20~2000Hz PSD: 0.053g^2 Time: 40min each direction (X,Y,Z) Tested after 4 to 12h at room temperature.	±1.0ppm
10	ESD-HBM	HBM, V=±1KV, C=100pF, R1=10M, R2=1.5K, 3times 	±1.0ppm

6. ENVIRONMENTAL COMPLIANCE INFORMATION

		Compliance information
1	RoHS	This product is fully RoHS compliant, 6/6 compliant per EU legislation.
2	RoHS 2	In regards of RoHS 2, 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



- Preheating at 150~180°C recommended.
- Peak temperature shall kept within ±5°C.
- For other procedures refer to IEC 60068-2-20.

MANUAL SOLDERING USING SOLDER IRON:

- Maintain solder bit temperature at +350±10°C.
- Application time shall be kept 3±1s or lesser.

DWG_ReflowProfile_260 HCI QE 2014/10 NO SCALE Rev.: 1