

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: 8121S-32.000NN18DTL

MODEL 产品型号: TCXO SMD 2.0x1.6, Sine wave, 1.8V

NOMINAL FREQUENCY 频率: 32.000MHz

ISSUE DATE 日期: 2022 / 11 / 11

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


MB.
J. Jiang

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Revision	Description / ECN	Prepared	Approved	Date
1	Initial release	MB	James Jiang	2022-11-11
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	32.000			MHz	--
2	Maximum supply voltage	V_{MAX}	-0.3		+4.6	V_{DC}	Between V_{CC} and GND
3	Nominal supply voltage	V_{CC}	+1.71	+1.80	+1.89	V_{DC}	--
4	Output load (resistive)	R_L	9	10	11	Ω	Clipped sine wave output
5	Output load (capacitive)	C_L	9	10	11	pF	Clipped sine wave output
6	Operating temperature range	T_{OP}	-40	+25	+85	$^{\circ}C$	Note 1
7	Storage Temperature Range	T_{ST}	-40		90	$^{\circ}C$	--
8	Enable / Disable function	E/D	Not available				Pin 1 GND

Note 1: 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	Offset from nominal at +25 $^{\circ}C$
2	Frequency stability over T_{OP}	$\Delta f/F_{OP}$	-1.0		+1.0	ppm	Over T_{OP} -40~+85 $^{\circ}C$; Note 1
3	Frequency VS voltage changes	$\Delta f/F_V$	-0.2		+0.2	ppm	$V_{CC} \pm 5\%$ at +25 $^{\circ}C$
4	Frequency VS load changes	$\Delta f/F_L$	-0.2		+0.2	ppm	$R_L//C_L \pm 5\%$ at +25 $^{\circ}C$
5	Aging first year	$\Delta f/F_{A1}$	-1.0		+1.0	ppm	at +25 $^{\circ}C$
6	Output amplitude voltage level	V_{P-P}	0.8	1.1		V_{AC}	Clipped sine wave DC coupled
7	Phase noise at 100Hz offset	L_{RMS}		-118		dBc/Hz	at +25 $^{\circ}C$
	at 1kHz offset	L_{RMS}		-135		dBc/Hz	at +25 $^{\circ}C$
	at 10kHz offset	L_{RMS}		-140		dBc/Hz	at +25 $^{\circ}C$
	at 100kHz offset	L_{RMS}		-145		dBc/Hz	at +25 $^{\circ}C$
8	Current consumption	I_{CC}			2.0	mA	Under load $R_L//C_L \pm 10\%$
9	Startup time	t_{STRT}			2.0	ms	V_{P-P} reach >90% of amplitude

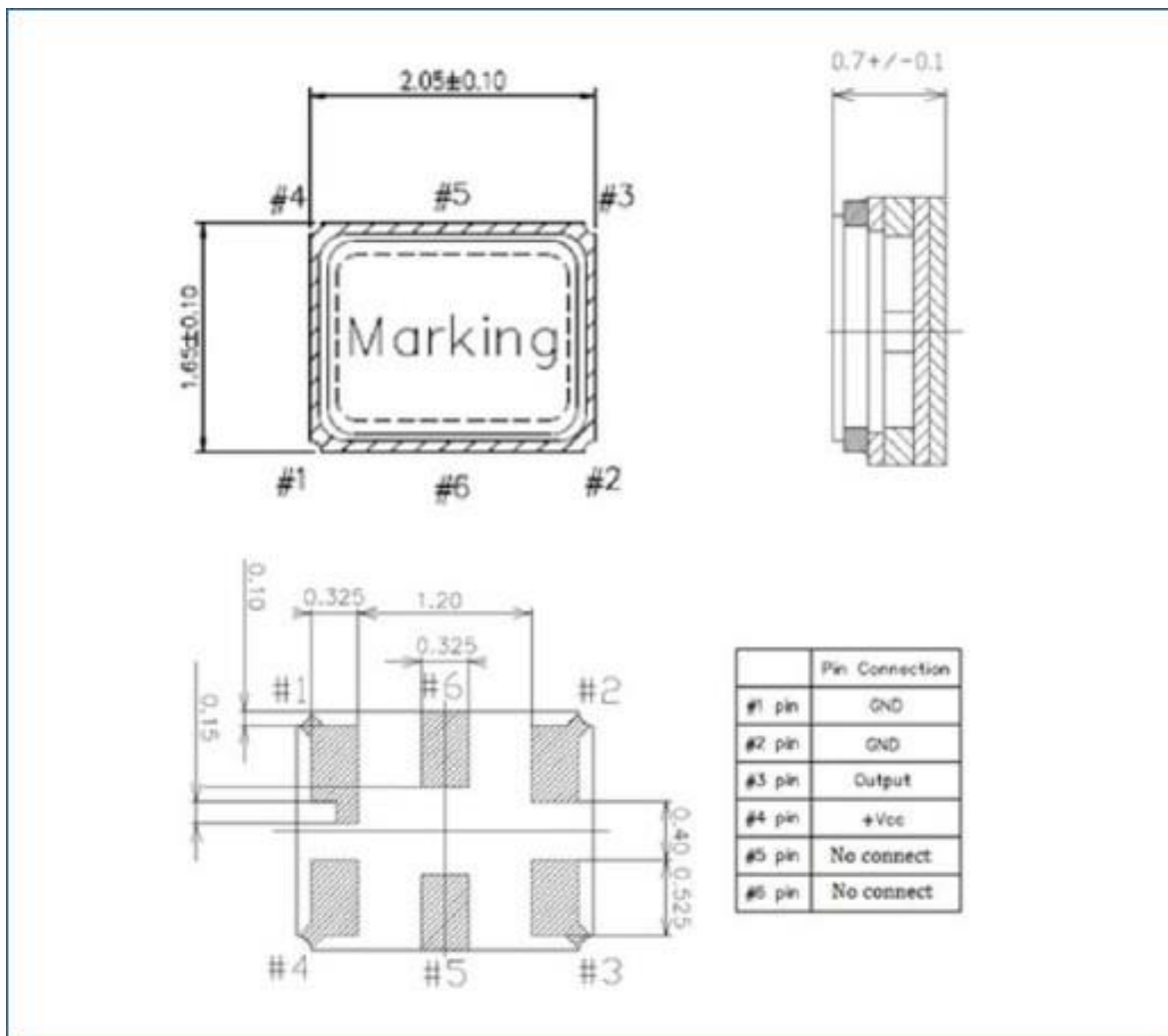
Note 1: Referenced to midpoint between minimum and maximum frequency over specified temperature range.

3. PRODUCT MARKING

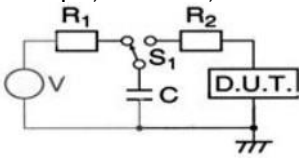
TBD

4. OUTLINE DRAWING

	Package description	Package model	Remarks
1	Ceramic seam seal SMD package 2.0x1.6mm with 4 pads for TCXO	CST2016p4sph70	--



5. RELIABILITY TEST INFORMATION

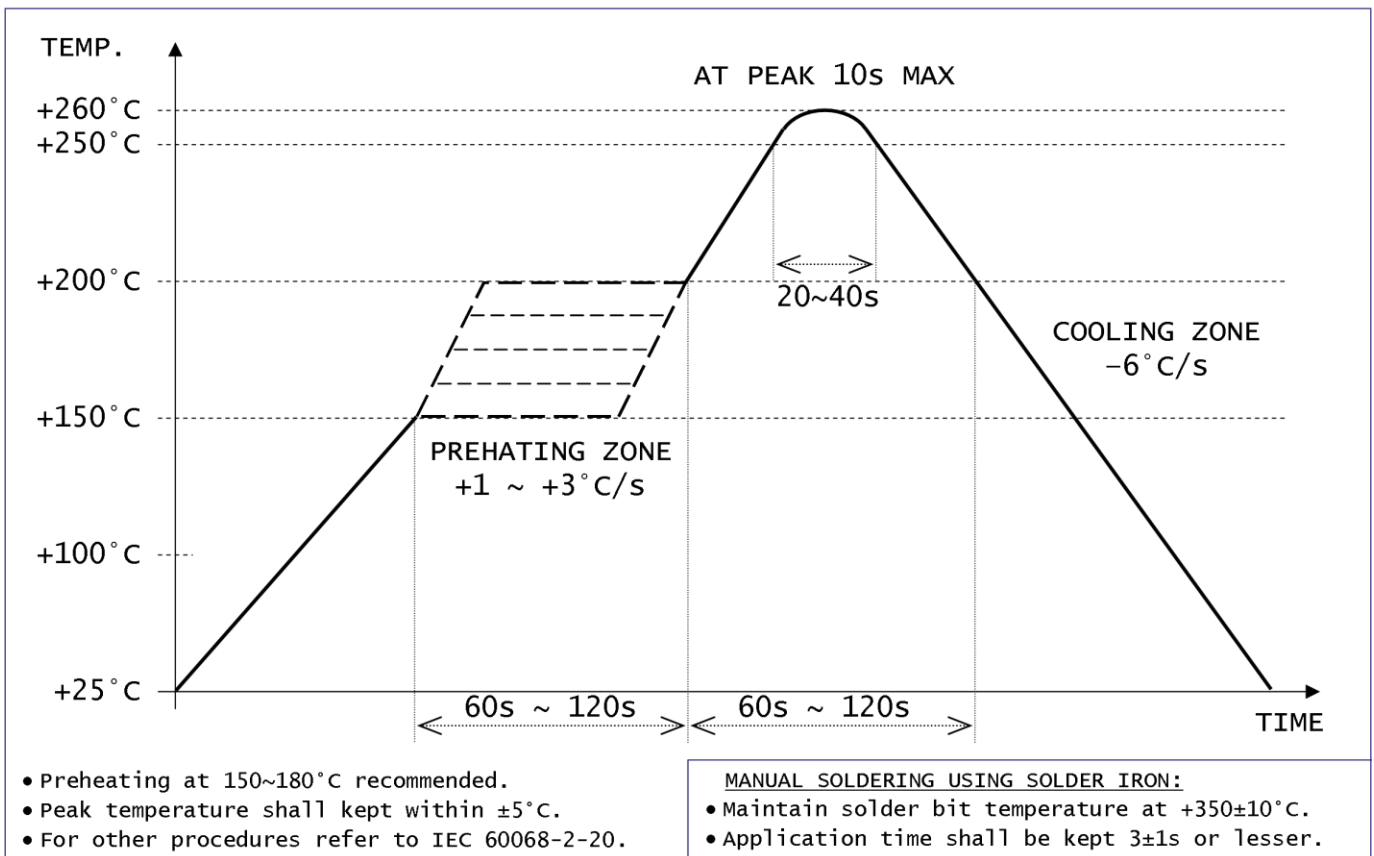
	Test item	Test conditions	Criteria
1	High temperature storage	Temperature: +125°C ±5°C Time: 240 ±4 Hours Tested after 4 to 12h at room temperature.	±1.0ppm
2	Low temperature storage	Temperature: -55°C ±5°C Time: 240 ±4 Hours Tested after 4 to 12h at room temperature.	±1.0ppm
3	Temperature humidity bias 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°C ±10°C 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

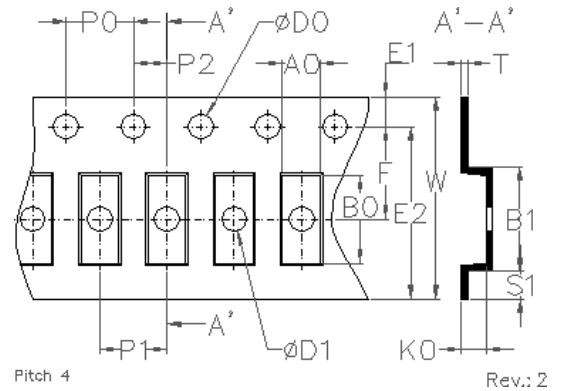
RECOMMENDED REFLOW SOLDER PROFILE – PEAK TEMPERATURE UP TO +260°C



8. PACKAGING

Carrier

Parameter	STANDARD PACKAGING	ALTERNATE PACKAGING
1 A0	1.85±0.1	
2 B0	2.25±0.1	
3 K0	1.05±0.1	
4 B1	2.85±0.1	
5 P0	4.0±0.1	
6 P1	4.0±0.1	
7 T	0.3±0.05	
8 W	8.0±0.2	



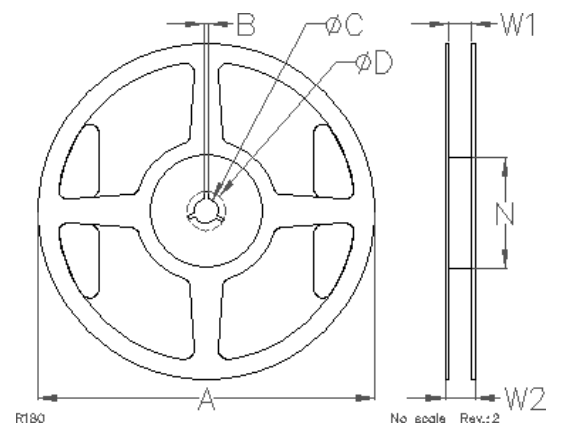
Note 1: All dimensions in [mm].

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

Reel

QTY per reel: 3,000pcs MAX

Parameter	STANDARD PACKAGING	ALTERNATE PACKAGING
9 A	180 ⁺⁰ -1.5	
10 B	2.0±0.5	
11 ØC	13±0.2	
12 ØD	21±0.8	
13 N	60±2	
14 W1	9.0±0.3	
15 W2	11.4±1.0	



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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