

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: 1532P8-1250.000J33DTL

MODEL 产品型号: Oscillator SMD 3.2x2.5, LVPECL, 3.3V

NOMINAL FREQUENCY 频率: 1250.000MHz

ISSUE DATE 日期: 2022 - 07 - 25

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

MB

QA

J Jiang

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Revision	Description / ECN	Prepared	Approved	Date
1	Initial release	MB	James Jiang	2022-07-25
2	Change the marking form.	MB	James Jiang	2023-09-25
3	Correct errors in the drawing.	MB	James Jiang	2023-09-28
4	Not issued			

1. MAXIMUM RATINGS, OPERATING AND STORAGE CONDITIONS

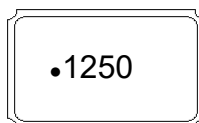
	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Maximum voltage range	V_{MAX}	-0.5		+5.0	V_{DC}	Between V_{CC} and GND
2	Nominal supply voltage	V_{CC}	2.97	3.30	3.63	V_{DC}	--
3	Output load impedance	R_L		50		Ω	Into -2V or Thevenin equivalent
4	Operating temperature range	T_{OP}	-40	+25	+85	$^{\circ}C$	--
5	Storage temperature range	T_{ST}	-55		125	$^{\circ}C$	--
6	Enable / Disable function ($\rightarrow$ Output TRISTATE)	E/D	Pin 1 = HIGH		$\rightarrow$	Outputs pin 4 and 5 enabled	
		Note 1	Pin 1 = LOW		$\rightarrow$	Outputs are disabled (high impedance)	

2. ELECTRICAL PARAMETER LIMITS

	PARAMETER	SYMB.	MIN	TYP	MAX	Unit	Conditions / Remarks
1	Nominal frequency	F_N	1250.000			MHz	--
2	Frequency stability (overall)	$\Delta f/F_N$	-30		+30	ppm	Note 1
3	Aging first year	$\Delta f/F_{A1}$	-3.0		+3.0	ppm	at +25 $^{\circ}C$
4	Output amplitude voltage level	V_{OH}	2.27		2.70	V_{DC}	$V_{DD}-1.03$ min., $V_{DD}-0.6$ max
5	Output amplitude voltage level	V_{OL}	1.45		1.70	V_{DC}	$V_{DD}-1.85$ min., $V_{DD}-1.6$ max
6	Differential output voltage swing	V_{DIFF}	595	750	930	mV	At $R_L=50\Omega$ / +25 $^{\circ}C$
7	Output amplitude rise time	t_R			0.4	ns	20~80% V_{CC} / 50 Ω / +25 $^{\circ}C$
8	Output amplitude fall time	t_F			0.4	ns	80~20% V_{CC} / 50 Ω / +25 $^{\circ}C$
9	Output amplitude symmetry	DC	45		55	%	At 50% V_{CC} / 50 Ω / +25 $^{\circ}C$
10	Phase Jitter RMS	j_{RMS}		0.16		ps	At 12kHz~20MHz / +25 $^{\circ}C$
11	Current consumption	I_{CC}			120	mA	At $R_L=50\Omega$ / +25 $^{\circ}C$
12	Standby current	I_{STB}			99	mA	Outputs disabled (pin 1 = LOW)
13	Startup time	t_{STRT}			10	ms	V_{P-P} reach >90% of amplitude

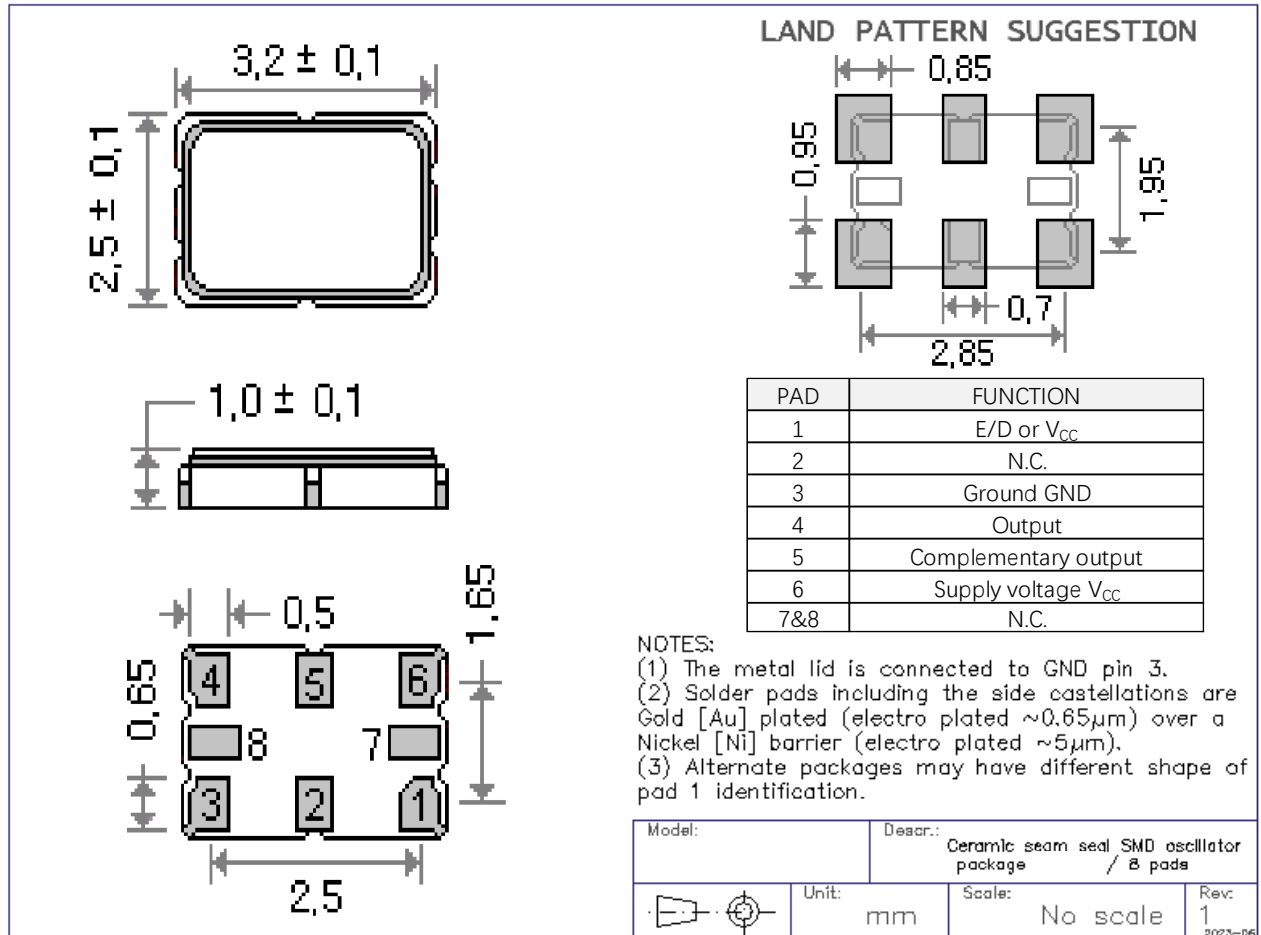
Note 1: Including tolerance at +25 $^{\circ}C$, deviations over operating temperature range, input voltage changes, output load changes, shock and vibration.

3. PRODUCT MARKING



4. OUTLINE DRAWING

	Package descriptions	Package model	Remarks
1	Ceramic seam seal SMD package 3.2x2.5mm with 8 pads for Oscillator with dual outputs	CSO3225p8	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 -40°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 -40°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.

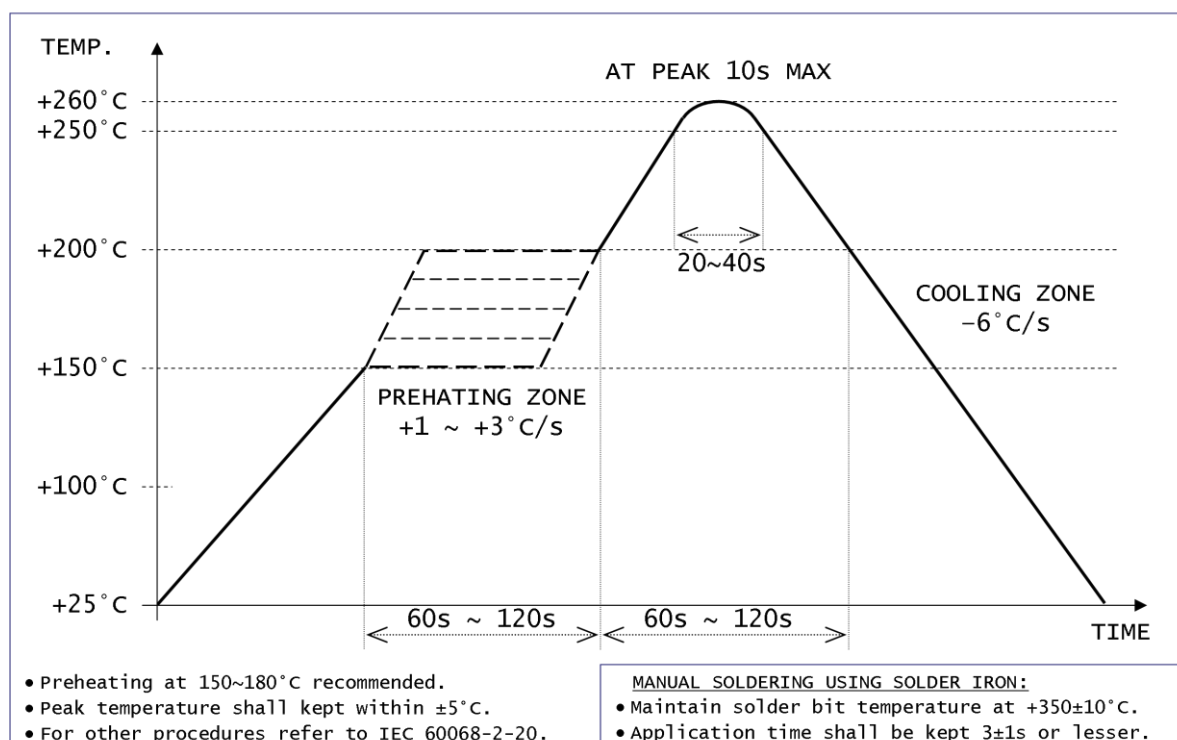
9	Terminal Strength (JIS-C-6429 Method 1 & 2)	Mount on a glass-epoxy board (100x50x1.6mm), then bend to 2mm displacement (velocity 1mm/sec) and keep for 5 seconds. or pulling force 0.5 kg for at least 60seconds	No damage
10	Resistance to Solder Heat (GB/T 2423.28-2005, Test Tb Meth. 1B)	Reflow at Preheat 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 DIRECTIVE 2011/65/EU.
2	RoHS 2	This product is RoHS compliant per DIRECTIVE 2015/863 (also called RoHS10). 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



DWG_ReflowProfile_260

HCI QE 2014/10

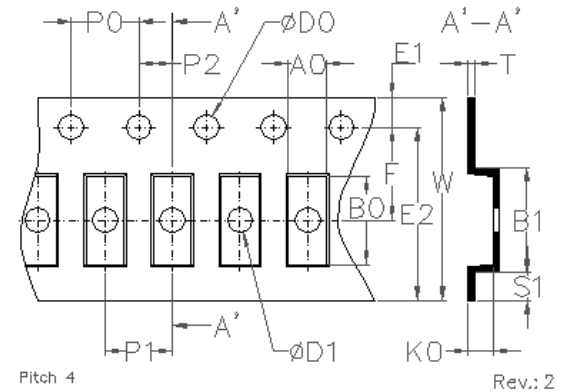
NO SCALE

Rev.: 1

8. PACKAGING

Carrier

	Parameter	STANDARD PACKAGING	ALTERNATE PACKAGING
1	A0	2.8±0.1	
2	B0	3.6±0.1	
3	K0	1.25±0.1	
4	B1	4.2±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	



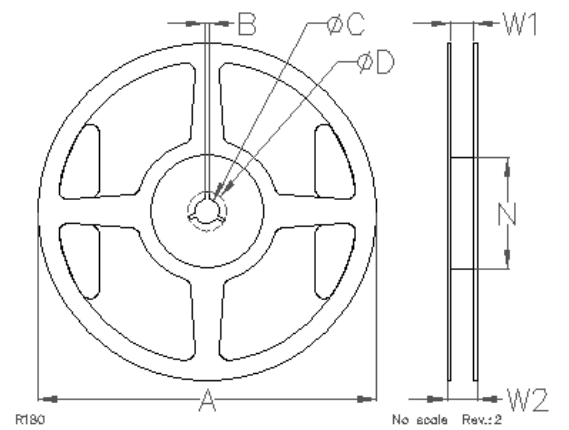
Note 1: All dimensions in [mm].

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	178 ⁺⁰ _{-1.5}	180 ⁺⁰ _{-1.5}
10	B	2.0±0.5	2.0±0.5
11	ØC	13.2±0.2	13.2±0.2
12	ØD	21±0.8	21±0.8
13	N	62±2	62±2
14	W1	9.0 ^{+2.0} ₋₀	8.0 ^{+2.0} ₋₀
15	W2	11.4 ^{+2.0} ₋₀	11.4 ^{+2.0} ₋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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