

CRYSTAL SEPECIFICATION

Customer : _____

Customer P/N : _____

Part Name : 49SMD 4M 15PF 20PPM

Product Description : <u>49SMD-4.000000M-15PF-20PPM</u>

Issue Date : <u>2017.10.20</u>

CUSTOMER'S APPROVAL

(PLEASE RETURN A COPY WITH APPOVAL

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湖北泰晶电子科技股份有限公司

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REV.	Description of Revision History	Date	Designer	Checked By
EV.	Description of Revision History New revision	Date 2015-11-25	Designer DaiWei	Checked By Huangx m



CRYSTAL SEPECIFICATION

Description: Quartz Crystal
 Nominal Frequency: 4.000000MHz
 Oscillation Mode: Fundamental

4. Cutting Mode: AT cut

5. Measurement Instrument: S&A 250B(Measured FL)

6. Electrical Characteristics: [1]Operation Conditions:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Operating Temperature Range	Topt	-20		75	$^{\circ}$	
Storage Temperature Range	Tstg	-40		85	$^{\circ}$	
Load Capacitance	CL		15		pF	
Drive Level	DL	0.1		100	uW	

[2]Frequency Stability:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Tolerance	dF/Fo	-20		20	ppm	Refer to Center Frequency@25±3℃
Stability Over Temperature	dF/F25	-30		30	ppm	Refer to Operating Temperature
Aging	dF/F25	-5		5	ppm	Per Year

dF/Fo:Frequency Deviation Refer to Center Frequency

dF/F25:Frequency Deviation Refer to 25℃ Frequency

[3]Electrical Performance:

Item	Symbol	MIN.	TYP.	MAX.	Unit	Condition
Equivalent Series Resistance	ESR			30	Ω	@Series
Shunt Capacitance	C0			7	pF	
Insulation Resistance	IR	500			ΜΩ	@DC 100 Volt

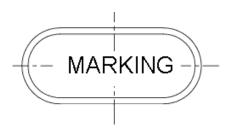
7. Marking:Laser

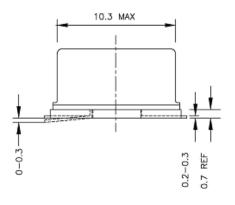
4.00 :Nominal Frequency

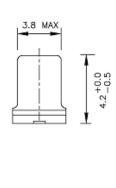
4.00

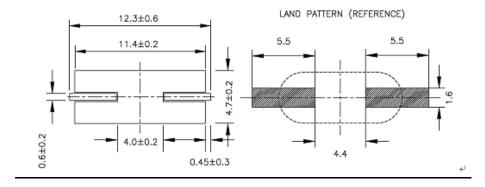


8. Outline drawing (unit: mm)









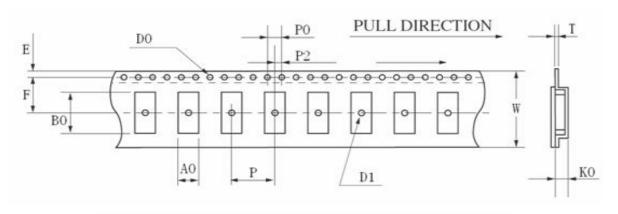


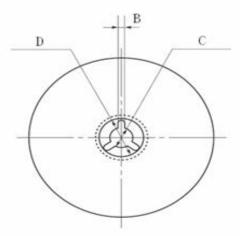
9. Reliability	/ Specification	n					
,	<u> </u>				Performance		
Test Item	l	Co	ondition of test		Requirements		
Tensile Strength	The unit's lea	ad wire should withstand	a tensile force applied	to the	There should be no		
Termination		n the direction of its dra		abnormalities detected on			
	maintained as			-	the unit		
Solder ability	The lead is	immersed in a 235±5°	2±0.5	A new uniform coating of			
-	seconds.			solder shall cover min			
	l				mun 95% of the surface		
	I				being immersed.		
Vibration	Endurance co	ondition by a frequency sv	weep shall be made. Th	he	(1).Frequency		
	entire freque	ency range from 10HZ t	to 50HZ and return to		Change:±5ppm		
	10HZ,shall be	e transverseb in 1min. Am	nplitude(total		(2).Resistance:±15%		
	excursion):1.5	5mm this motion shall be	applied for a period of	2h			
	each of 3 mut	tually perpendicular axes	(a total of 6h)				
Drop	Form 70cm he	eight 3 times on 3cm har	d wooden floor		(1).Frequency		
	l				Change:±5ppm		
	 	2			(2).Resistance:±15%		
Shock			n of the pulse :6ms		(1).Frequency		
		hocks shall be applied in		utually	•		
		r axes(a total of 18 shock	•		(2).Resistance:±15%		
Damp heat		Il be stored at a temper			(1).Frequency		
	Ī	90%to95% for 48h, the			Change:±5ppm		
		mospheric conditions	for 1 \sim 2h atter	which	(2).Resistance:±15%		
		t shall be made.		2.41	=		
Dry heat		Il be stored at a temper			(1).Frequency		
		be subjected to standard	•	s tor	Change:±5ppm		
Cold		hich measurement shall I		- than	(2).Resistance:±15%		
Cold		l be stored at a temperatu			(1).Frequency		
	_	ojected to standard atmos neasurement shall be mad	•	1~211	Change:±5ppm (2).Resistance:±15%		
Aging		l be stored at a temperatu		than it	Refer to verdict		
Aging		ected to standard atmosp			specification verdict		
	_	neasurement shall be mad		Z11	Specification		
Temperature		I be subjected to 5 succe		rature	Refer to verdict		
cycling		as show in table below,	•		specification		
J.c9		mospheric conditions			opcomodator:		
		t shall be made	VV 1.1.G				
		Temperature					
	1 -4	-40℃±3℃	Duration 30min				
		Standard atmospheric	Within 30s				
i		conditions					
	3 1	100℃±3℃	30min				
1	l	Standard atmospheric	Within 30s				
i		conditions					

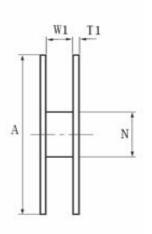


Test Item	Condition of test	Performance Requirements
Sealing	The crystal filter unit shall be immersed in a industry alcohol for 5±0.5 minutes then 25±3°C 1~2 Hr before testing	
Resistance to soldering heat	PEAK 10S MAX 265 0 2000 1500 25°C to Peak: 360s TIME (Seconds) Total: 420S Reflow soldering cure see the chart. Soldering iron method: Bit temperature: 350°C±10°C	Refer to verdict specification
	Application time of soldering iron:5s Max	









	(HC-49SMID	8045	7050	6035	5032	4025	3225
w	24.00 ± 0.30	16.00 ± 0.05	16.00 ± 0.05	12.00 ± 0.05	12.00 ± 0.05	12.00 ± 0.05	12.00 ± 0.05
E	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10
F	11.5 ± 0.10	7.5 ± 0.10	7.5 ± 0.10	5.5 ± 0.10	5.5 ± 0.10	5.5 ± 0.10	5.5 ± 0.10
Т	0.40 ± 0.05	0.35 ± 0.05	0.35 ± 0.05	0.35 ± 0.05	0.35 ± 0.05	0.35 ± 0.05	0.30 ± 0.05
P	12.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10	8.00 ± 0.10
P0	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P2	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10
D0	ф1.50+0.10	ф1.50+0.10	ф1.50+0.10	ф1.50+0.10	ф1.50+0.10	ф1.50+0.10	ф1.50+0.10
D1	Ф 1.50МПМ	ф 1.50МПМ	ф1.50 MIN	ф 1.50МПN	ф 1.50MIN	ф 1.50МШМ	Ф 1.50МПМ
A0	4.60 ± 0.10	4.85 ± 0.10	5.40 ± 0.10	3.90 ± 0.10	3.60 ± 0.10	2.80 ± 0.10	2.85 ± 0.10
K0	4.40 ± 0.10	1.90 ± 0.10	1.80 ± 0.10	1.50 ± 0.10	1.10 ± 0.10	0.90 ± 0.10	0.85 ± 0.10
В0	14.20 ± 0.15	8.60 ± 0.15	7.40 ± 0.10	6.40 ± 0.10	5.40 ± 0.10	4.30 ± 0.10	3.55 ± 0.10
A	ф330 ± 1.0	ф 178 ± 2.0	Φ 178 ± 2.0	ф 178 ± 2.0	ф 178 ± 2.0	ф 178 ± 2.0	ф 178 ± 2.0
В	2.30 ± 0.20	2.00 ± 0.50	2.00 ± 0.50	2.00 ± 0.50	2.00 ± 0.50	2.00 ± 0.50	2.00 ± 0.50
С	ф 13.5 ± 0.20	ф 13.2 ± 0.20	Φ13.2±0.20	ф 13.2 ± 0.20	ф13.2±0.20	φ 13.2 ± 0.20	φ 13.2 ± 0.20
D	Ф21.5±0.20	ф20.0±0.50	Ф20.0 ± 0.50	Ф20.0 ± 0.50	ф20.0±0.50	Φ20.0 ± 0.50	ф20.0±0.50
И	ф 100.0 ± 0.5	Φ60.5 ± 1.0	Φ60.5 ± 1.0	Φ60.5 ± 1.0	Φ60.5 ± 1.0	Φ60.5 ± 1.0	Φ60.5 ± 1.0
W1	24.5 ± 0.20	16.5 ± 0.20	16.5 ± 0.20	12.5 ± 0.20	12.5 ± 0.20	12.5 ± 0.20	12.5 ± 0.20
T1	2.30 ± 0.20	1.80 ± 0.20	1.80 ± 0.20	1.80 ± 0.20	1.80 ± 0.20	1.80 ± 0.20	1.80 ± 0.20