
MEC

PRODUCT SPECIFICATION

QUARTZCRYSTAL

FREQUENCY COMPONENTS

P R O D U C T T Y P E	: SMD-49S
N O M I N A L F R E Q U E N C Y	: 13.56MHZ
P A R T N O	: SMD49S-13.56M1620F
R E V I S I O N	: A

PRODUCT DESCRIPTION

Standard atmospheric conditions

Unless otherwise specified. The standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature $25\pm 2^{\circ}\text{C}$
Relative humidity $40\%\sim 70\%$

If there is no doubt the results, measurement shall be made within the following limits:

Ambient temperature $25\pm 2^{\circ}\text{C}$
Relative humidity : $40\%\sim 70\%$

Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

Crystal cutting type

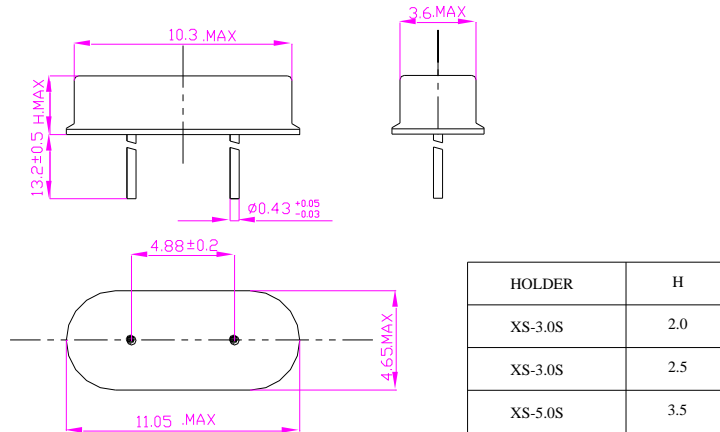
The crystal is using AT CUT (thickness shear mode)

ELECTRICAL SPECIFICATIONS

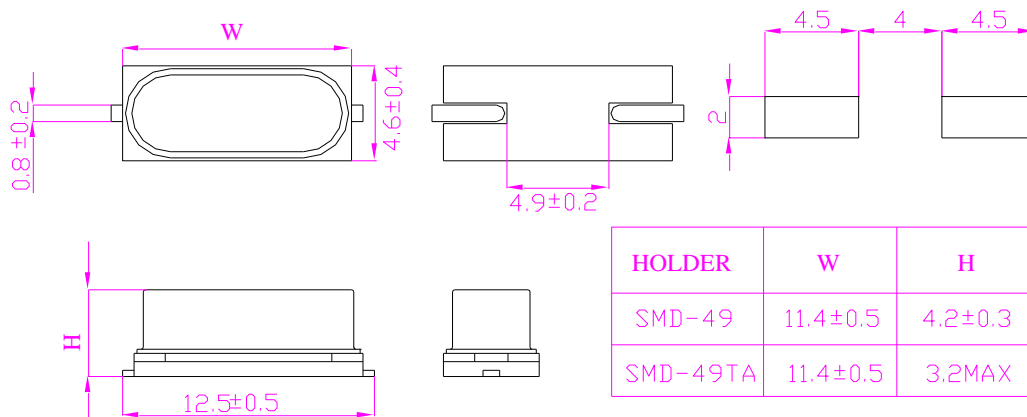
	Parameters	Symbol	Electrical Spec.	UNITS	Notes
1	Nominal Frequency	FL	13.560000	MHz	-
2	Oscillation Mode	-	Fund	-	-
3	Load Capacitance	CL	16.0	p F	-
4	Frequency Tolerance	-	± 20	ppm	at $25\pm 2^{\circ}\text{C}$
5	Operating Temperature	-	$-10\sim +80^{\circ}\text{C}$	$^{\circ}\text{C}$	-
6	Frequency Stability (reference 25°C)	-	± 30	ppm	$-10\sim +80^{\circ}\text{C}$
7	Drive Level	DL	1.0	u W	-
8	Effective Resistance Rr	ESR	< 40.0	ohm	-
9	Shunt Capaitance C0	C0	< 5.0	p F	-
10	Insulation Resistance	IR	> 500	M-ohm	at DC 100V
11	Aging	-	± 5	ppm	1st Year
12	Reflow shift	-	± 5	ppm	at $265\pm 2^{\circ}\text{C} * 10\text{sec}$
13	Storage Temperature	-	$-40\sim +85^{\circ}\text{C}$	$^{\circ}\text{C}$	-
14	ESD	-	HBM $> 2000\text{V}$	$^{\circ}\text{C}$	JESD22-A114-B
15	Others	-	-	-	-

DIMENSIONS

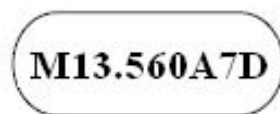
49S/49SMD MODE



49M MODE



MARKING



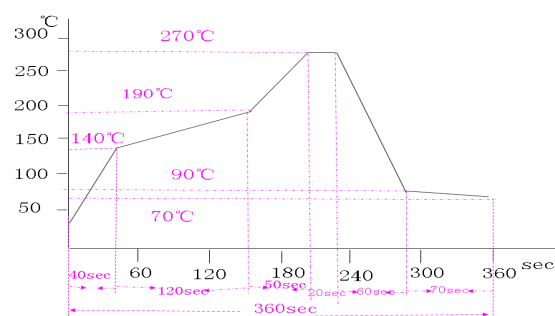
M: MHL MEC
13.560 : Frequency
A: Month code
7 Year code

A - Jan	E - May	J - Sept
B - Feb	F - June	K - Oct
C - Mar	G - Jul	L - Nov
D - Apr	H - Aug	M - Dec

SUGGESTED REFLOW PROFILE

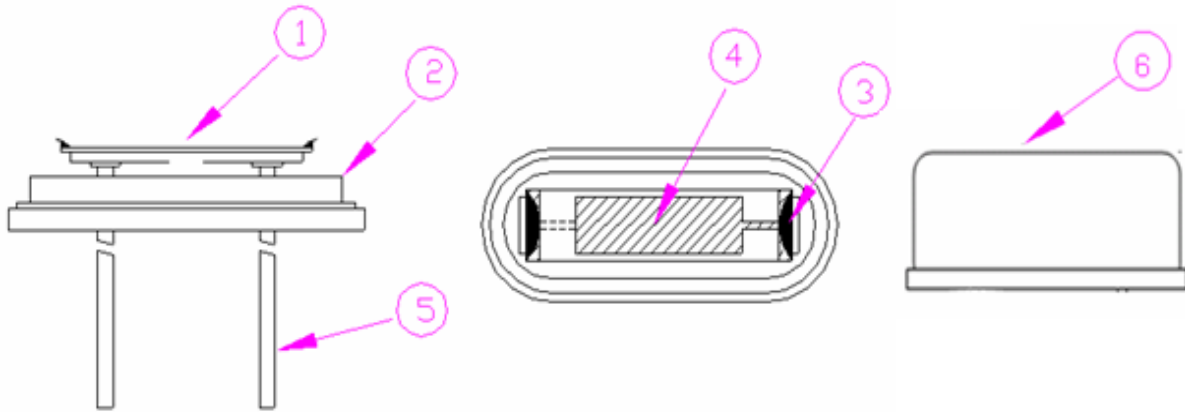
Total time : 200 sec. Max.

Solder melting point : 185 °C

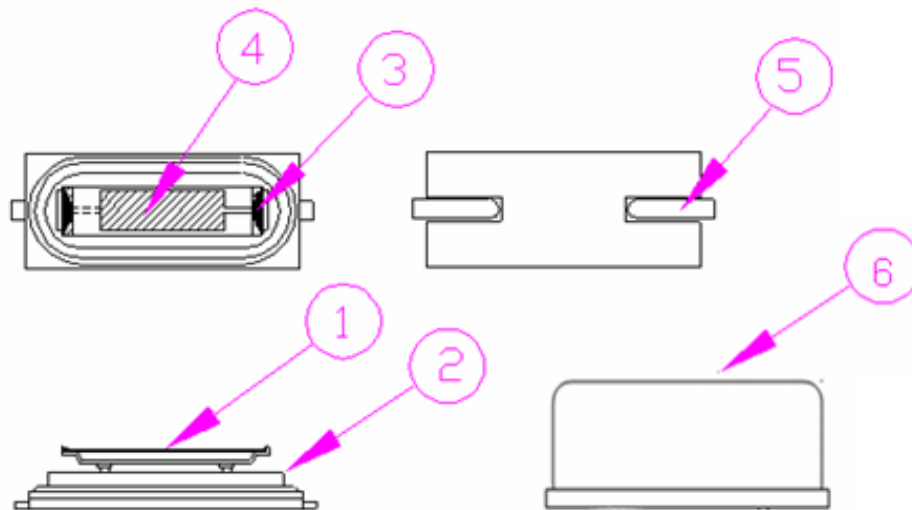


STRUCTURE ILLUSTRATION

49S/49SMD MODE



49M MODE



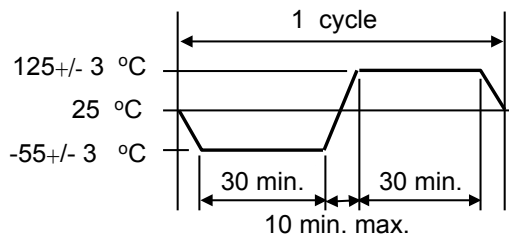
NO	COMPONENTS	MATERIALS	QTY	FINISH/SPECIFICATIONS
1	CRYSTAL BLANK	SiO ₂	1	-
2	BASE	SPCC-SD	1	-
3	CONDUCTIVE ADHESIVE	Ag +Resin	2	-
4	ELECTRODE	Ag	2	-
5	LEAD	Kovar	2	-
6	COVER/CAN	Kovar	1	-

RELIABILITY SPECIFICATIONS

1.MECHANICAL ENDURANCE

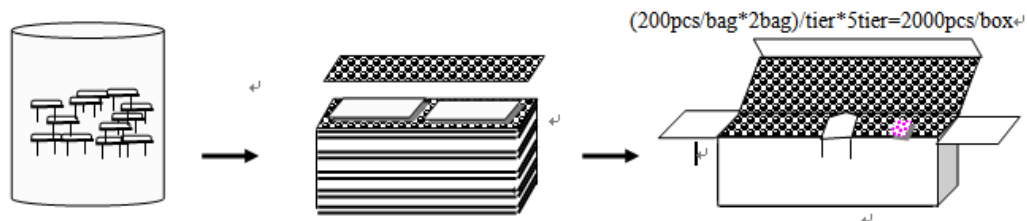
No.	Test Item	Test Methods	
1	Drop Test	50 cm height, fall freely onto stainless plate 3 times.	JIS C6701
2	Vibration	Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm Sweep time 20 minute Pendicular axes each test time 4 hours (Total test time 12 hours)	MIL-STD-883E
3	Solderability	Temperature 255 °C +/- 5 °C Immersing depth 0.5 mm minimum Immersion time 10 +/- 0.5 seconds Flux Rosin resin methyl alcohol solvent (1 : 4)	MIL-STD-883E
4	Resistance To Soldering Heat	Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 +/- 5 °C Test time 5 +/- 1 sec.	MIL-STD-202F

2.ENVIRONMENTAL ENDURANCE

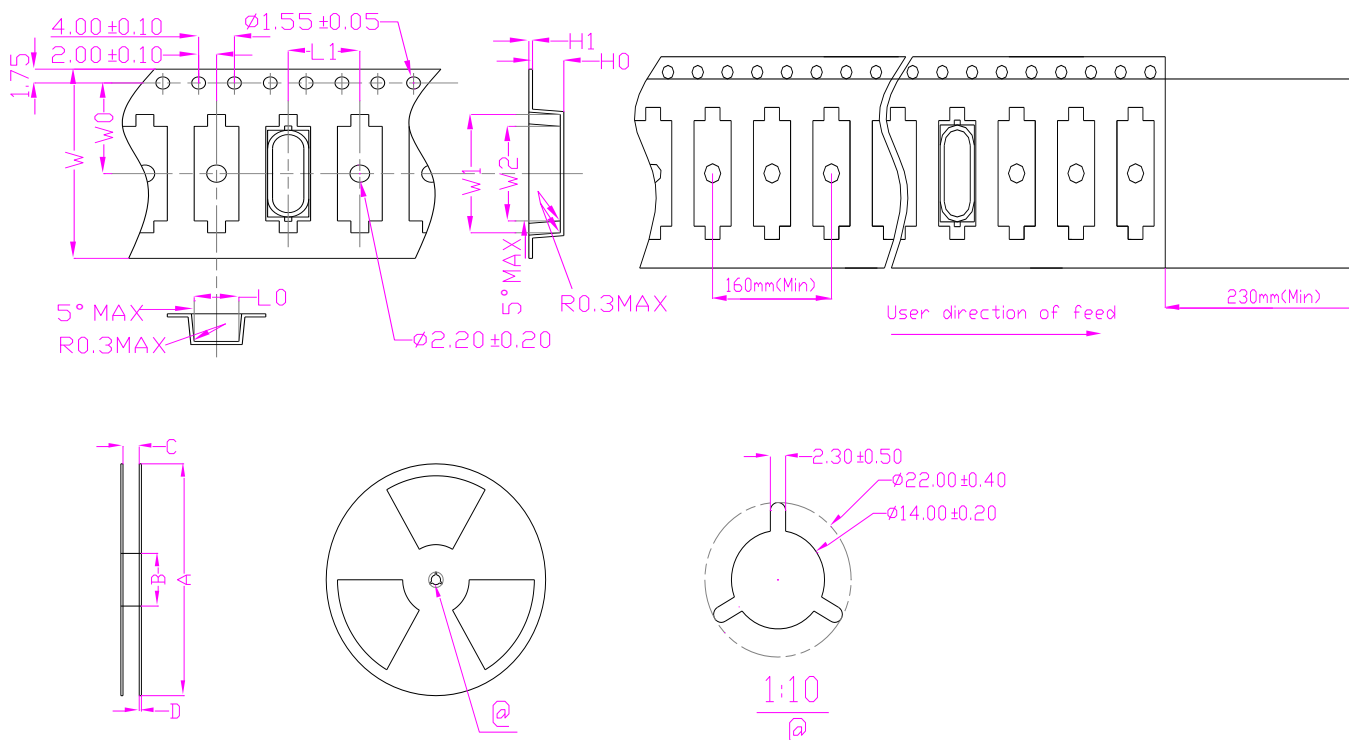
No.	Test Item	Test Methods	
5	High Temp. Storage	+ 125 °C +/- 2 °C for 500 +/- 12 hours	MIL-STD-883E
6	Low Temp. Storage	- 40 °C +/- 2 °C for 500 +/- 12 hours	
7	Thermal Shock	<p>Total 10 cycles of the following temperature cycle</p>  <p>The diagram shows a temperature cycle with three levels: 125 +/- 3 °C, 25 °C, and -55 +/- 3 °C. The cycle consists of a 30 min. ramp down from 125 °C to -55 °C, a 30 min. dwell at -55 °C, a 10 min. max. ramp up to 125 °C, and a 30 min. dwell at 125 °C. This sequence is repeated 10 times.</p>	MIL-STD-883E

PACKING :

49S/49SMD MODE



49M MODE



Type	Dimension	Unit : mm					
		W	W0	W1	W2	L0	L1
SMD-49S		24±0.3	11.5±0.1	15±0.1	12±0.1	5±0.1	8/12±0.1
	H1	A	B	C	D		
		4.25/3.5±0.2	330±2.0	100±1.0	24.5±1.0	2.4±0.2	

Standard Reel Quantity is 1,000 pcs per reel.

REMARK : NA

Mobicon Holdings Limited 7/F., New Trend Centre, 704 Prince Edward Road East, San Po Kong, Kowloon, Hong Kong. Tel: (852) 2397 6628 / 2397 8218; Fax: (852) 2397 0339 / 2397 8187 http://www.mobicon.com E-mail: info@mobicon.com			MHL P/N: SMD49S-13.56M1620F	
			VER: A	PAGE: 7/8
Range	Products	Packing Material	Test Method	
Banned Substances	Maximum concentration ppm(mg/kg)	Maximum concentration ppm(mg/kg)		
1. 镉及镉化合物 Cadmium and cadmium compounds	5	5	ICP-AES as per EN1122, method B2001 or other acid digestion.	
2. 铅及铅化合物 Lead and lead compounds	40	100	ICP-AES after as per EPA 3050B or other acid digestion.	
3. 汞及汞化合物 Mercury and mercury compounds	5	5	ICP-AES after as per EPA 3052 or other acid digestion.	
4. 六价铬化合物 Hexavalent-Chromium VI (Cr+6)	10	10	As per US EPA 7196A and US EPA 3060A.	
5. 聚溴联苯 PBB Polybrominated biphenyls	5	5	With reference to USEPA 3540 or USEPA3550. Analysis was performed by LPLC/DAD, LC/MS or GC/MS. (prohibited by 2002/95/EC (RoHS),83/261/EEC, and76/769/EEC)	
6. 聚溴二苯醚 PBDE Polybrominated diphenyl ethers	5	5	With reference to USEPA3540or USEPA3550. Analysis was performed by HPLC/DAD LC/MS or GC/MS.(prohibited by 2002/95/EC(RoHS), 83/264/EEC, and 76/769/EEC)	
7. 多氯联苯 (PCB) Polychlorinated biphenyl	5	5		
8. 多氯化萘 (PCN) Polychlorinated naphthalene	5	5		
9. 氯代烷烃 (CP) Chlorinated paraffin	5	5		
10. 其他有机氯化物 Other chlorinated organic compounds	5	5		
11. 其他有机溴化合物 Other brominated organic compounds	5	5		
12. 有机锡化合物 (三丁基锡化合物,三苯基锡化合物) Organic tin compounds (Tributyl tin category & Triphenyl tin category)	5	5		
13. 石棉 Asbestos	5	5		
14. 偶氮化合物 Azo compounds	5	5		
15. 甲醛 Formaldehyde	5	5		
16. 聚氯乙烯(PVC)以及聚氯乙烯混合物 Polyvinyl chloride (PVC) and PVC blends	No detect	No detect		
17. 包装材料中重金属(汞、镉、六价铬、铅、PBB、PBDE)之总量 Heavy metals (mercury, cadmium, lead, Cr+6,PBB and PBDE) in packing	N/A	<100		
Lead Free Products are “Directive 2002/95/EC of The European Parliament of 27 January 2003 on the restriction of certain hazardous substances (RoHS) in electrical and electronic equipment” and Sony SS-00259 Compliant.				

MEC

REVIEW OF SPECIFICATIONS

- 1) When something get doubtful with this specifications, we shall jointly work to get an agreement.
- 2) This specification limits the quality of the components as a single unit. Please insure the component is thoroughly evaluated in your application circuit.
- 3) Please do not use this component in any application that deviates from its intended use as noted within the specification. It may cause any mishaps.
- 4) Please return one of this specification after your signature of acceptance. In case of no return within 3 months from submission date. This specification should be treated as accepted.

When using our products, the following precautions should be taken.

- (1) Safety designing of apparatus or a system allowing for failures of electronic components used in the system

In general, failures will occur in electronic components at a certain probability. MOBICON HOLDINGS LTD makes every effort to improve the quality and reliability of electronic component products. However, it is impossible to completely eliminate the probability of failures. Therefore, when using MOBICON HOLDINGS LTD electronic component products, systems should be carefully designed to ensure redundancy in the event of an accident which would result in injury or death, fire, or social damage, to ensure the prevention of the spread of fire, and the prevention of faulty operation.

- (2) Quality Level of various kinds of parts, and equipment in which the parts can be utilized
Electronic components have a standard quality level unless otherwise specified.
- (3) This specifications is subject to change without notice.
The contents of this specifications are based on data which is correct as of 2002, and they may be changed without notice. If our products are used for mass-production design, please enquire consult with a member of our company's sales staff by way of precaution.
- (4) Reprinting and copying of this specifications without prior written permission from MOBICON HOLDINGS LTD are not permitted.

- (5) Industrial Property Problems

In the event any problems associated with industrial property of a third party arising as a result of the use of our products. MOBICON HOLDINGS LTD assumes no responsibility for problems other than problems directly associated with the constitution and manufacturing method of the products.