EASCERA

EAS CORPORATION

SPECIFICATION FOR APPROVAL

CUSTOMER	:	
PRODUCT TYPE	:	SMD SEAM XO 2.0*1.6
NOMINAL FREQ.	:	48.000000MHz
EASCERA P/N	:	EAS2016XO48.000DLXXR3
REVISION	:	A1
CUSTOMER P/N	:	
PM / SALES	:	
DATE	:	

CUSTOMER SIGNATURE & Date

(1) EAS requires one copy returned with signature and title of authorized individual that signifies acceptance of the attached specifications.

(2) Orders received and accepted by EAS after return of signed copy of specification will be produced per these specifications.

(3) Any changes to these specifications must be agreed upon by both parties and new revision of the Product Specification Sheet will be issued.

(4) Any issuance of purchase order prior to consigning back the Approval page of "Specification Sheets" from customers will be regarded as the agreement on the contents of these specifications.

Attachment: Product Specification Sheet

1
2
3
4
5

RoHS Compliant

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PRODUCT SPECIFICATION SHEET

PRODUCT TYPE	:	SMD SEAM XO 2.0*1.6
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REVISION	:	A1

PE/RD	QA	MFG

NOTE:

(1)Lead Free Products are "Directive 2002/95/EC of The European Parliament of 27 January 2003 on the restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment" Compliant (Attachment: SGS Test Report).

(2)Revision "Sx" is for engineering samples only. PE/RD's approval required.

(3)Revision "Ax" is production ready. PE, QA and MFG's approval required.

RoHS Compliant

Rev	Revise page	Revise contents	Date	Ref.No.	Reviser
A1	N/A	Initial released	26/Aug/18	N/A	Yachuan Miao

■ ELECTRICAL SPECIFICATIONS

Standard atmospheric conditions

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

Ambient temperature : 25±5℃

Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature : 25±3℃

Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by MD 37WX-05M or equivalent.

Crystal cutting type

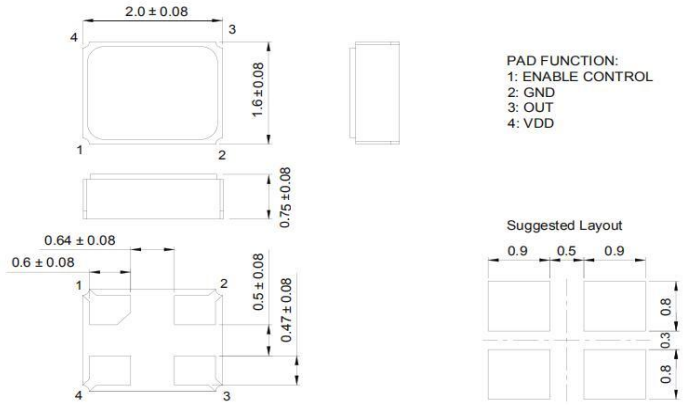
The crystal is using AT CUT (thickness shear mode).

Unit Weight:

0.015±0.002 g/pcs

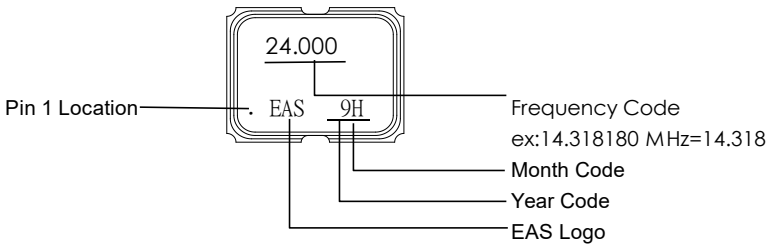
	Parameters	SYM.	Electrical Spec.				Notes
			MIN	TYPE	MAX	UNITS	
1	Nominal Frequency	-		48.000000		MHz	-
2	Frequency Stability	-		±20		ppm	-
3	Operating Temperature	Topr	-40	25	85	℃	-
4	Storage Temperature	Tstg	-40	~	85	℃	-
5	Supply Voltage	VDD	1.8	~	3.3	V	-
6	Input Current	Icc	-	-	10	mA	-
7	Enable Control	-		Yes		-	Pad 1
8	Output Load : CMOS	CL		15		pF	-
9	Output Voltage High	VoH	90%Vdd	-	-	V	-
10	Output Voltage Low	VoL	-	-	10%Vdd	V	-
11	Rise Time	Tr	-	-	10	ns	10%→90%VDD Level
12	Fall Time	Tf	-	-	10	ns	90%→10%VDD Level
13	Symmetry (Duty ratio)	TH/T	45	~	55	%	-
14	Start-up Time	Tosc	-	-	10	ms	-
15	Enable Voltage High	Vhi	70%Vdd	-	-	V	-
16	Disable Voltage Low	Vlo	-	-	30%Vdd	V	-
17	Aging	-		±3		ppm/yr.	1st. Year at 25℃
18	Output Disable Delay Time	T off	-	-	150	us	-
19	Output Enable Delay Time	T on	-	-	150	us	-

■ DIMENSIONS



Units: mm

■ MARKING



Year Code:

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
0	1	2	3	4	5	6	7	8	9	0	1

Month Code:

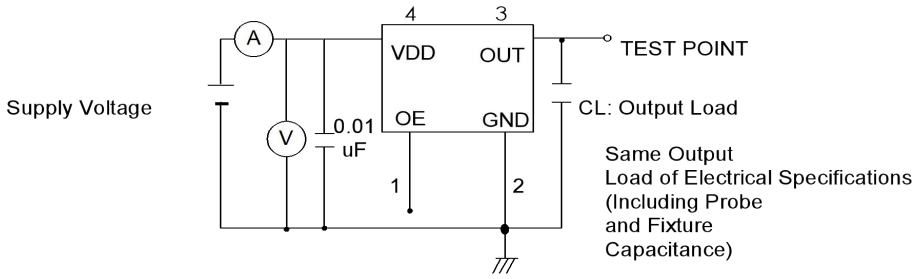
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
A	B	C	D	E	F	G	H	I	J	K	L

Production location:CHINA

■ TEST DIAGRAM

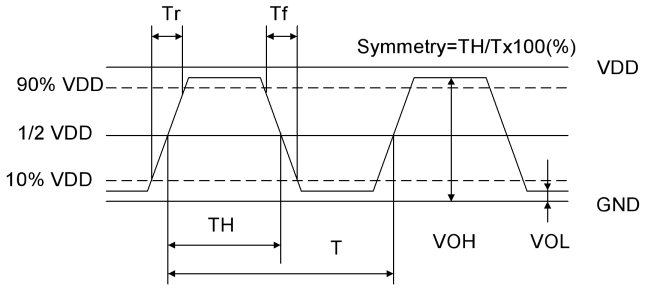
Pad 1 : Tri-State control

Pad 1(OE)	Pad 3 (Output)	Oscillator
High (or open)	OSC out	Normal operation
Low	High impedance	Stop oscillation



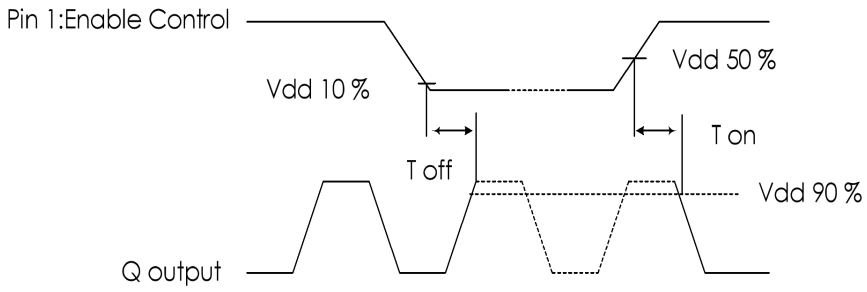
■ WAVEFORM CONDITIONS

Waveform measurement system should
have a min. bandwidth of 5 times the
frequency being tested.



■ OUTPUT ENABLE / DISABLE DELAY

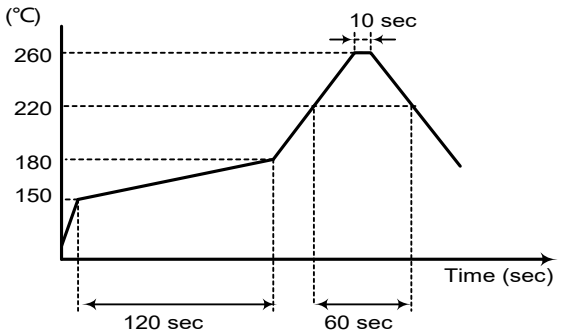
The following figure shows the oscillator timing during normal operation . Note that when the device is in standby, the oscillator stops. When standby is released, the oscillator starts and stable oscillator output occurs after a short delay.



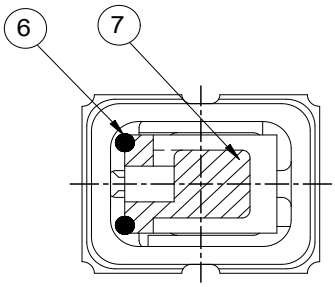
■ SUGGESTED REFLOW PROFILE

Total time : 200 sec. Max.

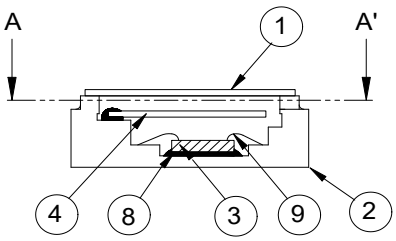
Solder melting point :220 ℃



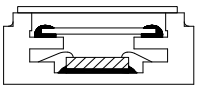
■ **STRUCTURE ILLUSTRATION**



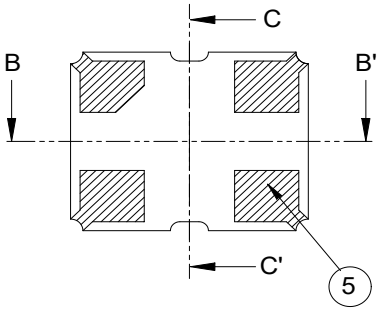
A-A' sectional drawing



B-B' sectional drawing

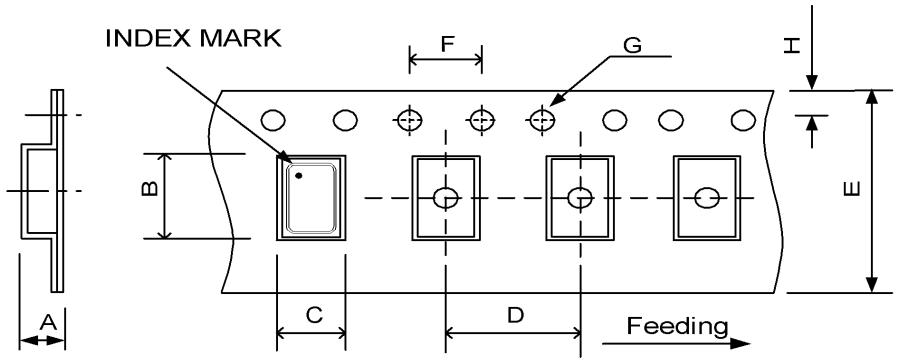


C-C' sectional drawing



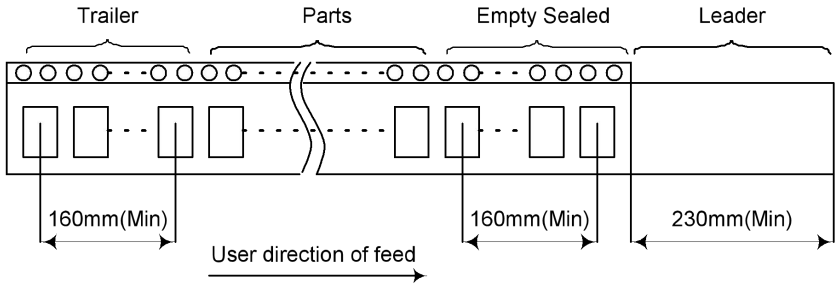
NO	COMPONENTS	MATERIALS	QTY	FINISH/SPECIFICATIONS
1	Lid	Kovar (Fe/Co/Ni)	1	-
2	Base (Package)	Ceramic (Al_2O_3) + Kovar (Fe/Co/Ni)+ Ag/Cu	1	-
3	IC chip	-	1	-
4	Crystal blank	SiO_2	1	-
5	PAD	Au	4	Tungsten metalize + Ni plating + Au plating
6	Conductive adhesive	Ag	4	Silicon resin
7	Electrode	Noble Metal	2	-
8	Die attached	Conductive (Ag)	1	Epoxy resin
9	Bonding wire	Au	5 or 6	Pad 1 options : NC is 5 wires , EN is 6 wires.

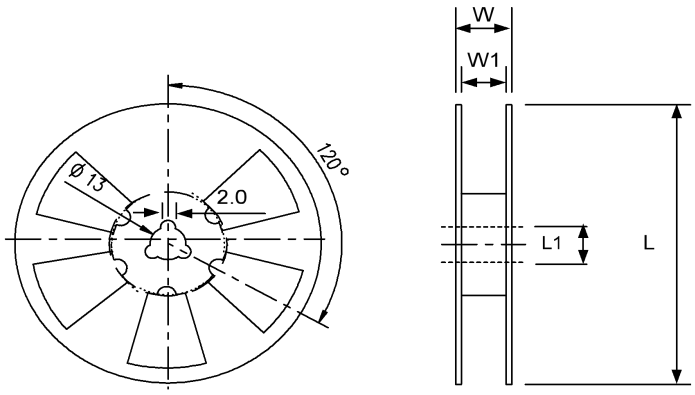
■ **PACKING**



DIMENSIONS	A	B	C	D	E	F	G	H	
	1.15	2.70	2.25	4.00	8.00	4.00	1.55	1.75	(UNIT : mm)

REMARK :





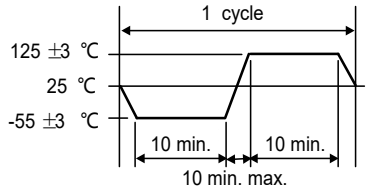
DIMENSIONS	L	L1	W	W1	pcs / Reel (UNIT : mm)
	178	13	11.6	8.4	Standard Reel Quantity is 3,000 pcs per reel

■ RELIABILITY SPECIFICATIONS

1.Mechanical Endurance

No.	Test Item	Test Methods		REF. DOC
1.1	Drop Test	75 cm height,3 times on concrete floor .		JIS C6701
1.2	Mechanical Shock	Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5m sec. duration time		MIL-STD-202F
1.3	Vibration	Frequency range Amplitude Sweep time perpendicular axes each test time	10 ~ 2000 Hz 1.52 mm/20G 20 minute 4 hours (Total test time 12 hours)	MIL-STD-883E
1.4	Gross Leak	Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm^2		MIL-STD-883E
1.5	Fine Leak	Helium Bomging 4.5 Kgf / cm^2 for 2 hr		
1.6	Solderability	Temperature Immersing depth Immersion time Flux	245 ℃ ± 5℃ 0.5 mm minimum 5 ± 1 seconds Rosin resin methyl alcohol solvent (1 : 4)	MIL-STD-883E

2.Environmental Endurance

No.	Test Item	Test Methods		REF. DOC
2.1	Resistance To Soldering Heat	Pre-heat temperature Pre-heat time Test temperature Test time	125 ℃ 60 ~ 120 sec. 260 ± 5 ℃ 10 ± 1 sec.	MIL-STD-202F
2.2	High Temp. Storage	+ 125 ℃ ± 3 ℃ for 1000 ± 12 hours		MIL-STD-883E
2.3	Low Temp. Storage	- 40 ℃ ± 3 ℃ for 1000 ± 12 hours		
2.4	Thermal Shock	Total 100 cycles of the following temperature cycle 		MIL-STD-883E
2.5	High Temp &Humidity	85℃ ± 3℃, RH 85% , 1000Hrs		JIS C5023
2.6	Pressure Cooker Storage	121 ± 3℃ , RH100% , 2 bar , 240Hrs		JIS C6701