

# H.ELE. Specifications for Approval



**CUSTOMER**

**PRODUCT TYPE**

**Quartz Crystal SMD-49**

**NOMINAL FREQUENCY**

**12.000000MHz**

**H.ELE. SAMPLE O/N**

**EOS-H20016-2**

**H.ELE. P/N**

**XSA012000DK1H-OX**

**RELEASE DATE**

**2017/02/09**

**VERSION**

**00**

**MSL**

**Level 01**

**GREEN PRODUCT**

Pb free  RoHS Compliant

HF-Halogen free  REACH Compliant

**CUSTOMER P/N**

**APPLICATION & MODEL**

**APPROVED BY CUSTOMER**

**(DATE)**

**Harmony Electronics Corp.**

F. S. TSAI   Y. W. LEE   U. F. CHEN  
(APPROVE)   (CHECK)   (PREPARE)

Country of Origin: Taiwan Factory  
Thailand Factory  
China Factory

**HARMONY ELECTRONICS CORPRATION**

KAOHSIUNG

TAIPEI

THAILAND

SHENZHEN

SUZHOU

TEL: 886-2-26588883

Email: [contactus@hele.com.tw](mailto:contactus@hele.com.tw)





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## 1. QUARZ CRYSTAL UNIT SPECIFICATION

Items	Electrical Spec.			Unit	Notes
	Min	Type	Max		
1. Frequency (FL)	12.000000			MHz	
2. Mode of oscillation:	Fundamental				AT-cut
3. Frequency tolerance	-20	-	+20	ppm	at 25°C±3°C
4. Equivalent resistance (RR)	-	-	50	Ω	SERIES
5. Storage temperature range	-40	-	+85	°C	
6. Operable temperature range	-40	-	+85	°C	
7. Temperature stability	-50	-	+50	ppm	-40°C ~ +85°C
8. Loading capacitance (CL)	-	20.0	-	pF	
9. Drive level (DL)	-	50	300	μW	
10. Shunt Capacitance (C0)	-	-	7.0	pF	
11. Insulation resistance	500	-	-	MΩ	at DC 100V
12. Aging:	-5	-	+5	ppm/ year	
13. Circuit:	Measured in HP/E5100A,S&A 250B				

Note:



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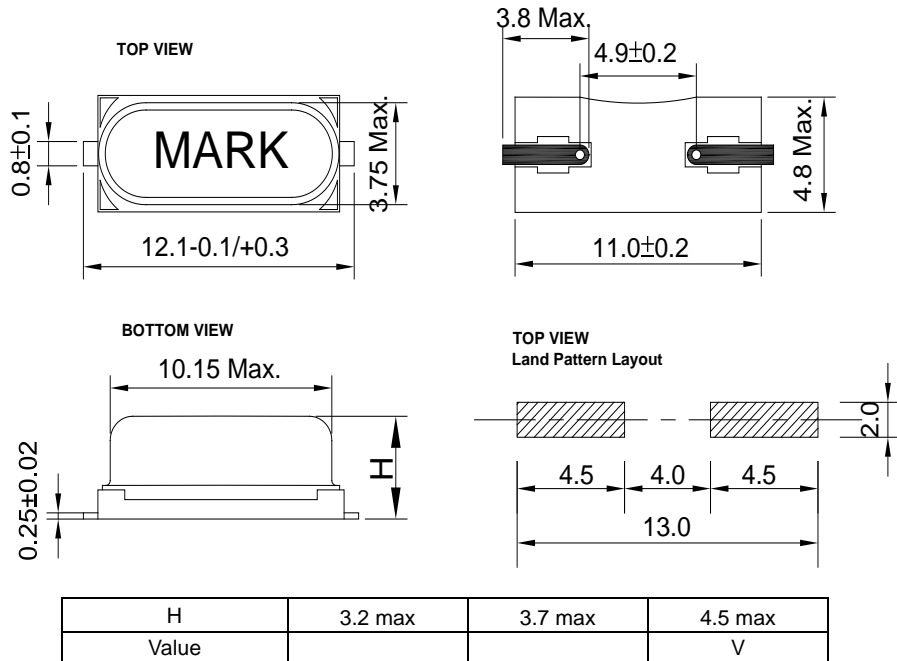
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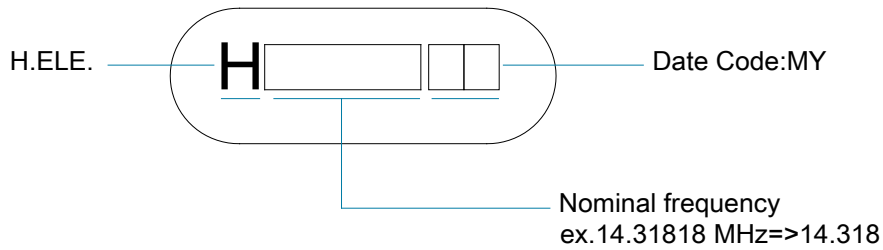
Email: [contactus@hele.com.tw](mailto:contactus@hele.com.tw)



## 2. DIMENSION



## 3. MARKING



Note:

1. Laser marking.
2. Date Code:

M=Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Code	A	B	C	D	E	F	G	H	J	K	L	M
Y=Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029		
Code	0	1	2	3	4	5	6	7	8	9		

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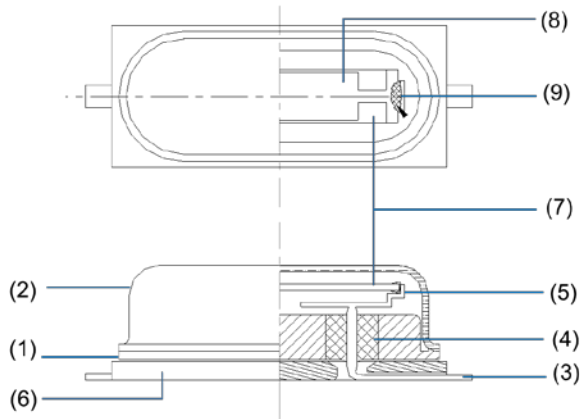
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#### 4. INSIDE STRUCTURE



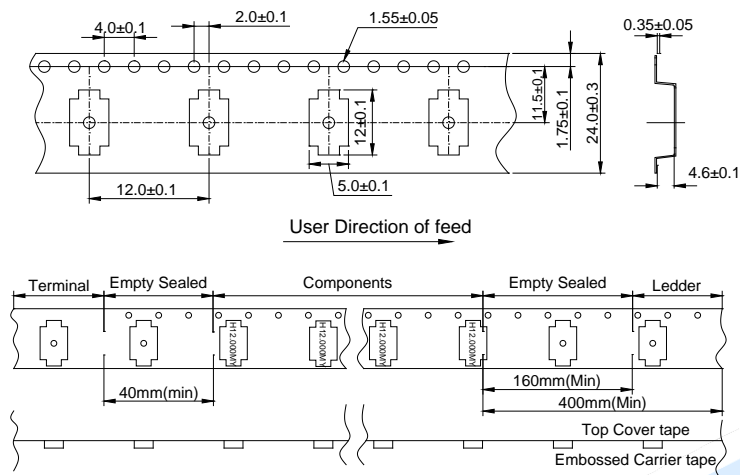
Reference drawing

No.	Component	Note
(1)	Base	
(2)	Can	
(3)	Lead	Free Pb
(4)	Glass	
(5)	Support	
(6)	Insulator	
(7)	Blank	
(8)	Electrode	
(9)	Connective Adhesive	

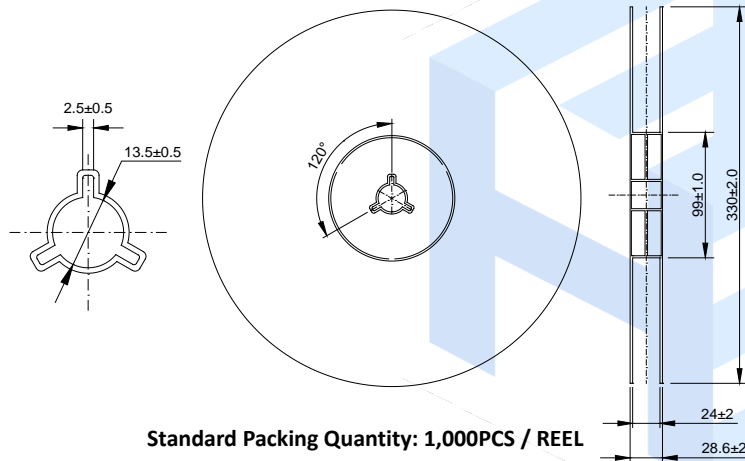
※The use prohibition chemistry substance of Table 1 of DHE-0204-1 (HE-QA-24) is not included in this item.

#### 5. EMOSS CARRIER TAPE AND REEL

##### ■ Carrier Tape



##### ■ Reel



Standard Packing Quantity: 1,000PCS / REEL

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■ **Joint of tape**

The carrier-tape and top cover-tape should not be jointed.

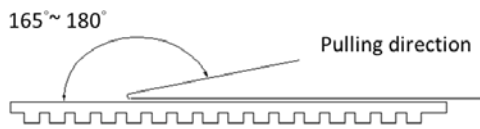
■ **Release strength of cover tape**

It has to between 0.1N to 0.7N under following condition.

Pulling direction: 165° to 180°

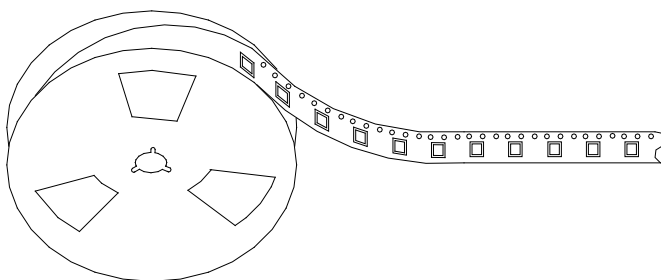
Speed: 300mm/min.

Otherwise unless specified.



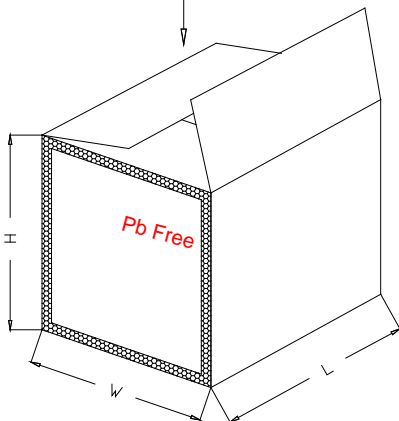
Other standards shall be based on JIS C 0806-1990.

**6. PACKAGE**



Reel

One reel quantity: 1000pcs



Carton (Corrugated Carton)  
Thickness: 7±1mm

Carton Size(mm)

Q'ty	REEL Carton	∅	330
	L±5	340	
	W±5	340	
10 reels	H±5	335	
5 reels	H±5	205	

**Label Contents:**



The label will be stickled on all reels.

**Descriptions:**

1. One carton will pack 10 reels (10,000 pcs totally) or 5 reels (5,000pcs of SMD-49 totally).
2. The cartoon will be placed 1.5cm thin-Foam-rubber cushions on the bottom and bottom for protection.

**7. MECHANICAL PERFORMANCE**

Item		Test Methods		Specifications code
1	Shock	Dropping from 50 cm height 3 times on 30 mm Concrete Floor Refer to: JIS C 60068-2-6.		A
2	Vibration	(1)Vibration Frequency	10~55Hz	A
		(2)Cycle	2 rounds	
		(3)Amplitude	0.8mm	

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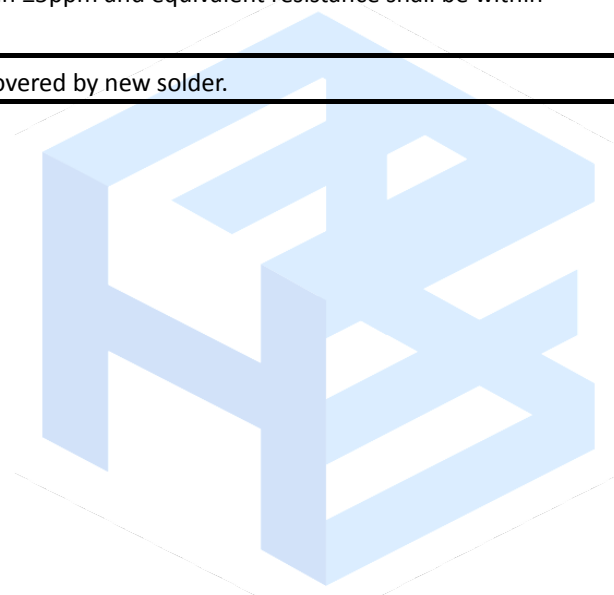


		(4)Direction	X.Y.Z	
		(5)Time	2hr for each direction	
3	Leakage Test	Dipping in the FC-40 at +125±5°C for 30 min. Not exceed specifications		---
4	Solder ability	After applying ROSIN Flux, dipping in solder bath at 245deg.C ±5deg.C for 3 ±0.5 sec. Refer to: JIS C 60068-2-20		B

## 8. ENVIRONMENT PERFORMANCE

Item		Test Methods	Specifications Code
1	Humidity	Temperature 60°C±2°C, RH 90~95%, duration of 240 hours. Back to room temperature first, then in 1~2 hours, the component shall be checked. Refer to: JIS C 60068-2-3	A
2	Storage in Low Temperature	-40deg.C ±2deg.C, duration of 240 hours. Back to the room temperature first, then in 1~2 hours, the component shall be checked. Refer to: JIS C 60068-2-1	A
3	Storage in High Temperature	+85deg.C ±2deg.C, duration of 240 hours. Back to the room temperature first, then in 1~2 hours, the component shall be checked. Refer to: JIS C 60068-2-2	A
4	Temperature cycles	-30deg.C +/-2deg.C (30min) ↔ +85deg.C +/-2deg.C (30min) 25 cycles. And Temperature Increasing/reducing time < 3mins. Back to the room temperature first, then in 1~2 hours, the component shall be checked. Refer to: JIS C 0025	A

Specifications code	Specifications
A	Frequency variation shall be within ±5ppm and equivalent resistance shall be within ±15% or 2Ω
B	More than 90% of lead shall be covered by new solder.



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## **FACTORY LOCATION**

### **HEAD OFFICE/TAIWAN FACTORY**

NO.39, HUADONG RD., DALIAO DIST., DAFA INDUSTRIAL PARK, KAOHSIUNG CITY 831, TAIWAN.

### **CHINA FACTORY**

JU YUAN INDUSTRIAL PARK, QIAO TANG ROAD, TANG WEI COMMUNITY, FUYONG, BAOAN DISTRICT, SHEN ZHEN CITY, CHINA (Post Code:518103).

### **THAILAND FACTORY**

66MOO 5, KAONGU-BEOKPRAI RD., T.BEOKPRAI, A. BANPONG, RATCHABURI PROVINCE 70110, THAILAND.

## **SERVICE CENTER**

### **TAIPEI OFFICE**

2F., NO.409, SEC.2, TIDING BLVD., NEIHU DISTRICT, TAIPEI CITY 114, TAIWAN  
TEL: 886-2-26588883  
FAX: 886-2-26588683

## **CONTACT INFORMATION**

E-MAIL: [contactus@hele.com.tw](mailto:contactus@hele.com.tw)

