



# TAI-SAW TECHNOLOGY CO., LTD.

No. 3, Industrial 2nd Rd., Ping-Chen Industrial District,  
Taoyuan, 324, Taiwan, R.O.C.

TEL: 886-3-4690038 FAX: 886-3-4697532

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## Product Specifications Approval Sheet

Product Description: Tuning Fork Crystal Unit 3.2x1.5 32.768KHz

TST Part No.: TZ1006AE

Customer Part No.: \_\_\_\_\_

Customer signature required
Company: _____
Division: _____
Approved by : _____
Date: _____

Checked by: \_\_\_\_\_ Yifan Chen *Yifan*

Approved by: \_\_\_\_\_ Kelly Huang *Kelly Huang*

Date: \_\_\_\_\_ 06/10/2022

1. Customer signed back is required before TST can proceed with sample build and receive orders.
2. Orders received without customer signed back will be regarded as agreement on the specifications.
3. Any specifications changes must be approved upon by both parties and a new revision of specifications shall be released to reflect the changes.



**TAI-SAW TECHNOLOGY CO., LTD.**  
Tuning Fork 3.2x1.5 32.768KHz Crystal Unit

MODEL NO.: TZ1006AE

REV. NO.: 3.0

**Revise:**

Rev.	Rev. Page	Rev. Account	Date	Ref. No.	Reviser
1	N/A	Initial release	11/05/20'	N/A	Yifan Chen
2	P6-7	Change T/R quality and drawing	10/26/21'	ECN-202100614	Yifan Chen
3	P7	Update 9K Tape drawing	06/10/22'	ECN-202200257	Yifan Chen



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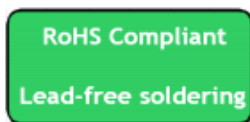
## Tuning Fork 3.2x1.5 32.768KHz Crystal Unit

MODEL NO.: TZ1006AE

REV. NO.: 3.0

### Features:

- Ceramic Seam Weld Package
- Excellent Reliability Performance
- Ultra Miniature Package
- Available to Surface Mount Technology and IR Reflow Process
- Moisture Sensitivity Level (MSL) : Level-1



### Description and Applications:

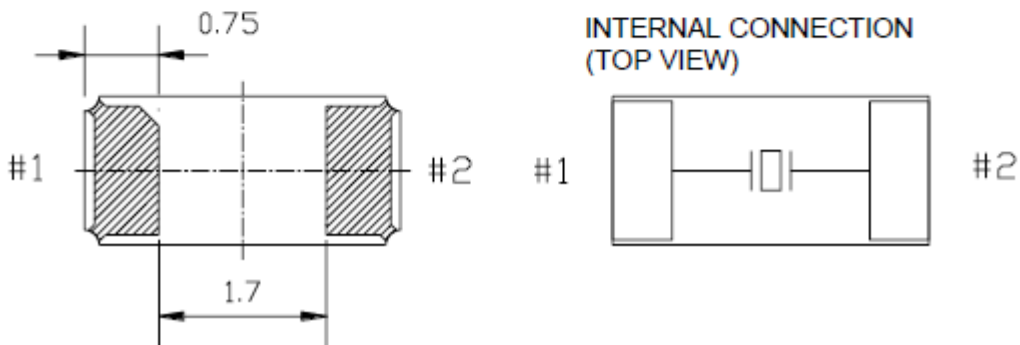
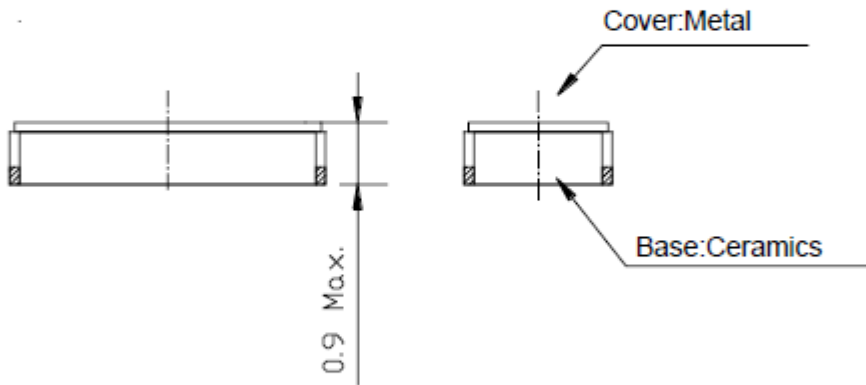
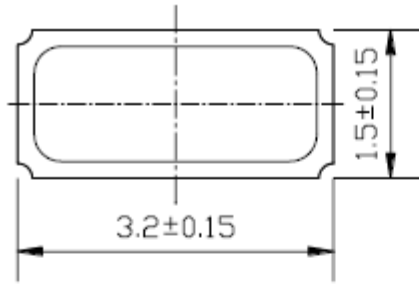
Surface mount 3.2mmx1.5mm crystal unit for use in communications devices,.

### Electrical Specifications:

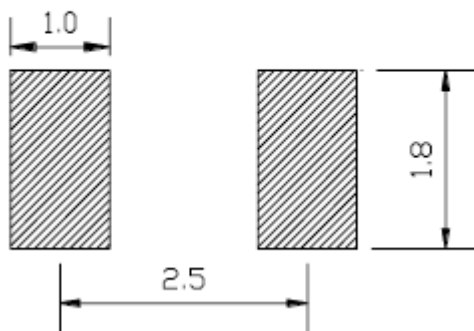
TZ1006AE	Specification
Nominal Frequency	32.768000 KHz
Storage Temperature Range	-40°C to +85°C
Operating Temperature Range	-40°C to +85°C
Turnover Temperature	25 +/- 5 °C
Parabolic Curvature Constant	-0.04 ppm /°C <sup>2</sup> max.
Frequency Make Tolerance (FL)	+/-20 ppm @ 25°C +/- 3°C
Equivalent Series Resistor (ESR)	50 kΩ max.
Drive Level	0.5 uW max.
Load Capacitance (CL)	12.5 pF
Shunt Capacitance (Co)	1.2 pF min ; 1.7 pF typ ; 2.2 pF max.
Motional Capacitance (C1)	5.0 fF min ; 7.0 fF typ ; 9.0 fF max.
Aging	+/-3.0 ppm/1 <sup>st</sup> year
Insulation Resistance	500M Ω min at DC 100V +/-15V
Marking	Laser marking

**TST DCC**  
Release document

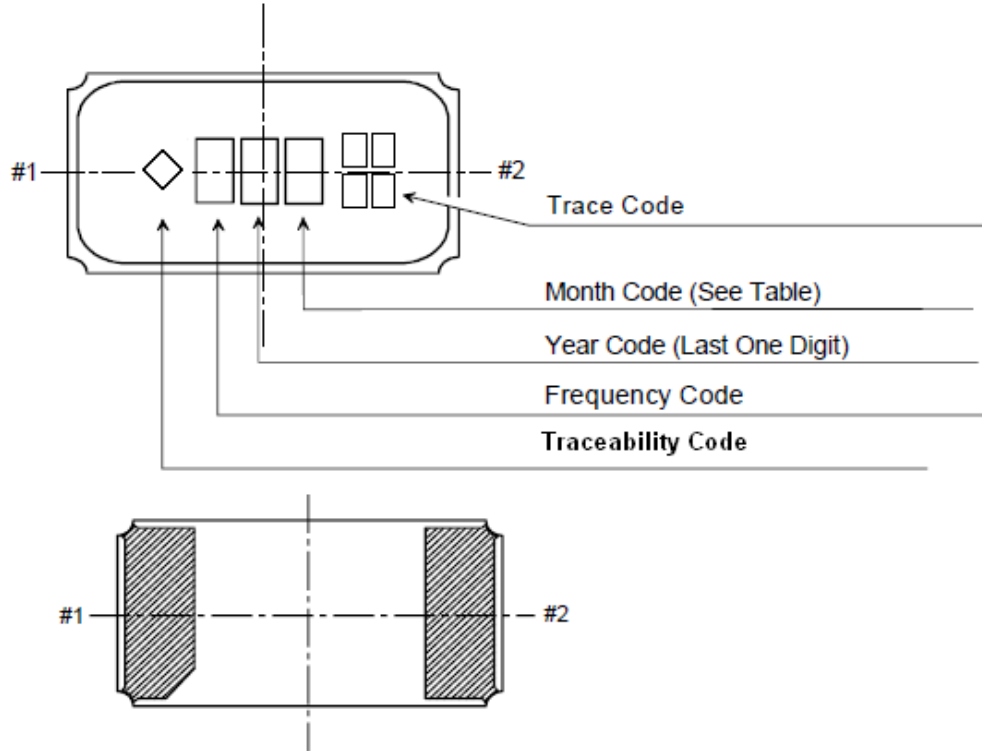
# Mechanical Dimensions (mm):



## Recommended soldering pattern



# Marking:



## 1. Frequency code ex :A

Frequency	32.768 kHz
Frequency Code	A

## 2. Month Code Table

Month	1 Jan.	2 Feb.	3 Mar.	4 Apr.	5 May.	6 Jun.	7 Jul.	8 Aug.	9 Sept.	10 Oct.	11 Nov.	12 Dec.
Month Code	1	2	3	4	5	6	7	8	9	X	Y	Z

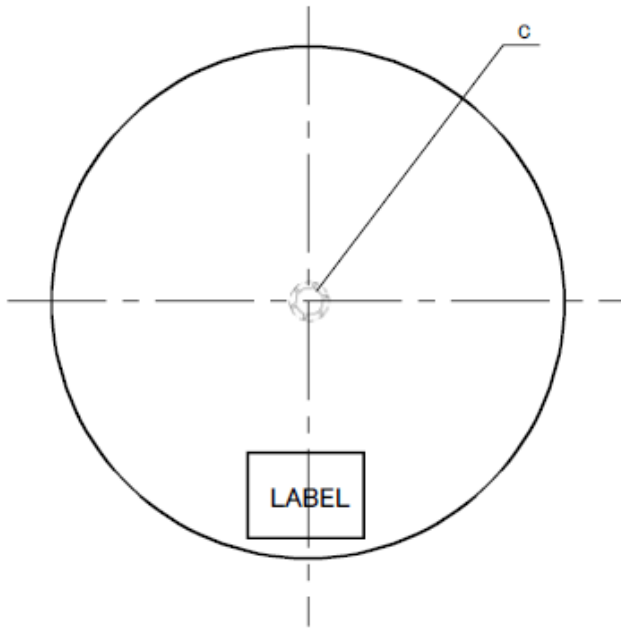
## 3. Marking Method

Marking Method is Laser Trimming.

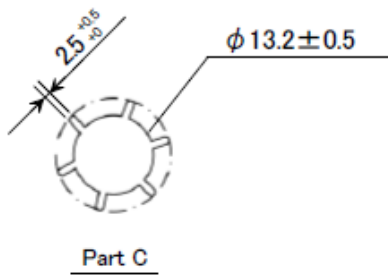
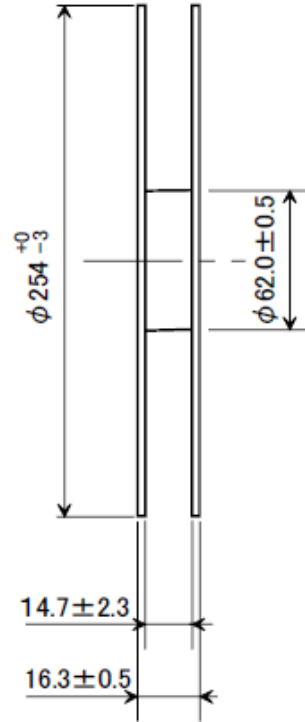
## 4. Traceability Code (◇ : N or space)

# Reel Dimensions (mm):

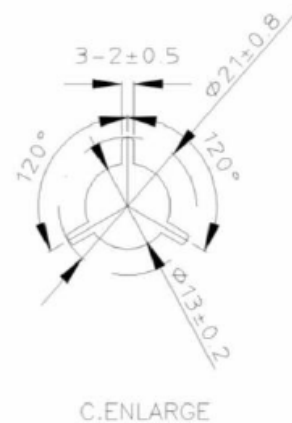
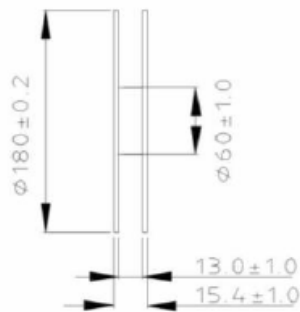
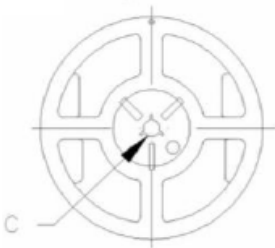
## 9K pcs reel



Reel material: Polystyrene

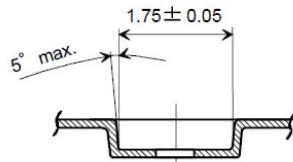
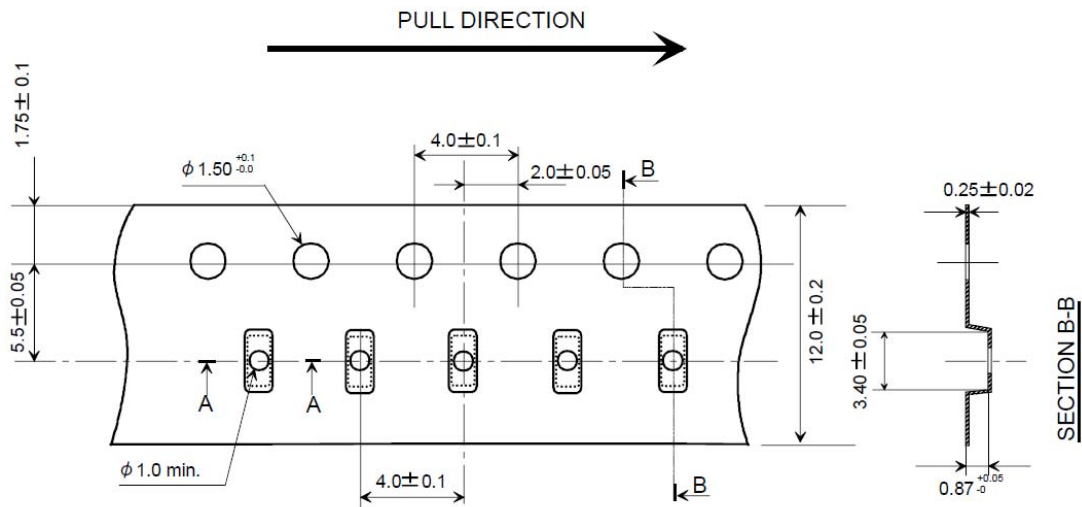


## 3K pcs reel

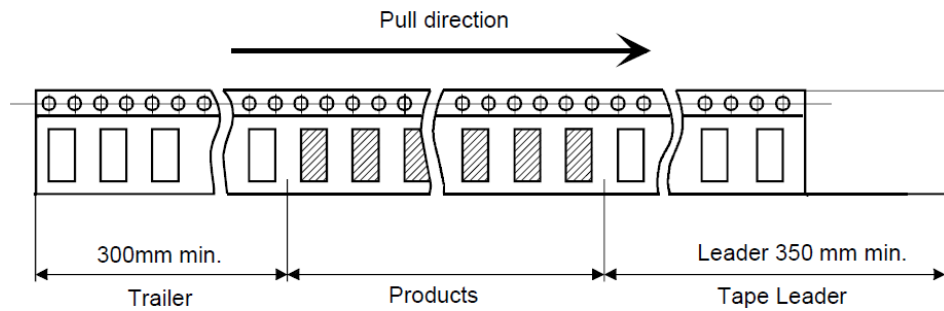
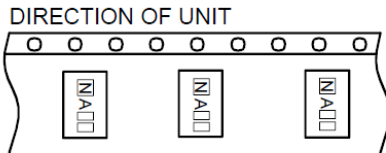


# Tape Dimensions (mm):

## 9K pcs tape

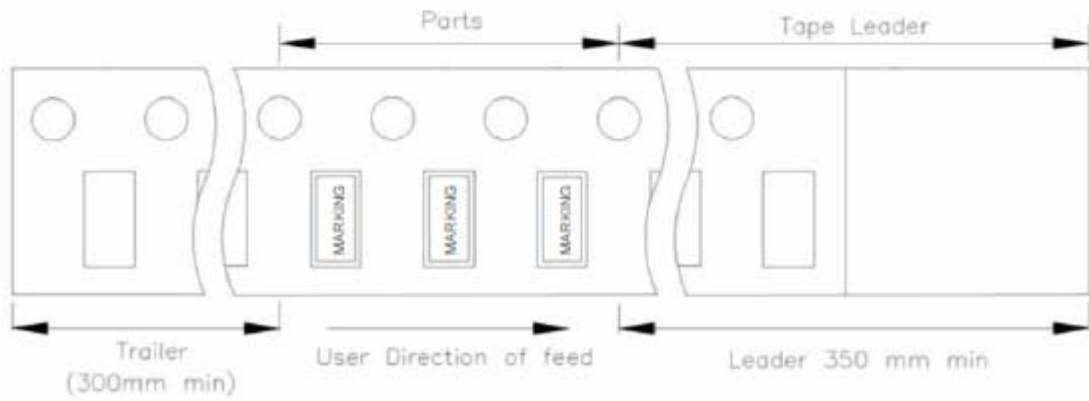
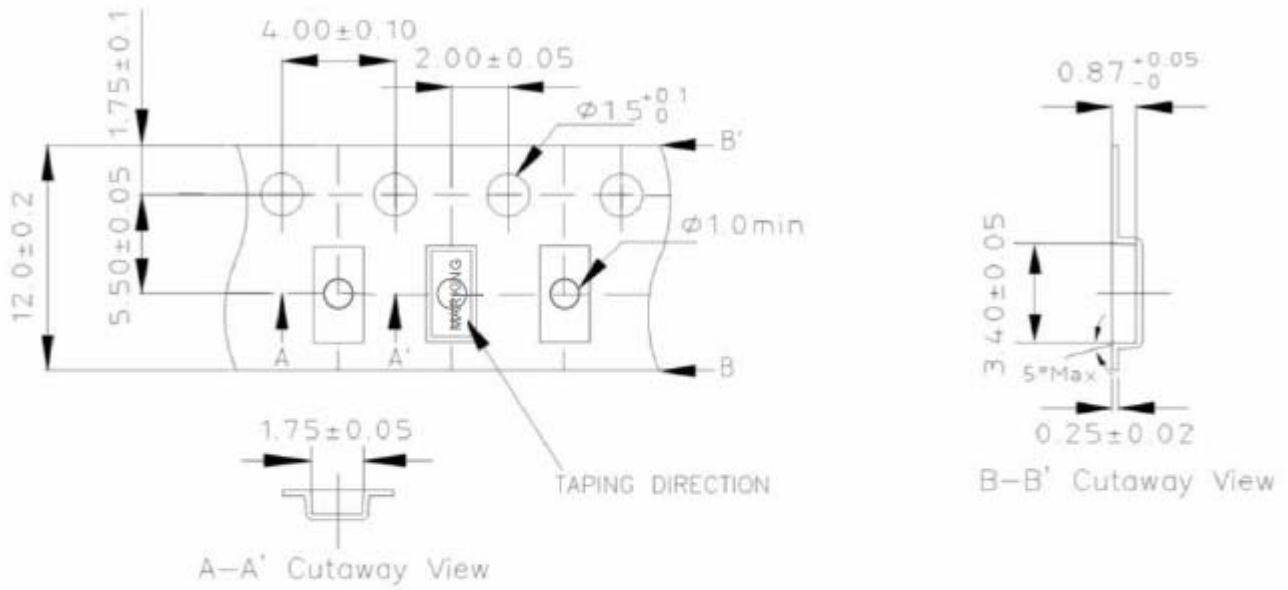


SECTION A-A



〈 MAX. 9000 pcs 〉

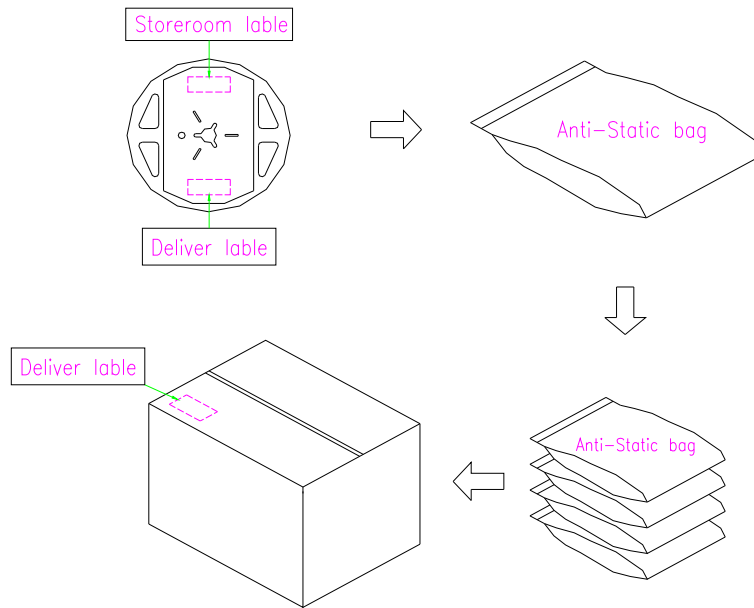
### 3K pcs tape





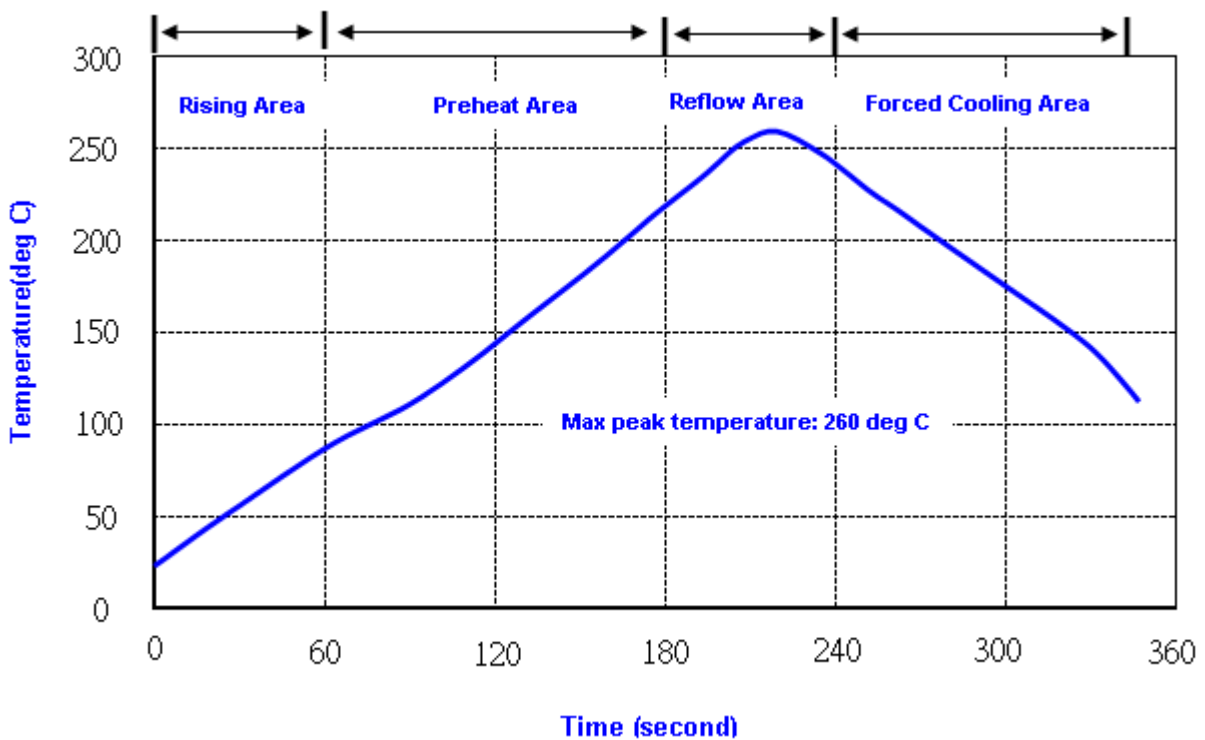
# Packing Quantity/Packing:

9K pcs maximum per reel



Deliver package carton  
1. L36xW35xH21cm-10 reel max.  
2. L38xW36xH32cm-15 reel max.

# Reflow Profile:



## Reliability Specifications

Test name	Test process / method	Reference standard
<b>Mechanical characteristics</b>		
resistance to Soldering heat (IR reflow)	Temp/ Duration : 265°C /10sec x2 times Total time : 4min.(IR-reflow)	EIAJED-4701  -300(301)M(II)
Vibration	Total peak amplitude : 1.5mm Vibration frequency : 10 to 2000 Hz Sweep period : 20 minute Vibration directions : 3 mutually perpendicular Duration : 2 hr / direc.	MIL-STD 202G method 204
Mechanical Shock	directions : 3 impacts per axis Acceleration : 3000g's, +20/-0 % Duration : 0.3 ms (total 18 shocks) Waveform : Half-sine	MIL-STD 202G method 213
Solderability	Solder Temperature:265±5°C Duration time: 5±0.5 seconds.	J-STD-002
<b>Environmental characteristics</b>		
Thermal Shock	Heat cycle conditions -40 °C (30min) ↔ 85 °C (30min) * cycle time : 10 times	MIL-STD 883G method 1010.8
Humidity test	Temperature : 85 ± 2 °C Relative humidity : 85% Duration : 96 hours	MIL-STD 202G method 103
Dry heat ( Aging test )	Temperature : 125 ± 2 °C Duration : 168 hours	MIL-STD 202G method 108A
Cold resistance (Low Temp Storage)	Temperature : -40 ± 2 °C Duration : 96 hours	IEC 60068-2-1