

Guangdong OPPO Mobile Telecommunications Co.,Ltd.

SPECIFICATION

Product Name CRYSTAL OSCILLATOR

Type DSB1612SDN

Nominal Frequency 38.400MHz

Spec No. 7EG03840A08

If there is a change in this specifications,
the specification number may be changed.

RECEIPT	
DATE	
RECEIVED	(signature) (name)

General Manufacturer of Quartz Devices

DAISHINKU CORP.

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C.ENG. *Y. Momoo*

ENG. *[Signature]*

1. Device name TCXO
2. Type name DSB1612SDN
3. Nominal frequency 38.400MHz
4. Mass 0.008g max.

5. Absolute maximum ratings

Item	Symbol	Rating	Unit
Supply voltage	V _{cc}	-0.3 ~ +4.6	V
Storage temperature range	T _{stg}	-40 ~ +85	°C

6. Recommended operating conditions

Item	Symbol	min.	typ.	max.	Unit
Supply voltage	V _{cc}	+2.66	+2.80	+2.94	V
Load impedance					
Resistance part	Load_R	9	10	11	kΩ
Parallel capacitance	Load_C	9	10	11	pF
Operating temperature range	T _{use}	-40	-	+85	°C

7. Electrical characteristics

(T_A=-40~+85°C, Load_R/C=10kΩ//10pF, V_{cc}=+2.8V unless otherwise noted)

Item	Conditions	Limits			Unit	Notes
		min.	typ.	max.		
Current consumption		-	-	+2.0	mA	
Output level		0.8	-	-	VP-P	1
Symmetry	GND level (DC cut)	40/60	-	60/40	%	
Frequency stability						
Tolerance	After 2times reflow Ref. to nominal frequency	-	-	±1.5	ppm	2,3
vs. Temperature	T _A =-40~+85°C Ref. to frequency (T _A =+25°C)	-	-	±0.5	ppm	
vs. Supply voltage	V _{cc} =+2.8V±5%	-	-	±0.2	ppm	
vs. Load variation	Load_R/C=(10kΩ//10pF)±10%	-	-	±0.2	ppm	
vs. Aging	T _A =Room ambient	-	-	±1.0	ppm/year	
Start up time	@90% of final V _{OUT} level	-	-	2.0	ms	
Phase noise	Relative to f ₀ level offset 1kHz	-	-	-130	dBc/Hz	

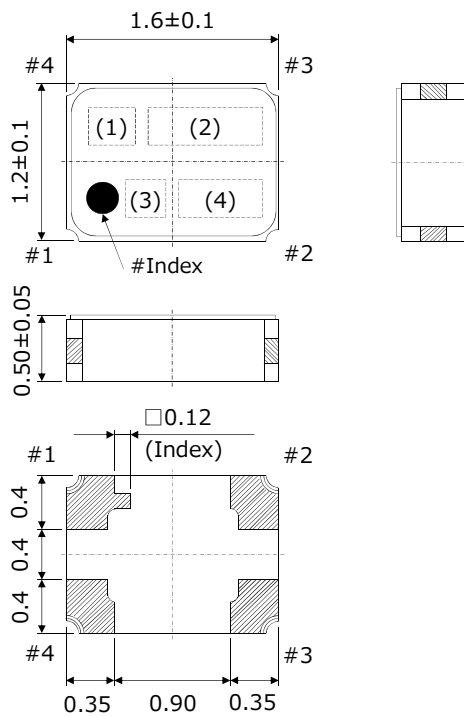
Notes

- Clipped sine wave (DC-coupled)
- T_A=+25°C
- Please leave after reflow in 2h or more at room ambient.

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8. Dimensions and Marking

8.1 Dimensions



Pin connections

Pin No.	Connection
#1	GND
#2	GND
#3	Output
#4	Vcc

Unit : mm
 Dimensional tolerance : ± 0.1
 (Unless otherwise noted)

8.2 Marking

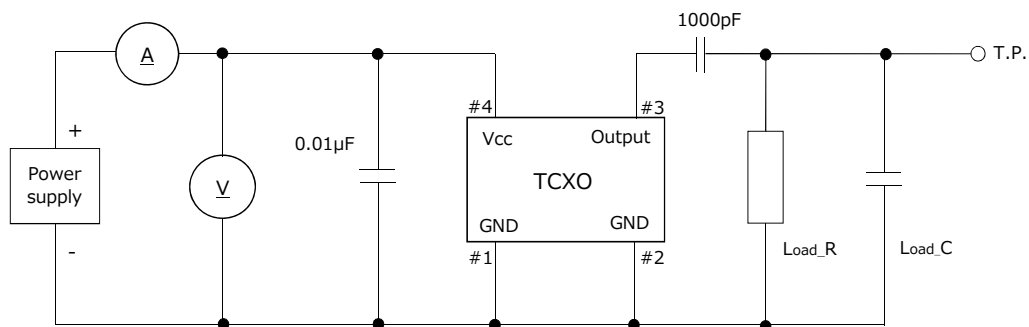
- (1) Model code B
- (2) Frequency ex.) 38.400MHz → 38.4
- (3) Logo D
- (4) Lot No. ex.) 2023/01/01 → 301

Year : The last digit of the year

Week : We gave the sequence of week numbers 01(first week) for production date.

There are starting from 1st of Jan. However, add '0' figure to the first week during the nine weeks.
 The week means are from Sunday to Saturday.

9. Measurement circuit



Load_R = $10 \text{ k}\Omega$
 Load_C = 10 pF (Total fixture and probe capacitance)

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10. Mechanical characteristics

All test is performed after 3times reflow (clause.13) except 10.9 (resistance to soldering heat)

No.	Test item	Test procedures	Requirements
1	Drop	Natural drop (on concrete) 1.6mm thick FR-4 board mounting on set or test fixture.(Aluminum material weight 100g) Height : 150cm Test cycle : 10cycles Direction : X, Y, Z 6directions Reference specification EIAJ-ED-4702C Method 5	df/f=<±1.0ppm
2	Vibration	Sweep range : 10~2000Hz Sweep speed : 20min/cycle Amplitude : 1.5mm (10~55Hz) Acceleration : 200m/s ² (55~2000Hz) Direction : X, Y, Z 3directions Test time : each 2h Reference specification IEC 60068-2-6	df/f=<±0.5ppm
3	Shock	Acceleration : 1000m/s ² Direction : X, Y, Z 6directions Duration : 6ms Test cycle : 10times/each direction Reference specification IEC 60068-2-27	df/f=<±0.5ppm
4	Board bending strength	PWB : t=1.6mm Pressure Jig tip : R5 PCB holding distance : 90mm Pressure speed : 1.0mm/s Bend width : 3mm Duration : 5±1s Reference specification IEC 60068-2-21 Ue1	df/f=<±0.5ppm No visible damage No leak damage
5	Shear	PWB : t=1.6mm Pressure Jig tip : R0.5 Direction : X, Y 2directions Pressure : 5N Duration : 10±1s Reference specification IEC 60068-2-21 Ue3	df/f=<±0.5ppm No visible damage No leak damage
6	Body strength	Pressure Jig tip : R0.5 Product holding distance 1/2 product long side Z axis direction from top of product Pressure : 3N Duration : 10±1s Reference specification IEC 60068-2-77	df/f=<±0.5ppm No visible damage No leak damage
7	Fine leak	It shall be measured by the He leak detector Reference specification IEC 60068-2-17	Less than 1.0x10 ⁻⁹ Pa·m ³ /s
8	Solderability	Coating ROSIN flux. Solder bath temperature : +245±5°C Duration : 3±0.5s Reference specification IEC 60068-2-58	A new uniform coating of solder shall cover a minimum of 90% of the surface being immersed
9	Resistance to soldering heat	Reflow In refer to temperature profile shown in clause13. Test cycle : 3cycles It shall be measured after 2h at room temperature, humidity Measurement after 24h or 48h Reference specification IEC 60068-2-58	df/f=<±1.0ppm dV _{OUT} =<±0.2V _{P-P} No visible damage

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11. Environmental characteristics

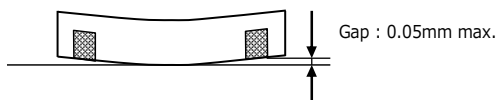
All test is performed after 3times reflow (clause.13)

No.	Test item	Test procedures	Requirements
1	Low temperature storage	Temperature : $-40\pm 2^{\circ}\text{C}$ Duration : 240h It shall be measured after 2h at room temperature, humidity Reference specification IEC 60068-2-1 Ab	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied
2	Humidity	Temperature : $+85\pm 2^{\circ}\text{C}$ Humidity : $85\pm 5\%$ R.H. Duration : 240h It shall be measured after 2h at room temperature, humidity Reference specification IEC 60068-2-78	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied
3	High temperature storage	Temperature : $+85\pm 2^{\circ}\text{C}$ Duration : 240h It shall be measured after 2h at room temperature, humidity Reference specification IEC 60068-2-2 Bb	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied.
4	HTB	Temperature : $+85\pm 2^{\circ}\text{C}$ Duration : 240h BIAS : max value of supply voltage It shall be measured after 2h at room temperature, humidity Reference specification IEC 60068-2-2 Bb	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied
5	THB	Temperature : $+40\pm 2^{\circ}\text{C}$ Humidity : $90\sim 95\%$ R.H. Duration : 240h BIAS : max value of supply voltage It shall be measured after 2h at room temperature, humidity Reference specification IEC 60068-2-78	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied
6	Temperature cycle	Thermal shock : $-40^{\circ}\text{C} : 30\text{min} \leftrightarrow +85^{\circ}\text{C} : 30\text{min}$ Test cycle : 200cycles Shift time : $2\sim 3\text{min}$ It shall be measured after 2h at room temperature, humidity Reference specification IEC 60068-2-14	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied
7	ESD	Model : Charge device model (CDM) $V = \pm 0.75\text{kV}$ Number of times : 3times Test terminal : Each terminals except common terminal (Connect to test terminal) Reference specification EIA/JESD22-C101	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied
		Model : Human body model (HBM) $V = \pm 1.5\text{kV}$ ($C = 100\text{pF}$, $R = 1.5\text{k}\Omega$) Number of times : 1time Test terminal : Each terminals except common terminal (Connect to test terminal) Reference specification EIA/JESD22-A114	$df/f = < \pm 1.0\text{ppm}$ $dV_{\text{OUT}} = < \pm 0.2\text{VP-P}$ The electrical characteristics are satisfied

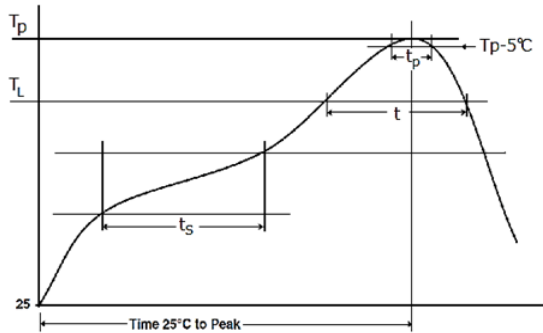
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12. Flatness of Terminal

When the component is placed on the flat surface, the gap from the connecting terminal shall not exceed 0.05mm.



13. Reflow conditions (Reference)

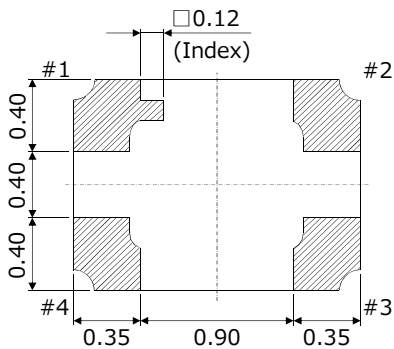


Ts	(°C)	150~200
ts time	(s)	60~120
Tl	(°C)	217
t time	(s)	60~150
Tp	(°C)	max.260
tp	(s)	max.30

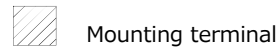
14. Terminals / Land pattern

14.1 Terminals

A through hole is not located on the bottom (mounting side).



Unit : mm
Dimensional tolerance : ±0.1



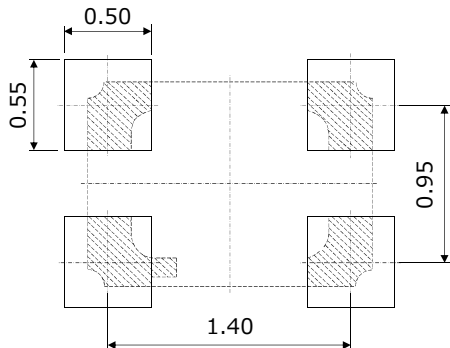
14.2 Land pattern (Reference)

The following land pattern is reference design.

The electrical characteristic shall be satisfied with mounting to this land.

The land pattern can be changed in the limits to which a test land and a mounting land are not connected.

And it does not any effect to the electrical characteristics.



Unit : mm



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15. Packing condition

- 15.1 Taping package
 - (1) Emboss carrier tape format and dimensions
See Fig.1
 - (2) Quantity on Reel
3000pcs. max. / reel
 - (3) Taping specification
See Fig.2
No lack of a product.
 - (4) Reel specification
See Fig.3
 - (5) Taping material list
See right table


Taping material list Cover tape : PET + Olefin resin (Conductivity) Emboss carrier tape : PS (Conductivity) Reel : PS (Conductivity)

- 15.2 Packing
The products packed in the antistatic bag.
* Moisture sensitivity level : IPC / JEDEC Standard J-STD-033 / Level 1
No dry pack required and baking after re-storage is unnecessary.

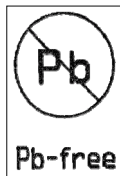
- 15.3 Packing box
Max. 10reels/packing box. However, in the case of less than 10reels, It is contained by any boxes.
The space in box is fill up with cushion.

- 15.4 Label Detail
Label is following information. Printing label at each reel.

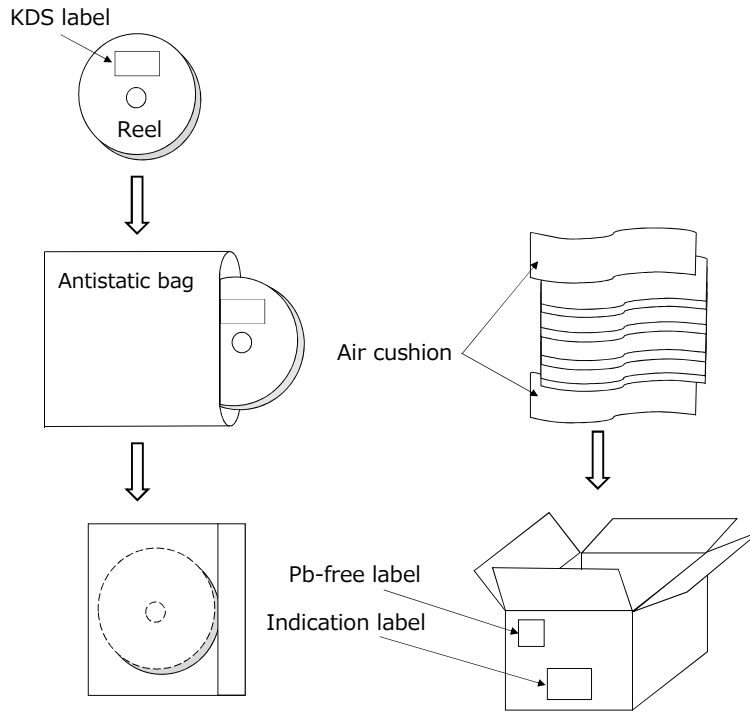
KDS label (Example)

TYPE	XXXXXXXX	Type name
SPEC NO.	XXXXXXXXXXXX	Our specification No.
PART NO.	XXXXXXXXXXXX [Barcode]	User part No.
LOT NO.	XXXXXXXXXXXX [Barcode]	Lot No.
FREQ.	XXX.XXXMHZ	Nominal frequency
Q'TY	XXXXXX [Barcode]	Quantity
CTL NO.	XXXXXXXXXXXXXXXX [Barcode]	Control No.
 MADE IN JAPAN		Producing country name

Pb-free label

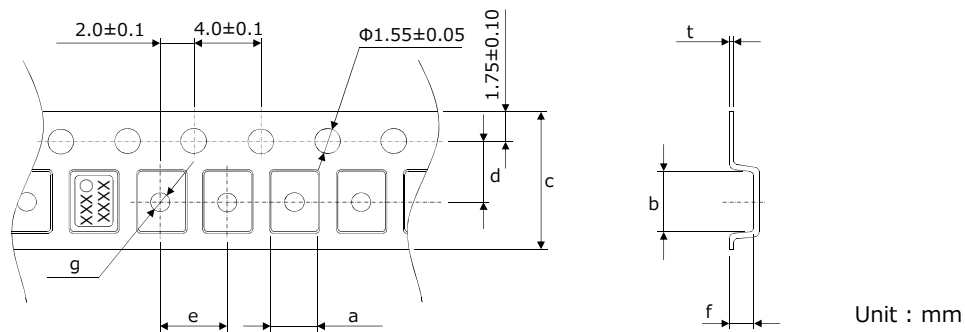


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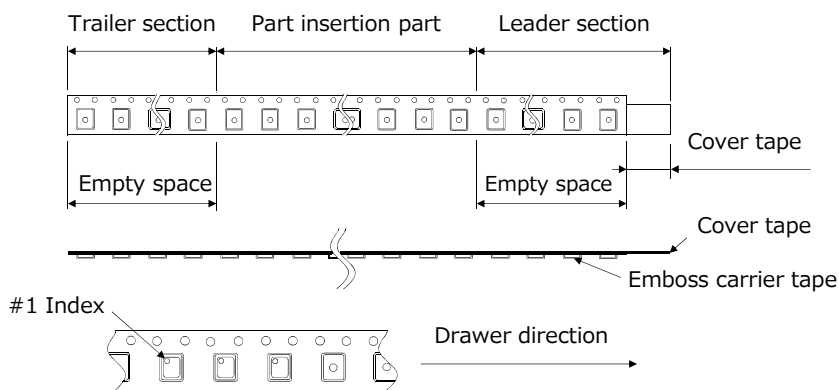
The product is packed up with the method which does not break in the handling by a shipping agent.

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Symbol	a	b	c	d	e	f	t	g
Size	1.4 ±0.1	1.8 ±0.1	8.0 ±0.2	3.50 ±0.05	4.0 ±0.1	0.7 ±0.1	0.25 ±0.05	Ø0.5 ±0.05

Fig.1 Emboss carrier tape format and dimensions



Leader section	Cover tape	The length of cover tape in the leader is more than 350mm including empty space area.
	Emboss carrier tape	After all products were packaged, must remain more than 10pieces or 150mm empty space area, which should be sealed by cover tape.
Trailer section	Cover tape	The empty space area which are sealed by cover tape must remain more than 350mm.
	Emboss carrier tape	

When a tape end is taken out to the front, sprocket holes becomes right hand side.

Peeling strength of cover tape

The peeling strength of cover tape pulls and keep to angle 165~180° and make limit 0.1~ 0.7N without prescription, when it pulled it with the speed of 300mm/min. (Others conform to JIS C 0806_1990)

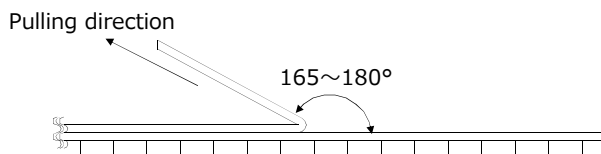
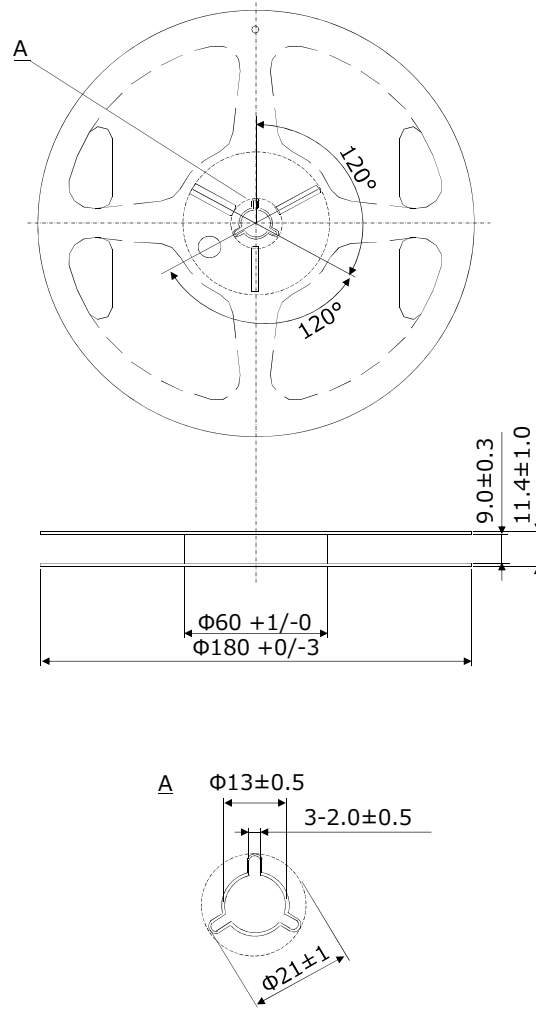


Fig.2. Taping specification

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Unit : mm

Fig.3. Reel specification

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16. Notes on mounting and handling

16.1 Storage environment

- (1) The temperature and humidity of a storage place, Please give +5~+40°C and 40~85% as a standard.
- (2) Please use this product within one year from the packing label date of issue.
- (3) Please avoid the place which generates corrosive gas, and the place with much dirt.
- (4) Please keep it in a place with little temperature change.

Dew condensation arises owing to a rapid temperature change and solder ability becomes bad.

16.2 Be cautions to static electricity and high voltage.

16.3 This product has sufficient durability to fall and vibration. However, conditions may change to the fall after mounting to a PWB, and vibration.

When you should drop on a floor the PWB which mounted the product or too much shock is added. Please use after a performance check.

16.4 Please check that the curvature of the substrate at the time of substrate cutting does not affect product. Moreover, especially when a product is near the position of a PWB guide pin, and the position of PWB break, be careful.

16.5 The part concerned does not correspond to washing.

16.6 Please repair at +260°C in 10s with hot air.

17. Mandatory control

17.1 Ozone-depleting substance

It regulates by the U.S. air purifying method (November, 1990 establishment). ODS of CLASS1 and CLASS2 is not contained or used.

17.2 PBDE, PBBs

PBDE, PBBs are not contained into all the material currently used for this product.

17.3 RoHS

Following material restricted by RoHS (2011/65/EU, (EU)2015/863) is not included or used.

17.4 Law Concerning Examination and Regulation of Manufacture, etc. of Chemical Substances

All the material currently used for this product is based on "Law Concerning Examination and Regulation of Manufacture, etc. of Chemical Substances". It is a registered material.

17.5 Lead

Leads, such as solder, are not used for this product. (Lead Free)

17.6 About the existence of silver and mercury use

The silver of very small quantity is contained in the conductive adhesives used for adhesion of Blank. Moreover, mercury is used. It does not get down.

18. The country of origin / Factory name / Address

Country of origin : Japan

Factory name : DAISHINKU Corp. Tottori Production Div.

Address : 7-3-21 Wakabadai minami, Tottori 689-1112

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单击下面可查看定价，库存，交付和生命周期等信息

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