

製品仕様書  
Specification of Piezoelectric Sounder

決定年月日 Issue Date : May 21, 2021

1. 品番 Part Number

|                  |                               |
|------------------|-------------------------------|
|                  | 当 社 品 番<br>Murata Part Number |
| テーピング品<br>Taping | PKLCS1212E20A0-R1             |

2. 適用 Scope

当製品仕様書は、車載用の確認音等の発生回路に使用する圧電サウンダについて規定します。この用途以外にご使用の場合には事前に当社へご連絡ください。  
This product specification is applied to the piezoelectric sounder used for sounder in alarm systems for automotive application. Please contact us when using this product for any other applications than described in the above.

3. 外観 及び 寸法 Appearance and Dimensions

- 3-1 外観 : 目視によって表示識別可能であり、汚れ等がありません。  
Appearance : No illegible marking. No visible dirt.
- 3-2 圧電サウンダの外形寸法図 : 製品単体の形状を項目9に示します。  
Dimensions of component : Please refer to item 9 for component dimensions.

4. 最大定格 Maximum Rating

|     | 項 目 Item                              | 規 格 Specification         |
|-----|---------------------------------------|---------------------------|
| 4-1 | 許容入力電圧<br>Maximum Input Voltage       | ±12.5Vo-p 以下/max.         |
| 4-2 | 動作温度範囲<br>Operating Temperature Range | -40 ~+85℃<br>-40 to +85℃  |
| 4-3 | 保存温度範囲<br>Storage Temperature Range   | -40 ~+85℃<br>- 40 to +85℃ |

5. 電気的性能 Electrical Characteristics

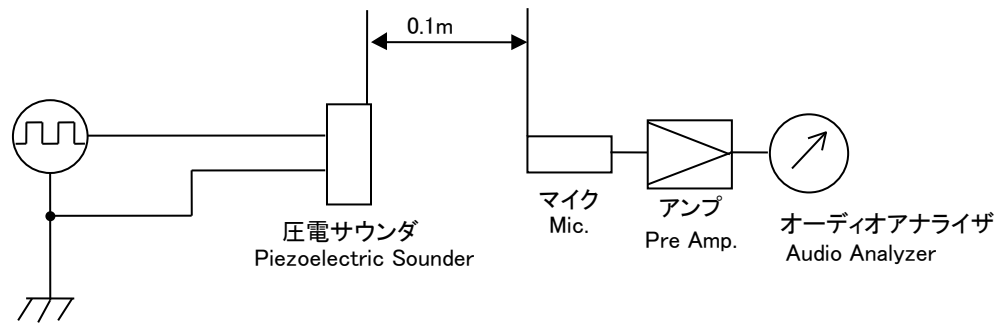
|     | 項 目 Item                      | 規 格 Specification |
|-----|-------------------------------|-------------------|
| 5-1 | 音圧レベル<br>Sound Pressure Level | 70dB 以上/min.      |

測定条件は次項を参照して下さい。  
Refer to next item for measuring method.

6. 測定方法    Measuring Method

6-1 音圧測定結線図    S.P.L. Measuring Circuit

入力信号 :  $\pm 1.5V_{o-p}$ , 2kHz, 方形波  
Input Signal :  $\pm 1.5V_{o-p}$ , 2kHz, Square wave



計測器    Measuring equipment

マイク/Mic.

Type4191 (Brüel & kjaer) 又は相当品/ or Equivalent

アンプ/Pre Amp.

Type2669 (Brüel & kjaer) 又は相当品/ or Equivalent

オーディオアナライザ/

Audio Analyzer

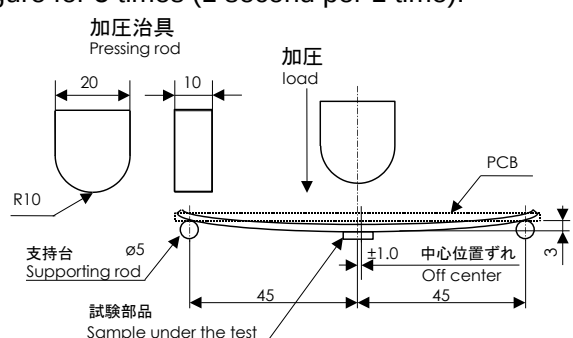
Type3560C (Brüel & kjaer) 又は相当品/ or Equivalent

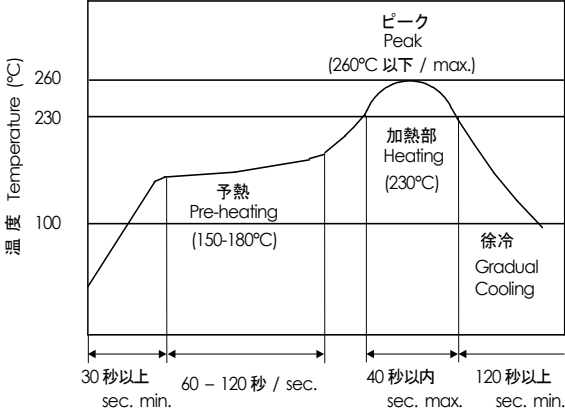
6-2 測定条件    Measuring Condition

□0.1mの基板に製品を付けた状態で、温度 $+25\pm3^{\circ}C$ 、湿度 $60\pm10\%R.H.$ を標準測定状態とし、特に疑義を生じない場合は、温度 $+5\sim+35^{\circ}C$ 、湿度 $45\sim85\%$ の範囲内で測定します。

After mounting products on PCB(□0.1m), standard conditions for the measurement shall be  $+25\pm3^{\circ}C$  temperature and  $60\pm10\%R.H.$  humidity. The measurement shall be performed at the temperature of  $+5$  to  $+35^{\circ}C$  and the humidity of  $45$  to  $85\%R.H.$  unless otherwise the result is doubtful.

7. 機械的性能    Physical Characteristics

|     | 試験項目<br>Item                    | 試験条件<br>Test Condition                                                                                                                                                                                                                                                                                    | 試験後の規格<br>Specification                                |
|-----|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 7-1 | 耐衝撃性<br><br>Shock               | 加速度 980m/s <sup>2</sup> 、半波正弦波の衝撃を XYZ の 3 方向に各 3 回印加後、測定します。<br>Components shall be measured after being applied shock(980m/s <sup>2</sup> ) for each three mutually perpendicular directions to each of 3 times by half sine wave.                                                                      | 第 1 表を満足します。<br>The measured value shall meet Table 1. |
| 7-2 | 耐振動性<br><br>Vibration Resistant | 振動周波数 10～55Hz，全振幅 1.5mm の振動を XYZ の 3 方向に各 2 時間印加後、測定します。<br>Applying the vibration of amplitude 1.5mm and vibration frequency 10 to 55 Hz in each of 3 perpendicular directions for 2 hours.                                                                                                              |                                                        |
| 7-3 | 基板たわみ強度<br>Bend Strength PCB    | 下図に示す様に加圧し、1回1秒の割合で5回加圧する。<br>After components soldered on PCB, the load shall be applied to the PCB as shown in below figure for 5 times (1 second per 1 time).<br><br>基板厚み / PCB thickness : 0.8mm<br>単位 / unit : mm |                                                        |

|     |                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                |
|-----|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 7-4 | はんだ耐熱性<br>Resistance to<br>Soldering Heat<br>(1)リフロー方式<br>Re-flow<br>Soldering | <p>下記プロファイルのリフロー炉に2回通して、常温に取り出し1時間後測定する。<br/>Components shall be measured after applying twice of the re-flow soldering with following temperature profile and leaving in natural condition for 1 hour.</p>                                                                                                                         | <p>第 1 表を満足します。<br/>The measured value shall meet Table 1.</p>                                 |
|     | (2)コテ付方式<br><br>Soldering<br>with Iron                                         | <p>温度+350±5°Cで3.0±0.5秒間当て、常温に1時間放置後に測定する。但し、はんだこて先は電極部に直接接触しない事とする。<br/>Components shall be measured after soldered at +350±5°C for 3.0±0.5 seconds, and then being placed in natural condition for 1 hour. The soldering iron shall not touch the components while soldering.</p>                                                                                                                                    |                                                                                                |
| 7-5 | はんだ付性<br><br>Solderability                                                     | <p>LFはんだ (Sn-3Ag-0.5Cu)<br/>PCT装置にて温度+105°C、湿度100%R.H.飽和の条件で、4時間のエージングをした後、端子部分をロジンメタノール液に5秒浸した後、+245±5°Cの溶融はんだ中に3±0.5秒間浸す。<br/>LF Solder (Sn-3Ag-0.5Cu)<br/>After being kept in pressure cooker at +105°C temperature and 100%R.H. for 4 hours, terminals of components shall be immersed in a soldering bath at temperature of +245±5°C for 3±0.5 seconds after being placed in a rosin-methanol for 5 seconds.</p> | <p>端子の90%以上にははんだが付着します。<br/>The solder shall coat at least 90% of the surface of terminal.</p> |

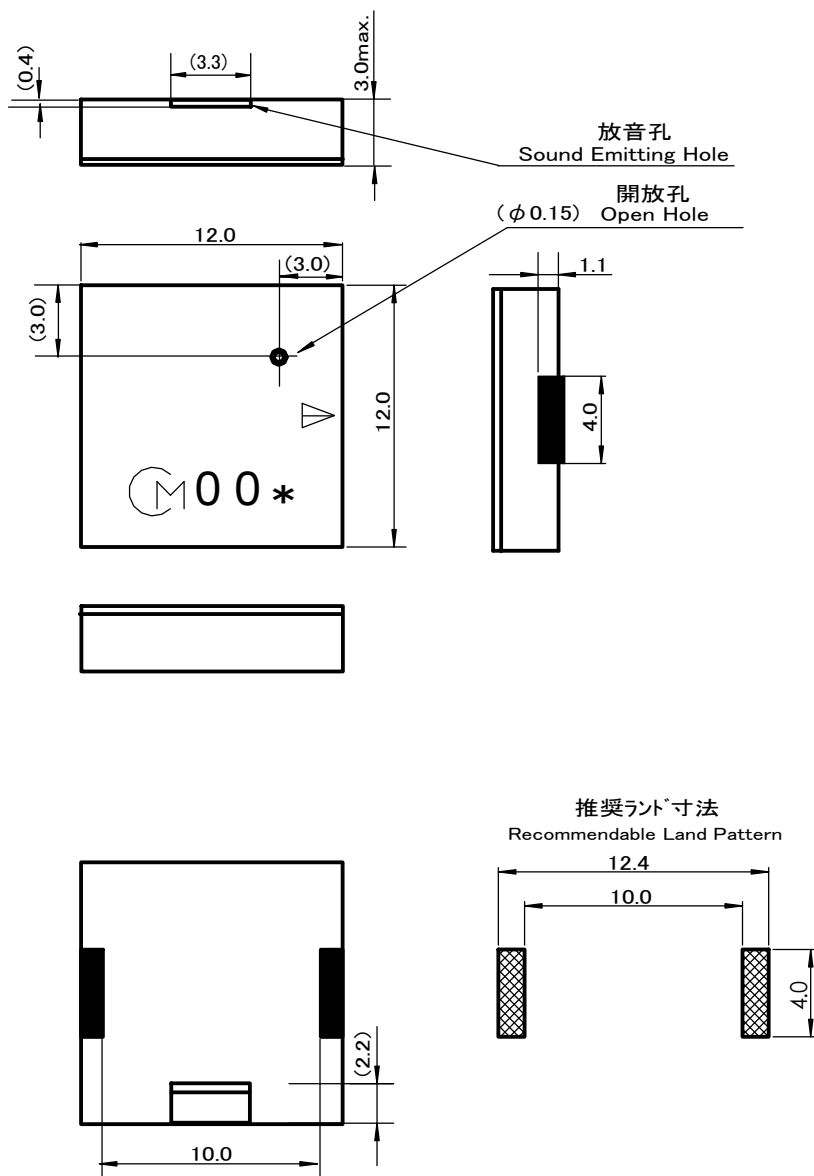
8. 耐候性能      Environmental Characteristics

|     | 試験項目<br>Item                           | 試験条件<br>Test Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 試験後の規格<br>Specification                                |
|-----|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 8-1 | 高温放置<br><br>Dry Heat Test<br>(Storage) | 温度+85±2℃に 500 時間保持し、常温に取出し 4 時間放置後測定します。<br>Components shall be left in a chamber (Temperature: +85±2℃) for 500 hours, then measured after leaving in natural condition for 4 hours.                                                                                                                                                                                                                                                                                                                                                                           | 第 1 表を満足します。<br>The measured value shall meet Table 1. |
| 8-2 | 低温放置<br><br>Cold Test<br>(Storage)     | 温度-40±2℃に 500 時間保持し、常温に取出し 4 時間放置後測定します。<br>Components shall be left in a chamber (Temperature: -40±2℃) for 500 hours, then measured after leaving in natural condition for 4 hours.                                                                                                                                                                                                                                                                                                                                                                           |                                                        |
| 8-3 | 耐湿性<br><br>Humidity                    | 温度+60±2℃，湿度 90～95％R.H.の恒温恒湿槽中に 500 時間保持し、常温に取り出し 4 時間放置後測定します。<br>Components shall be left in a chamber (90 to 95% R.H. at +60±2℃) for 500 hours, then measured after leaving in natural condition for 4 hours.                                                                                                                                                                                                                                                                                                                                                |                                                        |
| 8-4 | 熱衝撃<br><br>Thermal Shock               | 温度-40℃の恒温槽中に 30 分間保持後 2～3 分間の内に温度+85℃の恒温槽中に 30 分間保持する。これを 1 サイクルとし、500 サイクル行い常温に取り出し 4 時間放置後測定する。<br>After being kept at room temperature, components shall be placed at temperature of -40℃. After 30 minutes at this temperature, components shall be within a few minutes placed at temperature of +85℃. After 30 minutes at this temperature components shall be returned to -40℃ again.<br>After 500 above cycles, components shall be returned to room temperature. And components shall be measured after being placed in natural condition for 4 hour. |                                                        |

表 1      Table 1.

| 項 目<br>Item                   | 試験後の変化量<br>Specification after test |
|-------------------------------|-------------------------------------|
| 音圧レベル<br>Sound Pressure Level | 初期値±10dB<br>Initial Value±10dB      |

9. 外形寸法図    Dimensions



(備考) 開放孔は4限の1ヶ所にあれば可。  
(Note) The location of open hole is not specified.

社標 Vender's Code  
製造年月度 EIAJ Monthly Code  
単位 : mm in mm  
公差 : ±0.2  
Tol. ±0.2

製造年月度  
EIAJ Monthly Code

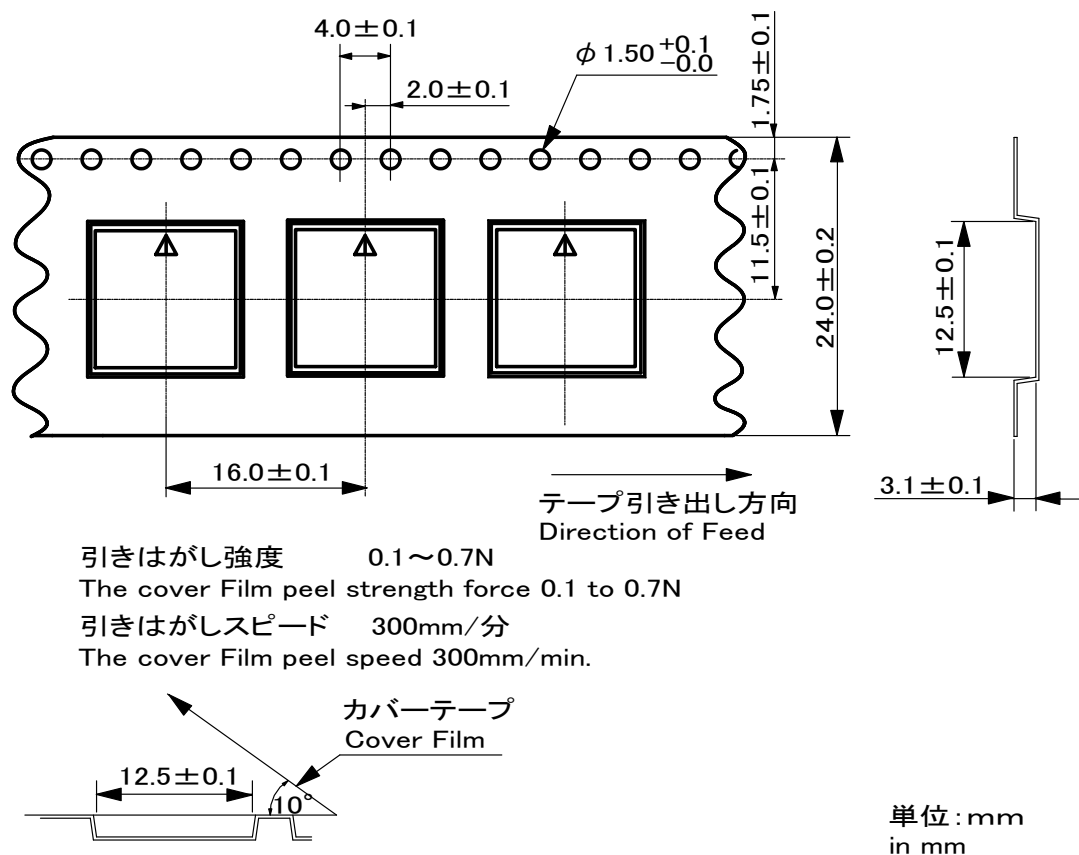
| 月 Month<br>年 Year      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------------|---|---|---|---|---|---|---|---|---|----|----|----|
| 2013, 2017, 2021, 2025 | A | B | C | D | E | F | G | H | J | K  | L  | M  |
| 2014, 2018, 2022, 2026 | N | P | Q | R | S | T | U | V | W | X  | Y  | Z  |
| 2015, 2019, 2023, 2027 | a | b | c | d | e | f | g | h | j | k  | l  | m  |
| 2016, 2020, 2024, 2028 | n | p | q | r | s | t | u | v | w | x  | y  | z  |

(注) 4年で1サイクルとなります。  
(note) The number is cycled by 4years.

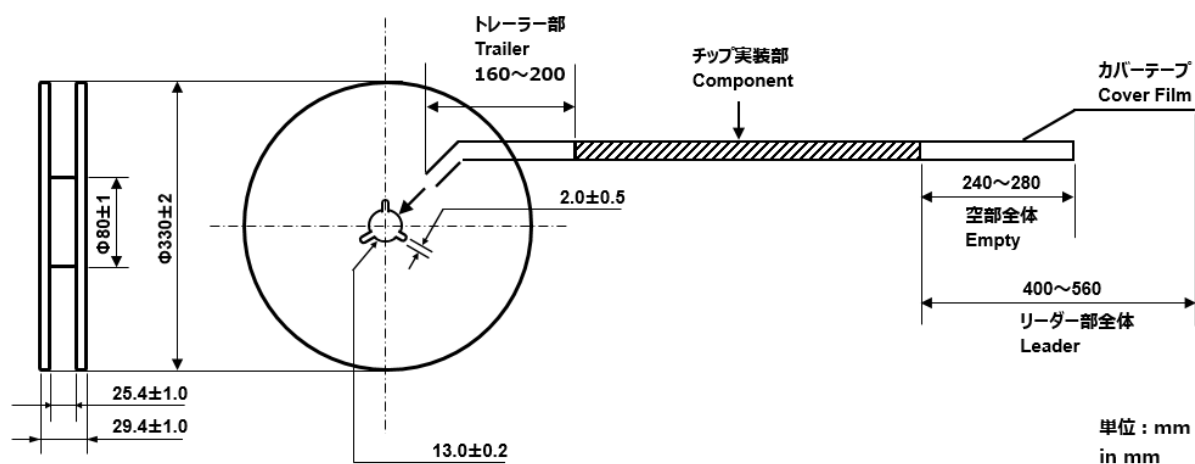
10. テーピング方法 Taping Method

- 10-1 テープは右巻き(テープの端を手前に取り出した時、送り穴が右側になる)とします。  
The carrier tape shall be wound clockwise. The feeding holes shall be to the right side as the tape is pulled toward the user.
- 10-2 1リール 1,000個とします。  
A reel shall contain 1,000pcs of components.
- 10-3 1リールを最小梱包単位として扱い、製品表示ラベルを貼り、品番、数量及びロット番号を記入します。  
The minimum packaging unit shall be a reel. And each reel shall have a label which shows part number, quantity and outgoing inspection number.

第1図 プラスチックテープの外形寸法図  
Figure 1. Dimensions of Plastic Tape



第2図 プラスチックリールの外形寸法図  
Figure 2. Dimensions of Plastic Reel



## 11. 注意 Cautions

### 11-1 用途の限定 Limitation of Applications

当製品について、その故障や誤動作が人命または財産に危害を及ぼす恐れがある等の理由により、高信頼性が要求される以下の用途でのご使用をご検討の場合は、必ず事前に当社までご連絡下さい。

- ①航空機器 ②宇宙機器 ③海底機器 ④発電所制御機器 ⑤医療機器
- ⑥輸送機器(自動車、列車、船舶等) ⑦交通用信号機器 ⑧防災／防犯機器
- ⑨情報処理機器 ⑩その他上記機器と同等の機器

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property .

- ①Aircraft equipment
- ②Aerospace equipment
- ③Undersea equipment
- ④Power plant control equipment
- ⑤Medical equipment
- ⑥Transportation equipment(vehicles, trains, ships, etc.)
- ⑦Traffic signal equipment
- ⑧Disaster prevention / crime prevention equipment
- ⑨Data-processing equipment
- ⑩ Applications of similar complexity and /or with reliability requirements to the applications listed in the above.

### 11-2 フェールセーフ機能の付加 Fail-safe

当製品に万が一異常や不具合が生じた場合でも、二次災害防止のために完成品に適切なフェールセーフ機能を必ず付加して下さい。

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

## 12. 使用上の注意 Cautions for Use

- 12-1 本体に規格以上の衝撃が印加された場合、不具合を生じることがありますので、取扱いには十分にご注意下さい。

The component may be damaged if mechanical stress over this specification is applied.

- 12-2 落下衝撃，熱衝撃によりサージ電圧が発生しますので、回路設計には十分ご注意ください。  
Please pay attention to protect operating circuit from surge voltage provided by something of force such as falling, shock and temperature changing.

- 12-3 本体に直流電圧を印加された場合、不具合を生じることがありますので、回路設計には十分注意して下さい。

Please pay attention never to be applied DC voltage to component.

- 12-4 IC等により駆動する際、安定鳴動及びIC保護用にIC出力端と本体に直列抵抗約 $1k\sim 2k\Omega$ を挿入するか、本体と並列にダイオードを挿入して、ご使用下さい。

The resistor should be used as shown in Fig. A. A suitable resistance value should be chosen, preferably  $1k\Omega$  to  $2k\Omega$ . Instead of this measure, a diode may also be applied as shown in Fig. B.

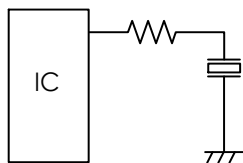


Fig.A

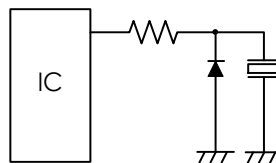


Fig.B

- 12-5 本体は密閉構造ではありませんので洗浄できません。

Washing of the component is not acceptable, because it is not sealed.

- 12-6 エアガン等で近距離から製品に直接高圧エアを吹き付けないで下さい。

High pressure air should not be blown on the component directly at short range by air gun or equivalent.

- 12-7 実装時に開放孔を吸着しないようにして下さい。

Please do not adsorb the open hole when the component is mounted.

13-1 温度-10～+40℃、相对湿度15～85%で、急激な温湿度変化のない室内で保管下さい。  
Please store the products in room where the temperature / humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions : Temperature : -10 to +40 (degree C)

Humidity : 15 to 85% R.H.

- Expire date (Shelf life) of the products is 6 months after delivery under the conditions of a sealed and an unopened package. Please use the products within 6 months after delivery.

If you store the products for a long time (more than 6months), use carefully because the products may be degraded in the solder-ability and/or rusty. Please confirm solder-ability and characteristics for the products regularly.

- Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, and/or be degraded in the solder-ability due to the storage in a chemical atmosphere.

- Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.

- Please do not store the products in the places such as : in a damp heated place, in a place where direct sunlight comes in, in place applying vibrations.

- Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solder-ability due to storage under the poor condition.

- Please do not drop the products to avoid cracking of ceramic element.

14-1 ご使用に際しましては、貴社製品に実装された状態で必ず評価して下さい。

Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.

- You are requested not to use our product deviating from this product specification.