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February 16, 2011

Subject: Class II Permissive Change notice
FCC ID: PGR2W3801HGV
IC: 3439B-3801HGV

To Whom it May Concern:

This Class II Permissive Change is a result of adding a second source TX filter (U23) to our approved vendors list (data sheet attached). This is a pin compatible equivalent component to the original NTK part. None of the changes noted below impact the original schematics, block diagram and/or operational description, or power settings. Nothing has changed regarding the PCB layout verses the original submittal.

In addition, as a result of the recent 2Wire/PACE acquisition, we are re-branding this product line. The label artwork is changing from the 2Wire trademark to the Pace trademark accordingly.

Listed below are the component changes reflected in this Class II Permissive Change submittal:

R193 (Improved closed loop gain measurements and factory calibration results)
WAS: 2101-005005-000, RES,SMD,1.0K OHM,5%,0402,ROHS
IS: 2101-004270-000, RES,SMD,681OHM,1%,0402,ROHS

C251 (Improved antenna matching impedance)
WAS: NO INSTALL
IS: 2301-020002-000, CAP,NPO,HI Q,0.5PF,25V,+/-0.1PF,0402,ROHS

U23 (Second source component)
WAS: 2501-200039-000, FILTER,LP,2.4GHZ,WIDEBAND,0805 (NTK TECHNOLOGIES, INC., LAT250D-7038C)
IS: 2501-200039-000, FILTER,LP,2.4GHZ,WIDEBAND,0805 (Soshin HMD804G-T)

Soshin datasheet is attached for reference.

Sincerely,

Mark A. Rieger
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BRINGING TECHNOLOGY HOME
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ISO 9001:2000 – FM 35904
ISO 14001:2004 – EMS 81500

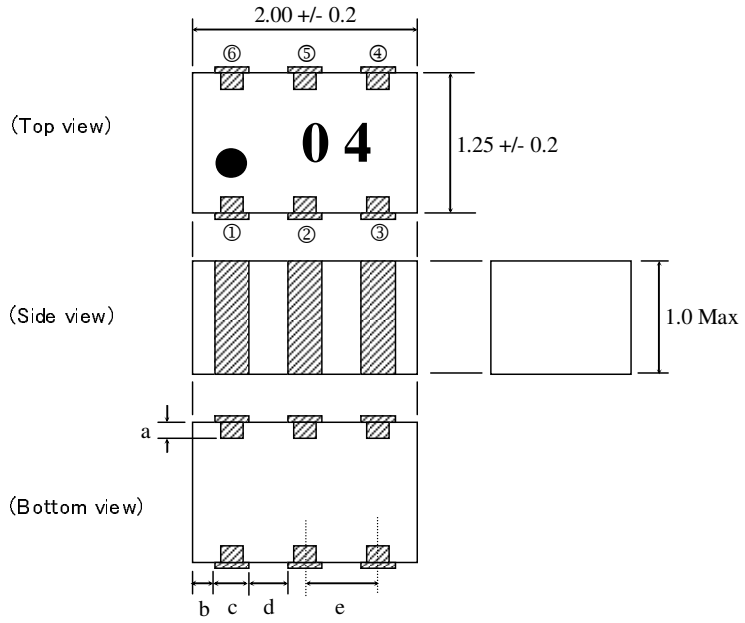
Registered in England No. 1672847
Pace and Pace are trade marks and/or registered trade marks of Pace plc.

SPECIFICATIONS	Control No. : MDR－2291-A 1
Customer : 2Wire	Issued on October 29, 2010

1. 2.7GHz LPF for WiMAX
   TYPE No. : HMD804G-T(Taping)

RoHS Compliant Parts & Lead Free

2. Appearance and Construction
   2.1 Dimension (Unit : mm)



Terminal	
①	Input
②	GND
③	Output
④	NC
⑤	GND
⑥	NC

Terminal Dimension	
a	0.15 Typ.
b	0.20 Typ.
c	0.30±0.15
d	0.35±0.15
e	0.65±0.15

   2.2 Construction
      Body : Multilayer Ceramics
      Internal Electrode : Silver
      External Electrode : Ni+Sn Plating
   2.3 Marking———Abbreviation of Model No. is printed

3. Electrical Characteristics

Pass band	Specification	Typical	Unit	Remark
fc (Center frequency)	2500	-	MHz	
Pass band frequency	2300-2700	-	MHz	
Nominal impedance	50	-	ohm	
Insertion Loss at 25degC.	0.5 Max.	0.34	dB	
Insertion Loss at -40 to +85degC.	0.6 Max.	-	-	
VSWR in BW	1.5 Max.	1.21	-	

Attenuation	Specification	Typical	Unit	Remark
4600 MHz - 5400 MHz	30 Min.	34.24	dB	2*f
6900 MHz - 8100 MHz	20 Min.	28.60	dB	3*f

4. Note
   4.1 Operating Temperature Range : -40～+85℃
   4.2 Storage condition for parts in a sealed plastic bag.
      Storage Temperature Range : -20～+35℃
      Storage Relative Humidity Range : 60% MAX.
      Storage Period : 6 Months MAX.
         (after opened the plastic bag : 14 days MAX.)
   4.3 Minimum Ordering Quantity : 2,000pcs(per reel)

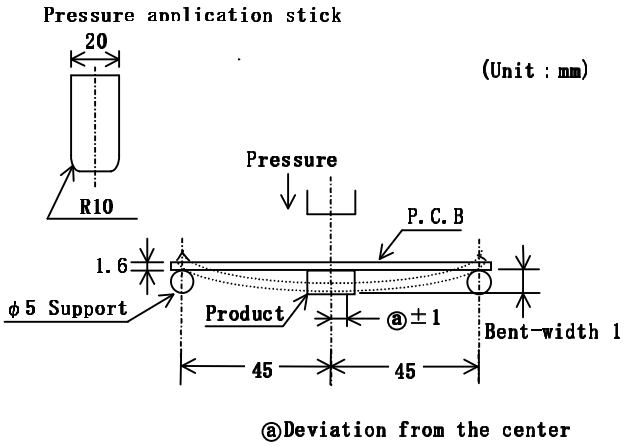
	Approved by				Raised by
	Y. MIZUTANI	Y. SHIMOMURA	M. TSUNODA	M. URANO	K. TAKASE

SOSHIN ELECTRIC CO.,LTD.

5. Test conditions

Testing in accordance with the requirements specified by IEC publication 68. "Recommended basic climatic and mechanical robustness testing procedure for electronic components".
Unless otherwise specified the following values apply.

6. Mechanical performance

Items	Conditions	Specifications
6.1 Bending	Apply pressure in the following manner with one application process per second to a total of 5 processes. A board used for this test is of a glass-epoxy material measuring 40(W)×100(L)×1.6mm(t).  〔Acc.: IEC 68-2-21 par. Ue1〕	① Electrical performance requirements(per clause 3) must be satisfied. ② No excessive changes in appearance may be observed.
6.2 Solder ability	Solder bath temperature : 235 ± 5℃ Bathing time : 3 ± 0.5 seconds Bathing depth : Entire products, up to the top of them 〔Acc.: IEC 68-2-20 par. Ta1〕	At least 3/4 of a surface of each terminal electrode must be covered by fresh solder.
6.3 Soldering heat resistance (Solder bath method)	Preheating temperature : 150 ± 10℃ Preheating time : 1 to 2 minutes Solder bath temperature : 260 ± 5℃ Bathing time : 5 ± 0.5 seconds Bathing depth : Entire products, up to the top of them 〔Acc.: IEC 384-10〕	① Electrical performance requirements(per clause 3) must be satisfied. ② No excessive changes in appearance may be observed.

Items	Conditions	Specifications
6.4 Vibration	Sweep rate : 10 to 55 to 10Hz per minute Total magnitude : 1.5mm Duration : 6 hours in total, 2 hours per each axis of 3 orthogonally crossing axes 〔Acc.: IEC 60068-2-6〕	①Electrical performance requirements(per clause 3) must be satisfied. ②No excessive changes in appearance may be observed.
6.5 Mechanical shock	Peak acceleration : 981m/s^2 (100G) Application time : 6ms Pulse shape : Half-sine pulse Duration : 18 applications in total, 3 applications in both directions of each axis of 3 orthogonally crossing axes (6 directions altogether) 〔Acc.: IEC 68-2-27〕	
6.6 Natural drop	3 non-accelerated natural drops from 1 meter above a wood board 〔Acc.: IEC 68-2-32〕	

7. Environmental characteristics

Items	Conditions	Specifications
7.1 Humidity (Steady conditions)	Temperature : 85 ± 2℃ Relative humidity : 80 to 90% Test duration : 500 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours. 〔Acc.: IEC 68-2-3〕	①Electrical performance requirements(per clause 3) must be satisfied. ②No excessive changes in appearance may be observed.
7.2 High temperature	Temperature : 85 ± 2℃ Test duration : 500 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours. 〔Acc.: IEC 68-2-2 par. Bb〕	
7.3 Low temperature	Temperature : −40 ± 3℃ Test duration : 500 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours. 〔Acc.: IEC 68-2-1 par. Aa〕	
7.4 Temperature cycle	Test temperature and exposure time 200 cycles must be applied, with one cycle consisting of exposure in −40℃ for 30 minutes and +85℃ for an additional 30 minutes. 〔Acc.: IEC 68-2-14, IEC 68-2-33〕	

8. Tape packaging method

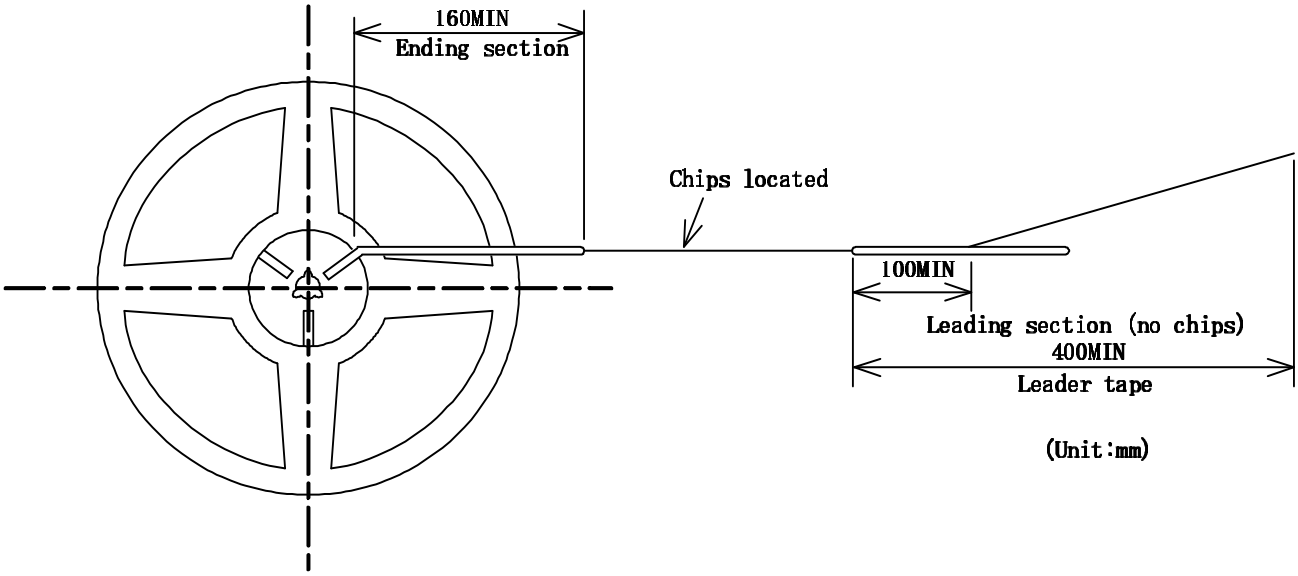
8.1 Tape packaging must conform to the following specifications. Refer to IEC-286-3 for items which are not included in them.

(1) Tape must be wound clockwise with the feeding hole coming to the right hand side when the tape end is pulled out towards an operator.

(2) Top cover tape must not cover feeding holes of carrier tape and/or show out of carrier tape.

(3) A blank section carrying no chips of a length of 160mm min. on ending section and 100mm min. on leading section must be provided.

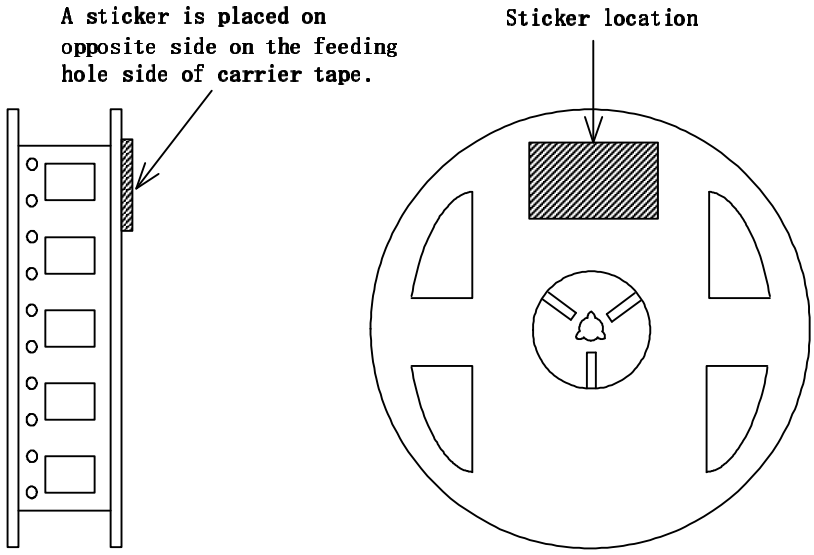
(4) A leading section of 400mm min. must be provided on top cover tape.



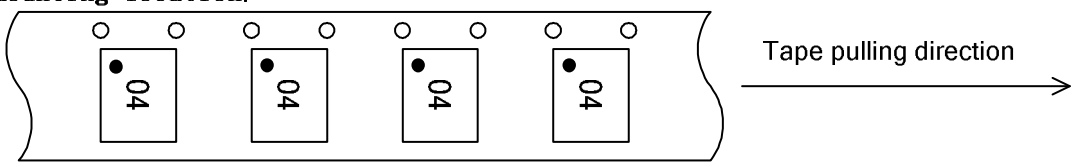
(5) To end tape winding, the leading section of top cover tape must be stuck on a side of a reel with adhesive tape.

(6) Removing force of top cover tape in the unwinding with an angle of 170 degrees between the removed side of a reel and carrier tape must be 0.1 to 1.0 N.

(7) A sticker carrying Soshin product No., quantity, lot No. is to be placed on the specified side of reels.

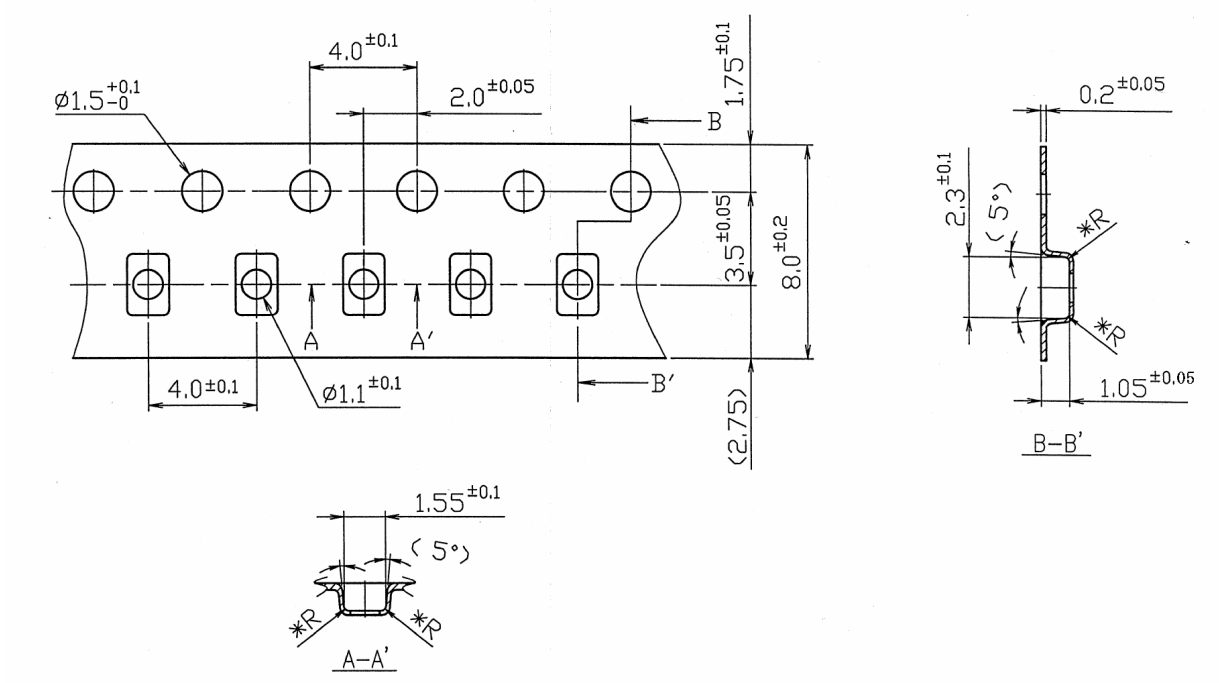


(8) Product orientation must be consistent. Products must not be positioned out of the mounting location.

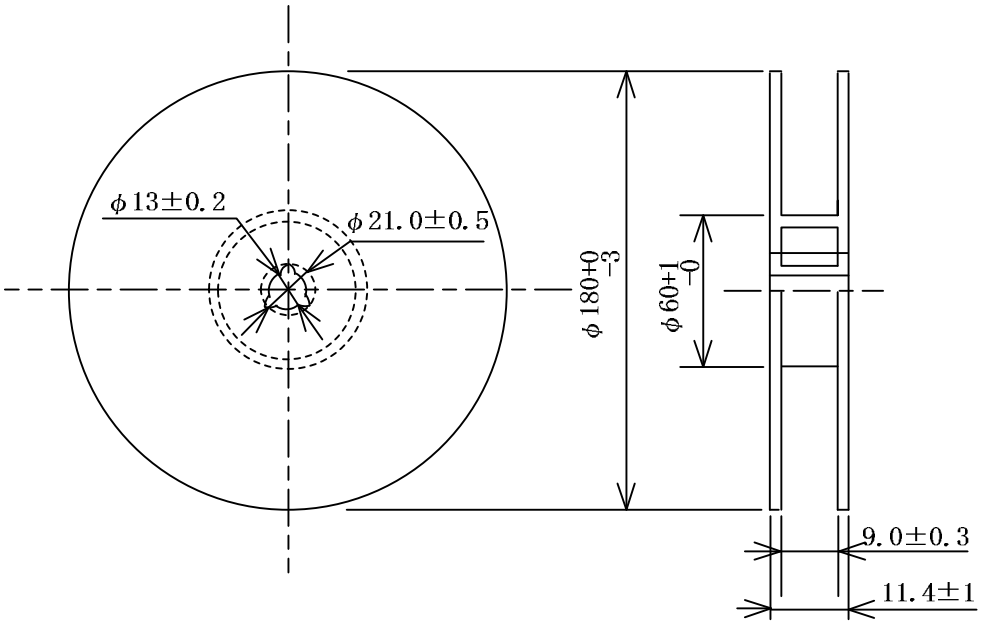


(9) Tape-packaged quantity
The quantity is 2,000 pieces per single tape-package as a rule.

8.2 Dimensions of the carrier tape (Unit : mm)



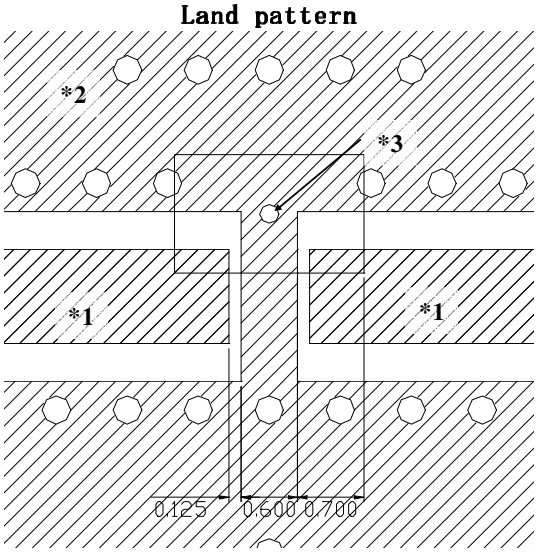
8.3 Carrier tape reel dimensions (Unit : mm)



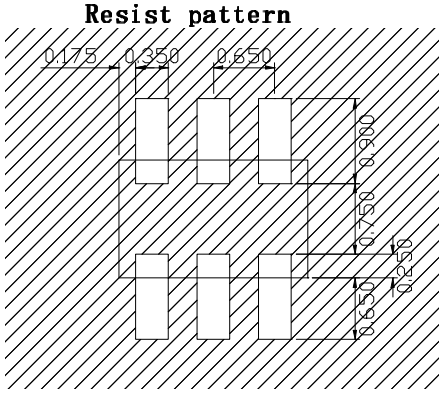
9. Recommended application conditions

9.1 Standard land dimensions (Unit : mm)

Land pattern

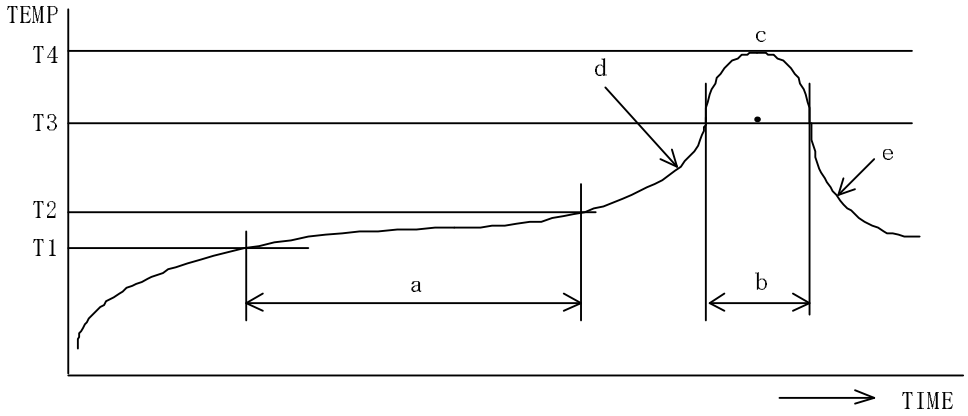


Resist pattern



*1 50 ohm Impedance Line
*2 Ground Plane
*3 Thorough Hole

9.2 Reflow-soldering conditions(For reference)



(1) High temperature reflow-soldering conditions(No more than 2 flows allowed)
T1 : 150 , T2 : 180℃ , T3 : 230℃ , T4 : 260℃
a : Preheating 60 to 120 seconds
b : Heating 30 to 50 seconds
c : Peak temperature 260±5℃, 5 to 10 seconds
d : Temperature rising slope 10℃/1 second, max.
e : Temperature falling slope 8℃/1 second, max.

9.3 Cleaning conditions

(1) Cleaning agent : Isopropyl alcohol
(2) Dip cleaning : 30 minutes, max., at 40℃
(3) Vapor cleaning : 30 minutes, max.
(4) Ultrasonic cleaning : 1 minutes, max, with a maximum power of 10w

9.4 Recommended Repair Soldering Conditions

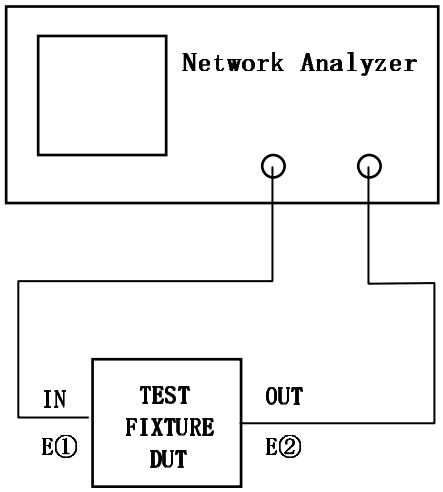
(1) Preheating Conditions
The temperature difference between soldering iron and device surface must be under 100℃.

(2) Recommended Condition of Soldering Iron
①Power : 20W MAX.
②Chip temperature : 290℃ MAX.
③Dimension of iron chip : ～1φ
④Soldering time : 3 Seconds MAX.

10. Measurement System

10.1 The device must be measured under the condition of using the test fixture.

10.2 Measuring Instrument (Reference)



E① : Input level

E② : Output level

10.3 Definition of Attenuation

(1) Attenuation is calculated by the following expression

$$\text{ATT (dB)} = -20 \log \frac{E②}{E①}$$

Reference level is set to 0 dB when input and output are shorted.

11. Other

11.1 No Class I ozone-depleting substances are employed throughout our production processes of this device.

11.2 Failure rate (for reference) : 1Fit

11.3 Please observe the law which provides suitable measure for the production and packing waste by an undertaking for themselves who discharges them.

11.4 These papers (including samples of products) includes our own secret information. Please do not disclose or copy the information to any third party without our permission in written.

11.5 In case of the usage of our products under the conditions requiring extremely high reliability, please consult with our sales in charge in advance.

11.6 We shall be free from any responsibility against the failure caused by the usage, deviating from the contents described in this Specification.

11.7 Lead-free is indicated on the labels under JEITA ETR-7021, section 3.3 Lead-free indication for electric components.

11.8 Please notify us of the Lot No. on a taping reel label when contacting us about delivered products.

SOSHIN ELECTRIC CO.,LTD.