MEMS Surface Mount Microphone Specification

Series FP4545

Model Number: FP4545TD383C3

Version 1.0

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1. Purpose and the Scope

This document contains the specific specifications (electrical and mechanical), inspection standard and the reliability standard for the purpose of the customer's approval.

2. Description

MEMS Surface Mount Microphone

3. Applications

PC, Handset/PDA, VoIP, Automotive etc.

4. Product Origin

China

5. Test Conditions

Test should be made under the conditions of room temperature (20 ± 10 º C) normal humidity (60 ± 20 %) and normal atmospheric pressure. In the case, however, that the judgment is questionable the test conditions are to be changed to room temperature 20 ± 2 º C, relative humidity 60 ~ 70 % and normal atmospheric pressure.

6. Ozone Guarantee

Certificate on the elimination of ozone layer destroying substances such as Freon.

7. Quality Protection

Test specifications of the mentioned model are based on this document. Other specification outside than this document must be discussed with us before we insert into this approval document. It means that we will not guarantee the specifications outside than this approval document.

8. Warranty

The warranty period will commence upon the date of the receipt of the parts from FLEZON. In the event that the warranty is not specified on the purchasing order, the warranty period shall be half year from the date of delivery.

9. Our Major Material List

Our major material is list below:

Transparent mylar: DuPont

10. Washing Conditions

The products mentioned with “remove after washing” could be washed by our recommended solvent.

11. Flux Removing Solvents

In the view of the recent requirement for total elimination of ozone-depleting chemicals, we have decided to recommend our customers to use deionized water for their cleaning process at the condition given below, instead of “CFC” that was conventionally used.

Cleaning solvent : deionized water
Solvent temperature : 55 ± 5 ° C
Immersion time : 5 ± 0.5 minutes

12. Power Supply and Resistance Loading

If the power supply voltage and the loading resistance is changed, the sensitivity would also change. Please make sure this 2 parts are the same as the specifications.

13. Filter

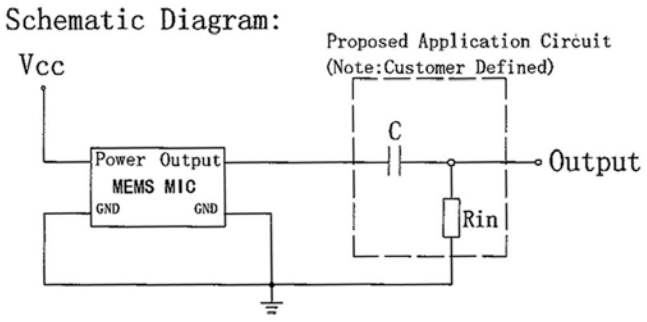
Please don’t tear off the top black filter on the top of microphone. It will affect the whole frequency response characteristic.

14. Pascal and Ubar

1 pa = 10 ubar
So the sensitivity will increase 20 dB with “ pa “ indication.
e.g. : -60 dB (0 dB = 1.0 V / ubar) = -40 dB (0 dB = 1.0 V / pa)

15. Driving Circuit

Our standard circuit for measurement is shown in the figure 1. The functions of this circuit is to make sure the driving transducer is measured based on the saturated condition. Other driving circuit could be used after consulting from FLEZON.
Ref. Circuit



The MENS Microphone inner 10 pF Cap.

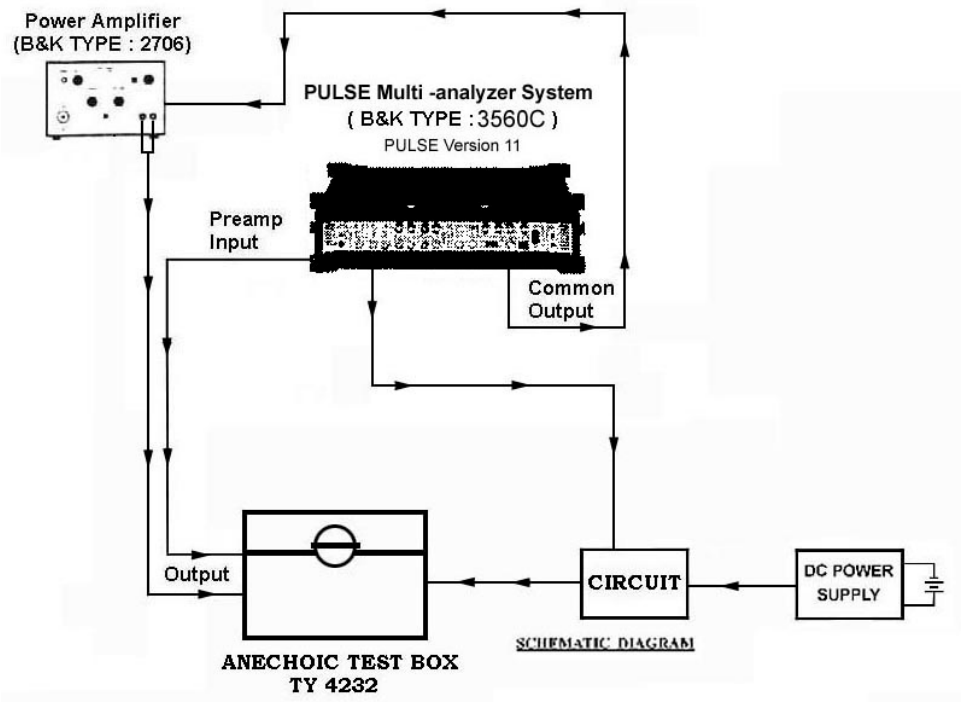
16. Electrical Specification

Items	Specifications	Conditions
Sensitivity	-38.0 ± 3.0 (dB) at 1.0 K Hz (0 dB = 1.0 V / pa at 1.0 K Hz)	Form a microphone with applying voltage 2.2 V (Vs), see test circuit.
Directivity	Omni directional	
Frequency Range	100 ~ 16000 Hz	
Operating Voltage Range	1.5 ~ 3.6 V	
Power Supply (Vs)	2.2 V	
Output Impedance	< 100.0 Ω	
Max. Current	0.2 mA	Tested at the test circuit
Voltage Deduction Characteristic	Within 3.0 dB at 2.0 V	
S / N Ratio	More than 58.0 dB	SPL = 1.0 pa, 1.0 K Hz, A – weighting
Max. Input Sound Level	110.0 dB SPL,	THD < 5.0 %
Operating Temperature	- 40.0 ~ + 100.0 °C	
Storage Temperature	- 40.0 ~ + 125.0 °C	
Weight	Less than 0.3 g	

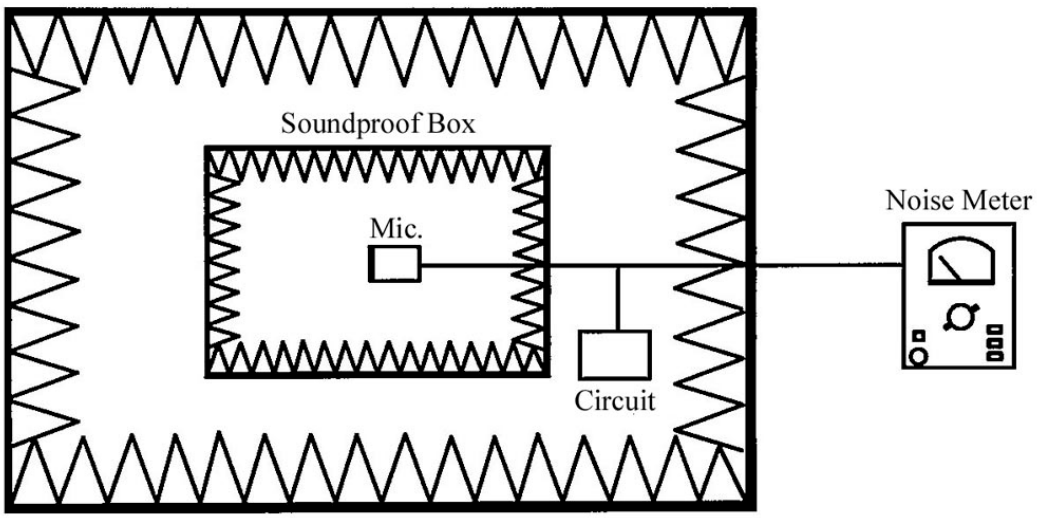
17. Reliability Test

Simulated Reflow (Without Solder)	Samples for qualification testing require a minimum of 3.0 passes of standard reflow solder profiles 2.0 hours of setting time is required between each reflow profile test.
Static Humidity	Precondition at + 25.0℃ for 1.0 hour. Then expose to + 70.0℃ with 90.0 to 95.0 % relative humidity for 120.0 hours. Finally dry at room ambient for 3.0 ± 1.0 hours before taking final measurement.
Temperature Shock	Each cycle shall consist of 15.0 minutes at - 40.0℃, 15.0 minutes at + 85.0℃ with a 20.0 seconds maximum transition time. Test duration is for 30.0 cycles, starting from cold to hot temperature.
ESD Sensitivity	Perform ESD sensitivity threshold measurements for each contact according to MIL-STD-883G, Method 3015.7 for Human Body Model. Identify the ESD threshold levels indicating passage of *8000* V Human Body Model.
Random Vibrations	Vibrate randomly from 20.0 Hz to 2000.0 Hz using the following Power Spectra Density (PSD) profile : It is a + 3.0 dB / octave. Starting with 0.01325g ^{2} / Hz from 20.0 Hz to 80.0 Hz, then 0.053g ^{2} / Hz from 80.0 Hz to the PSD tolerance is ± 3.0 dB from 20.0 Hz to 1000.0 Hz and ± 6.0 dB above 1000.0 Hz. The analyzer bandwidth to be set at 25.0 Hz BW from 20.0 Hz to 2000.0 Hz, 50.0 Hz BW to 1000.0 Hz, and finally 100.0 Hz BW to 2000.0 Hz, The test time is 15.0 minutes per plane.
Mechanical Shock	Subject sample to half sine shock pulses (3000.0 g's ± 15.0 % for 0.3 ms) in each direction, totally 6.0 shocks.
Operation Life	Subject sample to + 85.0 °C for 168.0 hours under full rated power.
Solder Reflow	One pass through standard solder reflow profile.
Drop Test	Samples are fixed inside the fixture and dropped naturally from the 2.0 m height onto a concrete plane in six directions for three times, total 18.0 times. The weight of test fixture is around 200.0 g.
Sinusoidal Vibration	Vibrate randomly from 10.0 Hz to 55.0 Hz, 1.0 octave / minute with 2.0 mm amplitude (peak to peak) for 2.0 hours in each direction.
PC Board Solder Adhesion	Each test PC board shall contain only one part. Place PC Board for testing upside down on two supports spaced 90.0 mm apart centering the part to within ± 1.0 mm of the span .Orient this part such that the longest dimension is perpendicular between the two supports. Next using a force gauge ,also centering to within ± 1.0 mm of the span's center ,slowly apply a downward vertical force and push with increasing force until the part's terminations separate from the PC board. Record at which deflection point mechanical failure occurs. Parts shall withstand a minimum deflection as described below .Repeat for each test sample. Identify precisely where termination stress failure (s) occur and include at least one picture.

18. Microphone Testing Process

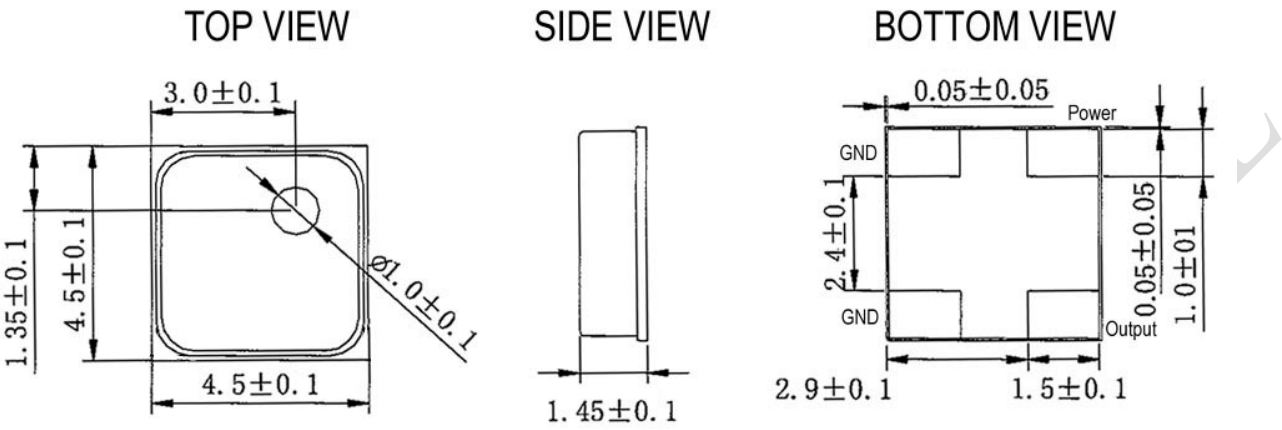


19. S / N Ratio Test

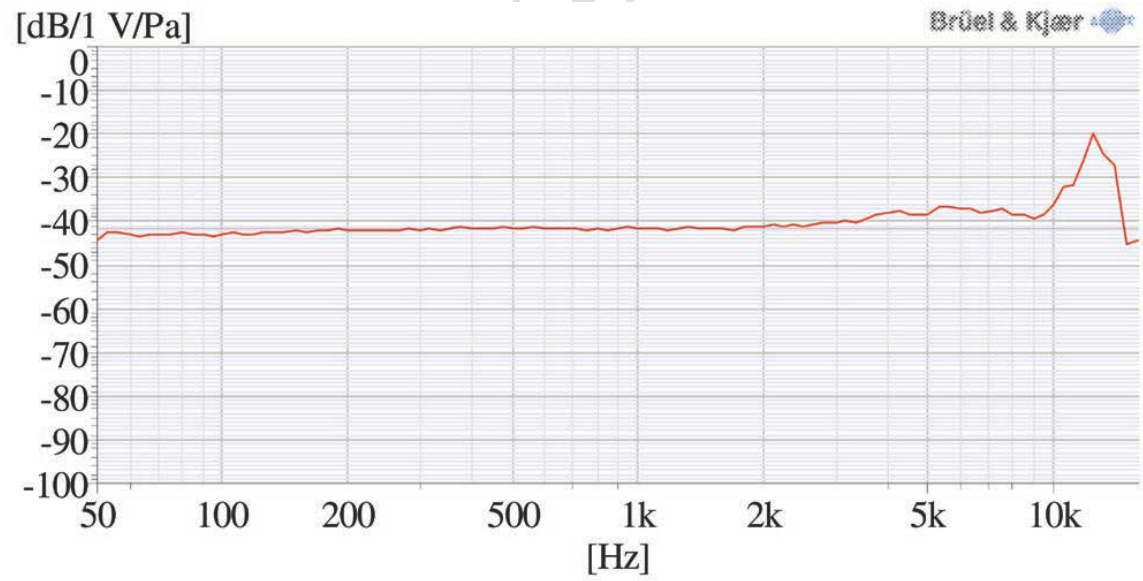


20. Mechanical Draw

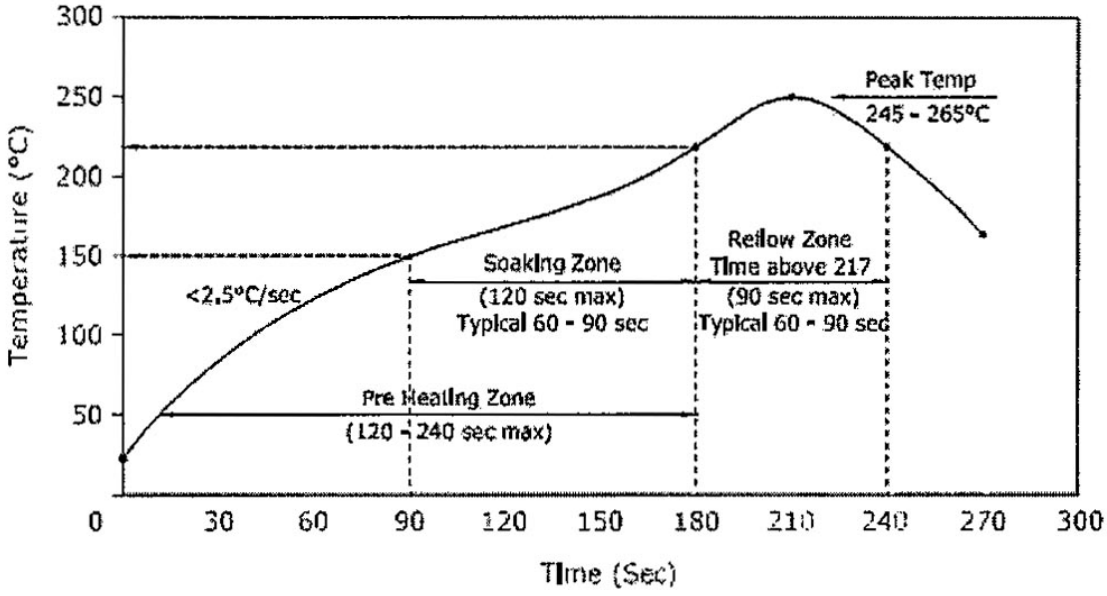
Unit : mm



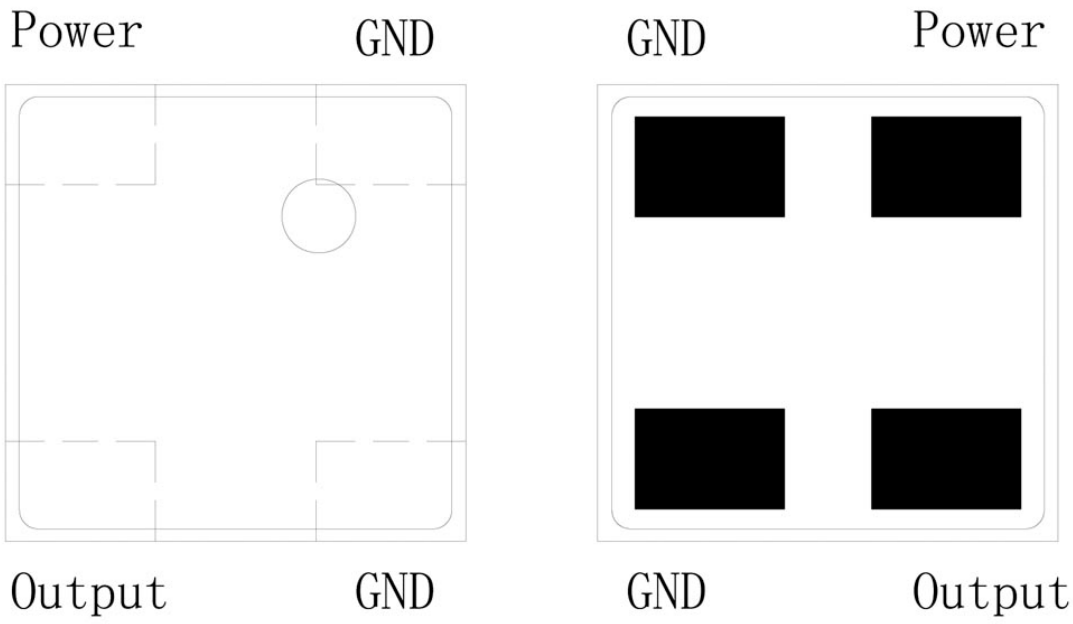
21. Frequency Response Curve



22. Recommend Reflow Profile

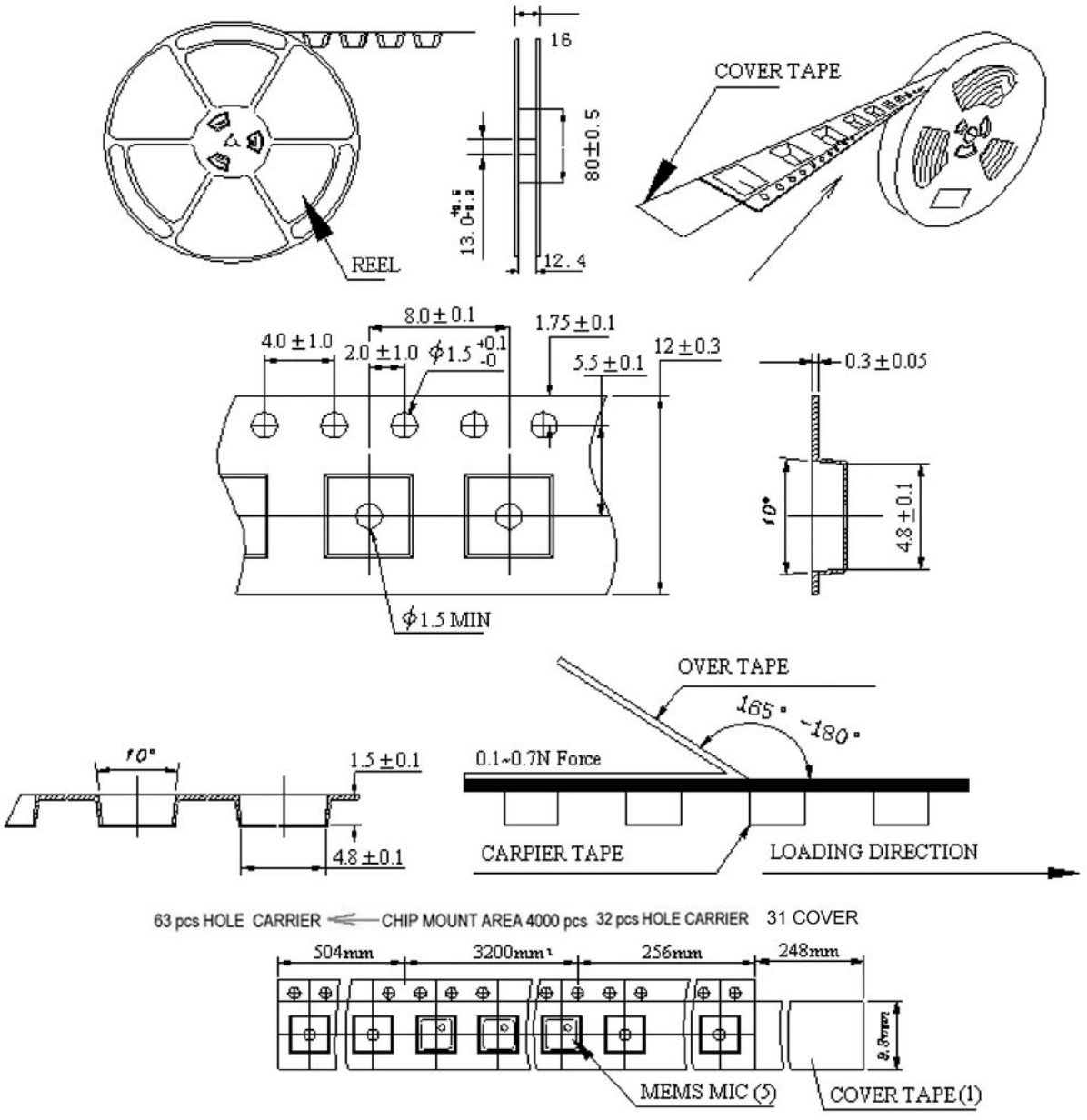


23. PCB Layout



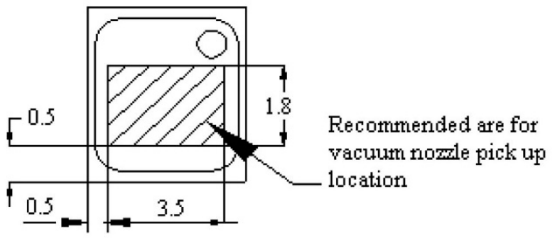
24. Tape & Reel Packing

24.1 Reel Tape

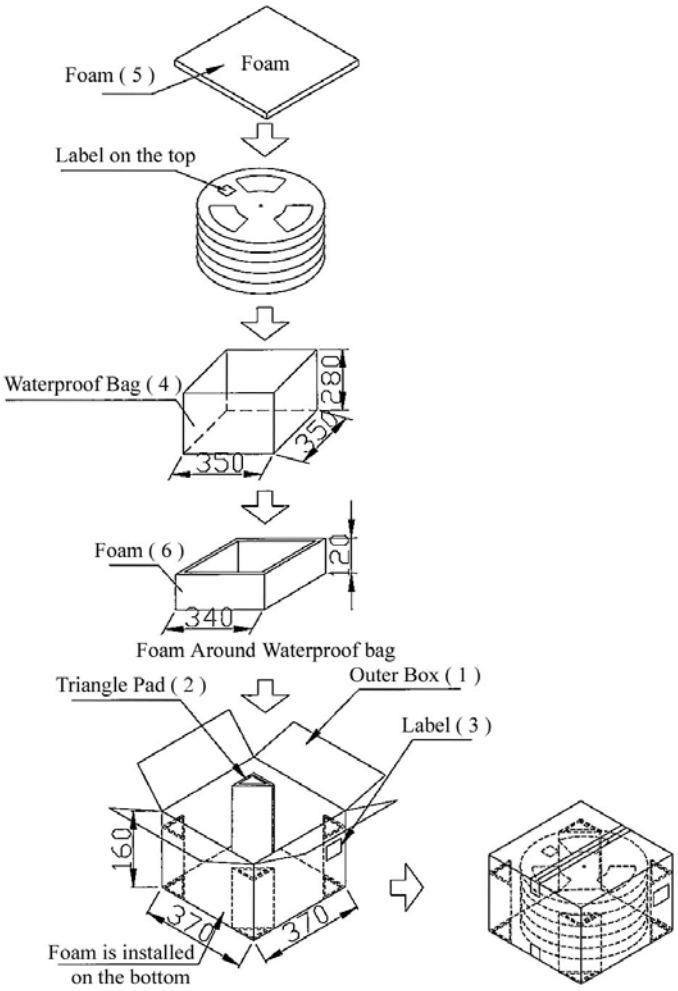


24.2. Packing quantity: 4000 pcs per reel, 5 reels per carton (Total 20000 pcs)

24.3. Pack up Tool Pick Location.



24.5. Reel Installation



Criteria:

piece of foam at the bottom of outer box

ams around waterproof bag and a triangle pad at

internal onner of outer box (between waterproof bag

oam).

abel on the top.

rolls of product into waterproof bag, then put into outer

age, 2500 X 5 / box.

foam at the first layer.

abel on outer box.

No	Description	Size	Quantity
1	Outer Box	370 X 370 X 160	1 pcs
2	Triangle Pad	120 X 95 X 95	4 pcs
3	Label	-	6 pcs
4	Waterproof Bag	350 X 350 X 280	1 pcs
5	Carton Board	350 X 350 X 10	2 pcs

25. Change History

Version	Date	Description
1.0	2012.02	First Released