SPECIFICATION FOR APPROVAL

Product Type: SMD Magnetic Transducer

Canopus Part No.: CSMT1307E2400L

Customer Part No.:

Revision: R00

Prepared: Chris Lee	**Checked:** Jose Lam	**Approved:** Jose Lam
Customer: Diverse Electronics	***Approval Signature:***	

Specification Revisions

Revisions	*Detailed Specification Change*	*Date*
R00		29th Mar 2001

1. Purpose and the scope

This document contains the specific specifications, reliability standard and inspection standard for customer's approval.

2. Description

SMD miniature electro-magnetic transducer

3. Test conditions

Test should be made under the conditions of room temperature (20 ± 10 º C) normal humidity (60 ± 20 %) and 1 atm.

4. Ozone guarantee

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

5. Quality protection

Testing specification other than that mentioned in this approval sheet needs to be discussed and they are not guaranteed until put into this approval sheet. Not until they are put into this specification sheet do we guarantee the correctness.

6. Warranty

The warranty period will commence upon the date of the receipt of the parts from Canopus Electronics (H.K.) Limited. 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.

7. Soldering conditions

This model should not be exposed to extremely high temperatures for prolonged period of time because excessive heat generated by ironing will degrade the internal structure of the unit. As a result, soldering should be completed as quickly as possible.

Recommended temperature and time for soldering:

Hand soldering (for ABS, hi-temp ABS, FR ABS, NYLON)

300 ^{o}C Thermal ironing

Wave soldering (NORYL, PBT, PPS)

256 ^{o}C within 3 seconds; 350 ^{o}C within 1 second

8. Washing conditions

The products mentioned with “remove after washing” could be washed by appropriate solvents.

9. 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 de-ionized water for their cleaning process at the condition given below, instead of “CFC” that was conventionally used.

Cleaning solvent	: de-ionized water
Solvent temperature	: 55 ± 5 ºC
Immersion time	: 5 ± 0.5 minutes

10. Signal input polarity

If the voltage signal input V_{P-P} is applied to our transducer with the polarity reversed, it can still generate sound but will not always meet the guaranteed sound pressure level stated in the specification.

11. Resonant Frequency

Canopus Electronics (H.K.) Limited could guarantee the sound output on the specific resonant frequency on this mentioned approval document. Customers must consult Canopus Electronics (H.K.) Limited on the other requested resonant frequency if necessary.

12. Input voltage

The input voltage must be within the operation range. Input outside the range would damage the internal structure. It is because the over driven of the enameled wire would melt the enameled coating and short circuit would hence happen.

13. Driving circuit

Standard circuit for measurement is shown in the Fig.1. The function 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 Canopus Electronics (H.K.) Limited.

14. Input waveform

All the specifications are based on the half duty square wave. The voltage is peak to peak value from V_o to V_p.

15. Sound emission hole

Canopus Electronics (H.K.) Limited recommends the design to use our buzzer in their application should be no barrier with minimum 5mm to the sound emission as it will cause the shifting of the resonant frequency.

16. Mounting precaution

When mounting the flange mount buzzer on the PC Board, beware not to fix, squeeze or deform the housing of the buzzer. It will cause low sound output, no sound and shifting frequency.

17. Specification:

ITEMS	SPECIFICATIONS	CONDITIONS
-RATED VOLTAGE	5.0 V	
-OPERATING VOLTAGE	4.0 ~ 8.0 VDC	
-RATED CURRENT	≤ 40mA	Applying DC rated voltage, square wave 1/2 duty at based frequency.(Fig.1)
-COIL DC RESISTANCE	47.0 ± 5.0 Ω	
-MINIMUM SOUND OUTPUT	≥ 87 dBA	Distance at 10 cm from a microphone with applying DC rated voltage, square wave, 1/2 duty, based frequency.(Fig.1&2)
-BASIC FREQUENCY	2400 Hz	
-TERMINAL	SMD	
-HOUSING MATERIAL	PPS	
-COLOR	Grey	
-OPERATING TEMPERATURE	-20 ~ +70 ℃	
-STORAGE TEMPERATURE	-30 ~ +80 ℃	
-WEIGHT	2g	

18. Inspection standard:

Item Tested	Standard	AQL	Level	Means	Remarks
NO SOUNDING	Within the operating voltage	0.25	II	EAR	At each lowest, rated, highest operating voltage, there should be no sounding, harsh sound and remarkable sound decrease at rated frequency square wave 1/2 duty.
-SOUND OUTPUT	≥ 87 dBA mentioned in specifications at rated voltage	1.00	II	SOUND PRESSURE LEVEL	Distance at 10cm with mounting to inspection device in a standard manner (A Range), rated frequency and square wave 1/2 duty.
-CURRENT	≤ 40mA when applying at rated voltage	0.65	I	MULTIMETER	(0.5 or 1.0 class) rated frequency square wave, 1/2 duty.
-COIL RESISTANCE	47.0 ± 5.0 Ω	0.65	I	MULTIMETER	
-OUTER DIAMETER	12.8 x 12.8 ± 0.2 (mm)	1.50	S-3	ELECTRONIC CALIPERS	To be measured at the maximum diameter.
-OVERALL HEIGHT	7.0 ± 0.2 (mm)	1.50	S-3	ELECTRONIC CALIPERS	
TERMINAL STRENGTH	> 1 KG	0.65	S-3	TENSION GAUGE	By pulling each terminal.
STATE OF SOLDER		1.00	II	MAGNIFYING GLASS	Soldered points and/or coil disposition should be proper.
RUST		1.00	II	EYE	Any rust should not be accepted.

STAIN		1.50	II	EYE	There should be no remarkable stains.
ADHESION		1.50	II	EYE	Adhesion should be made sufficiently and there should be no outflow of adhesive agent.
APPEARANCE		1.50	II	EYE	

19. Reliability Test:

Item	Method of Test	Standard
OPERATING TEMPERATURE	Driving from the lowest operating temperature to the highest operating temperature within 30 minutes or 2 cycles then expose to the room temp for 2 hours.	All specifications must be satisfied after the test.
STORAGE IN HIGH TEMP.	Storage in test box for 96 hours under the highest operating temperature then expose to the room for 2 hours.	All specifications must be satisfied after the test.
STORAGE IN LOW TEMP.	Storage in test box for 96 hours under the lowest operating temperature then expose to the room for 2 hours.	All specifications must be satisfied after the test.
LIFE TEST IN THE ROOM TEMP.	Operate the buzzer continuously for 1000 hours with applying at the rated signal.	All specifications must be satisfied after the test.
TEMP CYCLE TEST	Make 5 cycle tests without applying power as Fig 3, then expose to the room temp for 2 hours.	All specifications must be satisfied after the test.
TEMP./ HUMIDITY CYCLE TEST	Make 10 cycle tests without applying power as Fig 4, then expose to the room temp for 2 hours.	All specifications must be satisfied after the test.

VIBRATION TEST	Make the test for the directions of X, Y, and Z as Fig 5 for 2 hours each (total 6 hours). TO-AND-FRO sweep time (from 10 to 55 Hz and then 55 to 10) is 1minute.	All specifications must be satisfied after the test.
DROP TEST	Drop a buzzer naturally from the height of 700mm onto the surface of 10mm thick wooden board. Two directions; that is upper and side of the buzzer are to be applied for this drop test.	All specifications must be satisfied after the test.

Fig.1 Driving Circuit:

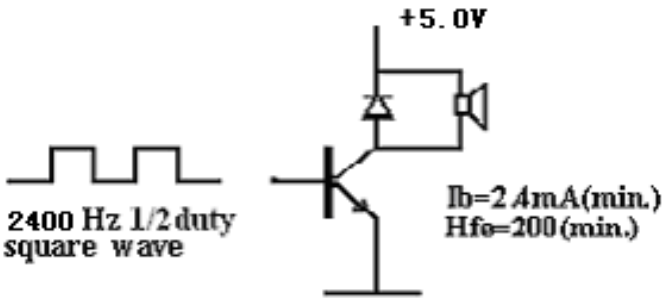


Fig2. Measuring method:

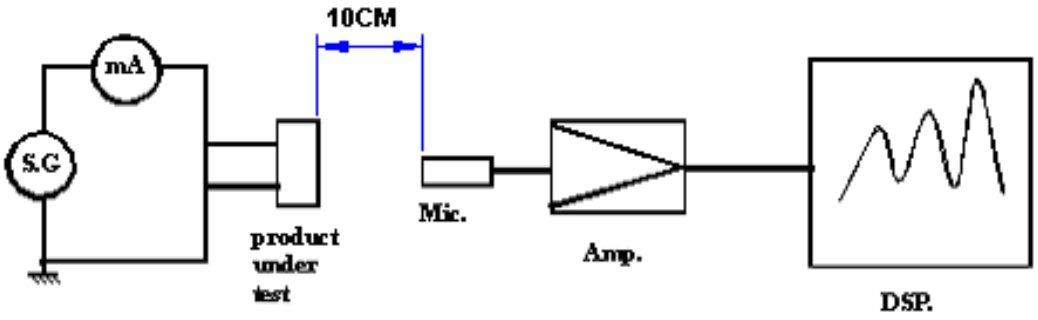


Fig.3 Temp. Cycle test:

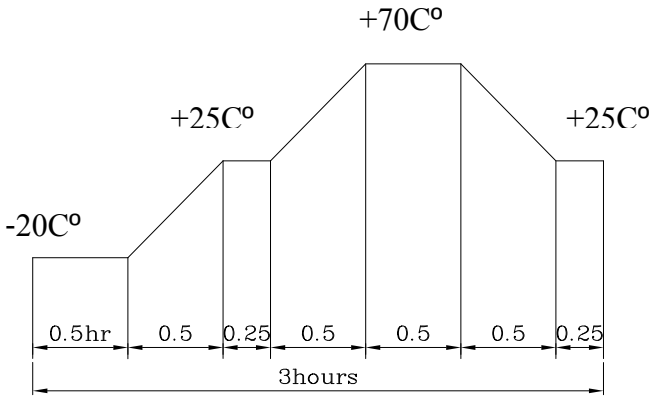


Fig. 4 Temp. / Humidity cycle test:

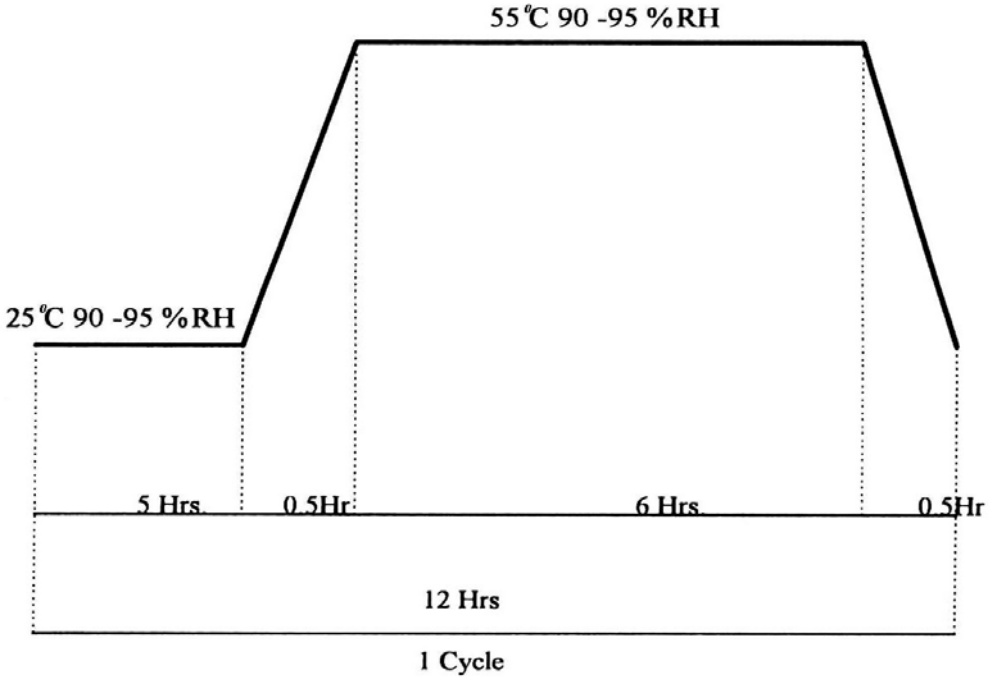


Fig. 5 Vibration test:

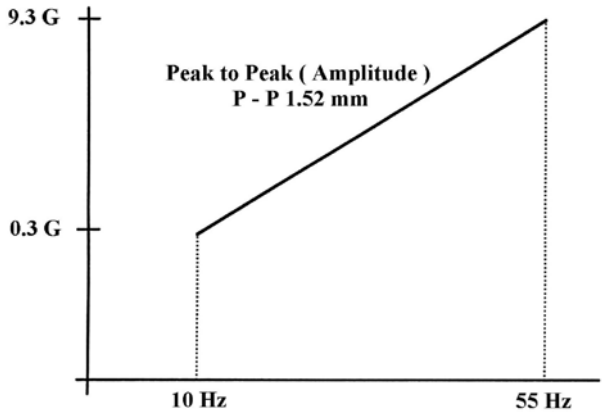


Fig. 6 Drop test:

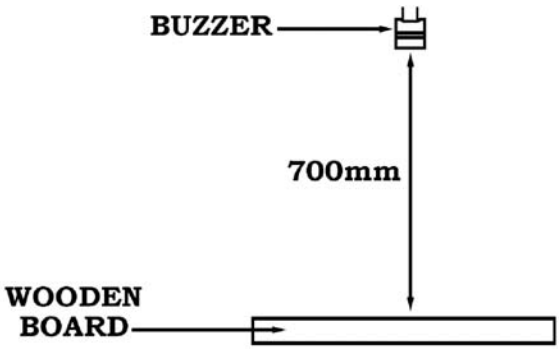
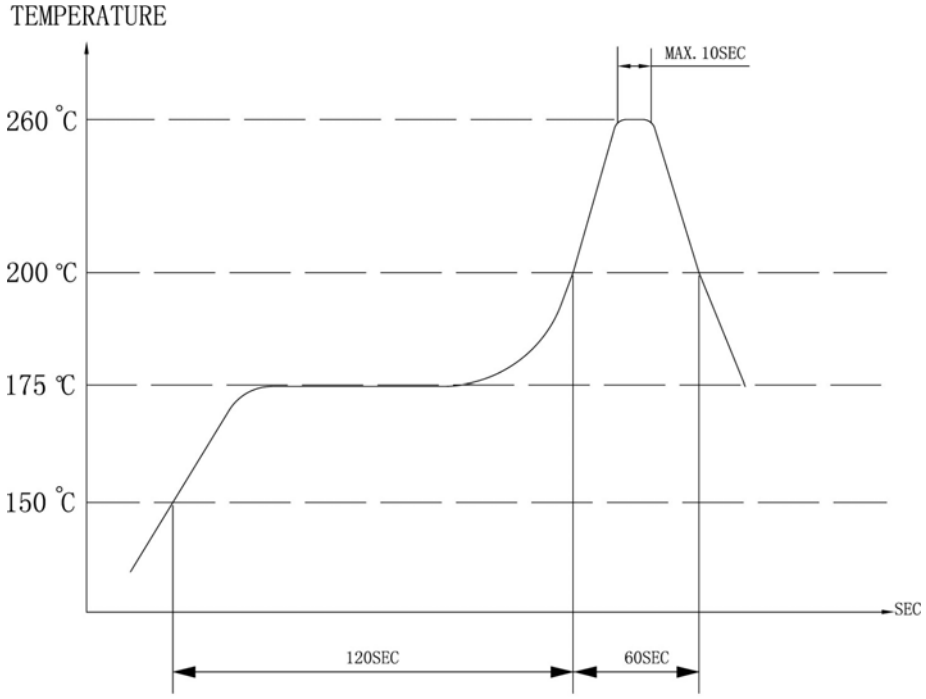


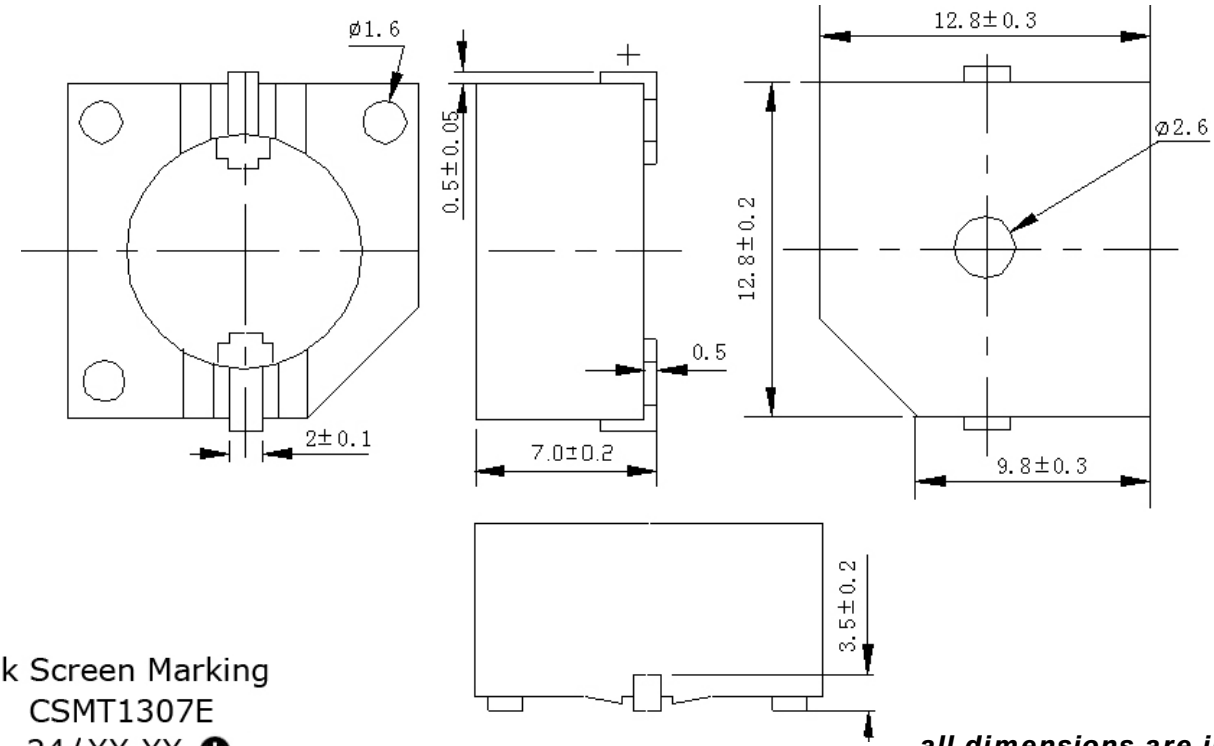
Fig. 7 Soldering condition:

Item	Testing Condition
Reflow Soldering	- Recommendable reflow soldering condition is as follows. - Note 1; It is requested that reflow soldering should be executed after heat of product goes down to normal temperature. - Note 2; Peak reflow temperature of 260c, with a maximum duration of 60 sec. between 220c and 260c.
Manual Soldering	Soldering iron temperature : 350c within 10 sec.



Heat resistant line

20. Mechanical draw:



Silk Screen Marking
CSMT1307E
24/XX XX ⊕
Year Week

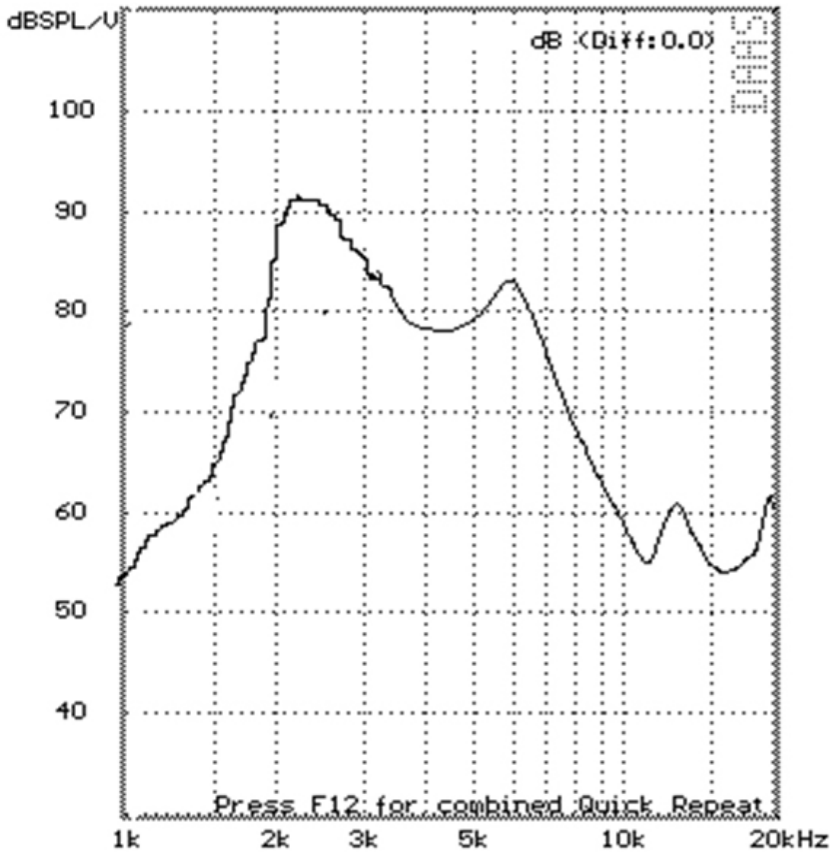
all dimensions are in mm

Tolerance: ± 0.3 mm

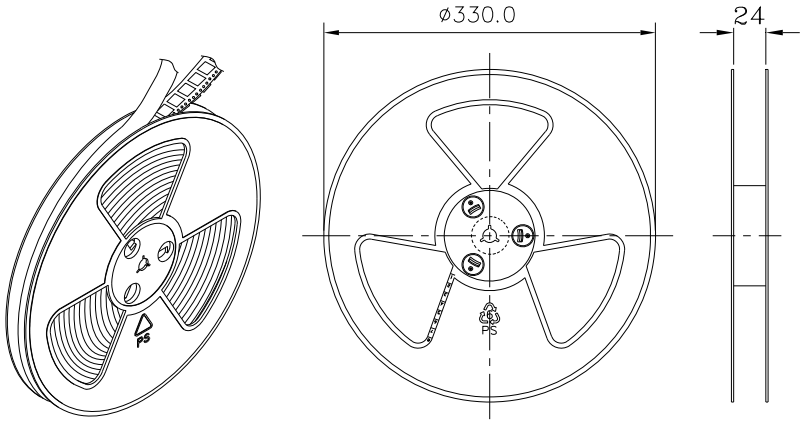
21. Material List:

Item	Part name	Type of Material	Supplier
1	Case	LCP	GE Plastics
2	Diaphragm	FeNi50	Shanghai Post Graduate Research Insititute
3	Yoke	DT4C	Shanghai Baoshan Iron Plant
4	Magnet	SrFeO2	Changzhou Tianning Electro-equipment Factory

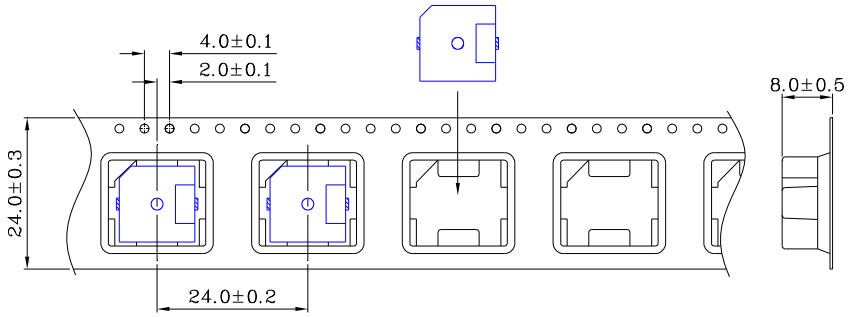
22. Frequency response curves:

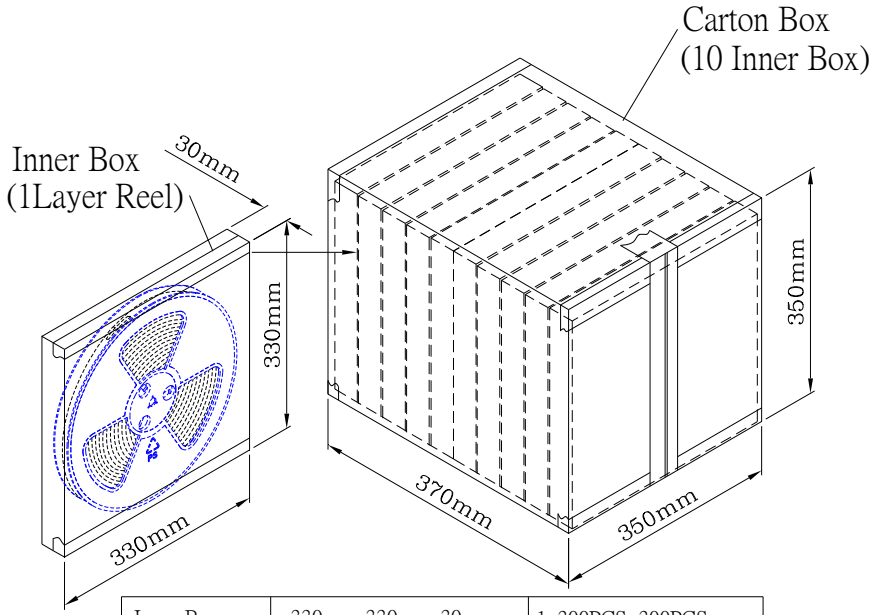


23. Packing:



1 Reel : 300PCS





Inner Box	330mmx330mmx30mm	1x300PCS=300PCS
Carton Box	350mmx350mmx370mm	10x300PCS=3,000PCS