Specification of Electret Condenser Microphone

(RoHS Compliance&Halogen-Free)

Customer Name：
Customer Model:
GoerTek Model： B4013AM443-058

GoerTek		CUSTOMER APPROVAL
DESIGN	Archie/Dec.12,2013	
CHKD	Dave /Dec.12,2013	
STANDARD	Sunny/Dec.12,2013	
APVD	Worden/Dec.12,2013	

10644
ISO/TS16949:2002
2551
ISO14001:2004
2728
ISO9001:2000

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Restricted

1 Security warning

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2 Publication history

Version	Modified P/O No.	Date	Description	Design	Approval
1.0	/	2013.12.12	New Design	Archie	Worden

3 Symbols Show

Symbols	Show
©	Signify Customer's Special Characteristic.
©	Signify GoerTek Special Characteristic.

Contents

PRODUCT SPECIFICATIONS

Type: Electret Condenser Microphone
Number: B4013AM443-058

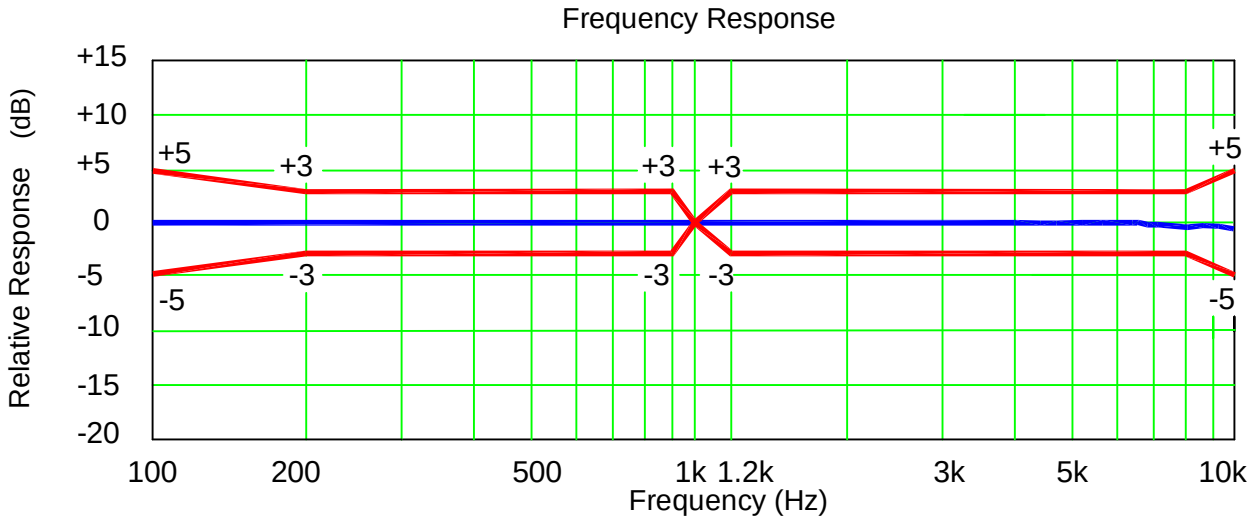
1 Test Condition (Vs=2.0V , RL=2.2kΩ, L= 50 cm)

StandardConditions (As IEC 60268-4)	Temperature	Humidity	Air pressure
Environment Conditions	+15℃～+35℃	25％RH～75%RH	86kPa～106kPa
Basic Test Conditions	+20℃±2℃	60％RH～70%RH	86kPa～106kPa

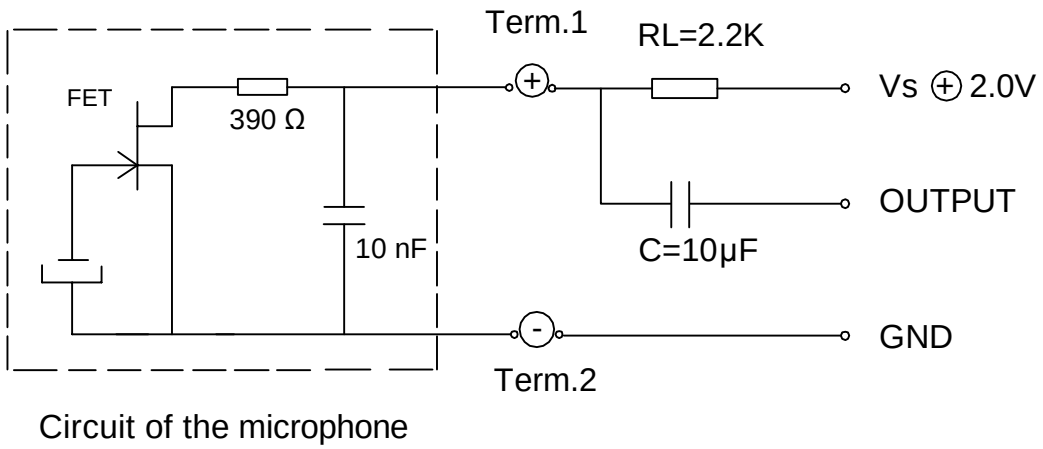
2 Electrical Characteristics

Item	Symbol	Test Conditions	Min	Standard	Max	Unit
Sensitivity	S	f=1kHz, Pin=1Pa	-47	-44	-41	dB 0dB=1V/Pa
Output Impedance	Zout	f=1kHz, Pin=1Pa			2.2k	Ω
Directivity	D(θ)	Omnidirectional				dB
Current Consumption	I				500	μA
S/N Ratio	S/N(A)	f=1kHz, Pin=1Pa A-Weighted Curve	58			dB
Decreasing Voltage Characteristic	ΔS	f=1kHz, Pin=1Pa Vs=2.0-1.5V			3	dB
Operating Voltage Range	Vs		1.0		10	V
Distortion	THD	f=1kHz, Pin=110dB			3	%

3 Frequency Response Curve and Limits

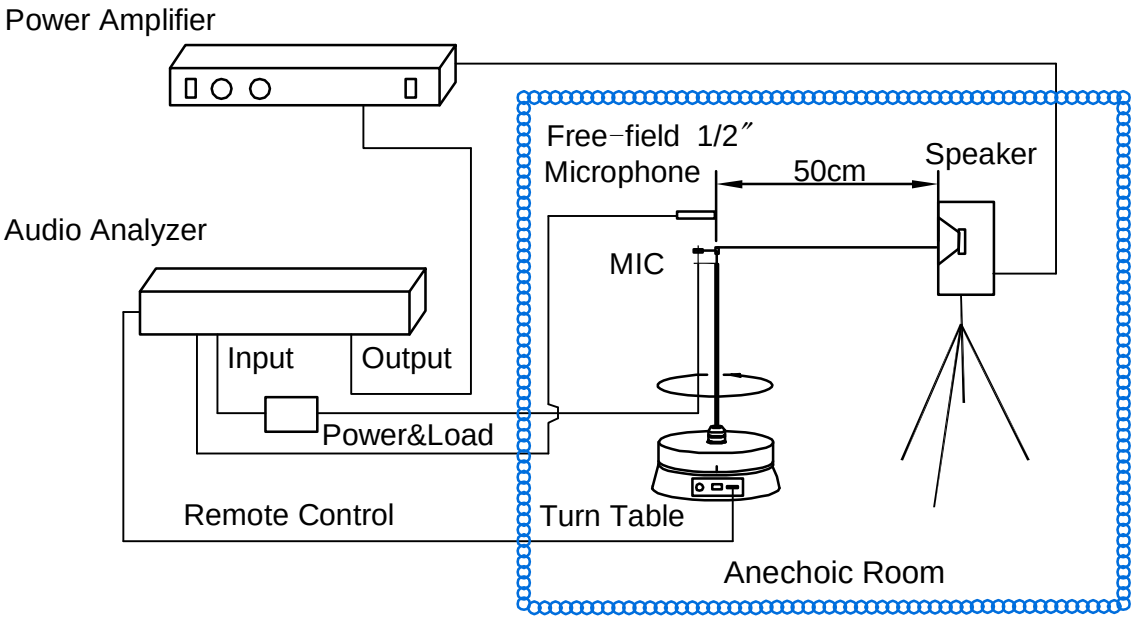


4 Measurement Circuit



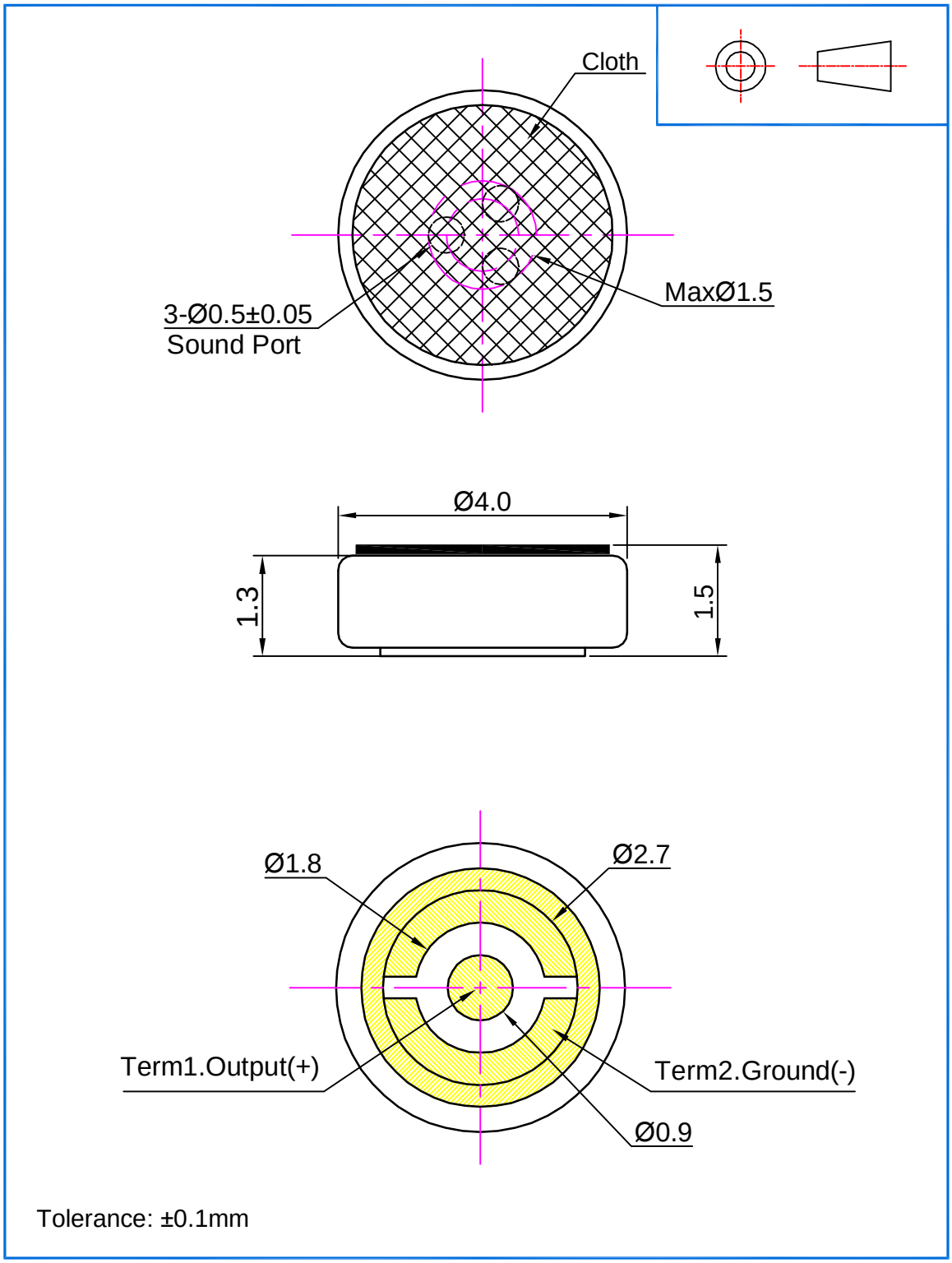
Circuit of the microphone

5 Test Setup Drawing



6 Mechanical Characteristics

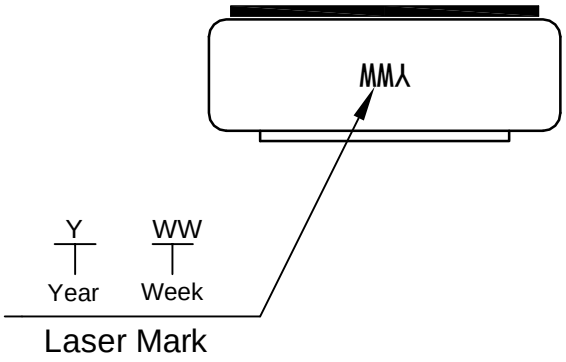
6.1 Appearance Drawing (Unit: mm)



6.2 Weight

Less than 0.2g

7. Laser Marking



ECM LOT: YWW

Y-PART: Year

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	…
Marking NO.	A	B	C	D	E	F	G	H	I	…

WW-PART: Week

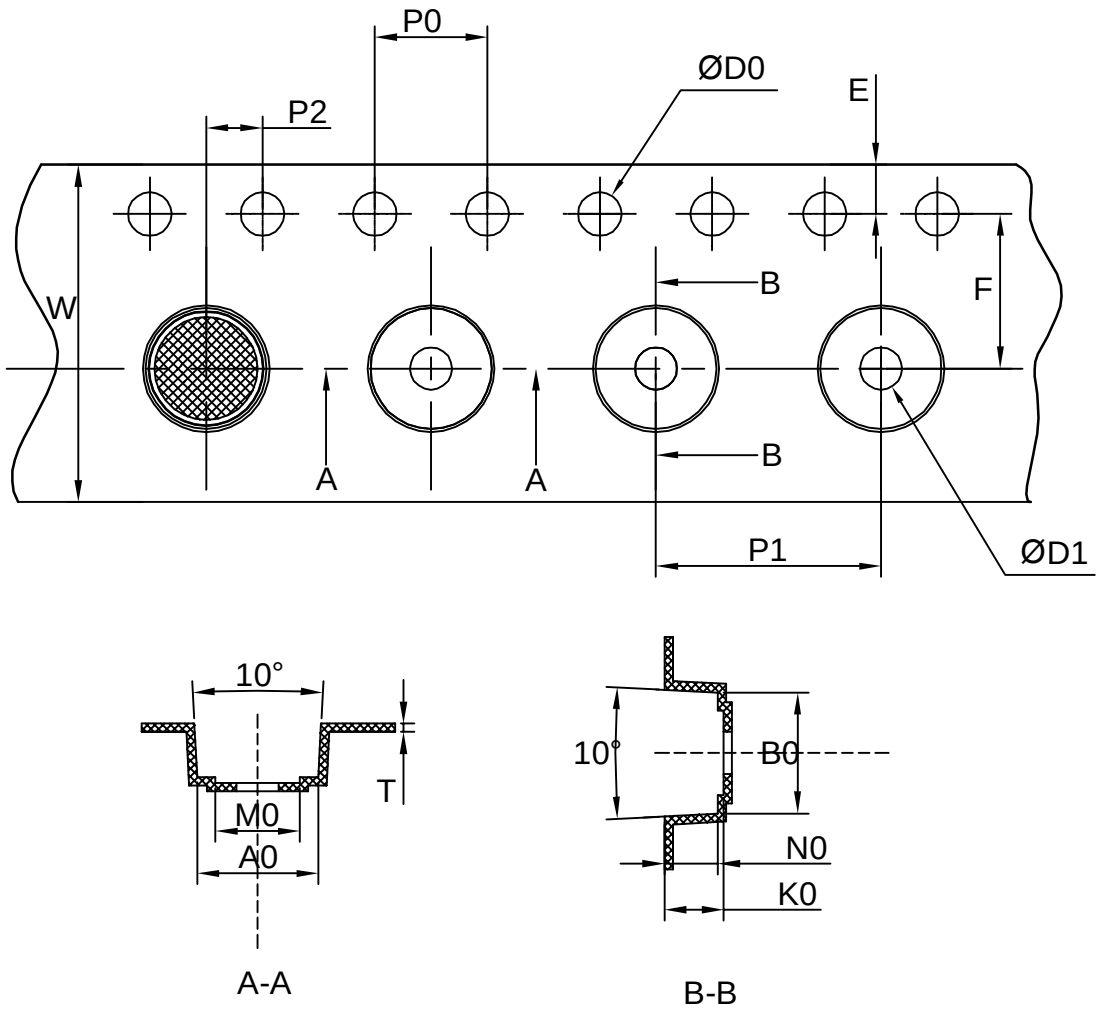
Week	1st	2nd	3rd	4th	5th	6th	7th	8th	…	fifty-second
Marking NO.	01	02	03	04	05	06	07	08	…	52

8 Reliability Test (20units of each test)

8.1 Vibration Test	To be no interference in operation after vibrations,10Hz to 55 Hz for 1 minute full amplitude 1.5mm,for 1 hours at three axises in state of standard packing,sensitivity to be within ±3dB from initial sensitivity. (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%)
8.2 Drop Test	Microphone in test box or in representative mechanics shall demonstrate normal performance and maintain sensitivity within +/- 3 dB of the 'initial sensitivity' after each of the following 1.5m drops onto concrete: 1.Two times on each side(2×6) 2.One drop from each edge(1×12) 3.Two drops from each corner(2×8)
8.3 Temperature Test	a) After exposure at +70°C for 96 hours,sensitivity to be within ±3dB from initial sensitivity. (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%) b) After exposure at -40°C for 96 hours,sensitivity to be within ±3dB from initial sensitivity. (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%)
8.4 Damp Heat Test	Microphone shall demonstrate normal performance and maintain sensitivity within +/-3 dB of the 'initial sensitivity' after 2 cycles: +25℃ / +55℃, 95% RH with 1 hour dwell time in +25℃ and 9 hours dwell time in +55℃,and then 9 hours dwell time in +25℃,3 hours change time. Dut power on. (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%)
8.5 Salt Spray Test	Microphone shall be pretreatment at 35℃ for 2 hours,and then placed in 5% brine spray environment for 8 hours. To be no interference in appearance of the microphone.
8.6 Temperature Cycle Test	After exposure at -40℃ for 60 minutes, at+70℃ for 60 minutes(change time 20 seconds)，24 cycles,sensitivity to be within ±3dB from initial sensitivity. (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%)
8.7 ESD Shock Test	The microphone under test must be discharged between each ESD exposure without ground.(contact:±6kV,air:±8kV) There is no interference in operation after 10 times exposure of each pole.
8.8 Tumble Test	Microphone mounted on PCB in a test block, drop from 1 meter onto steel base, 200 drops. (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%)
8.9 Reflow Test	Adopt the reflow curve of item12.3,after two reflows,sensitivity to be within ±3dB . (The measurement to be done after 2 hours of conditioning at +15 ℃～+35℃, R.H 25%～75%)

9 Package

9.1 Taping Specification



the dimensions as follows:

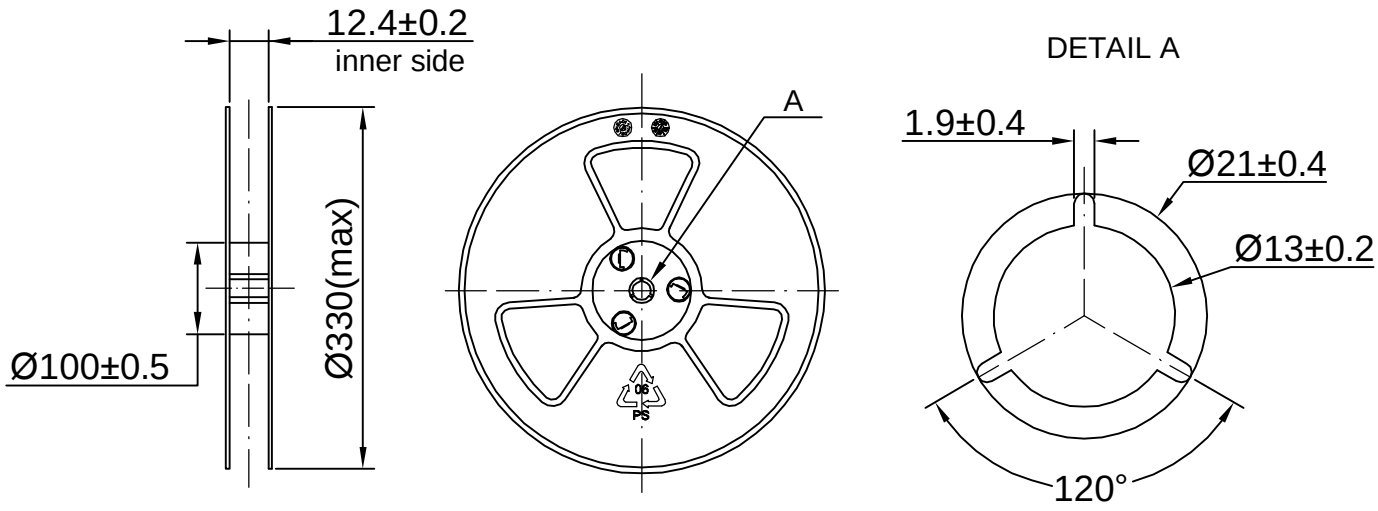
ITEM	W	E	F	ØD0	ØD1
DIM(mm)	12.0±0.30	1.75±0.10	5.50±0.05	1.50±0.10	1.55±0.10
ITEM	P0	10P0	P1	A0	B0
DIM(mm)	4.00±0.10	40.00±0.20	8.00±0.10	4.20±0.05	4.20±0.05
ITEM	K0	P2	T	M0	N0
DIM(mm)	1.70±0.10	2.00±0.05	0.35±0.05	3.00±0.05	1.50±0.1

9.2 Reel Dimension

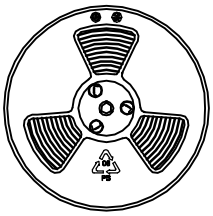
7〃 reel for sample stage

13〃 reel will be provided for the mass production stage

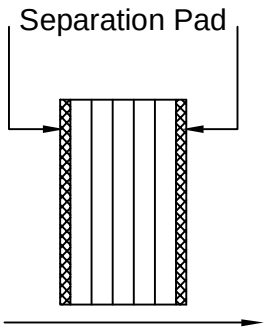
The following is 13" reel dimensions (unit:mm)



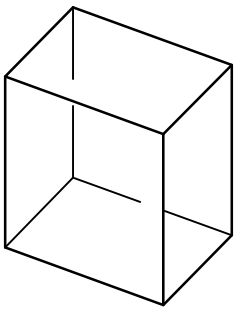
9.3 The Content of Box(13" reel)



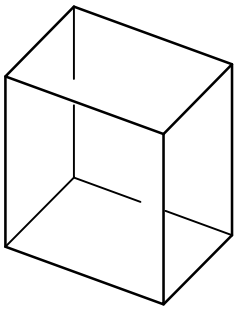
Packing (4000PCS)



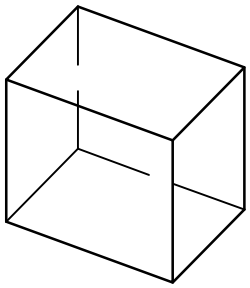
5 pcs reels



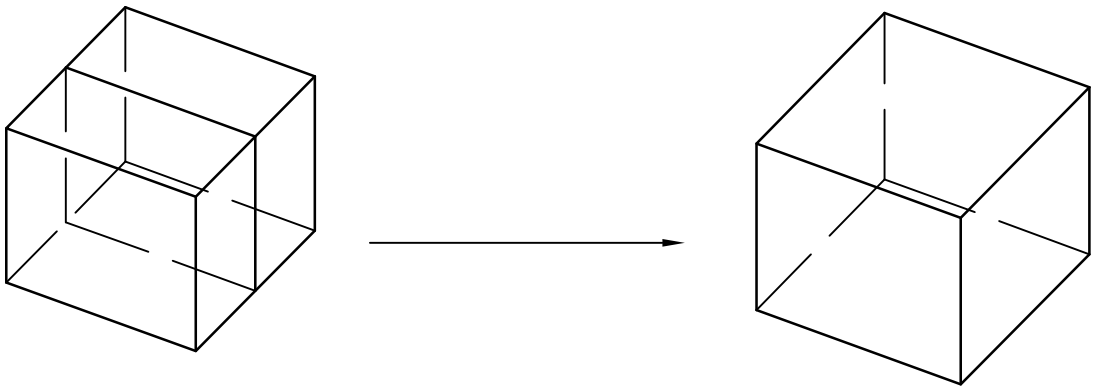
Plastic Bag (20000PCS)
(336mm*115mm*450mm)



Plastic Bag (20000PCS)
(336mm*115mm*450mm)



Inner Box (20000PCS)
(340mm*135mm*355mm）

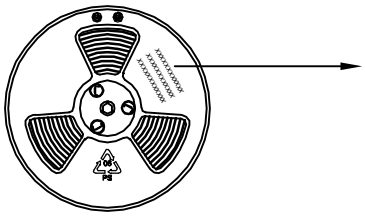


Two Inner Box(40000PCS)

Outer Box(40000PCS)
(370mm*300mm*390mm)

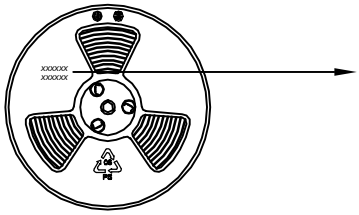
9.4 Packing Explain

9.4.1 The label content of the reel



the content including:
product type, Lot, customer P/N;
and other essential information such as
Quantity, Date etc.

9.4.2 The RoHS label



RoHS
compliance mark

10 Stock and Transportation

10.1 Keep ECM in warehouse with less than 75% humidity and without sudden temperature change, acid air, any other harmful air or strong magnetic field.

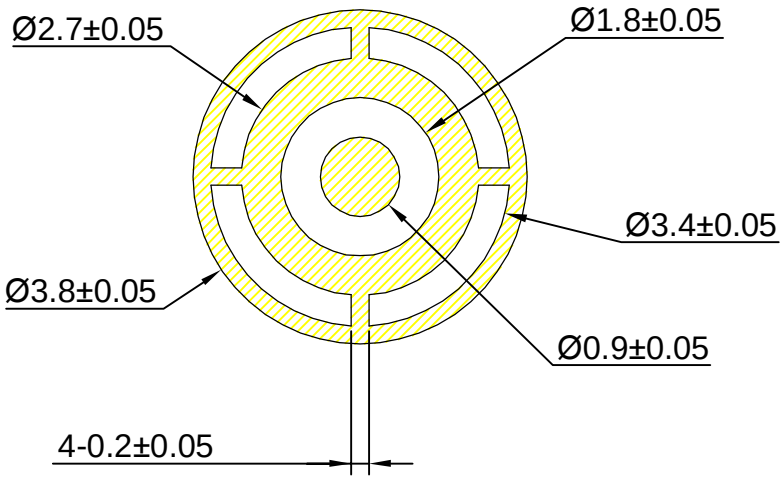
10.2 The ECM with normal pack can be transported by ordinary conveyances. Please protect products against moist, shock, sunburn and pressure during transportation.

10.3 Storage Temperature Range: -40 ℃~+85℃

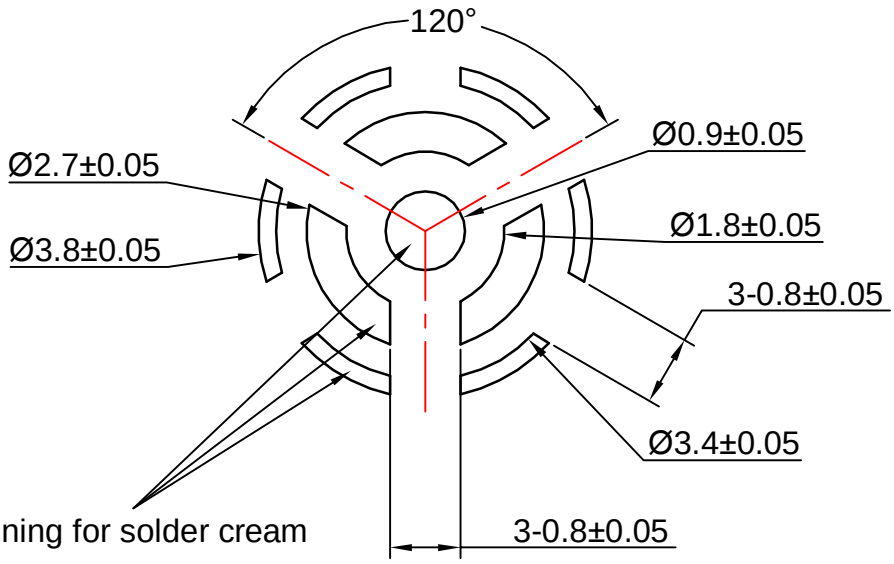
10.4 Operating Temperature Range: -30℃~+70℃

11 Land Pattern Recommendation (Unit: mm)

11.1 Soldering Surface - Land Pattern



11.2 Metal Mask Pattern



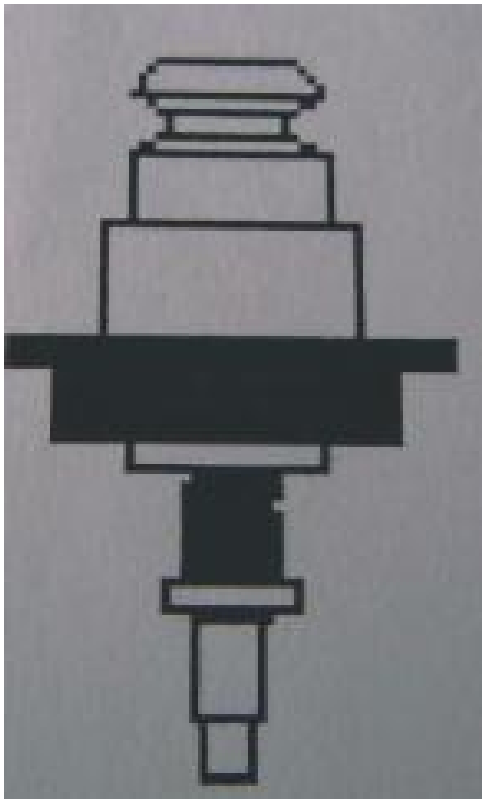
- thickness of metal mask:0.1mm

12 Recommend Soldering

12.1 Soldering Machine Condition

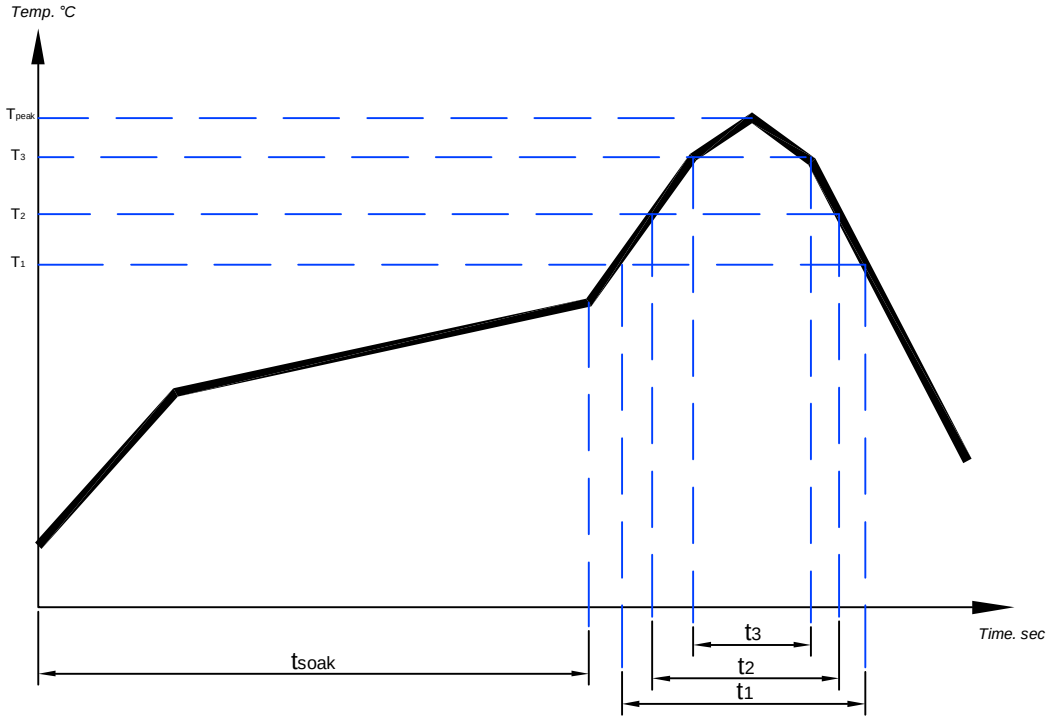
Temperature control	8 zones
Heater Type	Hot Air
Solder Type	Lead-free

12.2 The Pattern of the Nozzle



dimension of nozzle:504
external diameter: 1.5mm;
inside diameter: 1.0mm;
Pick up position:bottom center of microphone

12.3 Reflow Profile



Pb-free reflow profile requirements for soldering heat resistance

Parameter	Reference	Specification
Average Temperature Gradient in Preheating	---	2.5℃/s
Soak Time	t_{soak}	2-3 Minutes
Time Above 217℃	t_1	Max 60s
Time Above 230℃	t_2	Max 50s
Time Above 250℃	t_3	Max 30s
Peak Temperature In Reflow	T_{peak}	255℃ (-0/+5℃)
Temperature Gradient In Cooling	---	Max -5℃/s

When SMD MIC is soldered on PCB, the reflow profile is set according to solder paste and the thickness of PCB etc.

13 Cautions when Using SMD MIC

13.1 X-ray Inspection

The microphone should not be subjected to X-ray inspection. If it is absolutely necessary to do inspection using X-ray, the setting conditions with the following conditions:

Distance: >0.08meter;
Current: <0.080mA;
Time: <30s;
Voltage: <80kV.

13.2 Board Wash Restrictions

It is very important not to wash the PCB after reflow process, or this could damage the microphone.

13.3 Nozzle Restrictions

It is very important not to pull a nozzle over the post hole of the microphone, or this could damage the microphone.

14 Output Inspection Standard

Output inspection standard is excuted according to <<ISO2859-1:1999>>.