



深圳市广吉星电子有限公司
SHENZHEN GUANG JI XING ELECTRONIC CO., LTD

SPECIFICATION FOR APPROVAL

Specification of MEMS

Microphone

(RoHS Compliance)

Customer Name:

Customer Model:

GJX Model: SA0-3729-M-42-008

GJX	Customer Approval
<u>DESIGN Hx1 Oct. 28. 2014</u>	
<u>CHECKED Nqm Oct. 28. 2014</u>	
<u>STANDARD Lz Oct. 28. 2014</u>	
<u>APPROVED Lz Oct. 28. 2014</u>	



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1 **Type:**MEMS Microphone ("Ultra-mini" Surface Mount Silicon microphone)

2 **Number:** SAO-3729-M-42-008 (圓孔)

3 **Absolute Maximum Rating**(Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply Voltage		5	V
Sound Pressure Level		140	dB SPL
Mechanical Shock		10,000	g
Temperature Range		-40 to 85	°C
Electrostatic discharge protection		2 (HBM)	kV

4 **Acoustic & Electrical Specifications** (Test Condition: +25°C、 40-60% R.H.、 Vs =1.8V)

	Item	Symbol	Test Conditions	Min	Typ	Max	Unit
4.1	Directivity			Omnidirectional			/
4.2	Sensitivity	S	94dB SPL(1Pa)	-45	-42	-39	dBV
4.3	Signal-to-Noise Ratio	S/N(A)	A-Weighted	-	60	-	dB
4.4	THD+N	THD+N	Vin=26dBV F=400 to 30KHz	-	0.2	1	%
4.5	Max Input Sound Pressure	MISPL	F=1kHz, THD<10%	-	130	-	dB SPL
4.6	Power Supply Rejection Ratio	PSRR	F=217Hz,0.1Vpp square	-	-56	-	dB
4.7	Operating Voltage Range	Vs		1.5	1.8	3.6	V
4.8	Current Consumption	I	Across 1.5 to 3.6 volts	-	80	120	μA
4.9	Output Impedance	Z out	RL=2.2kohm	-	150	300	Ω

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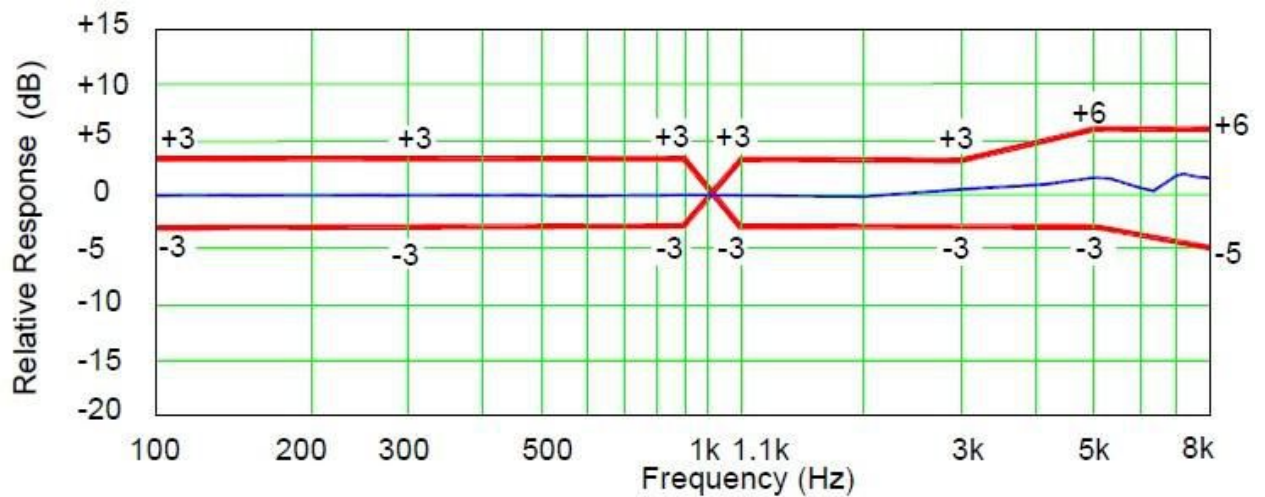
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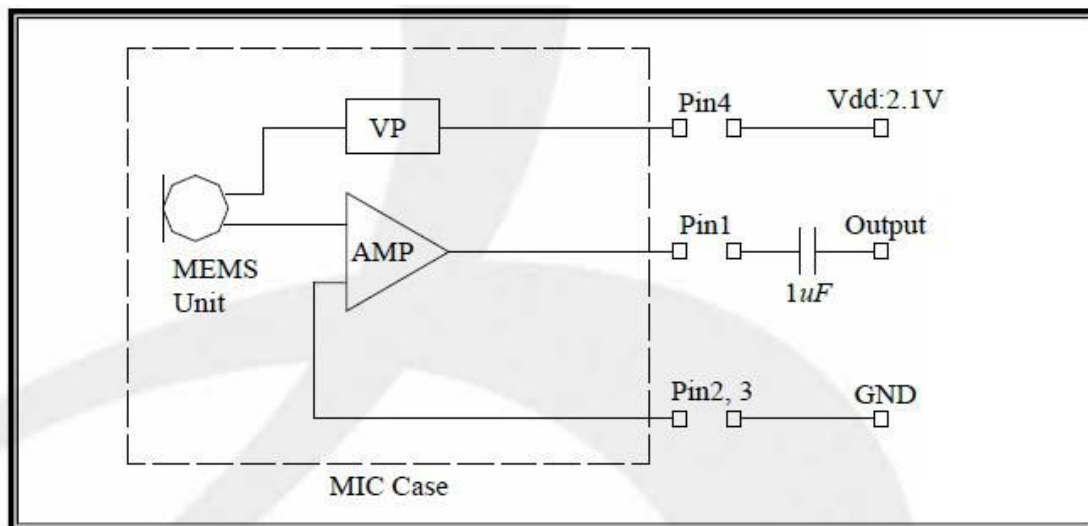
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5 Frequency Response Curve



6 Recommended Interface Circuit:



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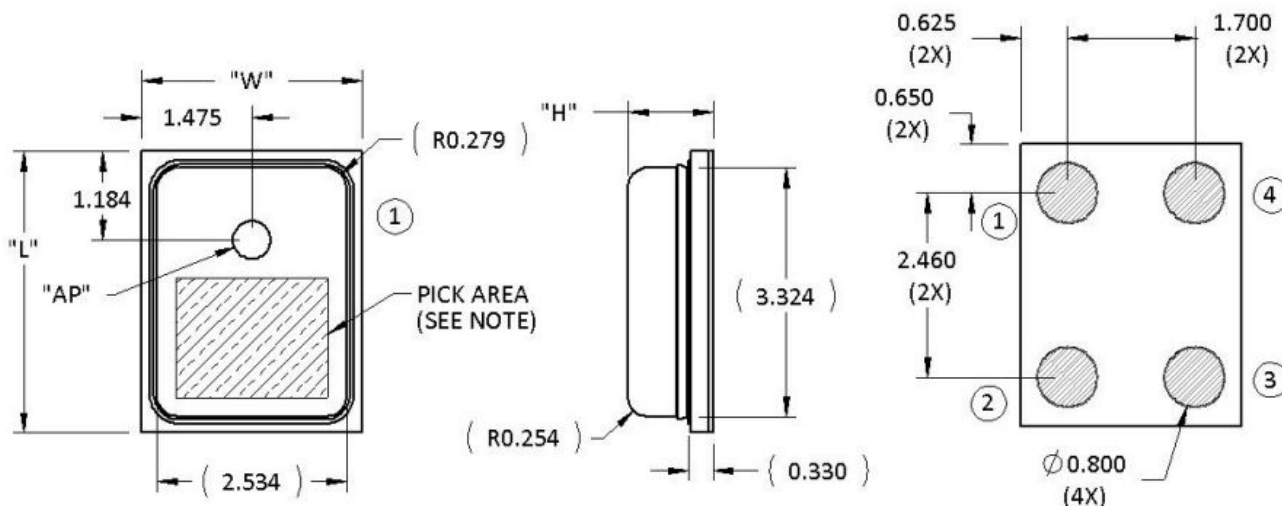
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7 Mechanical Specifications



Item	Dimension	Tolerance	Units
Length(L)	3.76	± 0.1	mm
Width(W)	2.95	± 0.1	mm
Height(H)	1.10	± 0.1	mm
Acoustic Port(AP)	$\phi 0.50$	± 0.05	mm

Pin#	Pin Name	Type	Description
1	V _{DD}	Power	Power
2	GROUND	Power	Ground
3	GROUND	Power	Ground
4	OUTPUT	Signal	Output Signal

Notes: Pick Area only extends to 0.25 mm of any edge or hole unless otherwise specified.
 Dimensions are in millimeters unless otherwise specified. Tolerance is ± 0.15 mm
 Unless otherwise specified

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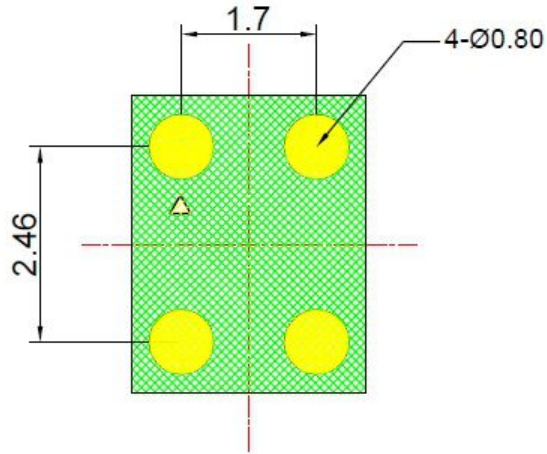
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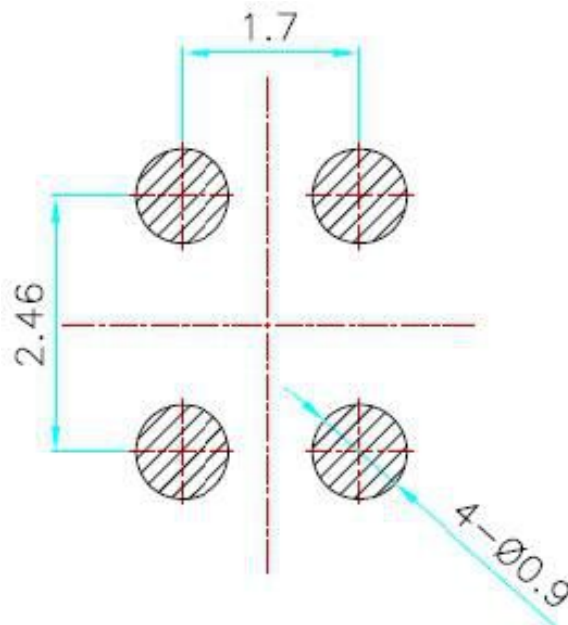
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8 EXAMPLE LAND PATTERN



9 EXAMPLE SOLDER STENCIL PATTERN

**Notes: Dimensions are in millimeters unless otherwise specified.
Further optimizations based on application should be performed.**



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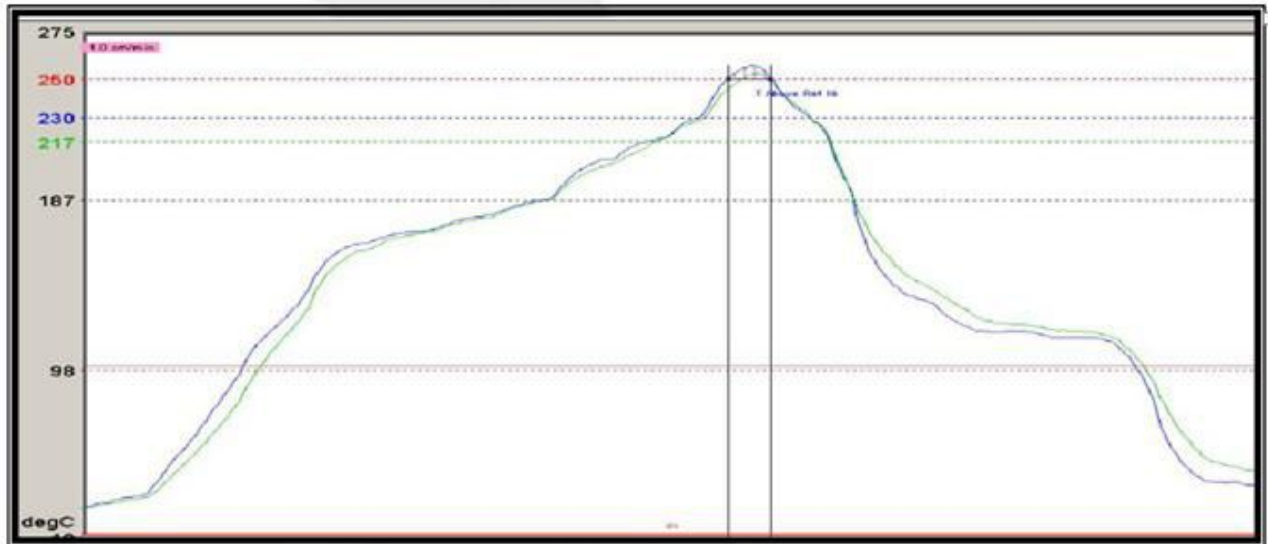
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10 REFLOW PROFILE (Guaranteed Maximum Reflow Condition)



Parameter	Specification	Parameter	Specification
Average temp. gradient in preheating	2.5°C/s	Time above 250°C	Max. 10 s
Soak time	2-3 minutes	Peak temp. in reflow	255°C(-0/+5°C)
Time above 217°C	Max. 60 s	Temp. gradient in cooling	Max. -5°C/ s
Time above 230°C	Max. 50 s		

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11 Additional Notes
<p>11.1 Shelf life: Twelve (12) months when devices are to be stored in factory supplied, unopened ESD moisture sensitive bag under maximum environmental conditions of 30°C, 70% R.H.</p> <p>11.2 MSL (moisture sensitivity level) Class 2a.</p> <p>11.3 Do not pull a vacuum over port hole of the microphone. Pulling a vacuum over the port hole can damage the device.</p> <p>11.4 Do not board wash after the reflow process. Board washing and cleaning agents can damage the device. Do not expose to ultrasonic processing or cleaning.</p> <p>11.5 Do not brush board after the reflow process. Brushing the board with/without solvents can damage the device.</p> <p>11.6 Do not insert any object in port hole of device at any time as this can damage the device.</p> <p>11.7 Number of reflow - Recommend no more than 3 cycles.</p>

12 Reliability Specifications
Note: The microphone sensitivity after stress must deviate by no more than ±3dB from the initial value.

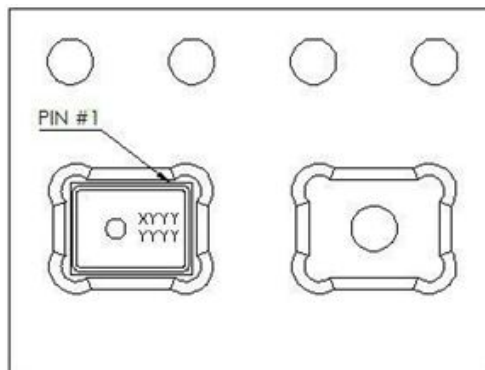
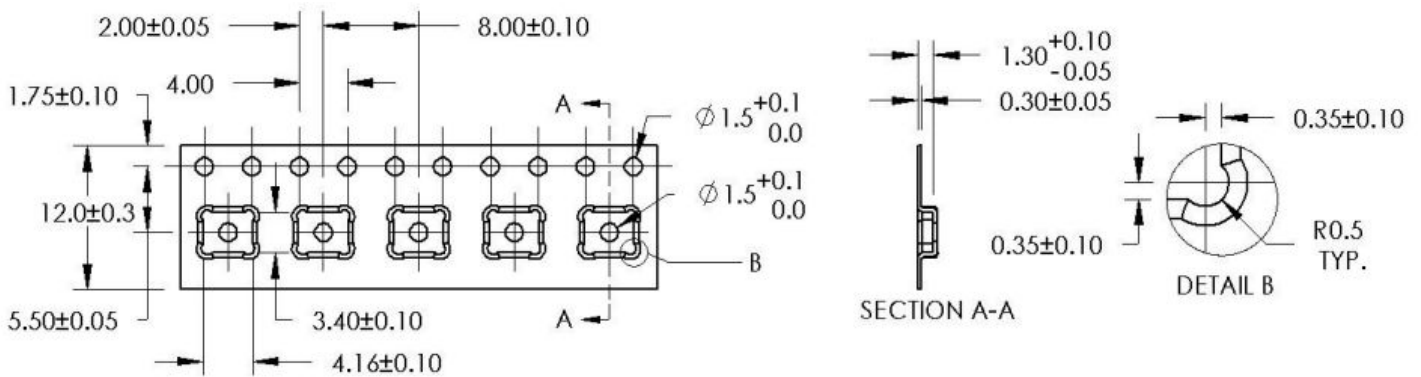
Test Item	Detail	Standard
Thermal Shock	100 cycles of air-air thermal shock from -40°C to +100°C with 15 minute soaks	IEC 60068-2-4
High Temperature Bias	+125°C environment while under bias for 1000 hours	IEC 60068-2-2 Test Ba
Low Temperature Bias	-40°C environment while under bias for 1000 hours	IEC 60068-2-2 Test Aa
Temperature/Humidity Bias	+85°C/85% R.H. environment while under bias for 1000 hours	JESD 22-A101A-B
Mechanical Shock	3 pulses of 10000g in the X,Y and Z direction	IEC 60068-2-27 Test Ea
Vibration Test	10~60Hz : 0.35mm; 60~500Hz:5g 1 oct/min Duration:15 minutes per plane	IEC60068-2-6

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Drop Test	1.5-meter height onto a concrete surface each time at three directions in state of packaging	IEC 60068-2-32
Reflow	5 reflow cycles with peak temperature of +260°C	/
ESD	150pF,330Ohm,contact discharge ±2KV/air discharge ±4KV,10 times,apply voltage to I/O pins	IEC 61000-4-2

13 Packing Specifications

A.Tape Specification:



Model Number	Reel Diameter	Quantity Per Reel
SAO-3729-M-42-008	13 inch	5000
	7 inch	1000

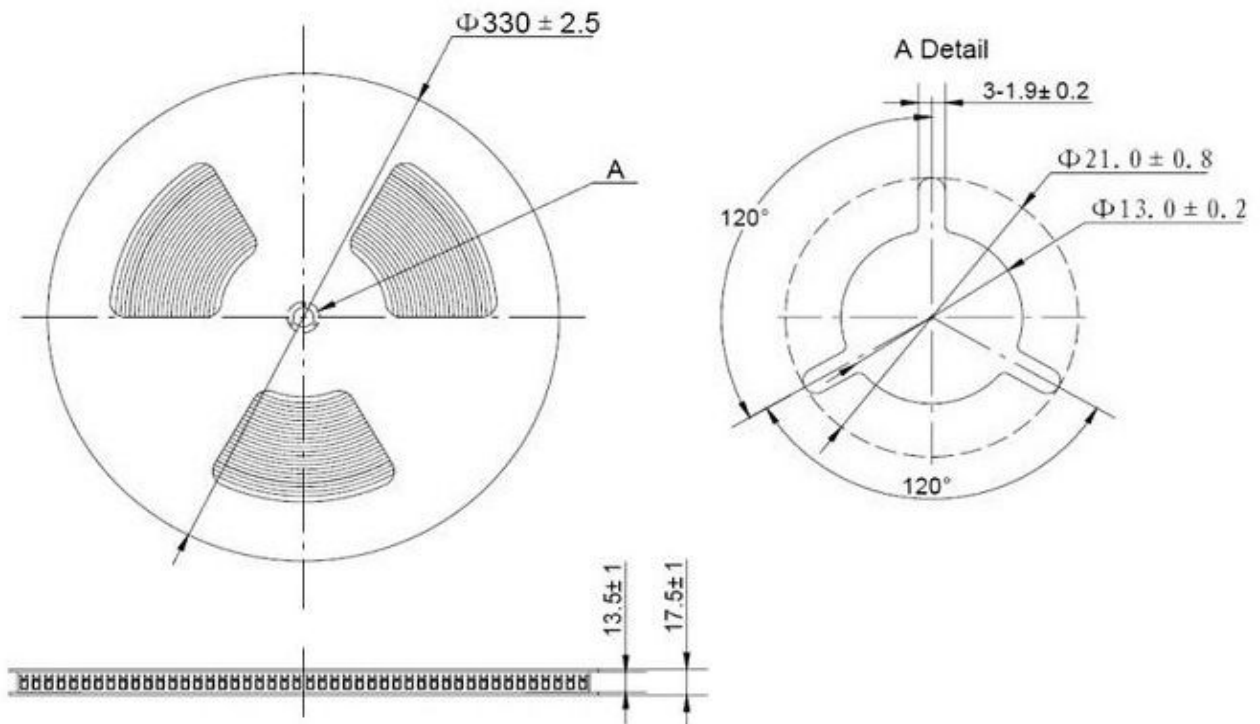
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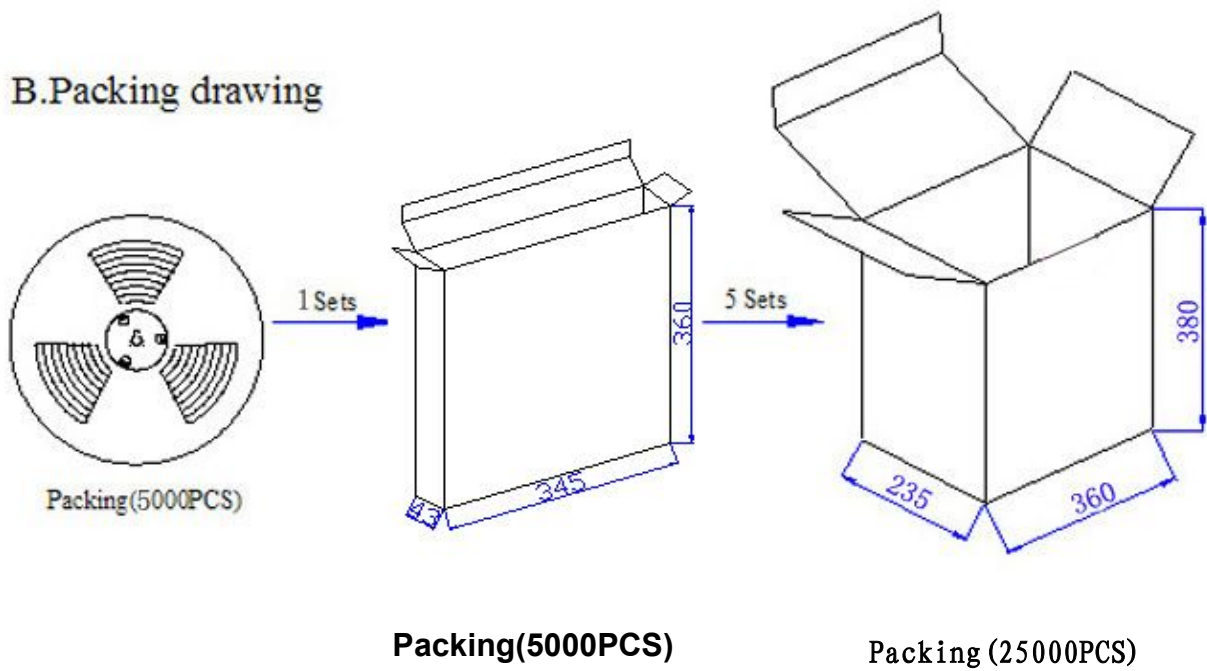
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B. Packing drawing



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14 Output Inspection standard

Output inspection standard is executed according to 《ISO2859-1:1999》.

15 TEST REPORT

Customer P/N	/	Vendor P/N	SAO-3729-M-42-008		
Measure instrument	B&K Pulse	Test condition	1.8V	Samples Qty	PCS

Test ambient: Temperature: 25°C Humidity: 50%

Test result: 10 PCS

ITEM NO.	Sensitivity (dB)	IDSS (μA)	Length (mm)	Width (mm)	Height (mm)
		-42±3	≤120	3.76±0.10	2.95±0.10
1	-41.2	110	3.78	2.96	1.13
2	-42.6	105	3.75	2.94	1.12
3	-42.1	100	3.76	2.96	1.08
4	-41.8	95	3.78	2.98	1.09
5	-43.2	103	3.77	2.94	1.10
6	-41.0	112	3.75	2.93	1.16
7	-41.0	104	3.75	3.01	1.12
8	-40.2	99	3.77	3.01	1.07
9	-44.0	102	3.75	2.89	1.08
10	-43.0	96	3.75	2.90	1.10
MAX:	-40.2	112	3.78	3.01	1.16
MIN:	-44.0	95	3.75	2.89	1.07
AVG:	-42.01	102.6	3.761	2.952	1.105
Conclusion	OK	OK	OK	OK	OK

Notes: Attached curves of anechoic chamber from No.1 to No.10.