



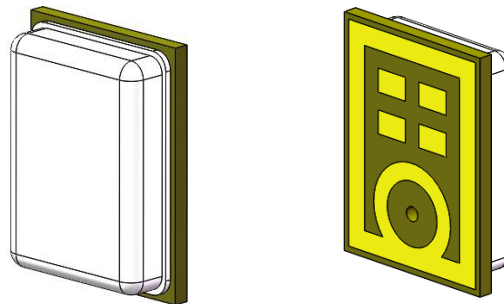
Specification of Digital MEMS Microphone

RoHS Compliance & Halogen Free

YG Model: SD4030B261-NT02

Customer:

Customer Model :



YINGGE

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Checked by: Daniel Peng

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Customer Approval

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ISO 9001:2015
ISO 14001:2015

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MEMS Microphone

1. Introduction

The SD4030B MEMS Microphones are integrated with specialized Pre-amplification ASIC to provide high sensitivity, high SNR output from a capacitive audio sensor. It's packaged for surface mounting and high temperature reflow assembly.

2. Electrical Characteristics

Unless otherwise noted, typical test conditions are $T_O = 25^{\circ}\text{C}$, $V_{DD} = 1.8\text{ V}$. All voltages refer to GND node. The electrical characteristics are measured using a characterization test board .

Electrical Characteristics

Parameter	Symbol	Note/Test Condition	Vales			Unit
			Min	Typ.	Max	
Power supply voltage	V_{DD}		1.6	1.8	3.6	V

Standard Mode

Test Condition: Measurement Clock Frequency 2.4 MHz, $V_{DD} = 1.8\text{ V}$.

Items	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Directivity		Omni-directional				
Sensitivity	S	94dB SPL @1kHz	-27	-26	-25	dBFS
Current Consumption	I_{DD}	Normal mode		800	950	μA
S/N Raito	SNR	94dB SPL @1kHz A-weighted		63		dB
Total Harmonic Distortion	THD	94dB SPL @1kHz,			0.5	%
Acoustical Overload Point	AOP	10% THD @1kHz		120		dB SPL
Power Supply Rejection	PSR	100mVpp Square wave @217Hz, A-weighted		-80		dBFS



Low Power Mode

Test Condition: Measurement Clock Frequency 768 kHz, VDD = 1.8 V

Items	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Directivity		Omni-directional				
Sensitivity	S	94dB SPL @1kHz	-27	-26	-25	dBFS
Current Consumption	I _{DD}	Low Power Mode		300	350	μA
S/N Ratio	SNR	94dB SPL @1kHz A-weighted		61		dB
Total Harmonic Distortion	THD	94dB SPL @1kHz			0.5	%
Acoustical Overload Point	AOP	10% THD @1kHz		120		dB SPL
Power Supply Rejection	PSR	100mVpp Square wave @217Hz, A-weighted		-91		dBFS

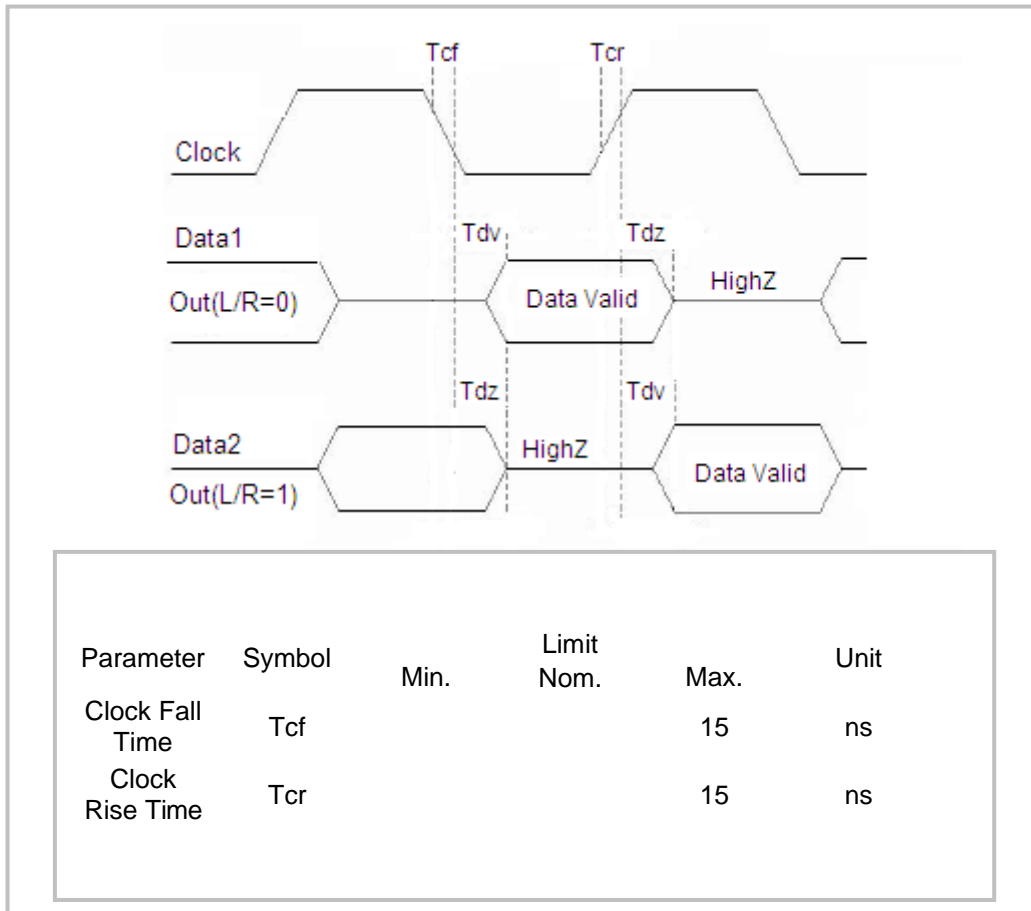
Operation Ratings

Parameter	Symbol	Note/Test Condition	Vales			Unit
			Min	Typ.	Max	
Power supply voltage	V _{DD}		1.6		3.6	V
Frequency Range	Sleep Mode		0		250	kHz
	Low Power Mode		350	768	800	kHz
	Standard Mode		1		4.8	MHz
Duty Cycle	DC	Note1)	45		55	%
Logic Input High			0.65*V _{DD}		V _{DD} +0.3	V
Logic Input Low			-0.3		0.35*V _{DD}	V
Logic Output High			V _{DD} -0.45			V
Logic Output Low					0.45	V
Load Capacitance					200	pF

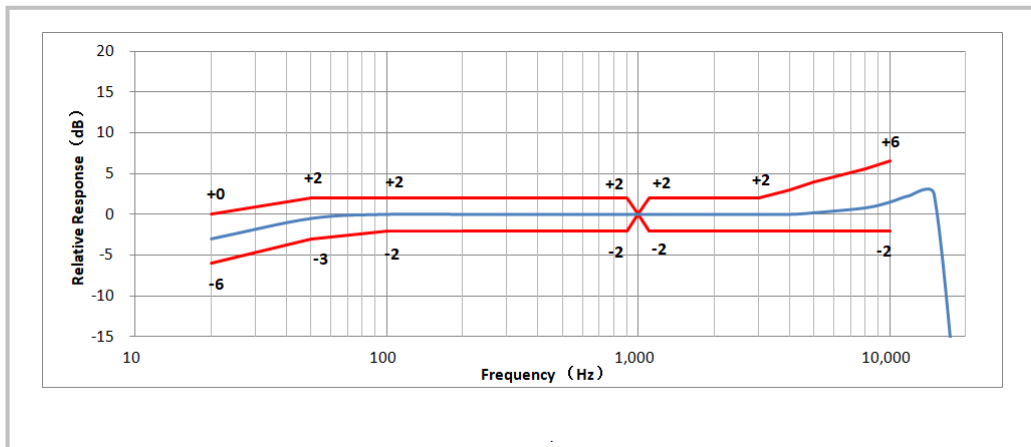
- 1) 1) For f_{CLK} ≤ 2.4 MHz the duty cycle must be in the range of 45~55% and for f_{CLK} > 2.4 MHz the duty cycle must be 50 %.



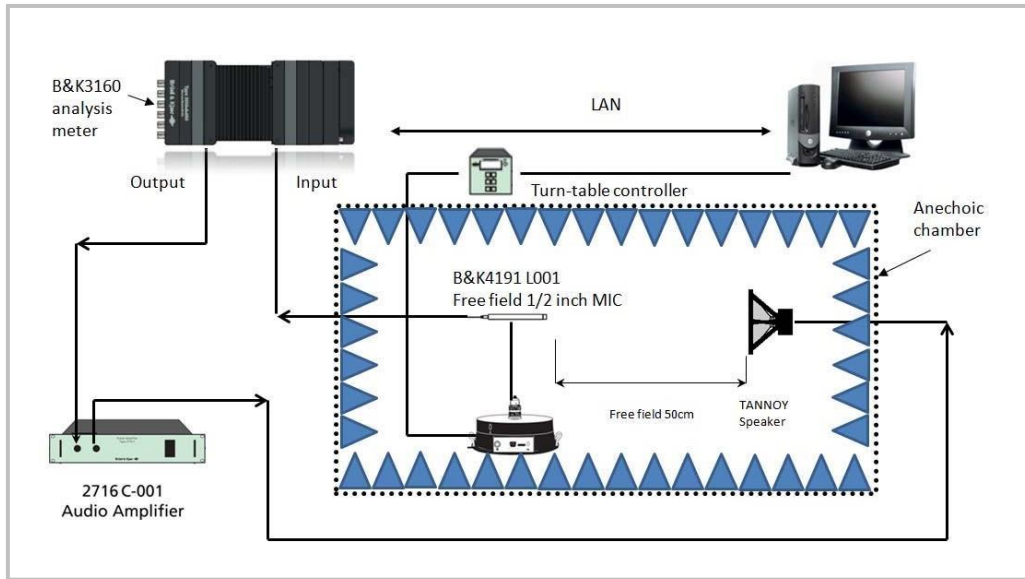
3. Timing Characteristics



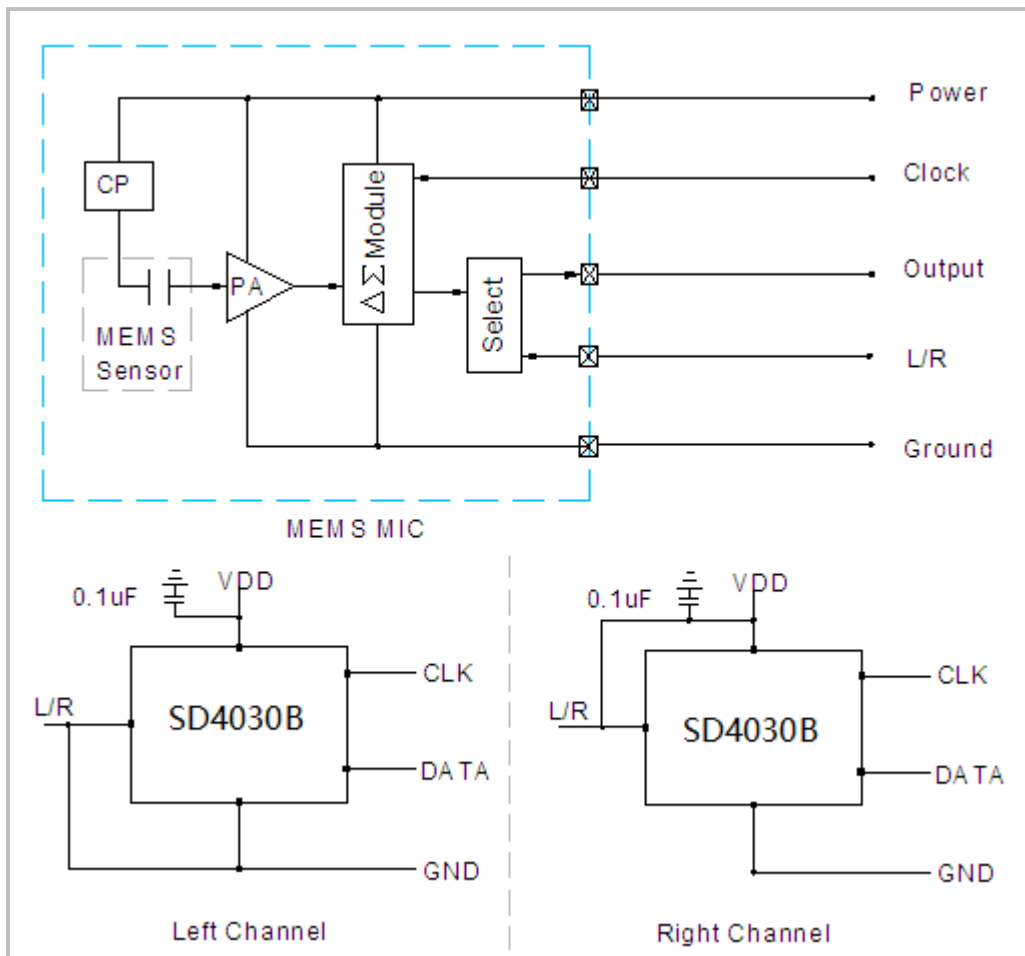
4. Frequency Response Curve



5. Test Setup (Sensitivity Test in Anechoic Room)



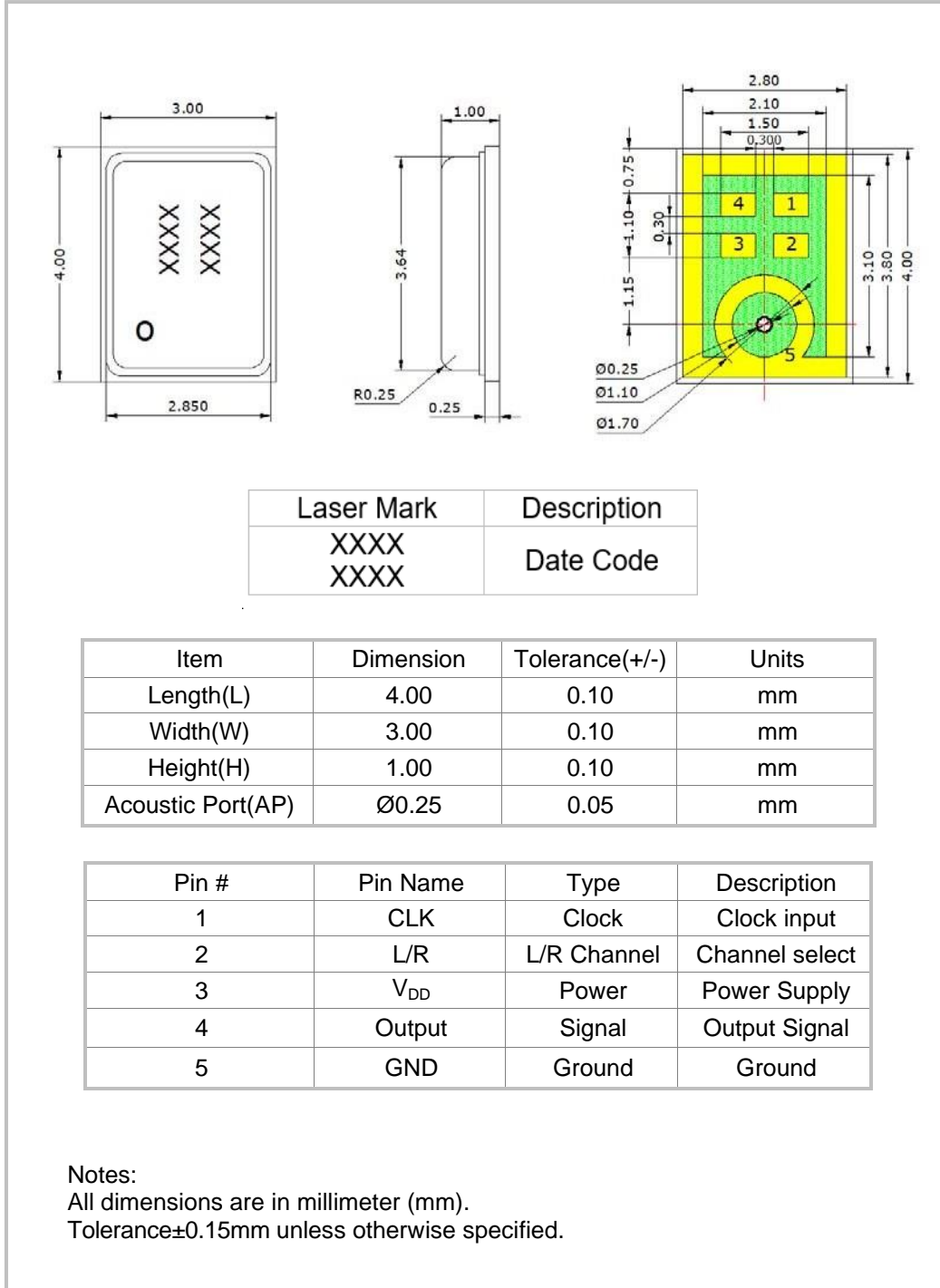
6. Measurement Circuit



7. Mechanical Characteristics

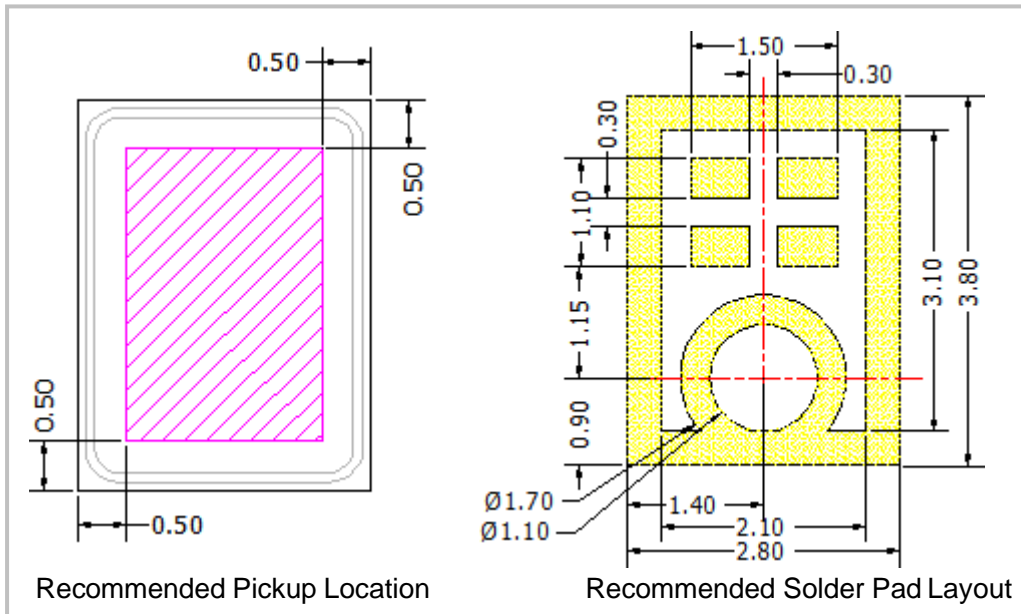
7.1 Weight : Less than 0.03g

7.2 Appearance Drawing(unit: mm)



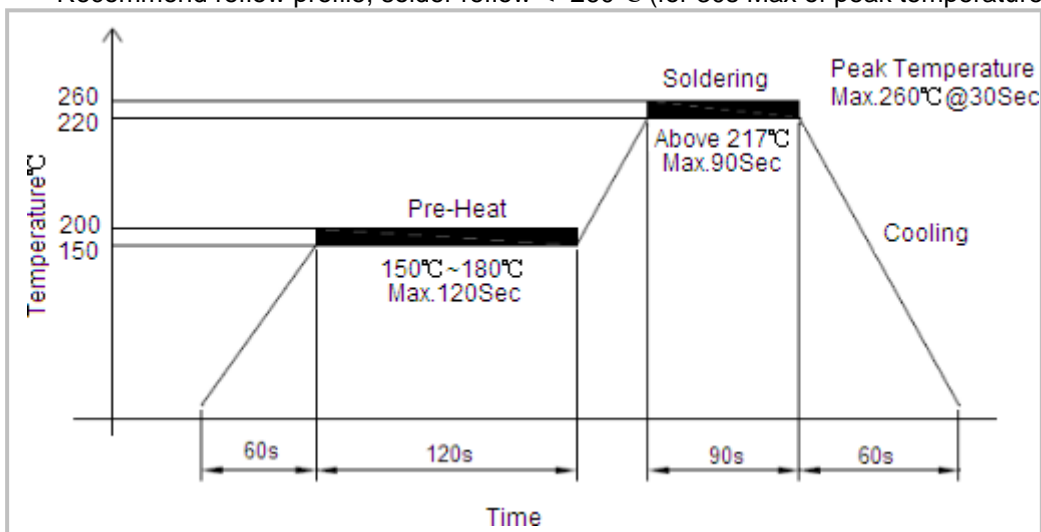
8. Application

8.1 Pickup Tool Pick Location & PCB Solder Pad Layout



8.2 Recommended Reflow Process Condition

Recommend reflow profile, solder reflow $\leq 260^{\circ}\text{C}$ (for 30s Max of peak temperature).



Important Notes

In order to minimize device damage:

1. Do not wash or clean the boards after the reflow process.
2. Do not apply the airflow which pressure over 0.3MPa blow into the port hole within a distance of less than 5 cm.
3. Do not exposed to ultrasonic processing or cleaning.
4. Do not pull a vacuum over port hole of the microphone.

8.3 Storage Condition

8.3.1 Storage temperature range: $-40\sim+100^{\circ}\text{C}$, and humidity is less than 75%.

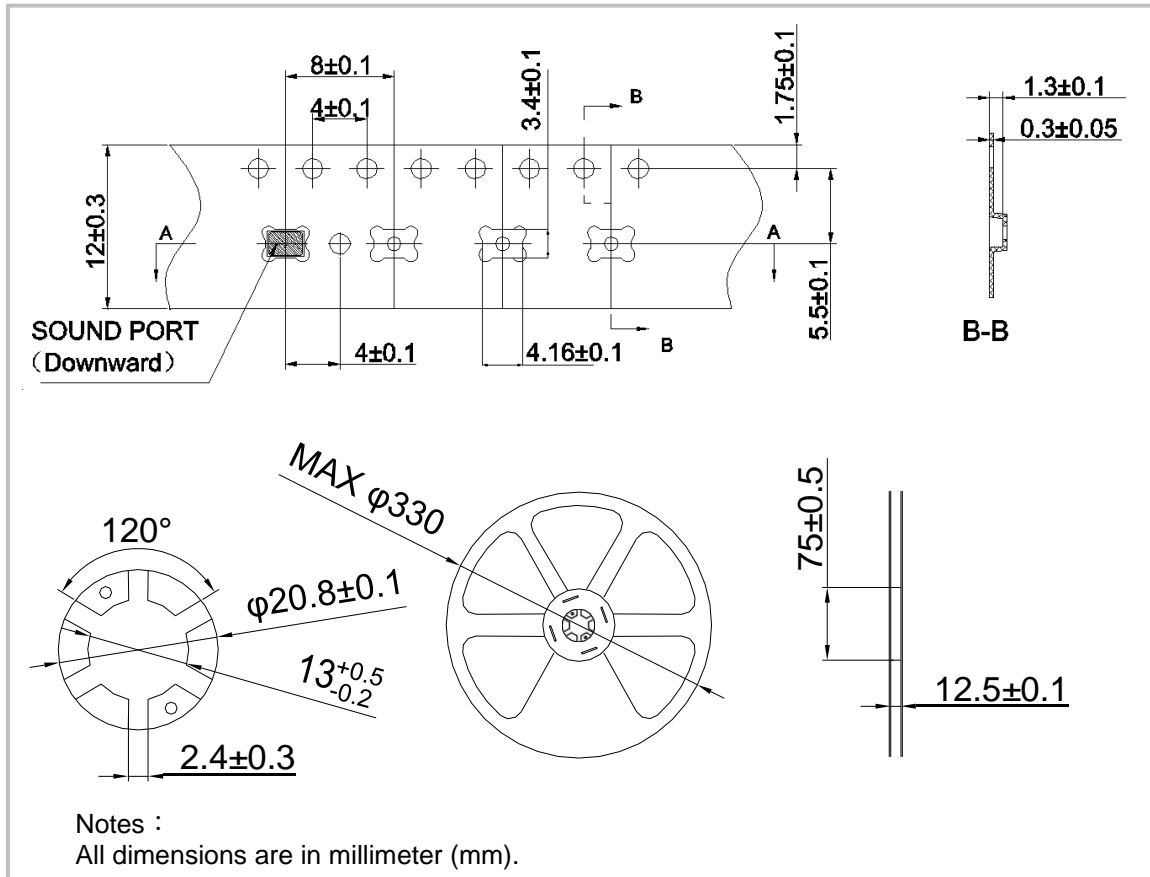
8.3.2 Operating temperature range: $-40\sim+85^{\circ}\text{C}$.

8.3.3 MSL (moisture sensitivity Level) is Class 1.



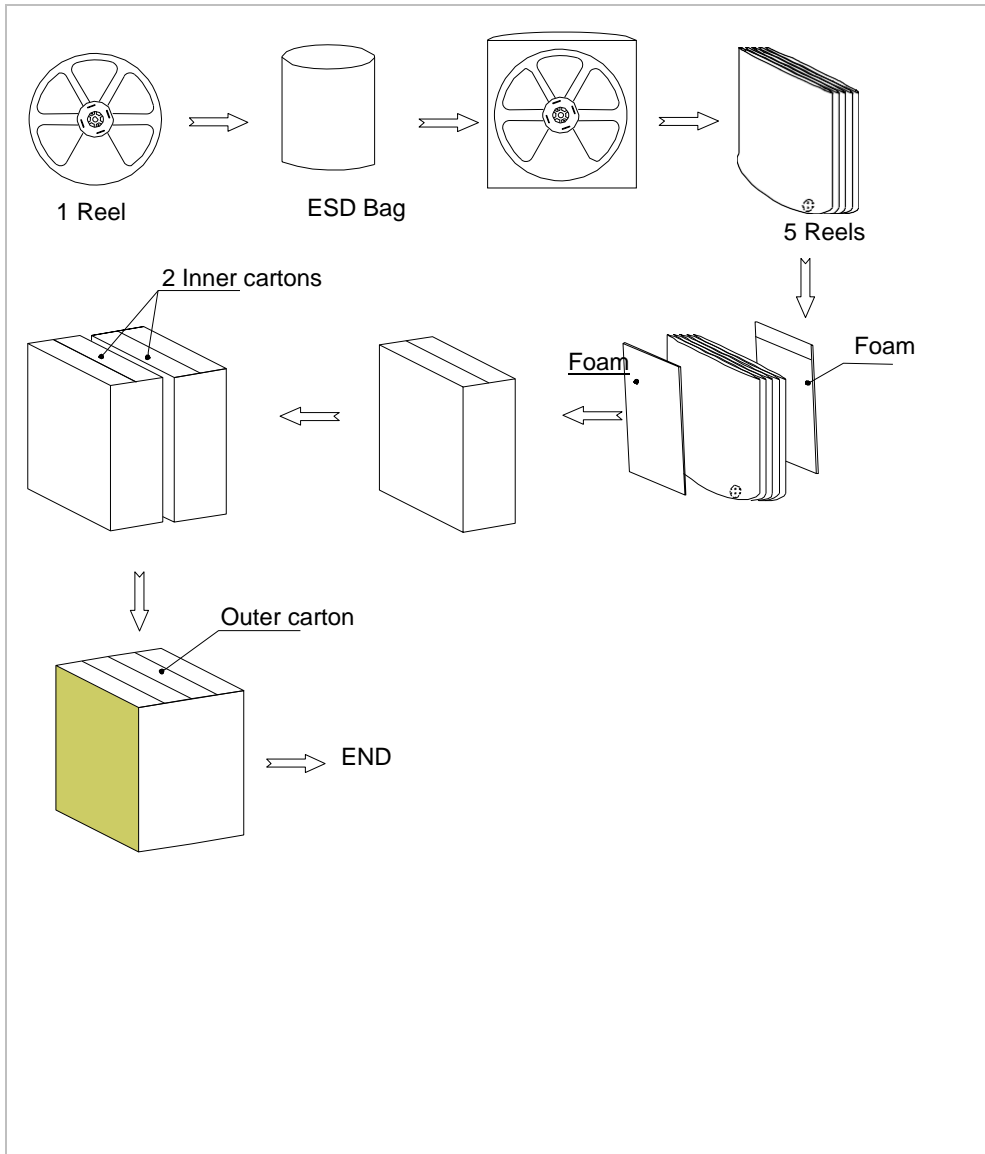
9. Packaging

9.1 Tape & Reel Specification





9.2 Packaging Information



Packaging Quantity :
1 Reel=5000pcs
1 Inner Carton =5Reels=25000pcs
1 Outer Carton=2 Inner Cartons=50000pcs



10. Reliability Test

The samples should be placed in the room with 23+/-2°C, 55+/-10%R.H. for 2 hours at least before final measurement, unless otherwise specified. After conducting any of the following tests, the sensitivity change of DUT shall be less than±3dB from its initial value unless otherwise noted, and shall keep its initial operation and appearance.

Item	Detail	Standard
Simulated Reflow (Without Solder)	Samples for qualification testing require 3 passes 260±5 °C reflow solder profiles. 2 hours of setting time is required between each reflow profile test.	±3 dB
Static Humidity	Precondition at +25°C for 1 hour. Then expose to +85°C with 85% relative humidity for 1000 hours. Finally dry at room ambient for 3±1 hours before taking final measurement.	±3 dB
Temperature Shock	Each cycle shall consist of 30 minutes at -40°C, 30 minutes at +125°C with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature.	±3 dB
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 3000V Human Body Model.	±3 dB
Random Vibrations	Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4cycles from 20Hz~2000Hz with a peak acceleration 20g.	±3 dB
Mechanical Shock	Subject samples to half sine shock pulses (3000g±15% for 0.3ms) in each direction, totally 18 shocks.	±3 dB
Operation Life	Subject samples to +125°C for 168 hours under full maximum rated voltage.	±3 dB
Drop Test	The test was repeated in six directions for three times, Dropped from 1.5m height on to a steel surface, total 18 times and inspected for mechanical damage. Note: Sensitivity should vary within +/-3dB from initial sensitivity after test conditions are performed.	±3 dB

