

Model No.

JL-M2417

SPECIFICATION
Of CMOS MEMS Analog Microphone
(RoHS Compliance)

Model No.: JL-M2417

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ISSUED BY	J.C	09-27-2012
CHECKED BY		
APPROVED BY		



Revision History

Version	Description	Date	Author	Approved
00	Initial release			



Product Descriptions

The **M2417A** is one of the smallest analog output microphone which uses CMOS foundry process technology. The **M2417A** is integrated with an acoustic transducer and an analog amplify circuit into a single chip which eliminates the need for inter-die wire bonds to achieve a smaller and more reliable microphone. As a result of a monolithic solution, the tiny **M2417A CMOS MEMS** microphones are ideal for use in many compact portable consumer electronic devices such as cellular phone, headset and other space limited applications.

Features

- Innovated technology to achieve a single chip CMOS MEMS microphone
- High reliability microphone by CMOS semiconductor process
- High stability microphone without membrane aging
- High durability under SMT to improve manufacture efficiency and reliability
- Adapted to automatic pick and place handler
- Smallest analog output microphone with footprint of only 4.08mm²
- Miniature 2.40mm x 1.70mm x 1.00mm
- Small package size by wafer level package approach, WLP

Applications

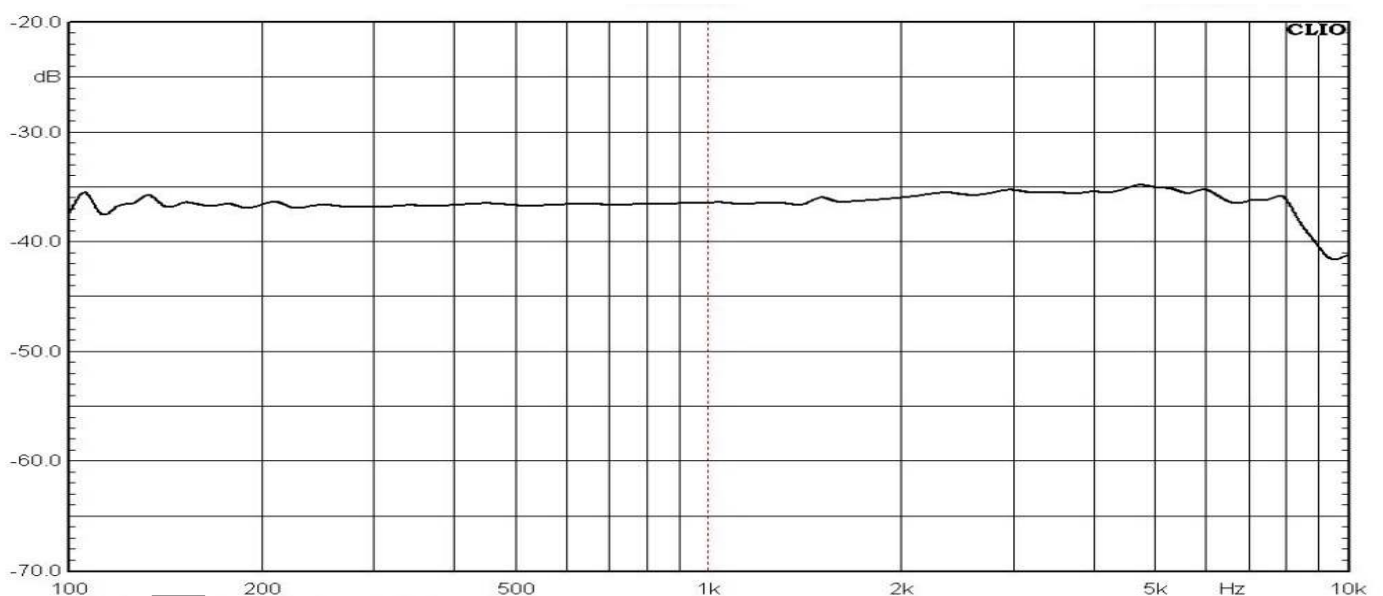
- Compact thin-profile cellular phones
- Compact headsets
- Space limited portable consumer electronic devices
- Multi-microphone devices, Microphone array
 - Noise cancellation, Noise reduction
 - Echo cancellation
 - Beam forming



1、Acoustic and Electrical characteristics:

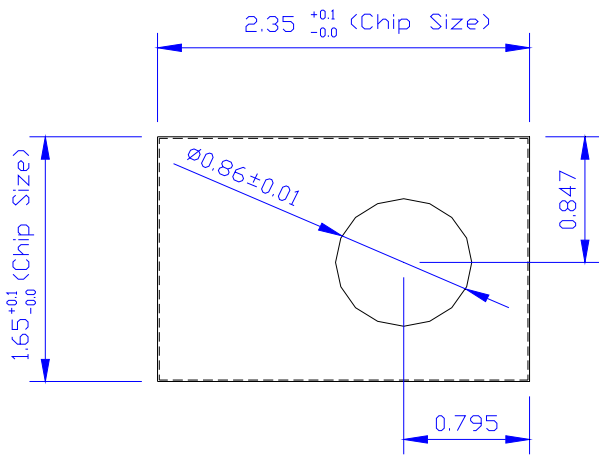
Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Acoustic						
Sensitivity	1KHz, 94dB SPL	S	-39	-36	-33	dBV/Pa
Signal to Noise ratio	A-weighted	S/N		57		dB
Equivalent Noise Level	A-weighted	ENL		37		dB
Total Harmonic Distortion	@ 114dB SPL	THD		< 5		%
Electrical						
Supply Voltage	The recommended voltage is more than 2.1V	V _{dd}	2.0		3.6	V
Current Consumption		I _b		200	250	μA
Power Supply Rejection Ratio	1KHz, 100mV P-P square wave superimposed on V _{dd} 2.6V	PSRR		-60		dB
Output Impedance		Z _{out}		200		Ω
Output DC Offset				1.2		V

2、Frequency response

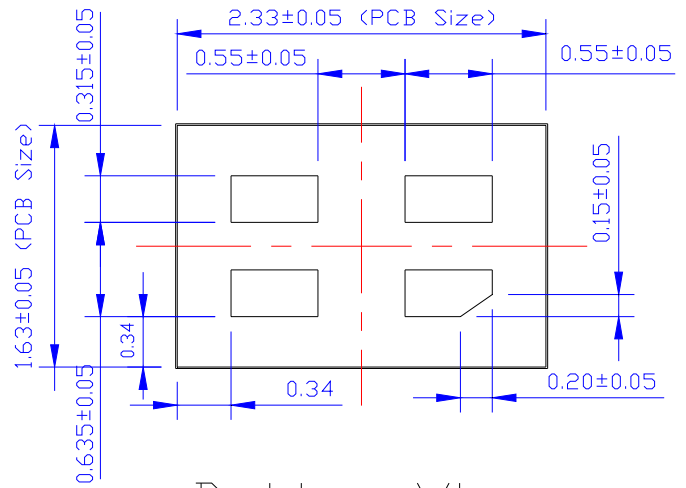


3、Dimensions

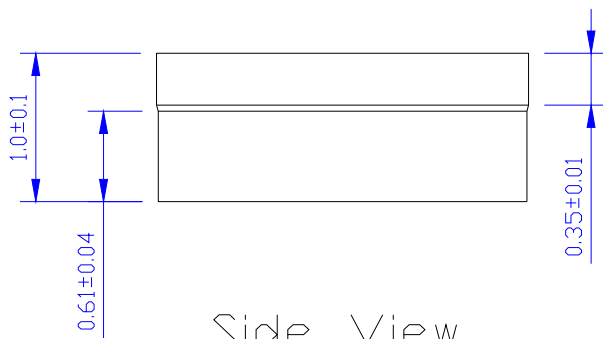
Unit : mm



Top View



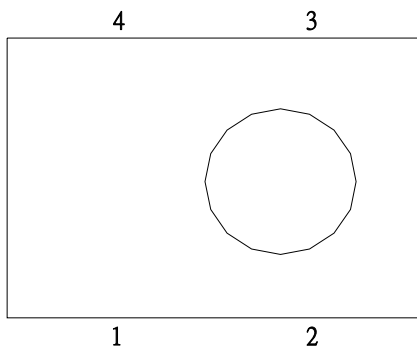
Bottom View



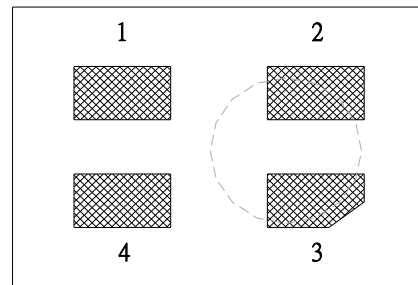
Side View



4、Pin Definition and Function



Top View

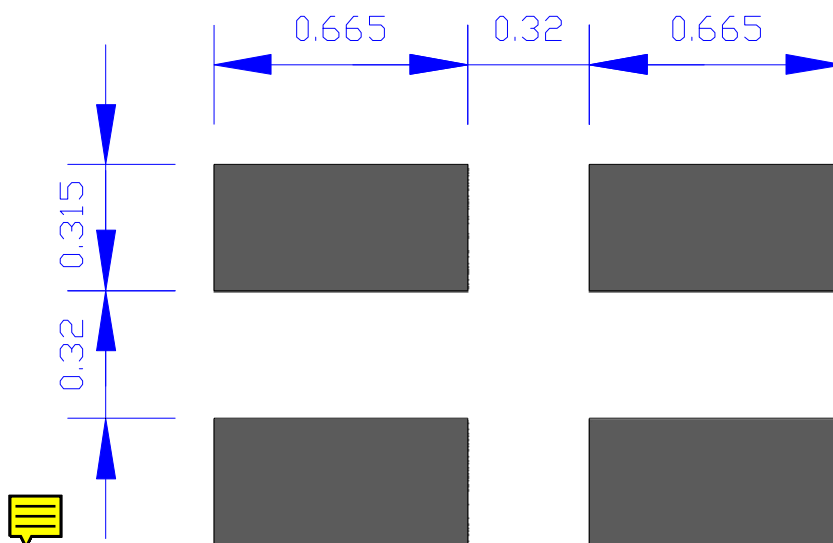


Bottom View

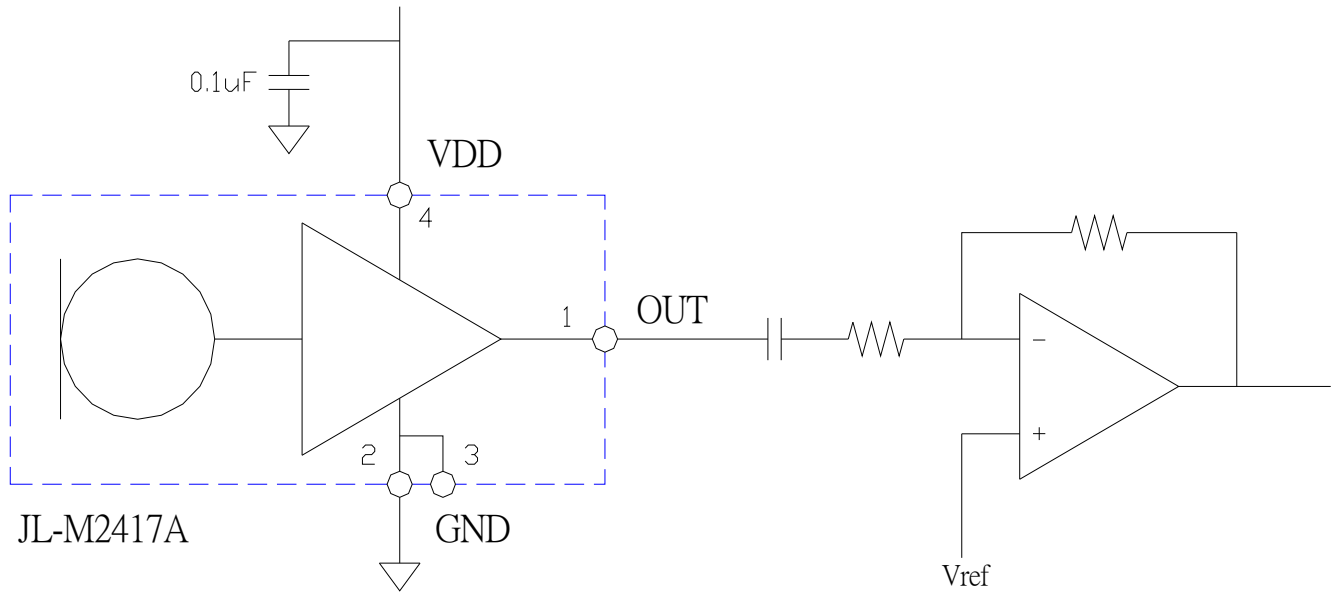
Pin No.	Symbol	Function
1	OUTPUT	Analog signal output
2	GND	GROUND
3	GND	GROUND
4	VDD	Power supply

5、Recommended PCB Land Pattern

Unit : mm



6 · Application Circuit

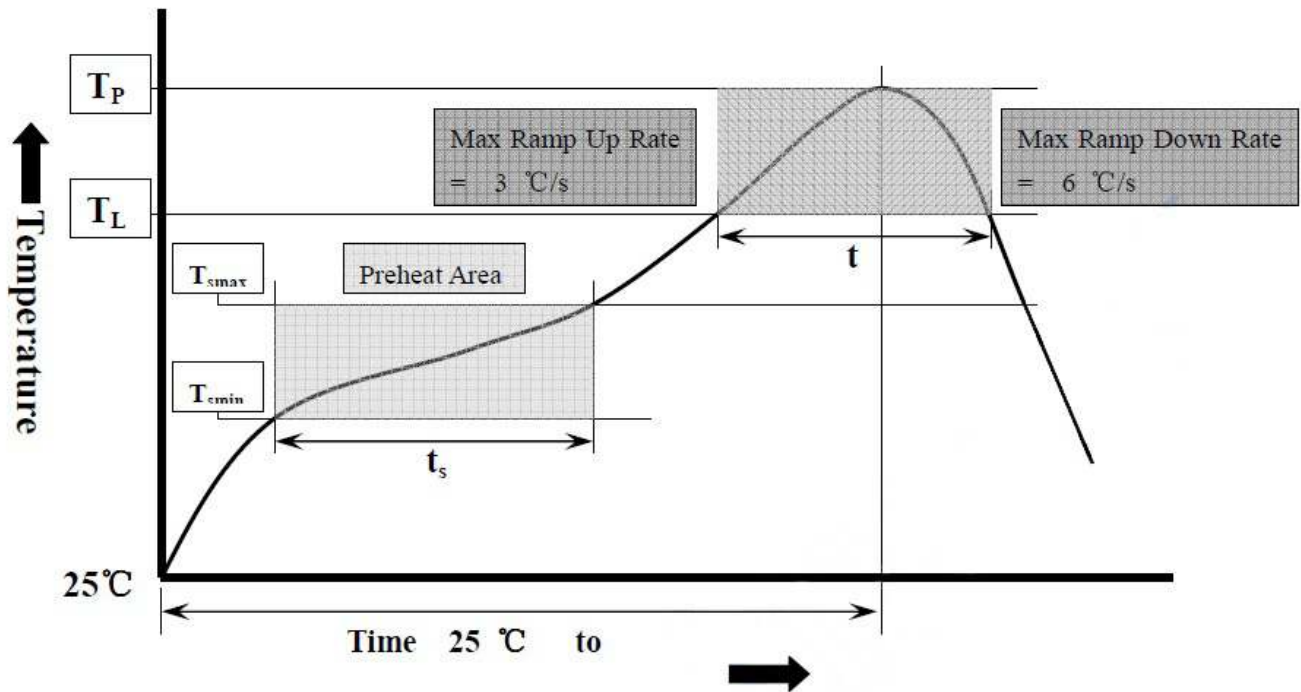


7、Reliability test :

After the the following test, the sensitivity of microphone shall not deviate more than 3dB from its initial value .

TEST	DESCRIPTION
High Temperature Storage	+105°C environment for 1,000 hours. The test refers to IEC 60068-2-2 Test Ba .
Low Temperature Storage	-40°C environment for 1,000 hours. The test refers to IEC 60068-2-2 Test Aa .
High Temperature Operation	+105°C environment while under bias for 1,000 hours. The test refers to IEC 60068-2-2 Test Ba .
Low Temperature Operation	-40°C environment while under bias for 1,000 hours. The test refers to IEC 60068-2-2 Test Aa .
Temperature / Humidity bias	+85°C and 85% R.H environment while under bias for 1,000 hours. The test refer to JESD22-A101-B
Thermal Shock	100 cycles of air-air thermal shock from -40°C to +125°C with 15 minute soaks. The test refers to IEC 60068-2-14.
Reflow	5 reflow cycles with peak temperature of +260°C . The test refers to J-SID-020D
Vibration	4 cycles lasting 12 minutes from 20 to 2,000 Hz in X, Y and Z direction with peak acceleration of 20g . The test refers to MIL883E, Method 2007.2, A
Mechanical Shock	3 pulses of 10,000g in the X, Y and Z direction. The test refers to IEC 60068-2-27, Test Ea .
Electrostatic Discharge	3 discharges at ±8KV direct contact to lid when unit is grounded and 3 discharges at ±2KV direct contact to I/O pins. The test refers to JESD22-A114 (HMB) and JESD22-A115 (MM).

8 · Solder Re flow Profile



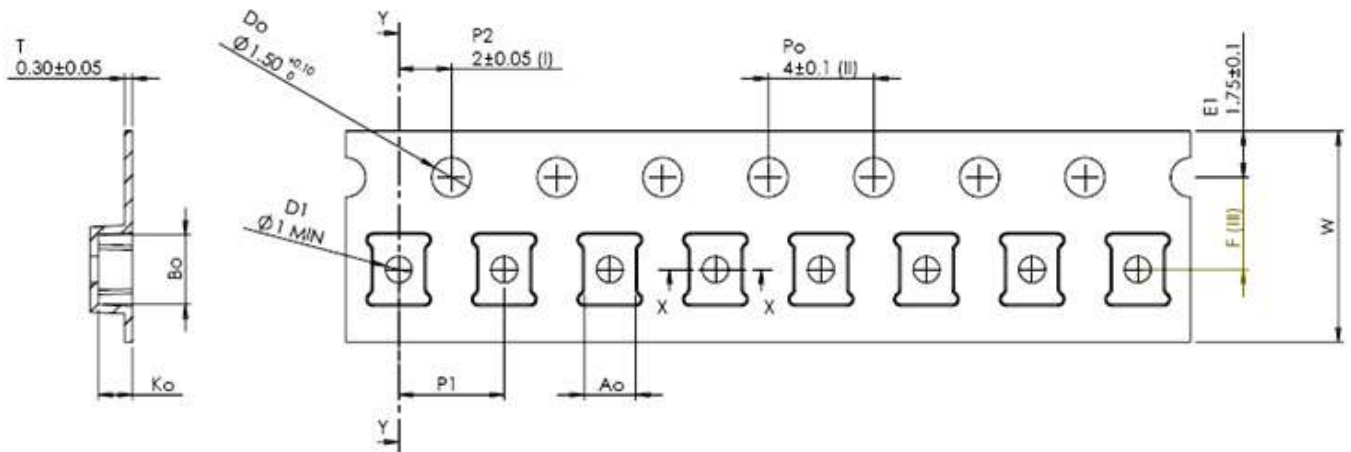
Stage	Temperature Profile	Time
Pre-heat	170 °C ~ 180 °C	60 ~ 120 seconds
Solder Melt	Above 230 °C	60 ~ 150 seconds
Peak	260 °C maximum	N/A



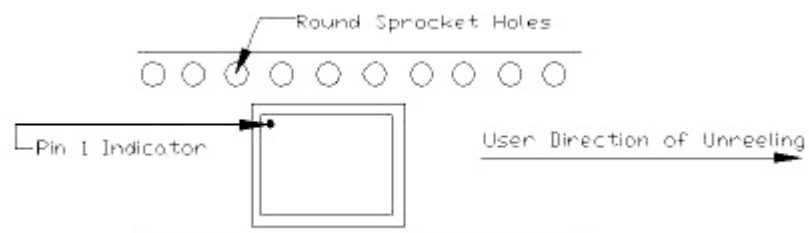
9、Packing

Unit : mm

Carrier Tape

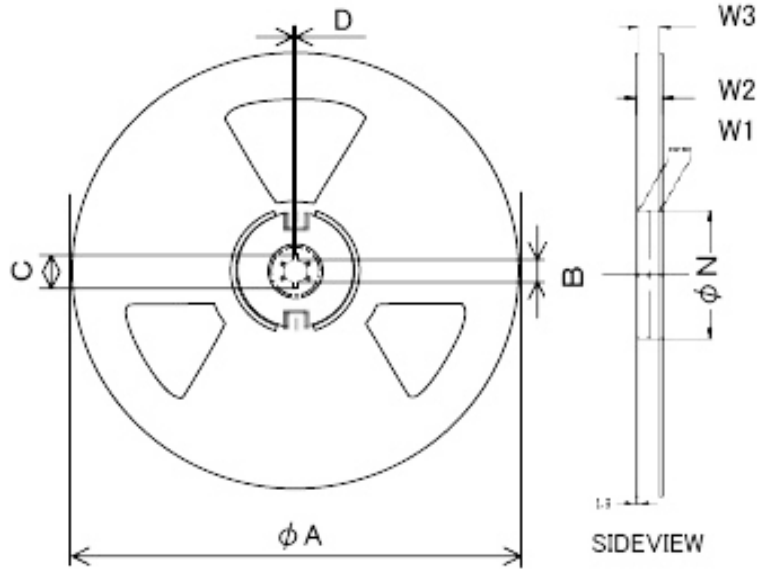


A0	B0	K0	F	P1	W
1.95±0.1	2.65±0.1	1.30±0.1	3.50±0.1	4.00±0.1	8.00±0.1



Reel Specifications:

7" : 3,000 pcs



ϕA	ϕN	W1	W2	B	C	D
178±1	60±0.5	9±0.5	11.8	4.9	13 +0.5/-0.2	23.9

