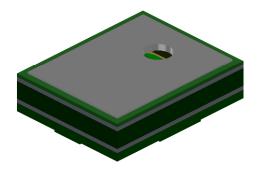
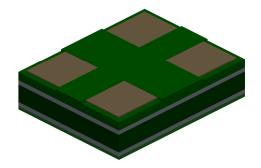


"Mini" SiSonic™ Microphone Specification With Enhanced RF Protection- *Halogen Free*





Knowles Acoustics 1151 Maplewood Drive Itasca, IL 60143





Release Level: ACTIVE

Sheet 2 of 10

1. DESCRIPTION AND APPLICATION

1.1 DESCRIPTION

"Mini" Surface Mount Silicon Microphone with Enhanced RF Protection.

1.2 APPLICATION

Hand held telecomunication devices.

2. PART MARKING

Identification Number Convention

S 1 2 3

4 5 6 7

S: Manufacturing Location
"S" - Knowles Electronics Suzhou
Suzhou, China

"No Alpha Character" - Knowles Electronics Itasca, IL USA

"E" - Engineering Samples

Digits 1-7: Job Identification Number

3. TEMPERATURE RANGE

- 3.1 Operating Temperature Range: -40°C to +100°C
- 3.2 Storage Temperature Range: -40°C to +100°C





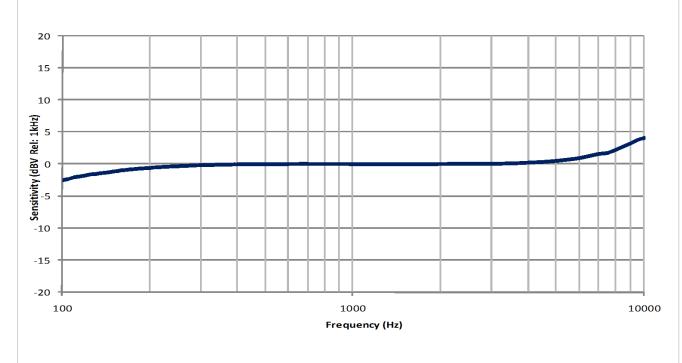
4. ACOUSTIC & ELECTRICAL SPECIFICATIONS

TEST CONDITIONS: +20°C, 60-70% R.H.

	Symbol	Condition	Limits			Unit
	Зуппоот	Condition	Min.	Nom.	Max.	Orill
Directivity		Omni-directional				
Sensitivity	S	@ 1kHz (0dB-1V/Pa)	-45	-42	-39	dB
Output Impedance	Zout	@ 1kHz (0dB-1V/Pa)			300	Ω
Current Consumption	Idds	Across 1.5 to 3.6 volts			250	μA
Signal to Noise Ratio	S/N	@ 1kHz (0dB-1V/Pa)		59		dB
Supply Voltage	Vs		1.5		3.6	V
Sensitivity Loss Across		Change in sensitivity	No Change Across Voltage		dB	
Voltage		over 3.6V to 1.5V	Range		αв	
Maximum Input Sound		At 100dB	At 100dB SPL, THD < 1%			
Level		At 115dB \$	SPL, THD ≤ 10%			

5. FREQUENCY RESPONSE CURVE

TYPICAL FREE FIELD RESPONSE NORMALIZED TO 1kHz



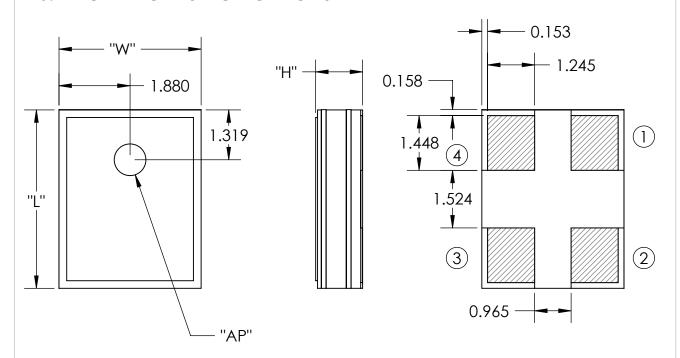


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Revision: C Release Level: ACTIVE Sheet 3 of 10



6. MECHANICAL SPECIFICATIONS



ITEM	DIMENSION	TOLERANCE	UNITS
LENGTH (L)	4.720	±0.100	mm
WIDTH (W)	3.760	±0.100	mm
HEIGHT (H)	1.250	±0.100	mm
ACOUSTIC	Ø0.838	±0.100	po po
PORT (AP)	Ø0.030	±0.100	mm

PIN OUTPUT		
PIN #	FUNCTION	
1	OUTPUT	
2	GROUND	
3	GROUND	
4	POWER (Vdd)	

Note:

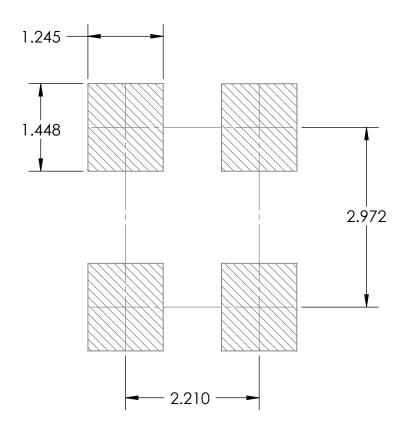
Dimensions are in milimeters unless otherwise specified.

Tolerance ± 0.15 mm unless otherwise specified.





7. RECOMMENDED CUSTOMER LAND PATTERN



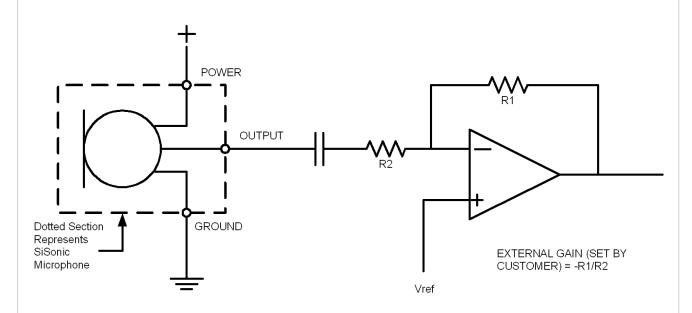
8. RECOMMENDED SOLDER STENCIL PATTERN

N/A





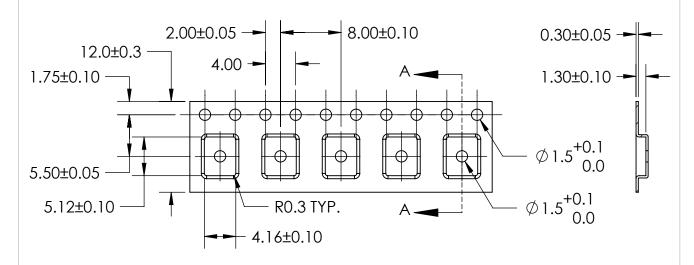
9. RECOMMENDED INTERFACE CIRCUIT

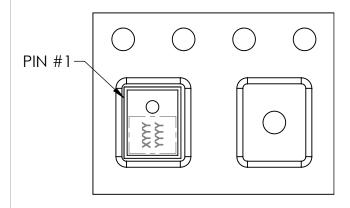






10. PACKAGING DETAIL





COMPONENT **ORIENTATION**

MODEL NUMBER	SUFFIX	REEL	QUANTITY
MODEL NOMBER	301117	DIAMETER	PER REEL
SPM0404HE5H-PB	-2	7"	1,200
31 77104041 IL311-1 D	-6	13"	4,800

TAPE & REEL	
II ABEI	LABEL APPLIED TO EXTERNAL PACKAGE & DIRECT TO REEL.

Note:

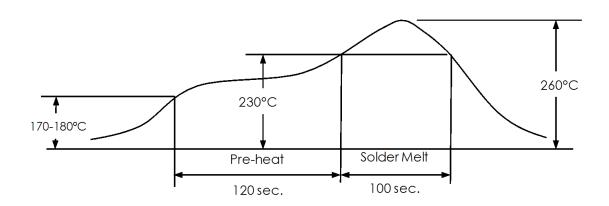
Dimensions are in milimeters unless otherwise specified.



Revision: C Release Level: ACTIVE Sheet 7 of 10



11. SOLDER FLOW PROFILE



Stage	Temperature Profile	Time (maximim)
Pre-heat	170 ~ 180°C	120 sec.
Solder Melt	Above 230°C	100 sec.
Peak	260°C maximum	30 sec.

12. ADDITIONAL NOTES

- (A) 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. MSL (moisture sensitivity level) Class 2a.
- (B) Do not pull a vacuum over port hole of the microphone. Pulling a vacum over the port hole can damage the device.
- (C) 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.
- (D) Do not brush board after the reflow process. Brushing the board with/without solvents can damage the device.
- (E) <u>Do not insert any object in port hole</u> of device at any time as this can damage the device.
- (F) Number of reflow Recommend no more than 3 cycles.



Revision: C Release Level: ACTIVE

Sheet 8 of 10



13. RELIABILITY SPECIFICATIONS

Note: After test conditions are performed, the sensitivity of the microphone shall not deviate more than 3dB from its initial value.

Test	Description
Thermal Shock	100 cycles of air-air thermal shock from -40°C to
momal one or	+125°C with 15 minute soaks. (ICE 68-2-4)
High Temperature	+105°C environment for 1,000 hours. (ICE 68-2-2 Test
Storage	Ba)
Low Temperature	-40°C environment for 1,000 hours. (ICE 68-2-2 Test Aa)
Storage	-40 C environment for 1,000 hoors. (ICL 60-2-2 lest Ad)
High Topon grature Disc	+105°C environment while under bias for 1,000 hours.
High Temperature Bias	(ICE 68-2-2 Test Ba)
Low Tomporature Pias	-40°C environment while under bias for 1,000 hours.
Low Temperature Bias	(ICE 68-2-2 Test Aa)
Temperature / Humidity	+85°C/85% R.H. environment while under bias for 1,000
Bias	hours. (JESD22-A101A-B)
	4 cycles lasting 12 minutes from 20 TO 2,000 Hz in X, Y
Vibration	and Z direction with peak acceleration of 20g. (MIL
	883E, Method 2007.2, A)
	 3 discharges at +/-8kV direct contact to lid when unit
Electrostatic Discharge	is grounded (IEC 61000-4-2) and 3 discharges at +/-2kV
	direct contact to I/O pins. (MIL 883E, Method 3015.7)
Reflow	5 reflow cycles with peak temperature of +260°C.
Mechanical Shock	3 pulses of 10,000g in the X, Y and Z direction. (IEC 68-2-
THOUSE GROUND	27, Test Ea)





14. SPECIFICATION REVISIONS

Revision	Detailed Specification Changes	Date
С	Updated to new format. (DMS)	8/14/2009

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