

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from, Europe, America and south Asia, supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts, Customers Priority, Honest Operation, and Considerate Service", our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip, ALPS, ROHM, Xilinx, Pulse, ON, Everlight and Freescale. Main products comprise IC, Modules, Potentiometer, IC Socket, Relay, Connector. Our parts cover such applications as commercial, industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



# Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

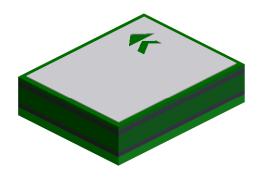


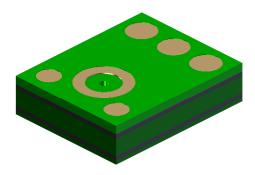






# "Mini" SiSonic<sup>™</sup> Microphone Specification With Enhanced RF Protection - *Halogen Free*





Knowles Acoustics 1151 Maplewood Drive Itasca, IL 60143





#### 1. DESCRIPTION AND APPLICATION

- 1.1 DESCRIPTION "Mini" Surface Mount Silicon Microphone with Enhanced RF Protection - Halogen Free
- 1.2 APPLICATION

Consumer electronics 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



Release Level: ACTIVE Sheet 2 of 10

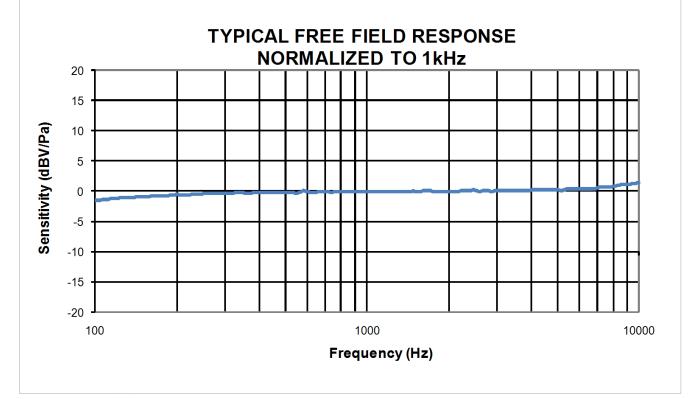


### 4. ACOUSTIC & ELECTRICAL SPECIFICATIONS

TEST CONDITIONS: +20°C, 60-70% R.H.

	Symbol	Condition	Limits			Unit
	39111001	Condition	Min.	Nom.	Max.	OF III
Directivity		Omni-directional				
Sensitivity	S	@ 1kHz (0dB-1V/Pa)	-41	-38	-35	dB
Output Impedance	Zout	@ 1kHz (0dB-1V/Pa)			300	Ω
Current Consumption	<b>I</b> DDs	Across 1.5 to 3.6 volts			250	μA
Signal to Noise Ratio	S/N	@ 1kHz (0dB-1V/Pa)		62		dB
Supply Voltage	Vs		1.5		3.6	V
Sensitivity Loss Across		Change in sensitivity	No Char	ge Across	Voltage	dB
Voltage		over 3.6V to 1.5V		Range		αв
Total Harmonic	THD	At 100dB	SPL, THD <	< 1%		
Distortion	טווו	At 115dB \$	SPL, THD <u>&lt;</u>	10%		

## 5. FREQUENCY RESPONSE CURVE



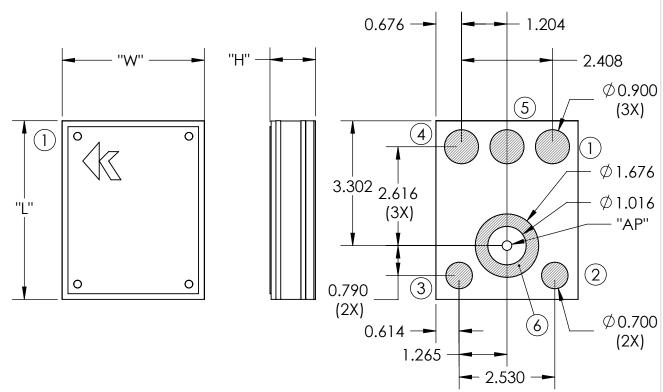


Knowles Acoustics, a division of Knowles Electronics, LLC.

Revision: E Release Level: ACTIVE Sheet 3 of 10



### 6. MECHANICAL SPECIFICATIONS



ITEM	DIMENSION	TOLERANCE	UNITS
LENGTH (L)	4.724	±0.100	mm
WIDTH (W)	3.759	±0.100	mm
HEIGHT (H)	1.250	±0.100	mm
ACOUSTIC	Ø0.254	±0.100	mm
PORT (AP)	Ø0.234	±0.100	mm

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

#### Note:

Dimensions are in milimeters unless otherwise specified.

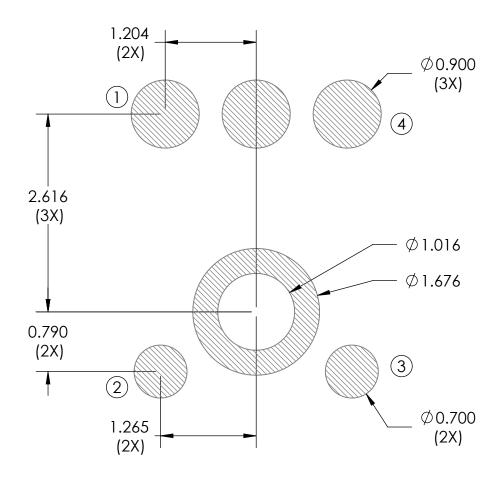
Tolerance  $\pm 0.15$ mm unless otherwise specified.



Revision: E Release Level: ACTIVE Sheet 4 of 10



#### 7. RECOMMENDED CUSTOMER LAND PATTERN



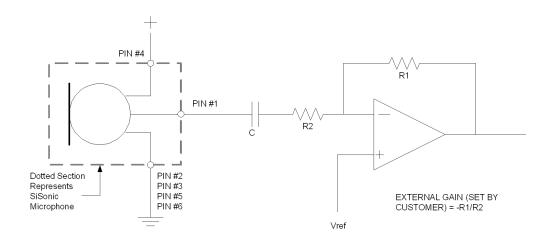
### 8. RECOMMENDED SOLDER STENCIL PATTERN

N/A





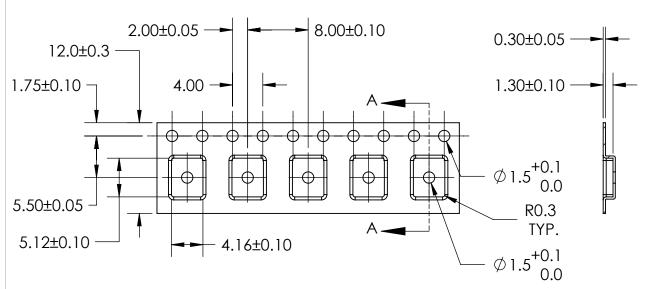
### 9. RECOMMENDED INTERFACE CIRCUIT

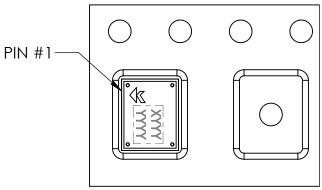






### 10. PACKAGING DETAIL





**COMPONENT ORIENTATION** 

MODEL NUMBER	SUFFIX	REEL DIAMETER	Quantity Per reel
SPM0404LE5H-QB	-2	7"	1,200
31 1VI0404LL311-QD	-6	13"	4,800

TAPE & REEL	PER EIA-481
II ABFI	LABEL APPLIED TO EXTERNAL PACKAGE & DIRECT TO REEL.

Note:

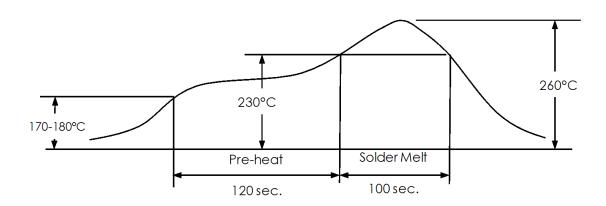
Dimensions are in milimeters unless otherwise specified.



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



Knowles Acoustics, a division of Knowles Electronics, LLC.

Revision: E 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	
merriai snock	+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 floors: (ICL 66-2-2 lest Adj	
High Tomporature Pigg	+105°C environment while under bias for 1,000 hours.	
High Temperature Bias	(ICE 68-2-2 Test Ba)	
1 T Pi	-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	
Licensiane Biserial go	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 GET GET GET GET	27, Test Ea)	





#### 14. SPECIFICATION REVISIONS

Revision	Detailed Specification Changes	Date
D	Initial release. (DMS, C10109839)	7-20-2009
E	ROTATED LASER MARKING 90-DEGREES, CW TO MATCH PRODUCTION; ADDED DIMENSION FOR CORNER RADII OF CARRIER TAPE. (DMS, C10110197)	10-23-2009

The information contained in this literature is based on our experience to date and is believed to be reliable and it is subject to change without notice. It is intended as a guide for use by persons having technical skill at their own discretion and risk. We do not guarantee favorable results or assume any liability in connection with its use. Dimensions contained herein are for reference purposes only. For specific dimensional requirements consult factory. This publication is not to be taken as a license to operate under, or recommendation to infringe any existing patents. This supersedes and voids all previous literature.

