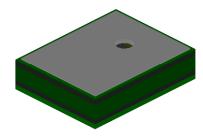
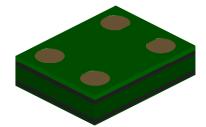


"Ultra-Mini" SiSonic[™] Microphone Specification - *Halogen Free*





Knowles Acoustics 1151 Maplewood Drive Itasca, IL 60143



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1. DESCRIPTION AND APPLICATION

- 1.1 DESCRIPTION "Ultra-mini" Surface Mount Silicon Microphone - Halogen Free
- 1.2 APPLICATION

Consumer electronic 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



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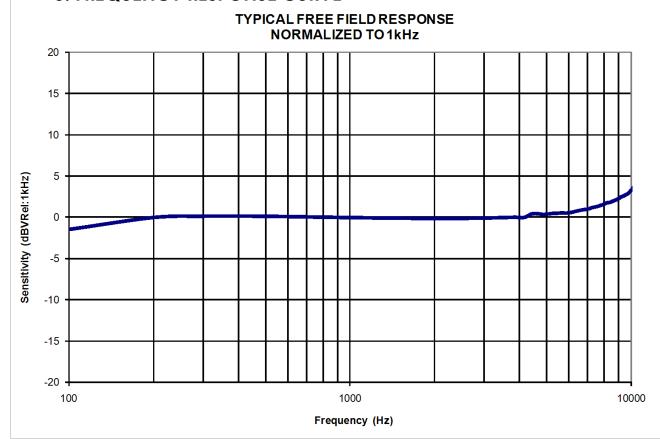


4. ACOUSTIC & ELECTRICAL SPECIFICATIONS

TEST CONDITIONS: +20°C, 60-70% R.H.

	Symbol	Condition	Limits		Unit	
	Зуппоот	Condition	Min.	Nom.	Max.	OHIII
Directivity		Omni-directional		I		
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	00dB SPL, THD < 1%			
Level		At 115dB \$	SPL, THD <u><</u> 10%			

5. FREQUENCY RESPONSE CURVE

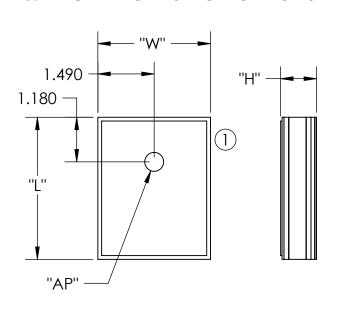


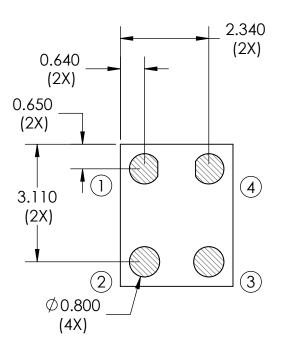


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6. MECHANICAL SPECIFICATIONS





ITEM	DIMENSION	TOLERANCE	UNITS
LENGTH (L)	3.760	±0.100	mm
WIDTH (W)	2.950	±0.100	mm
HEIGHT (H)	0.900	±0.100	mm
ACOUSTIC	Ø0 500	±0.100	no no
PORT (AP)	Ø0.500	±0.100	mm

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

Note:



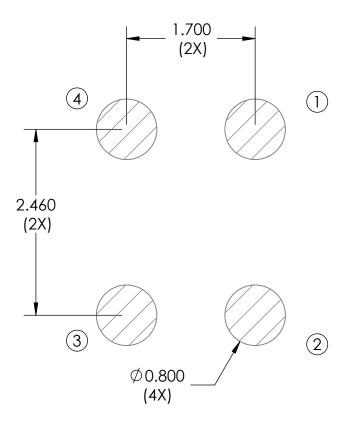
Dimensions are in milimeters unless otherwise specified. Tolerance ± 0.15 mm unless otherwise specified.

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7. RECOMMENDED CUSTOMER LAND PATTERN



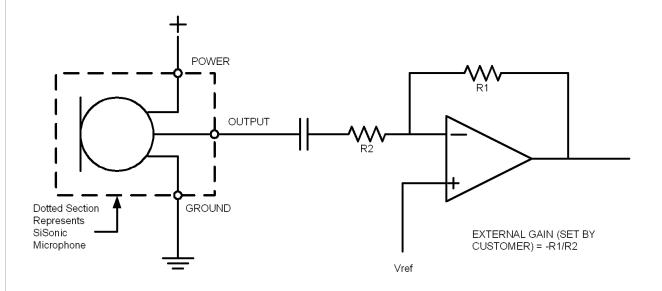
8. RECOMMENDED SOLDER STENCIL PATTERN

N/A





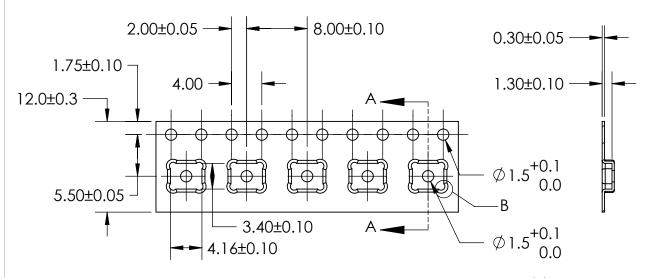
9. RECOMMENDED INTERFACE CIRCUIT

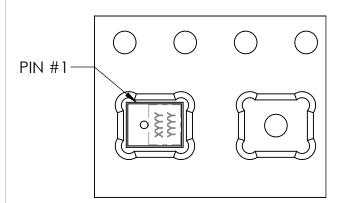


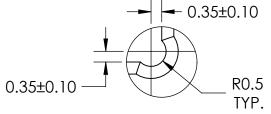




10. PACKAGING DETAIL







DETAIL B SCALE 8 : 1

COMPONENT ORIENTATION

MODEL NUMBER	SUFFIX	REEL DIAMETER	QUANTITY PER REEL
SPU0409HD5H-PB	-2	7"	1,200
31 0040/110311-1 0	-7	13"	5,700

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

Note:

Dimensions are in milimeters unless otherwise specified.



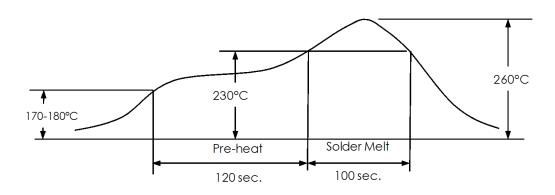
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11. SOLDER FLOW PROFILE



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

- 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.
- Do not pull a vacuum over port hole of the microphone. Pulling a vacum over the (B) port hole can damage the device.
- Do not board wash after the reflow process. Board washing and cleaning agents (C) can damage the device. Do not expose to ultrasonic processing or cleaning.
- Do not brush board after the reflow process. Brushing the board with/without (D) solvents can damage the device.
- Do not insert any object in port hole of device at any time as this can damage the (E) device.
- Number of reflow Recommend no more than 3 cycles. (F)



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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	
THE THE STOCK	+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	1-40 C environment for 1,000 floors. (ICL 00-2-2 lest Adj	
High Temperature Bias	+105°C environment while under bias for 1,000 hours.	
	(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	
Liechostatic Discharge	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-	
IMPERIORICAL SHOCK	27, Test Ea)	





14. SPECIFICATION REVISIONS

Revision	Detailed Specification Changes	Date
1	Preliminary Specification Release	
В	Format updated (Mdurso, C10110188)	10/22/09

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