

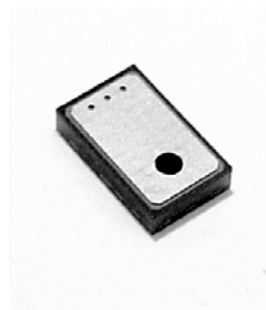
## Product Specification: SP0102 Series (Generation II)

This document applies the following SiSonic Model Numbers:

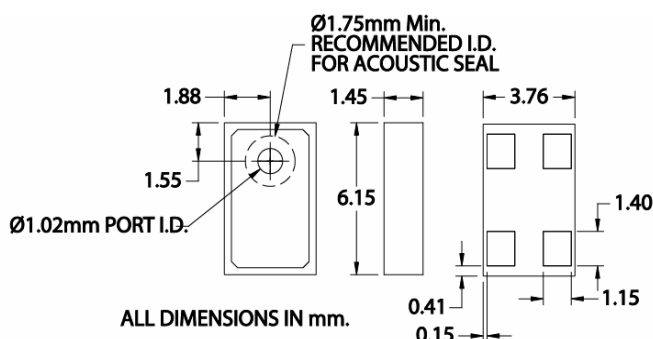
SP0102NC3-2

SP0102NC3-3

SiSonic microphone was developed as a cost effective alternative to traditional electret condenser microphones. Provided on tape-and-reel, SiSonic is ideally suited for high volume applications. It can be processed directly to a customer's PCB using standard automatic pick-and-place equipment, and surface mounted via standard solder reflow equipment.

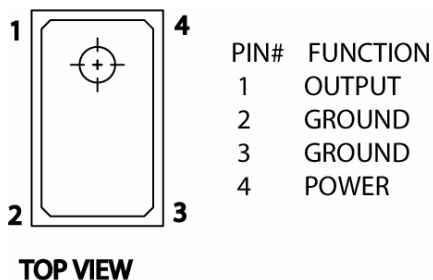


### Microphone Dimensional Layout

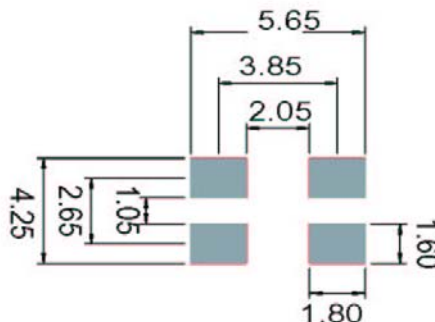


| Item                    | Dim.  | Tol. (+/-) | Units |
|-------------------------|-------|------------|-------|
| Height                  | 1.45  | 0.15       | mm    |
| Length                  | 6.15  | 0.05       | mm    |
| Width                   | 3.76  | 0.05       | mm    |
| Long Edge to C.L. Port  | 1.88  | 0.25       | mm    |
| Short Edge to C.L. Port | 1.55  | 0.25       | mm    |
| Weight                  | ~0.09 | grams      |       |
| Coplanarity             | < 0.1 |            | mm    |

### Microphone Pin Output



### Recommended PCB Land Layout

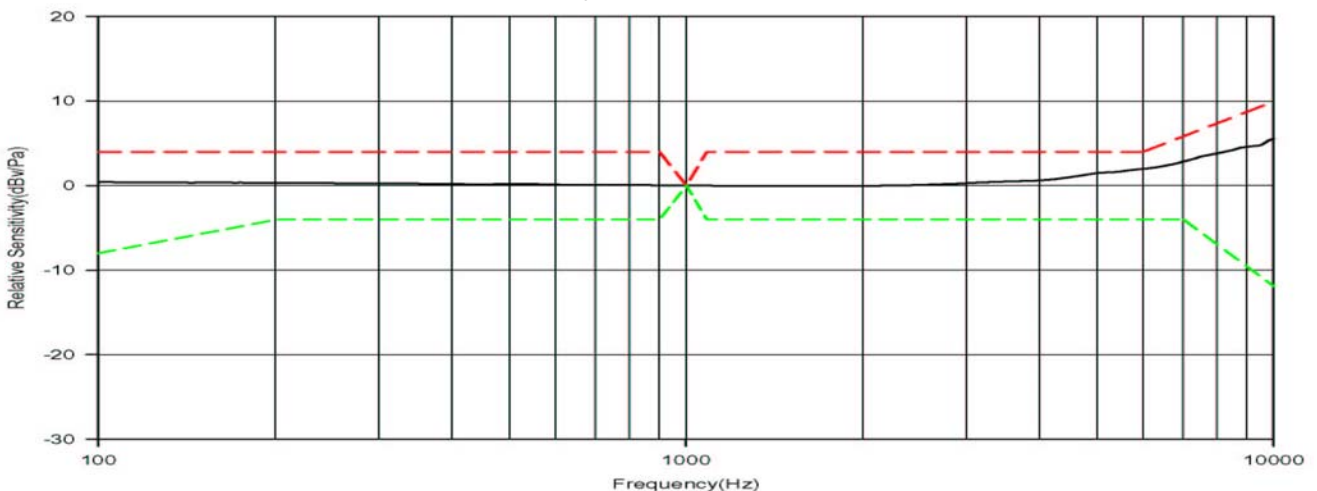


## Product Specifications

Test Conditions: +20°C, 60-70% R.H.

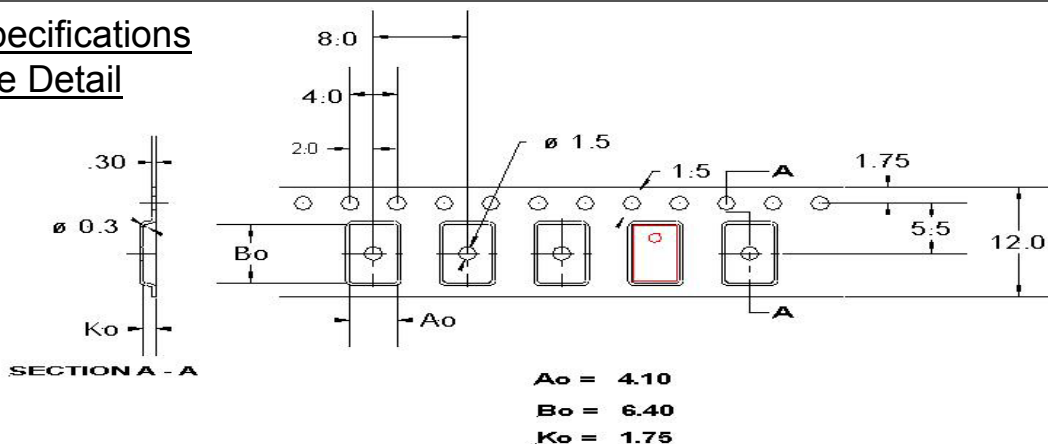
|                                 | Symbol           | Condition                                           | Limits                         |      |       | Unit    |
|---------------------------------|------------------|-----------------------------------------------------|--------------------------------|------|-------|---------|
|                                 |                  |                                                     | Min.                           | Nom. | Max.  |         |
| Directivity                     |                  | Omni-directional                                    |                                |      |       |         |
| Sensitivity                     | S                | @ 1kHz (0dB=1V/Pa)                                  | -46                            | -42  | -38   | dB      |
| Output impedance                | Z <sub>OUT</sub> | @ 1kHz (0dB=1V/Pa)                                  |                                |      | 100   | Ω       |
| Current Consumption             | I <sub>DSS</sub> | across 1.5 to 5.5 volts                             | 0.100                          |      | 0.250 | mA      |
| Signal to Noise Ratio           | S/N              | @ 1kHz (0dB=1V/Pa)                                  | 55                             | 59   |       | dB      |
| Typical Input Referred Noise    | ENL              | A-weighted                                          |                                | 35   |       | dBA SPL |
| Supply Voltage                  | Vs               |                                                     | 1.5                            |      | 5.5   | V       |
| Sensitivity Loss across Voltage |                  | Change in sensitivity over 5.5v to 1.5v             | No Change Across Voltage Range |      |       | dB      |
| Maximum Input Sound Level       |                  | At 100dB SPL, THD < 1%<br>At 115dB SPL, THD = < 10% |                                |      |       | dB      |
| Operating Temperature           |                  |                                                     | -40                            |      | +100  | °C      |
| Storage Temperature             |                  |                                                     | -40                            |      | +100  | °C      |
| Frequency Range                 |                  | 100 – 10,000                                        |                                |      |       | Hz      |

### Frequency Response Curve



## Packaging Specifications

### Carrier – Tape Detail



| Model Number | Suffix | Reel Diameter | Qty per Reel | Capacitor Config. |
|--------------|--------|---------------|--------------|-------------------|
| SP0102NC3    | -2     | 7"            | 1,200        | 10 & 33pF         |
| SP0102NC3    | -3     | 13"           | 4,500        | 10 & 33pF         |

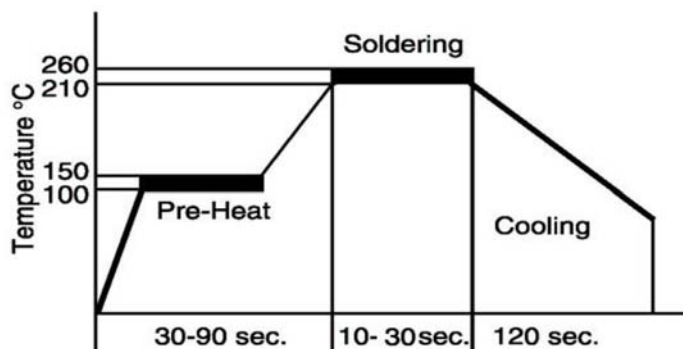
NOTE: All devices are lead-free and compatible with lead-free reflow profile.

|                  |                                                                  |
|------------------|------------------------------------------------------------------|
| Tape & Reel      | Available in 7" or 13" diameter.                                 |
| Leader Length    | 800mm or minimum of 100 empty pockets                            |
| Label            | Label applied to external package and direct to reel. Per JEDEC. |
| Storage Life     | 1 year storage (original packaging, low humidity)                |
| Polarity of part | "L" – direction                                                  |

## Solderability Characteristics

|               |                                                                                                       |
|---------------|-------------------------------------------------------------------------------------------------------|
| Solder Reflow | 260°C for maximum 30 seconds                                                                          |
| Conditions:   | <b>Do not board wash after reflow.</b><br><b>Do not pull vacuum directly over acoustic port hole.</b> |

Reflow Profile  
(Maximum Conditions)



## Reliability

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

|                                 |                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Thermal Shock                   | Microphone unit must operate when exposed to air-to-air thermal shock 100 cycles, from –40°C to +125°C. (IEC 68-2-4),                                                                            |
| High Temperature Storage Test   | Microphone unit must maintain sensitivity after storage at +105°C for 1,000 hours. (IEC 68-2-2 Test Ba)                                                                                          |
| Low Temperature Storage Test    | Microphone unit must maintain sensitivity after storage at –40°C for 1,000 hours. (IEC 68-2-1 Test Aa)                                                                                           |
| High Temperature Operating Test | Microphone unit must operate within sensitivity specifications for 16 hours at 105°C. (IEC 68-2-2 Test Ba)                                                                                       |
| Low Temperature Operating Test  | Microphone unit must operate within sensitivity specifications for 16 hours at –40°C. (IEC 68-2-1 Test Aa)                                                                                       |
| Humidity Test                   | Tested under Bias at 85°C/85% R.H. for 270 hours. (JESD22-A101A-B)                                                                                                                               |
| Vibration Test                  | Microphone unit must operate under test condition: 4 cycles, from 20 to 2,000 Hz in each direction (x,y,z), 48 minutes, using peak acceleration of 20g (+20%, -0%). (MIL 883E, method 2007.2, A) |
| Electrostatic Discharge         | Tested to 8kV direct contact discharge or 15kV air discharge as specified by IEC 1000-4-2, level 3 and level 4.                                                                                  |
| Reflow                          | Microphone is tested to 5 passes through reflow oven under conditions of 260°C for 30 seconds maximum.                                                                                           |
| Mechanical Shock                | Tested to 5,000g (IEC 68-2-27, Ea).                                                                                                                                                              |

## Recommended Interface Circuit

