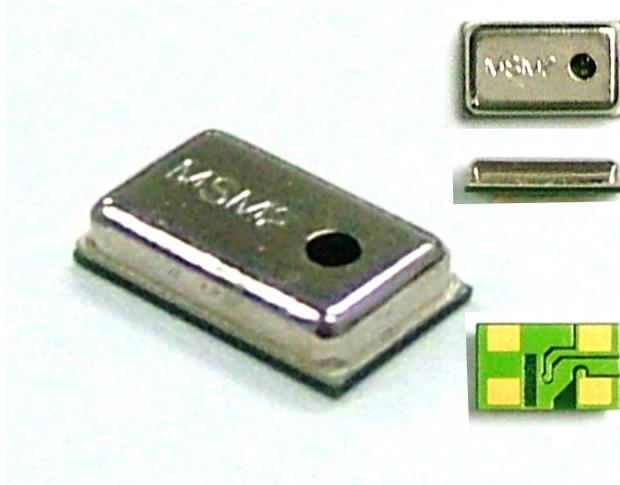


MSM2C-S4045

PosiSound Series



Integrated Silicon Microphone



The Silicon Acoustic Age “MSM2C” is the next generation of audio sensor technology made possible by advanced MEMS expertise. Fabricated with state of the art micro-machining techniques and unique patented processes. The MSM2C series will push the microphone industry into the age of silicon technology, bringing performance and innovation that allows new applications in consumer electronics, telecommunications, and industrial applications.

The silicon based MSM2C microphones are integrated with specialized pre-amplification ASIC to provide high sensitivity, high signal to noise ratio output from a capacitive audio sensor. Packaged for surface mounting and high temperature re-flow assembly, it routinely operates in adverse conditions that would permanently damage conventional microphones.

FEATURES

- Selectable Sensitivity Ranges
- 100% Factory Tested
- Stable and Reliable
- Excellent Signal to Noise Ratio
- Ultra Low Profile Package Availability
- Surface Mountable: MLP Design
- Tape and Reel, Tray Packaging
- Lead Free Package Material
- Patents Application

THE MAIN FIELD OF APPLICATIONS

- ✓ Mobile phones, DECT phones
- ✓ Laptops, PDA's
- ✓ MP3 Players, Recording Devices
- ✓ Audio Devices, Hearing Aides
- ✓ Industrial PDA's
- ✓ Mobile Email Systems, Text Messaging
- ✓ Smart Microphone Modules
- ✓ Audio Input Peripherals
- ✓ For all lithium battery application from 1.5V to 3.6V

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Technical Specification: (All data taken at 25±2°C, Relative Humidity 45±5% unless otherwise specified)

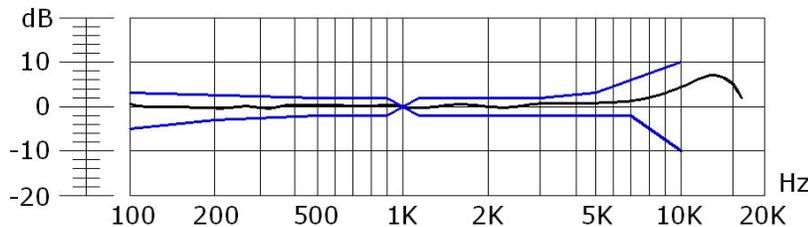
Maximum ratings

| Specification | Min. | Typ. | Max. | Unit |
|-----------------------|------|------|------|------|
| Operating Temperature | -40 | - | 100 | °C |
| Storage Temperature | -40 | - | 125 | °C |
| Operating Voltage | 1.5 | 2.1 | 3.6 | V |

Data

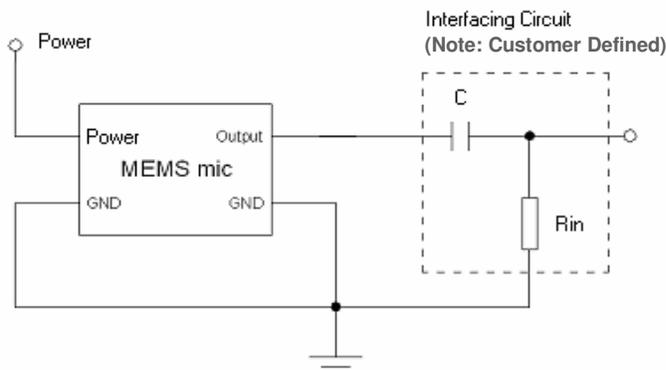
| Specification | Min. | Typ. | Max. | Unit |
|--|------------------|---------|-------|---------|
| Directivity | Omni directional | | | |
| Maximum input sound level (for less than 0.5% distortion) | - | - | 120 | dB SPL |
| Sensitivity Range (0dB = 1V/Pa, 1KHz) | -45 | - | -40 | dBV/ Pa |
| Current consumption (@2.1 VDC) | - | 150 | 250 | uA |
| Frequency range | 100 | - | 10K | Hz |
| Output impedance | - | - | 100 | Ohms |
| Signal to noise ratio (A-weighted) | 55 | 58 | - | dBV/ Pa |
| Filtering capacitor options | - | 10 & 33 | - | pF |
| Solder reflow (for 30s max of peak temperature) | - | - | 260 | °C |
| Output Signal @ 94 dB SPL, 1 KHz | 5.65 | - | 10.04 | mV |
| PSRR | 40 | 45 | 50 | dB |
| Sensitivity variation over operating voltage range (1.5 to 3.6V) | - | - | 1 | dB |

Frequency Response Curve



Application Circuit

Please refer to Electrical Layout for connection details.



RC Value (R = 5K Ohms, C = 0.22uF)

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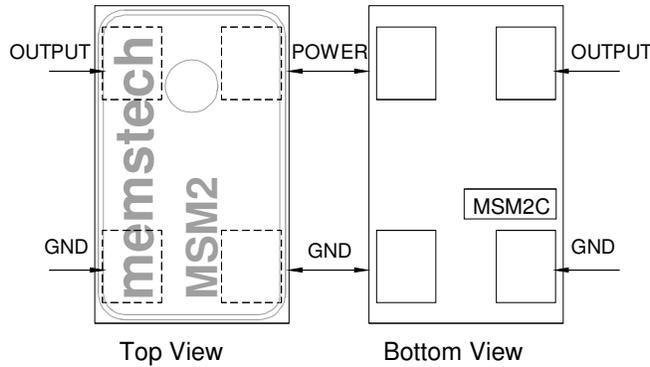


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Electrical Layout



Terminology

1. **POWER:** The Supply Voltage Positive Terminal (Pad name "POWER" in Electrical layout drawing) which is connected to the Microphone Sensing Element.
2. **OUTPUT:** The Output Terminal, where the electrical signal equivalent to the acoustic pressure is available, i.e the Microphone output. (Pad name "OUTPUT" in Electrical layout drawing)
3. **COMMON:** The Terminal where the supply negative (Pad name "GND" in Electrical layout drawing) is connected to microphone package.
4. **SENSITIVITY:** Sensitivity is the open circuit output voltage amplitude for a given sound pressure at the microphone diaphragm. This is frequency dependent so typically quoted at 1KHz. Units are defined in dB logarithmic scale.
5. **FREQUENCY RESPONSE:** It is the plot of Sensitivity in dB vs frequency [Hz], it depends on transducer mechanism directional response, and reflection from room boundaries – usually quote free-field response.
6. **DIRECTIVITY:** It is the response pattern that expresses the geometric shape of the region of sensitivity surrounding the microphone, omni directional, uni directional, bi- directional.

Reliability Test

1. Temperature characteristics: Data collected at -40°C, +25°C, +85°C.
2. Temperature shock: 32 cycles, starting from cold to hot temperatures. Each cycle: 30mins at -40°C followed by 30mins at +85°C with a 20s max transition time.
3. Static humidity: Precondition @+25°C for 1hr. Expose to +70°C with 90-95% RH for 240hrs. Dry at room ambient for 4hrs before measurements.
4. Random vibrations: Vibrate randomly from 20-2000Hz using the following power Spectra Density (PSD) profile: It is a +3dB/octave from 20-80Hz, then 0.053g²/Hz or at 8g's RMS level from 80 -350Hz, and finally at -3dB/octave from 350-2000Hz. The PSD tolerance is +/-3dB from 20-1000Hz and +/-6dB above 1000Hz. The Analyzer Bandwidth to be set at 25Hz BW from 20-200Hz, 50Hz BW to 1000Hz, and finally 100Hz BW to 2000Hz. The test time is 15 mins per plane.
5. Mechanical shock: Subject samples to three one-half sine shock pulses (3000g's for 0.3ms) in each direction (for six totals) along each of the three mutually perpendicular axes for a total of 18 shocks.
6. Operation life: Subject to 85°C for 1000hrs under full rated power.
7. Solder heat resistance: 3x reflow @ 230°C and 260°C.

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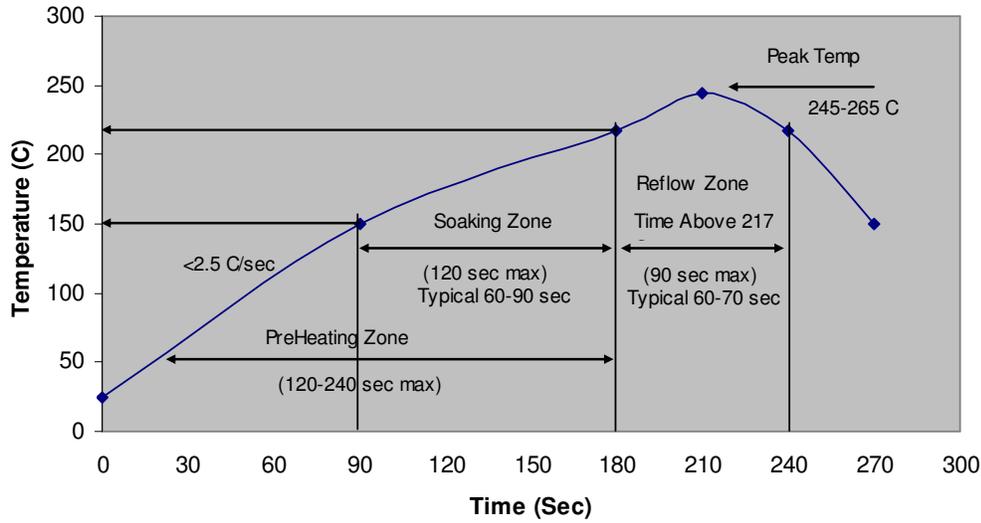
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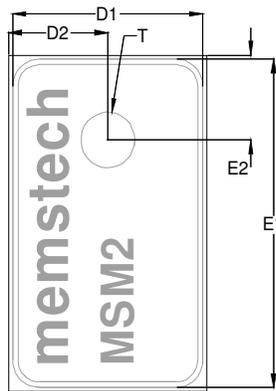
MSM2C-S4045

PosiSound Series

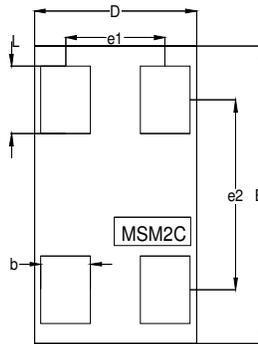
Reflow Profile



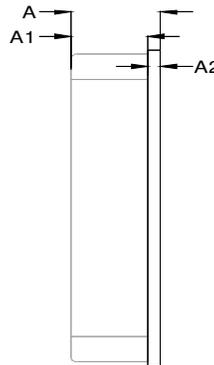
Mechanical Dimensions



Top View



Bottom View



Side View

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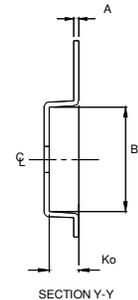
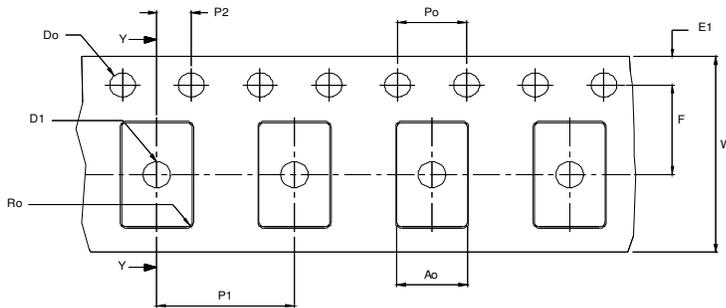
PosiSound Series

| SYMBOLS | | MILLIMETER | | | INCHES | | |
|---------|-----------|------------|---------|---------|---------|---------|---------|
| | | MINIMUM | NOMINAL | MAXIMUM | MINIMUM | NOMINAL | MAXIMUM |
| A | OPTION 1 | 1.450 | 1.500 | 1.550 | 0.0571 | 0.0591 | 0.0610 |
| | *OPTION 2 | 1.350 | 1.400 | 1.450 | 0.0531 | 0.0551 | 0.0571 |
| | OPTION 3 | 1.250 | 1.300 | 1.350 | 0.0492 | 0.0511 | 0.0531 |
| | OPTION 4 | 1.050 | 1.100 | 1.150 | 0.0413 | 0.0433 | 0.0453 |
| A1 | OPTION 1 | 1.200 | 1.200 | 1.250 | 0.0472 | 0.0472 | 0.0492 |
| | *OPTION 2 | 1.100 | 1.100 | 1.150 | 0.0433 | 0.0433 | 0.0453 |
| | OPTION 3 | 1.000 | 1.000 | 1.050 | 0.0394 | 0.0394 | 0.0413 |
| | OPTION 4 | 0.800 | 0.800 | 0.850 | 0.0315 | 0.0315 | 0.0335 |
| A2 | | 0.230 | 0.280 | 0.330 | 0.0091 | 0.0110 | 0.0130 |
| b | | 1.100 | 1.150 | 1.200 | 0.0433 | 0.0453 | 0.0472 |
| D | | 3.710 | 3.760 | 3.810 | 0.1461 | 0.1480 | 0.1500 |
| D1 | | 3.530 | 3.610 | 3.610 | 0.1390 | 0.1421 | 0.1421 |
| D2 | | --- | 1.880 | --- | --- | 0.0740 | --- |
| E | | 6.100 | 6.150 | 6.200 | 0.2402 | 0.2421 | 0.2441 |
| E1 | | 5.920 | 6.000 | 6.000 | 0.2331 | 0.2362 | 0.2362 |
| E2 | | --- | 1.550 | --- | --- | 0.0610 | --- |
| e1 | | --- | 2.310 | --- | --- | 0.0909 | --- |
| e2 | | --- | 3.930 | --- | --- | 0.1547 | --- |
| L | | 1.350 | 1.400 | 1.450 | 0.0531 | 0.0551 | 0.0571 |
| T(Ø) | | 0.970 | 1.020 | 1.070 | 0.0382 | 0.0402 | 0.0421 |

Packaging Options

Tape & Reel

- a Reel Diameter: 13"
- b Quantity / Reel: 4,500 pieces



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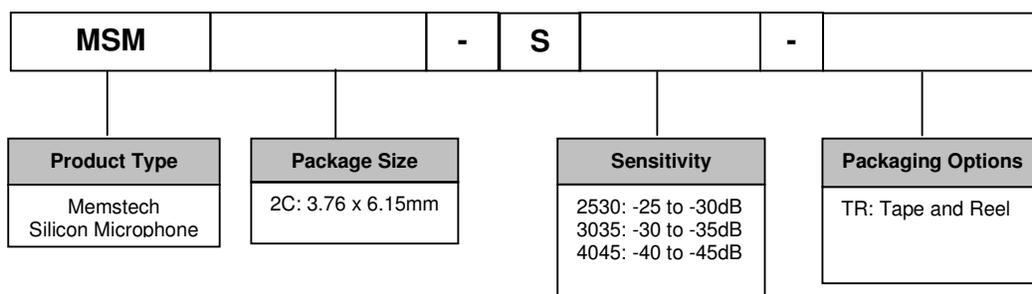


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|---------|------------|---------|---------|---------|---------|---------|
| | MINIMUM | NOMINAL | MAXIMUM | MINIMUM | NOMINAL | MAXIMUM |
| A | 0.250 | 0.300 | 0.350 | 0.0098 | 0.0118 | 0.0138 |
| Ao | 4.000 | 4.100 | 4.200 | 0.1575 | 0.1614 | 0.1654 |
| Bo | 6.300 | 6.400 | 6.500 | 0.2480 | 0.2520 | 0.2559 |
| Ø Do | 1.450 | 1.500 | 1.550 | 0.0571 | 0.0591 | 0.0610 |
| Ø D1 | 1.500 | 1.500 | 1.700 | 0.0571 | 0.0591 | 0.0610 |
| E1 | 1.650 | 1.750 | 1.850 | 0.0650 | 0.0689 | 1.85 |
| F | 5.400 | 5.500 | 5.600 | 0.2126 | 0.2165 | 0.2205 |
| Ko | 1.650 | 1.750 | 1.850 | 0.0650 | 0.0689 | 0.0728 |
| Po | 3.900 | 4.000 | 4.100 | 0.1535 | 0.1575 | 0.1614 |
| P1 | 7.900 | 8.000 | 8.100 | 0.3110 | 0.3150 | 0.3189 |
| P2 | 1.900 | 2.000 | 2.100 | 0.0748 | 0.0787 | 0.0827 |
| Ro | --- | 0.300 | --- | --- | 0.0118 | --- |
| W | 11.700 | 12.000 | 12.300 | 0.4606 | 0.4724 | 0.4823 |

Order information



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JL World Corporation Limited: Foh, Ming Cherng (Managing Director), Hong Kong. Tel: (+852) 2565 0319 Fax: (+852) 2565 6979 Website: www.jlworld.com

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MemsTech's Standard Sales Terms apply. Price and specifications are subject to change without notice.

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