A RAMI TECHNOLOGY Company

# MEMS MIC

## RMIC-94-3.6-2718-NX-NS1

**Description:** The RMIC-94-3.6-2718-NX-NS1 is a high-performance, low power, bottom port MEMS microphone with single-ended analog output.

Top View

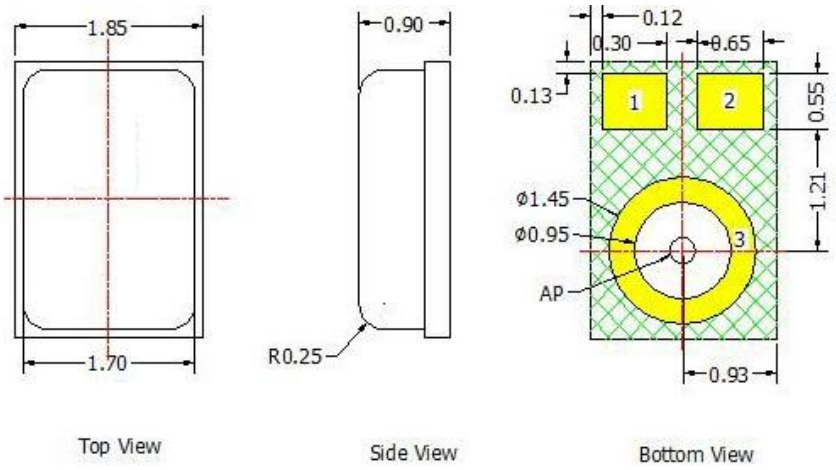
Bottom View

## ACOUSTIC AND ELECTRICAL SPECIFICATIONS

Test Condition: VDD=2.0V, 23±2℃, 55±10%R.H., unless otherwise specified

| Specification | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Directivity | | | Omni-directional | | | |
| Sensitivity Range | S | 94dBSPL @1kHz | -39 | -38 | -37 | dB |
| Output Impedance | Zout | 94dBSPL @1kHz | | | 250 | Ω |
| Operating Voltage | VDD | | 1.6 | 2 | 3.6 | V |
| Current Consumption | I | 1.6V to 3.6V | | | 200 | μA |
| S/N Ratio | SNR | 94dBSPL @1kHz, A-Weighted | | 60 | | dB(A) |
| Total Harmonic Distortion | THD | 94dBSPL @1kHz | | | 0.5 | % |
| Sensitivity vs Voltage | △S | 94dBSPL @1kHz, Vdd=3.6V to 1.6V | | | 0.5 | dB |
| Acoustic Overload Point | AOP | THD=10% @1kHz | | 128 | | dBSPL |
| Power Supply Rejection | PSR | 0.1Vpp Square wave @217Hz, A-weighted | | -100 | | dB |

## DIMENSIONS

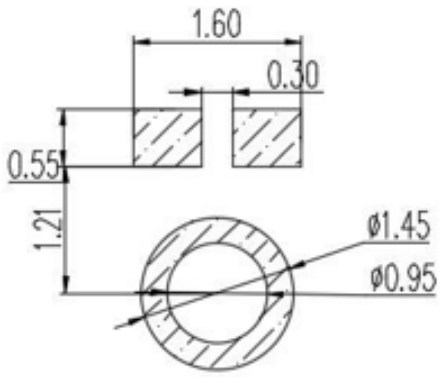



| Item | Dimension | Tolerance(±) | Units |
|---|---|---|---|
| Length | 2.75 | 0.1 | mm |
| Width | 1.85 | 0.1 | mm |
| Height | 0.9 | 0.1 | mm |
| Acoustic Port | Ø0.25 | 0.05 | mm |

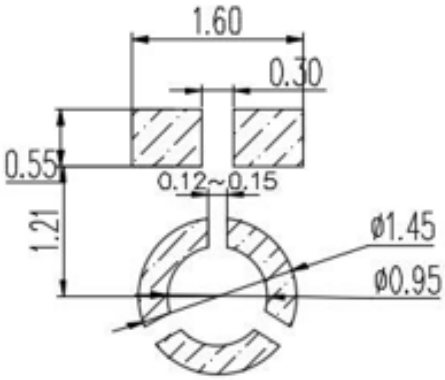
| Pin # | Definition | Type | Description |
|---|---|---|---|
| 1 | $V_{DD}$ | Power | Power Supply |
| 2 | Output | Signal | Output Signal |
| 3 | GND | Ground | Ground |

Notes: Dimensions are in mm unless otherwise specified.
Tolerance is ±0.10mm unless otherwise specified
All Ground Pin must be connected to the ground in end application.

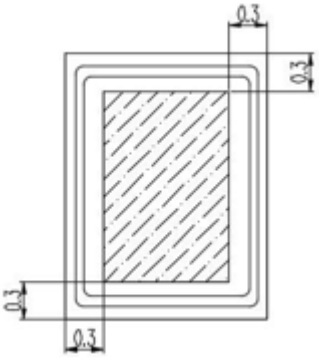
### EXAMPLE LAND PATTERN



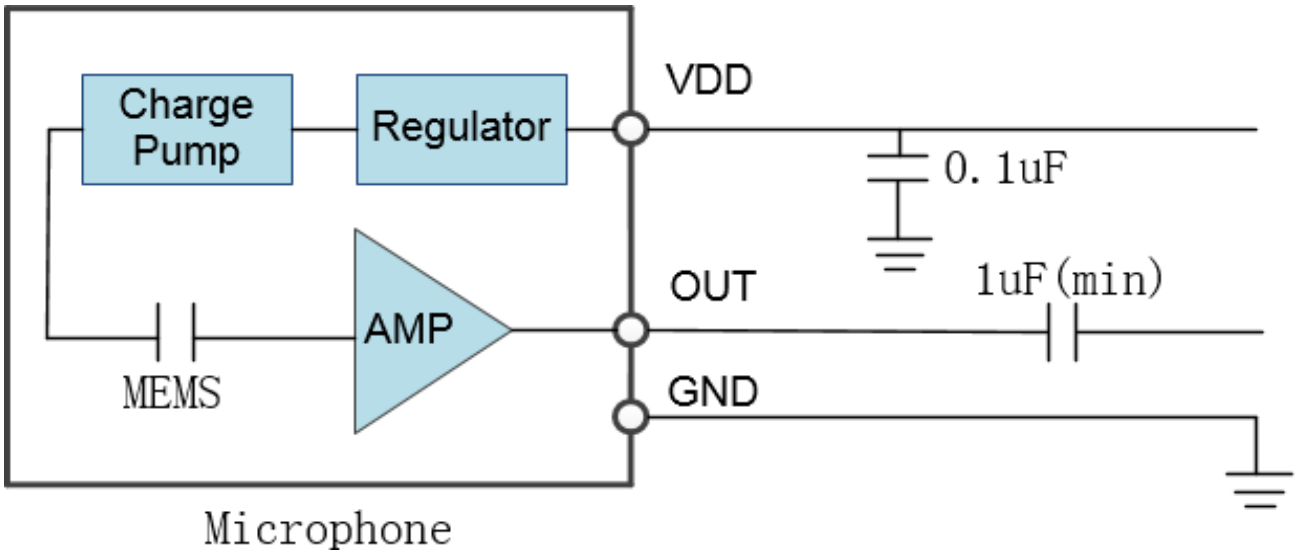

### EXAMPLE SOLDER STENCIL PATTERN



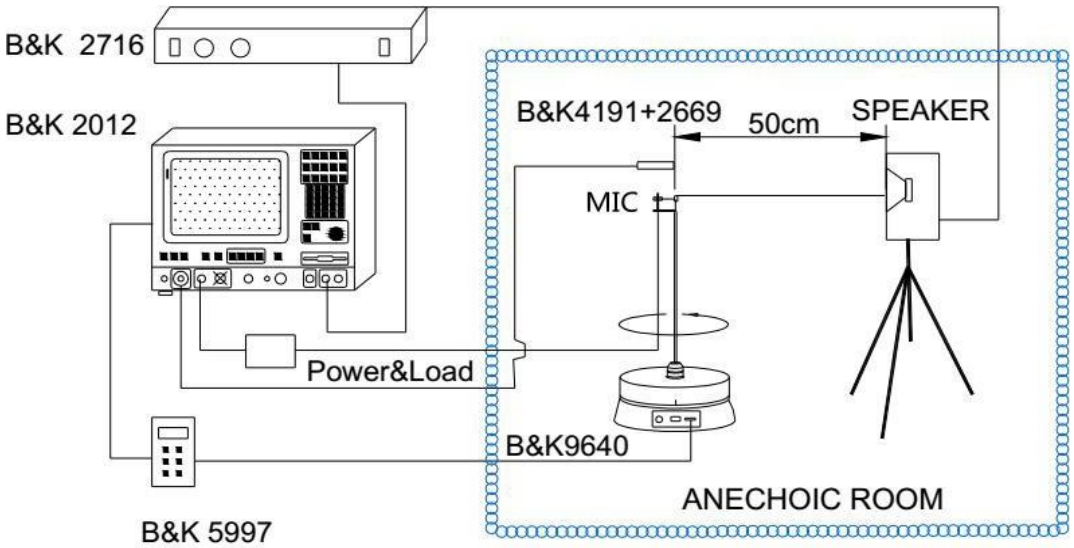

### EXAMPLE PICK UP LOCATION



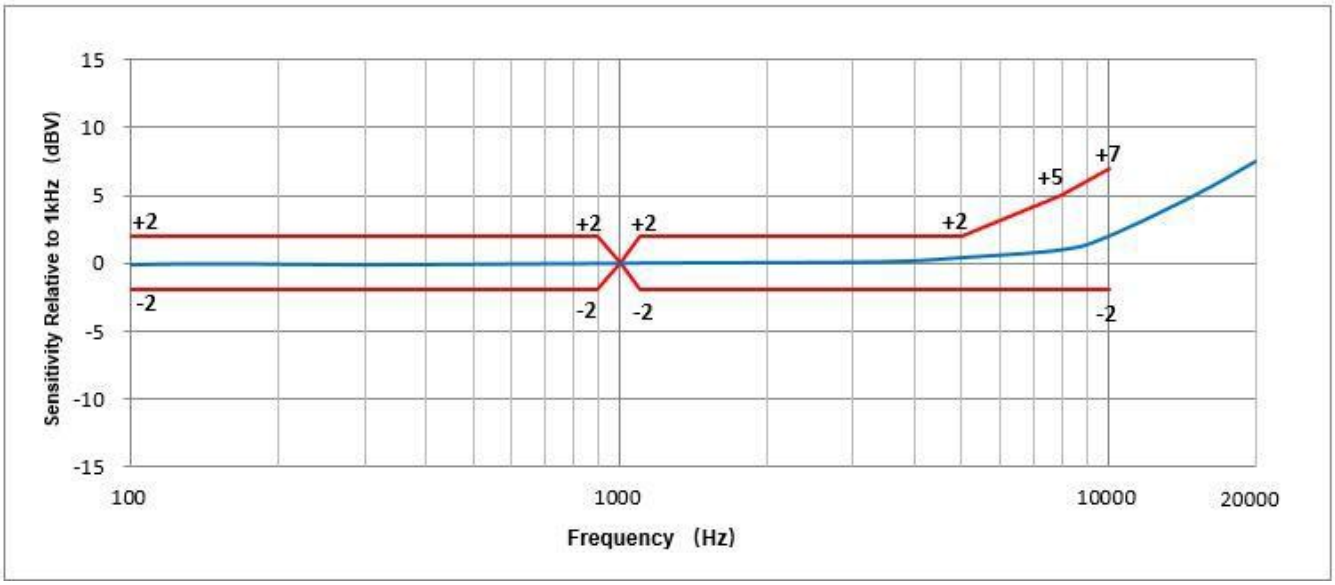
## SCHEMATIC MEASURING DIAGRAM



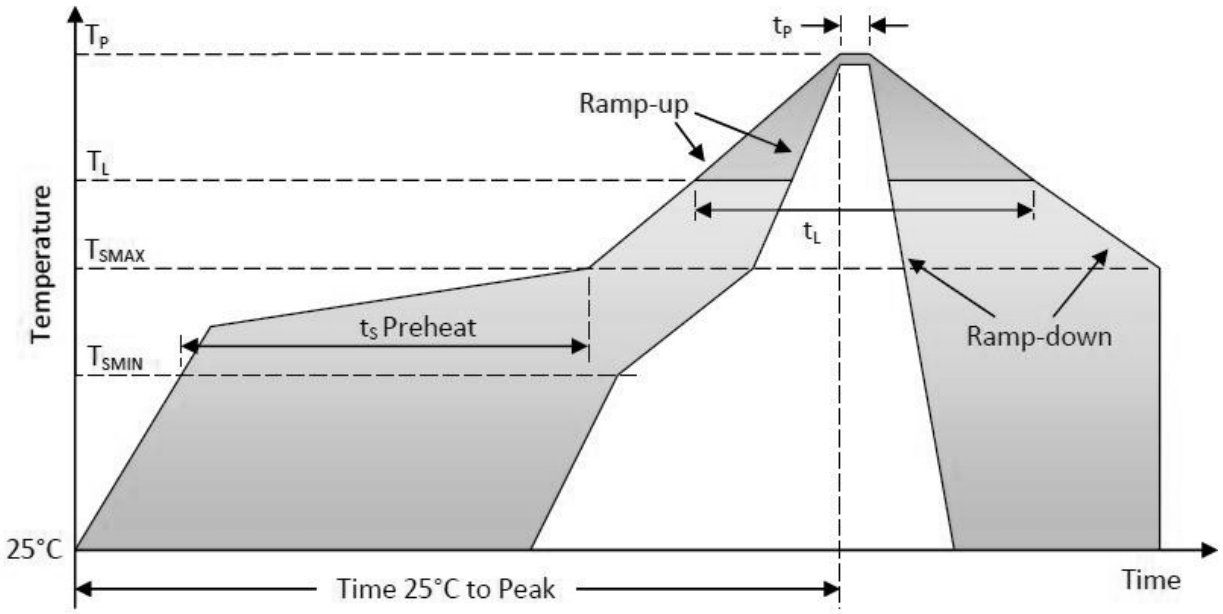

## MEASUREMENT SYSTEM SETUP



## FREQUENCY CHARACTERISTICS




## REFLOW PROFILE



| Parameter | | Reference | Specification |
|---|---|---|---|
| Average Ramp-up Rate | | $T_L$ to $T_P$ | 3°C/sec max |
| Preheat | Minimum Temperature | $T_{SMIN}$ | 150°C |
| | Maximum Temperature | $T_{SMAX}$ | 200°C |
| | Time $T_{SMIN}$ to $T_{SMAX}$ | ts | 60 -180 sec |
| Ramp-up Rate | | $T_{SMAX}$ to $T_L$ | 1.25°C/sec |
| Time Maintained Above Liquidous | | $t_L$ | 60-150 sec |
| Liquidous Temperature | | $T_L$ | 217°C |
| Peak Temperature | | $T_P$ | 260°C |
| Time Within +5°C of Actual Peak Temperature | | $t_P$ | 20 -40 sec |
| Ramp-down Rate | | $T_P$ to $T_{SMAX}$ | 6°C/sec max |
| Time 25°C to Peak Temperature | | | 8 min max |

## STORAGE CONDITION

Storage temperature range: -40 ~ +100°C, and humidity is less than 75%.

Operating temperature range: -40 ~ +100°C.

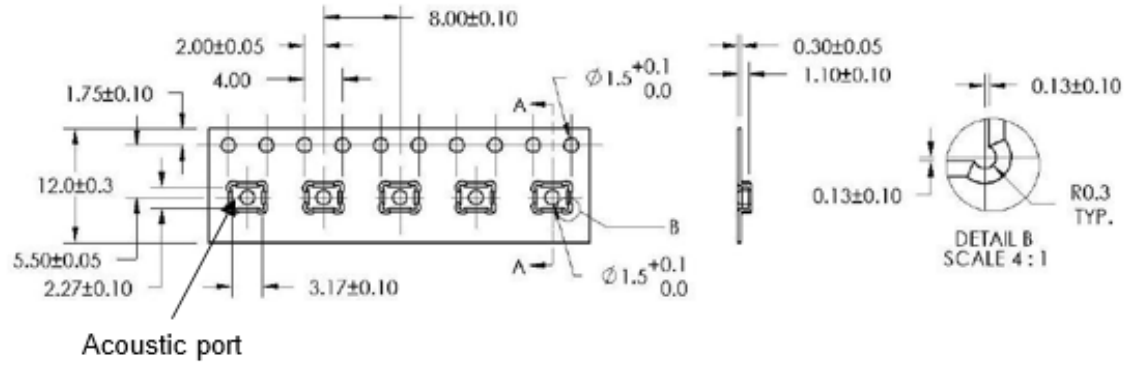
MSL (moisture sensitivity Level) is Class 1

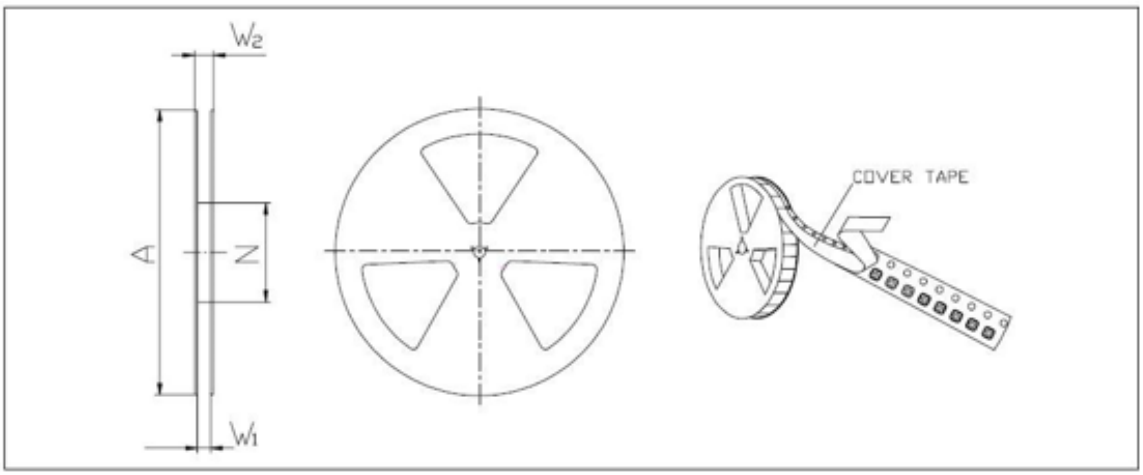
## RELIABILITY SPECIFICATIONS

The microphone should be placed in the room with 23±2 °C, 55±10%R.H. for 2 hours at least before final measurement, unless otherwise specified. After conducting any of the following tests, the sensitivity change of DUT shall be less than ±3dB from its initial value unless otherwise noted, and shall keep its initial operation and appearance.

| NO. | Item | Detail |
|---|---|---|
| 1 | Reflow | Samples for qualification testing require 3 Times 260±5 ℃ reflow solder profiles. 2 hours of setting time is required between each reflow profile test. |
| 2 | Humidity Test | Precondition at +25℃ for 1 hour. Then expose to +85℃ with 85% relative humidity for 1000 hours. |
| 3 | Thermal Shock | Each cycle shall consist of 30 minutes at -40℃, 30 minutes at +125℃ with 5 minutes transition time. Test duration is for 30 cycles, starting from cold to hot temperature. |
| 4 | ESD | According to MIL-STD-883G, Method 3015.7 for Human Body Model.<br>Discharge Position: I/O pins<br>Charge Voltage: ±2000V Discharge Network:100pF & 1500Ω |
| 5 | Vibration Test | Vibrate randomly along three perpendicular directions for 30 minutes in each direction, 4cycles from 20Hz~2000Hz with a peak acceleration 20g. |
| 6 | Mechanical Shock | Subject samples to half sine shock pulses (3000g±15% for 0.3ms) in each direction, totally 18 shocks. |
| 7 | High temperature Storage | Microphone unit must maintain sensitivity after storage at +105ºC for 1000 hours. |
| 8 | Low temperature Storage | Microphone unit must maintain sensitivity after storage at –40ºC for 1000 hours. |
| 9 | Drop Test | The test was repeated in six directions for three times, Dropped from 1.5m height on to a steel surface, total 18 times and inspected for mechanical damage. |

## PACKAGING




| A | W1 | W2 | N | Quantity per Reel |
|---|---|---|---|---|
| Ø 330 | 12.4±1.5 | 18.4 MAX | Ø 100 | 5000 |

Unit: mm

## APPROVAL

| | |
|---|---|
| DRAWN BY | AR, January 13, 2025 |
| APPROVED BY | CP, January 13, 2025 |
| REVISION | A, Initial Release |