

WMM7027ABSNO

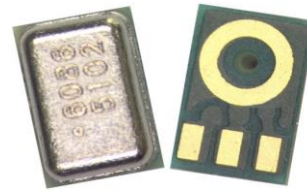
Bottom port analog silicon Microphone

Descriptions

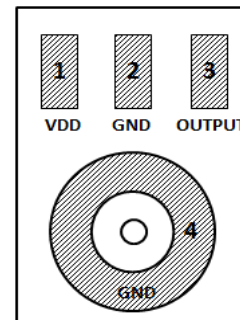
The WMM7027ABSNO is a miniature, high performance, low power, bottom port silicon microphone. The WMM7027ABSNO consists of an acoustic sensor, a low noise input buffer, and an output amplifier. These devices are suitable for portable electronic devices where excellent wideband audio performance and RF immunity are required applications.

The WMM7027ABSNO is manufactured in a compact 2.75mm*1.85mm*0.90mm, 4-pin LGA package.

[Http://www.willsemi.com](http://www.willsemi.com)



Product appearance



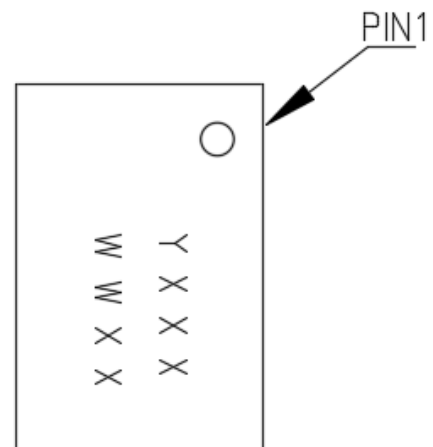
Pin configuration (Bottom view)

Features

- Small package
- Low current
- Flat Frequency Response
- Zero-Height
- Ultra-Stable Performance
- Standard SMD Reflow
- Omnidirectional

Applications

- Cellphones
- Smart phones
- Headset
- TWS
- Digital still cameras
- Portable music recorders



Marking (Top view)

Y = Year code

WW = Week code

XX = Data code

Order information

| Device | Package | Shipping |
|-------------------|-----------------------|----------------|
| WMM7027ABSNO-4/TR | LGA 2.75*1.85*0.90 | 5000/Reel&Tape |

Absolute maximum ratings

| Parameter | Absolute Maximum Rating | Units |
|--------------------------|-------------------------|-------|
| VDD to Ground | -0.5, +5.0 | V |
| OUT to Ground | -0.3, VDD + 0.3 | V |
| Input Current to Any Pin | ±5 | mA |
| Temperature Range | -40 to +100 | °C |

Stresses exceeding these “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only. Functional operation at these or any other conditions beyond those indicated under “Acoustic & Electrical Specifications” is not implied. Exposure beyond those indicated under “Acoustic & Electrical Specifications” for extended periods may affect device reliability.

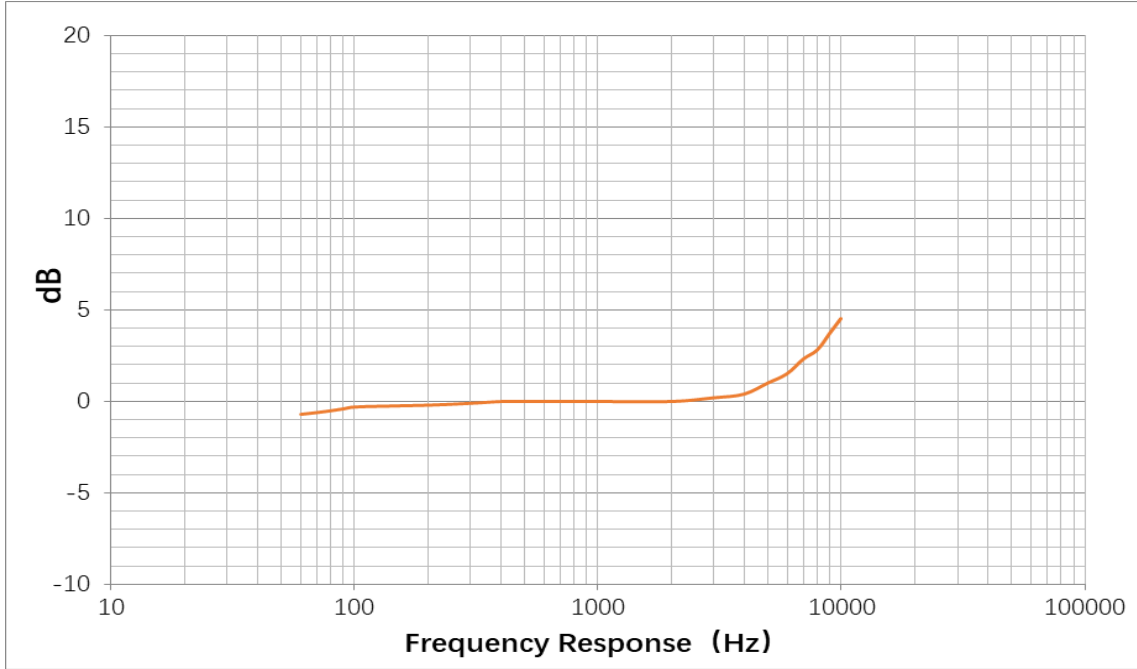
ACOUSTIC & ELECTRICAL SPECIFICATIONS

TEST CONDITIONS: 23 ±2°C, 55±20% R.H., V_{DD}(min) < V_{DD} < V_{DD}(max), no load, unless otherwise indicated

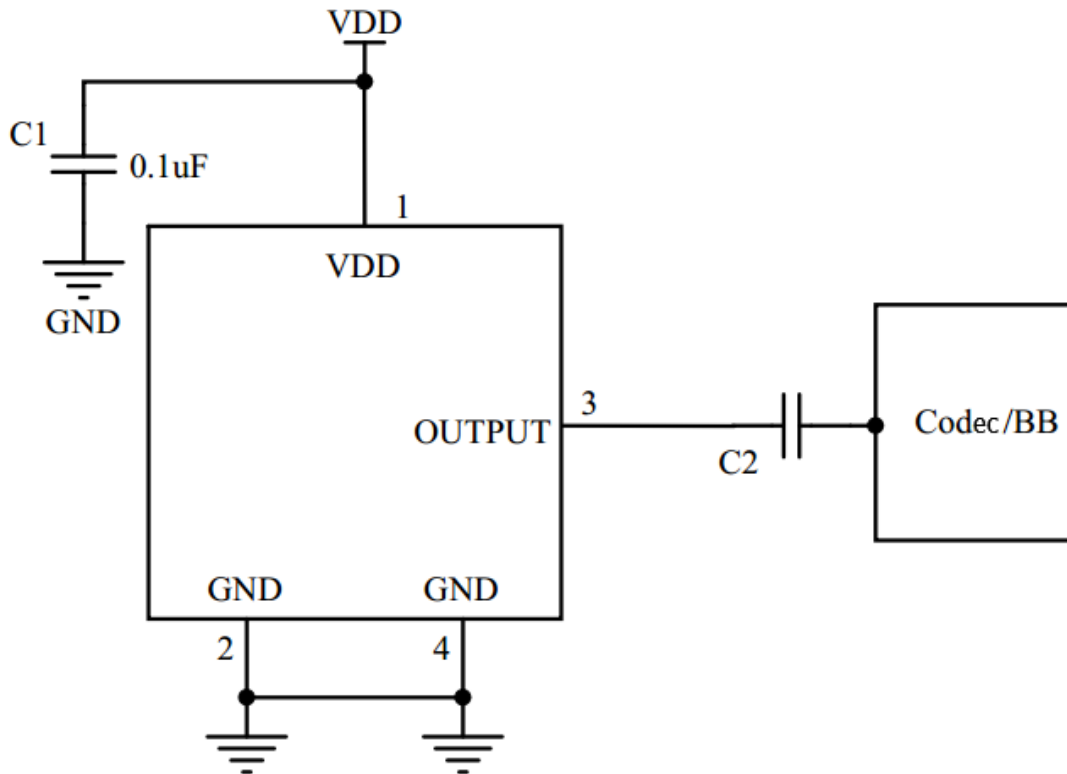
| Parameter | Symbol | Conditions | Min | Typ | Max | Units |
|---------------------------|--------|--|-----------------|------|-----|--------|
| Supply Voltage | VDD | | 1.5 | - | 3.6 | V |
| Supply Current | IDD | | - | 92 | 100 | uA |
| Sensitivity | S | 94dB SPL @1KHz | -41 | -38 | -35 | dBv |
| Signal to Noise Ratio | SNR | 94dB SPL @1KHz, A-weighted | - | 62 | - | dB(A) |
| Total Harmonic Distortion | THD | 94dB SPL @1KHz, S=Typ, VDD=2.2V | - | 0.15 | - | % |
| Acoustic Overload Point | AOP | 3%THD @1KHz, S=Typ, VDD=2.2V | - | 126 | - | dB SPL |
| Power Supply Rejection | PSR | 100mVpp 7/8 duty cycle rectangular wave @217Hz, A-weight, 20KHz BW | - | -101 | - | dBv |
| DC Output | | VDD=2.2V | - | - | 1.1 | V |
| Output impedance | ZOUT | @1KH | - | - | 300 | Ω |
| Directivity | | | Omnidirectional | | | |

Typical specifications are measured at VDD = 2.2V.

Frequency response curve

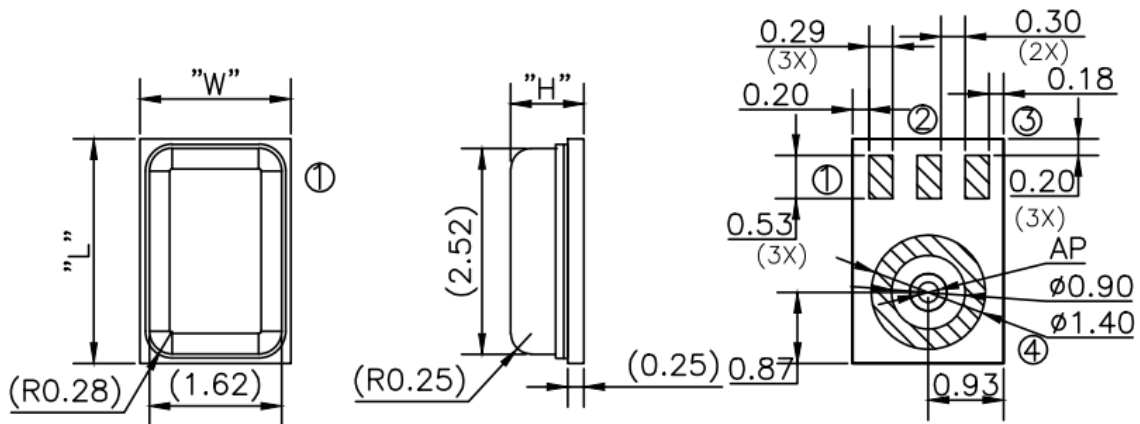


Application informations



Note:

- All GND pins must be connected to ground.
- Capacitors near the microphone should not contain Class 2 dielectrics.

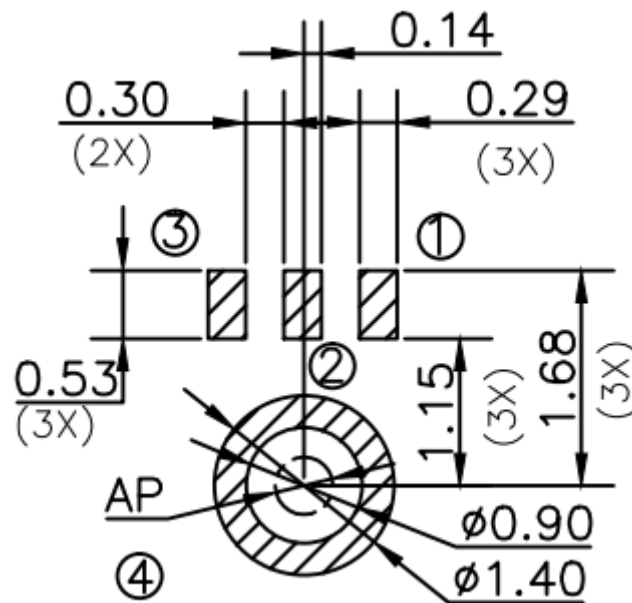
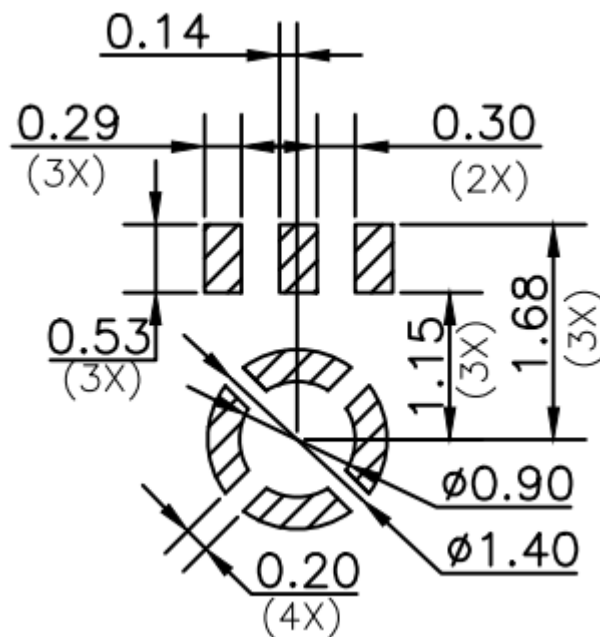
MECHANICAL SPECIFICATIONS


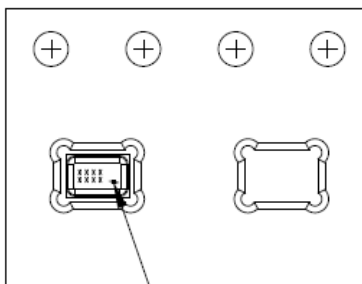
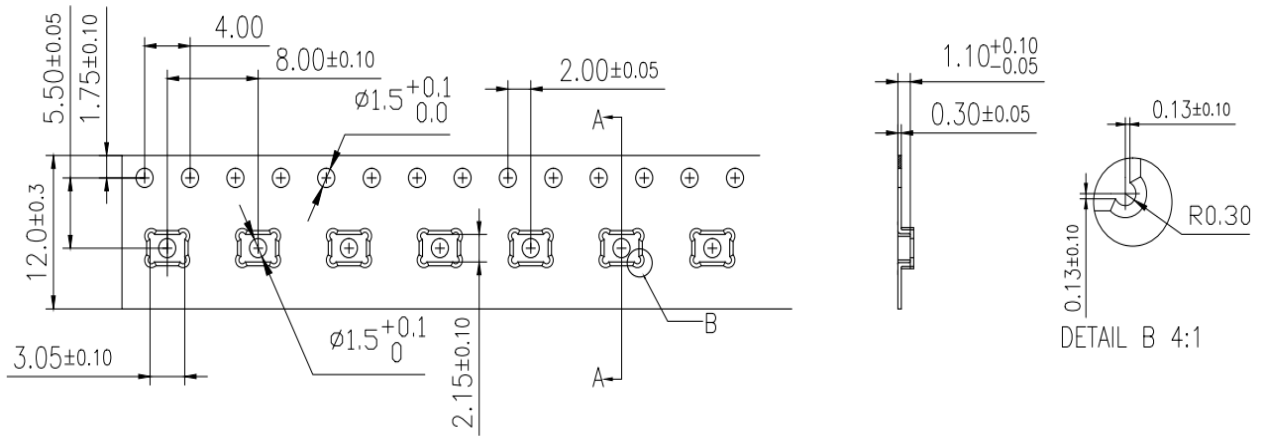
| Item | Dimension | Tolerance |
|--------------------|-----------|-----------|
| Length(L) | 2.75 | ±0.10 |
| Width(W) | 1.85 | ±0.10 |
| Height(H) | 0.90 | ±0.10 |
| Acoustic Port (AP) | Ø0.25 | ±0.05 |

| Pin# | Pin Name | Description |
|------|----------|---------------|
| 1 | VDD | Power Supply |
| 2 | GND | GND |
| 3 | OUTPUT | Output Signal |
| 4 | GND | GND |

Notes:

- Dimensions are in millimeters unless otherwise specified.
- Tolerance is ±0.10mm unless otherwise specified.

EXAMPLE LAND PATTERN

EXAMPLE SOLDER STENCIL PATTERN


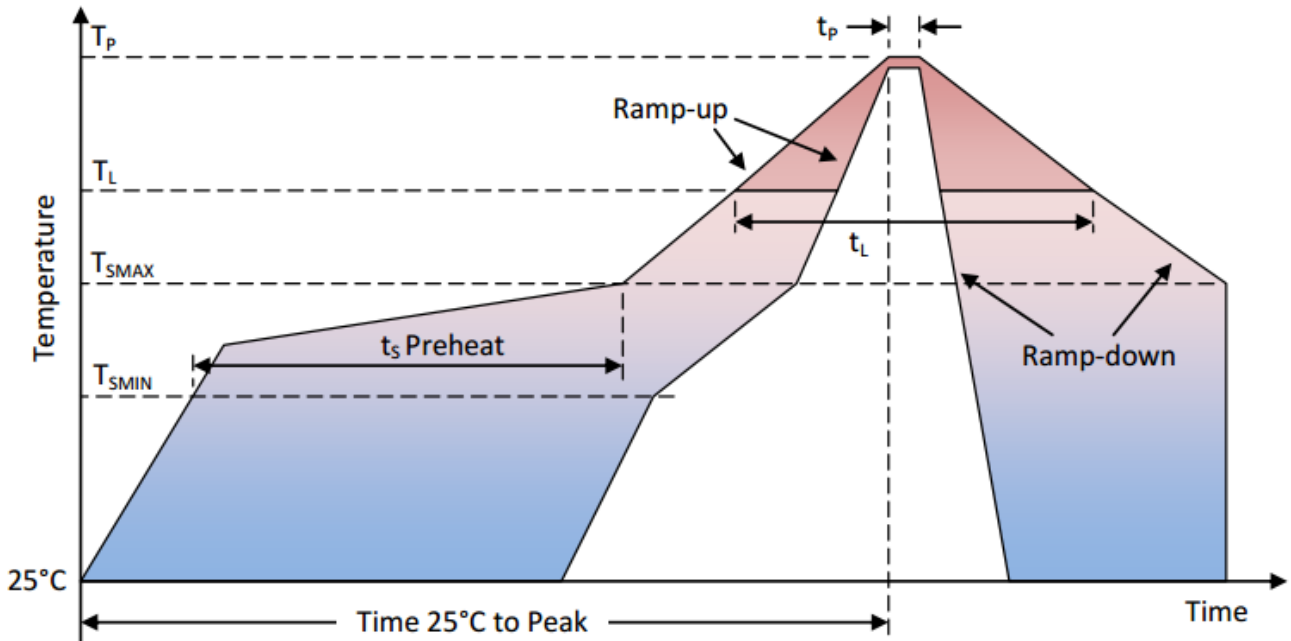
PACKAGING & MARKING DETAIL


Pin 1

| Model Number | Reel Diameter | Quantity Per Reel |
|---------------------|---------------|-------------------|
| WMM7027ABSNO | 13" | 5,000 |

Notes:

- Dimensions are in millimeters unless otherwise specified.
- Vacuum pickup only in the pick area indicated in Mechanical Specifications.
- Tape & reel per EIA-481.
- Labels applied directly to reel and external package.

REFERENCED REFLOW PROFILE


| Profile Feature | Pb-Free |
|--|----------------------------------|
| Average Ramp-up rate (T_{SMAX} to T_P) | 3°C/second max. |
| Preheat <ul style="list-style-type: none"> • Temperature Min (T_{SMIN}) • Temperature Max (T_{SMAX}) • Time (T_{SMIN} to T_{SMAX}) (t_s) | 150°C 200°C 60-180 seconds |
| Time maintained above: <ul style="list-style-type: none"> • Temperature (T_L) • Time (t_L) | 217°C 60-150 seconds |
| Peak Temperature (T_P) | 260°C |
| Time within 5°C of actual Peak Temperature (t_p) | 20-40 seconds |
| Ramp-down rate (T_P to T_{SMAX}) | 6°C/second max |
| Time 25°C to Peak Temperature | 8 minutes max |

Note:

All temperatures refer to topside of the package, measured on the package body surface.

ADDITIONAL NOTES

(A) MSL (moisture sensitivity level) Class 2.

(B) Maximum of 3 reflow cycles is recommended.

(C) In order to minimize device damage:

- Do not board wash or clean after the reflow process.
- Do not brush board with or without solvents after the reflow process.
- Do not directly expose to ultrasonic processing, welding, or cleaning.
- Do not insert any object in port hole of device at any time.
- Do not apply over 30 psi of air pressure into the port hole.
- Do not pull a vacuum over port hole of the microphone.
- Do not apply a vacuum when repacking into sealed bags at a rate faster than 0.5 atm/sec.

RELIABILITY SPECIFICATIONS

| Test | Description |
|--------------------------|--|
| Thermal Shock | 100 cycles air-to-air thermal shock from -40°C to +125°C with 15 minute soaks. |
| High Temperature Storage | 1000 hours at +105°C environment |
| Low Temperature Storage | 1000 hours at -40°C environment |
| Temperature / Humidity | 1000 hours at +85°C /85% R.H. |
| Vibration | 4 cycles of 20 to 2,000 Hz sinusoidal sweep with 20g peak acceleration lasting 12 minutes in X, Y, and Z directions. |
| ESD-HBM | 3 discharges of ± 2 kV direct contact to I/O pins. |
| ESD-LID/GND | 3 discharges of ± 8 kV direct contact to lid while unit is grounded. |
| ESD-MM | 3 discharges of ± 200 V direct contact to I/O pins. |
| Reflow | 5 reflow cycles with peak temperature of +260°C |
| Mechanical Shock | 3 pulses of 10,000g in the X, Y, and Z direction |

Note:

After reliability tests are performed, the sensitivity of the microphones shall not deviate more than 3 dB from its initial value.