

LMV1012-07/LMV1012-15/LMV1012-25

Analog Pre-Amplified IC's for High Gain Microphones

General Description

The LMV1012 is an audio amplifier series for small form factor electret microphones. It is designed to replace the JFET amplifier currently being used. The LMV1012 series is ideally suited for applications requiring high signal integrity in the presence of ambient or RF noise, such as in cellular communications. The LMV1012 audio amplifiers are guaranteed to operate over a 2.2V to 5.0V supply voltage range with fixed gains of 7.8dB, 15.6dB and 23.8dB. The devices offer excellent gain accuracy and temperature stability as compared to a JFET microphone.

The LMV1012 series enables a two-pin electret microphone solution, which provides direct pin-to-pin compatibility with the existing JFET market.

The devices are offered in two space saving 4-bump micro SMD™ packages. The LMV1012TP-07, LMV1012TP-15, and LMV1012TP-25 are well suited for canister packages 1.8mm and thicker. The LMV1012UP-15 is ideal for canisters 1.3mm and thicker. These miniature packages are designed for electret condenser microphones (ECM) form factor.

Features

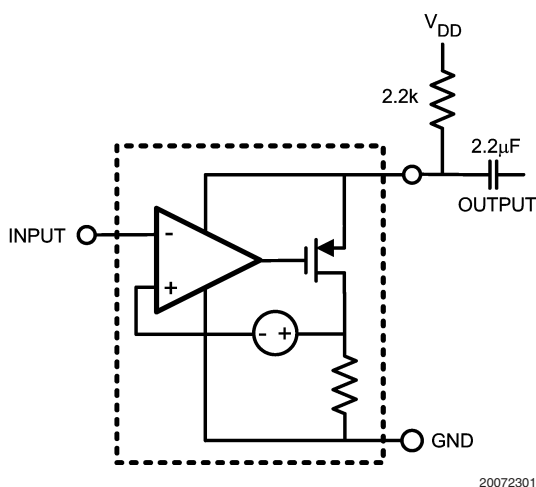
(Typical LMV1012-15, 2.2V supply, $R_L = 2.2k\Omega$, $C = 2.2\mu F$, $V_{IN} = 18mV_{PP}$, unless otherwise specified)

■ Supply voltage	2V - 5V
■ Supply current	<180 μA
■ Signal to noise ratio (A-weighted)	60dB
■ Output voltage noise (A-weighted)	-89dBV
■ Total Harmonic Distortion	0.09%
■ Voltage gain	
— LMV1012-07	7.8dB
— LMV1012-15	15.6dB
— LMV1012-25	23.8dB
■ Temperature range	-40°C to 85°C
■ Offered in 4-bump micro SMD packages:	
— 0.93 x 1.0 x 0.4mm	
— 0.93 x 1.0 x 0.5mm	

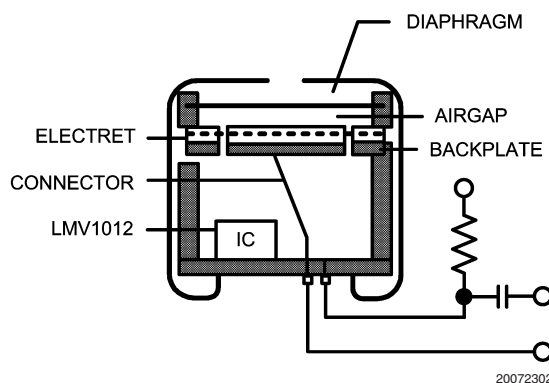
Applications

- Cellular phones
- Headsets
- Mobile communications
- Automotive accessories
- PDAs
- Accessory microphone products

Schematic Diagram

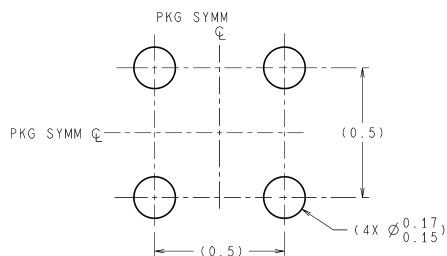


Built-In Gain Electret Microphone



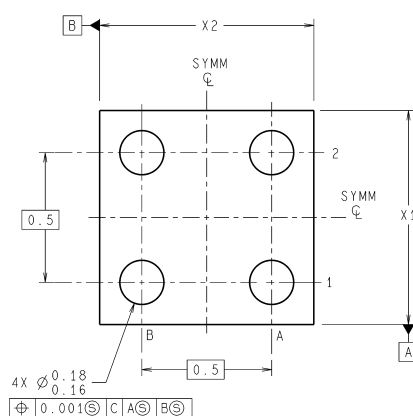
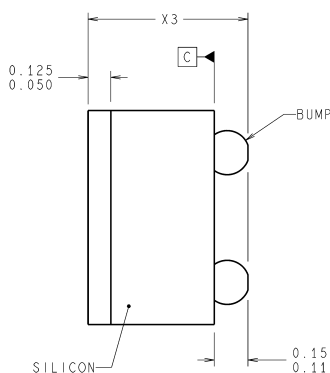
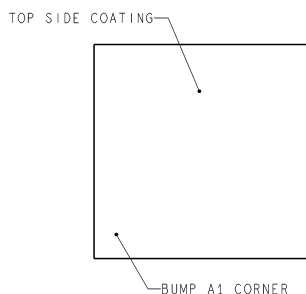
Physical Dimensions inches (millimeters)

unless otherwise noted



DIMENSIONS ARE IN MILLIMETERS

LAND PATTERN RECOMMENDATION



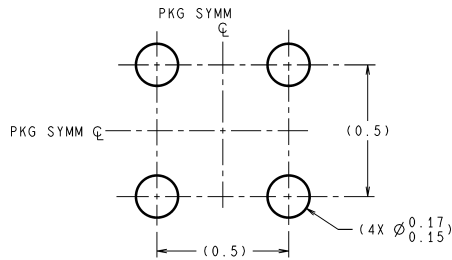
TPA04XXX (Rev B)

NOTE: UNLESS OTHERWISE SPECIFIED.

1. EPOXY COATING.
2. 63Sn/37Pb EUTECTIC BUMP.
3. RECOMMEND NON-SOLDER MASK DEFINED LANDING PAD.
4. PIN A1 IS ESTABLISHED BY LOWER LEFT CORNER WITH RESPECT TO TEXT ORIENTATION PINS ARE NUMBERED COUNTERCLOCKWISE.
5. XXX IN DRAWING NUMBER REPRESENTS PACKAGE SIZE VARIATION WHERE X1 IS PACKAGE WIDTH, X2 IS PACKAGE LENGTH AND X3 IS PACKAGE HEIGHT.
6. REFERENCE JEDEC REGISTRATION MO-211. VARIATION BC.

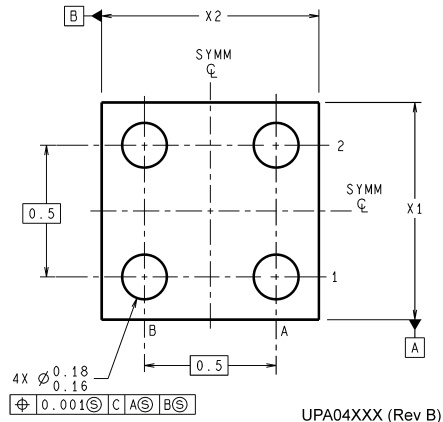
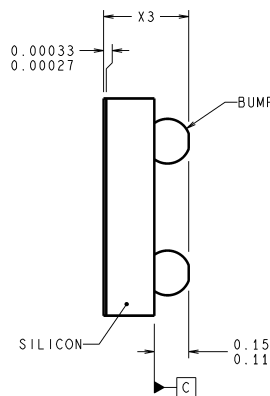
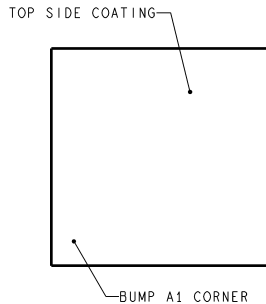
4-Bump Thin micro SMD
NS Package Number TPA04GKA
X₁ = 0.93mm X₂ = 1.006mm X₃ = 0.500mm

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



DIMENSIONS ARE IN MILLIMETERS

LAND PATTERN RECOMMENDATION



UPA04XXX (Rev B)

NOTE: UNLESS OTHERWISE SPECIFIED.

1. TITANIUM COATING.
2. FOR SOLDER BUMP COMPOSITION, SEE "SOLDER INFORMATION" IN THE PACKAGING SECTION OF THE NATIONAL SEMICONDUCTOR WEB PAGE (www.national.com).
3. RECOMMEND NON-SOLDER MASK DEFINED LANDING PAD.
4. PIN A1 IS ESTABLISHED BY LOWER LEFT CORNER WITH RESPECT TO TEXT ORIENTATION.
5. XXX IN DRAWING NUMBER REPRESENTS PACKAGE SIZE VARIATION WHERE X1 IS PACKAGE WIDTH, X2 IS PACKAGE LENGTH AND X3 IS PACKAGE HEIGHT.
6. REFERENCE JEDEC REGISTRATION MO-211. VARIATION CA.

4-Bump ULTRA-Thin micro SMD
NS Package Number UPA04GKA
X₁ = 0.93mm X₂ = 1.006mm X₃ = 0.400mm

LIFE SUPPORT POLICY

NATIONAL'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF THE PRESIDENT AND GENERAL COUNSEL OF NATIONAL SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.



National Semiconductor
Americas Customer
Support Center
Email: new.feedback@nsc.com
Tel: 1-800-272-9959

www.national.com

National Semiconductor
Europe Customer Support Center
Fax: +49 (0) 180-530 85 86
Email: europe.support@nsc.com
Deutsch Tel: +49 (0) 69 9508 6208
English Tel: +44 (0) 870 24 0 2171
Français Tel: +33 (0) 1 41 91 8790

National Semiconductor
Asia Pacific Customer
Support Center
Email: ap.support@nsc.com

National Semiconductor
Japan Customer Support Center
Fax: 81-3-5639-7507
Email: jpn.feedback@nsc.com
Tel: 81-3-5639-7560