

# PRODUCT BRIEF Processor for Dual Microphone Adaptive Noise Cancelling With Wind Noise Alert

Check for Samples: [LMV1051](#)

## FEATURES

- **Superior Noise Cancellation**
  - Dual Mic Technology
  - Active Directional Pattern
  - Up to 30dB Peak Noise Rejection of Stationary and Non-Stationary Noise Sources
  - No Distortion of Desired Signal
  - Flat Frequency Response
- **Wind Noise Alert and Protection**
  - Automatically Reduces Wind Noise by  $\approx 20$  dB (vs. Directional Mic)
  - Wind Noise Alert can be Used to Further Reduce Impact of Wind on Desired Signal
- **Ultra-Low Power Consumption**
  - 210  $\mu$ A (Typical) Including Mic Bias
  - Battery-Free Operation in Wired Headsets
- **Compatible with Standard ECM Interfaces**
  - 2-Wire or 3-Wire Interface
  - Powered from Mic Bias Supply
- **Complete Signal Processing Solution**
  - No Software Required
  - Enables a Fully Integrated Mic Module
- **Zero-Latency Signal Processing**
- **Noise Cancelling or Omni-Directional Output**
- **Better EMI Noise Rejection than ECM**
- **Supports Telephony Bandwidth**
- **Small Size 3 x 3 mm**

## APPLICATIONS

- **Wired Headset**
- **Webcams**
- **Cellular or Cordless Handsets**

## DESCRIPTION

The LMV1051-LLP is an ultra-low power signal processor that processes the signals from 2 ECM or MEMS microphones to create an adaptive beam forming noise reduction system.

The LMV1051-LLP processor is intended to be integrated with microphones (ECMs or MEMS). By using a proprietary TI algorithm, the processor extracts a clean intelligible signal from noisy environments through the use of an adaptive directional pattern. The resulting solution can reduce noise by up to 30 dB, resulting in a significant improvement to the signal-to-noise ratio (SNR). The signal processing does not introduce artifacts into the talker's voice. The desired signal is unmodified, which improves intelligibility and speech recognition accuracy.

The LMV1051-LLP is designed to replace a standard ECM using a two-wire or three-wire interface. The entire module, including the processing IC, is powered from the mic bias supply. The resulting system uses less power than an individual ECM giving the end-product designer the ability to upgrade current designs without modifying the existing circuit. The result is an easy-to-use, low cost microphone alternative, providing superior noise reduction for end users.

**Notice: This document is not a full datasheet. For more information regarding this product or to order samples please contact your local TI sales office or visit <http://www.ti.com/support/dir.html>**



These devices have limited built-in ESD protection. The leads should be shorted together or the device placed in conductive foam during storage or handling to prevent electrostatic damage to the MOS gates.



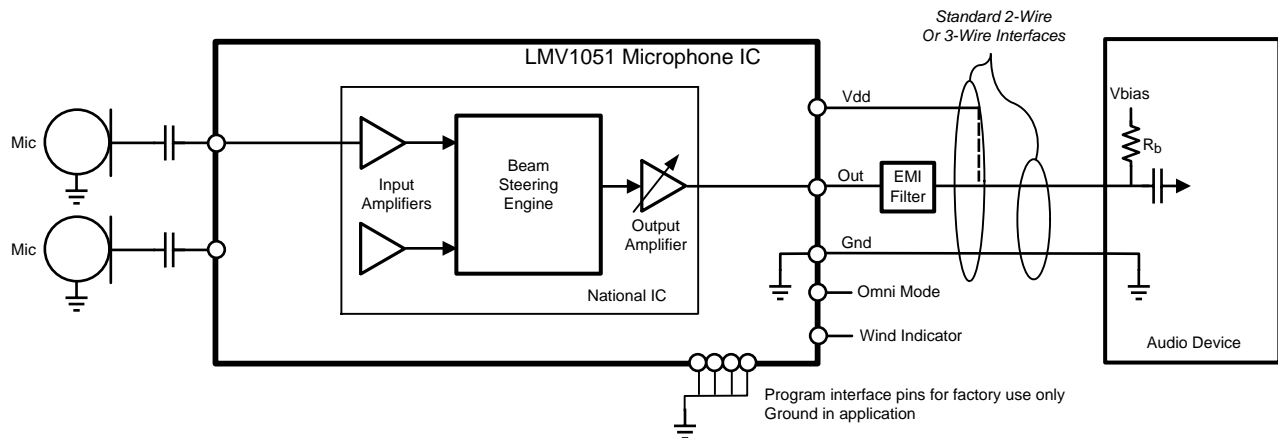
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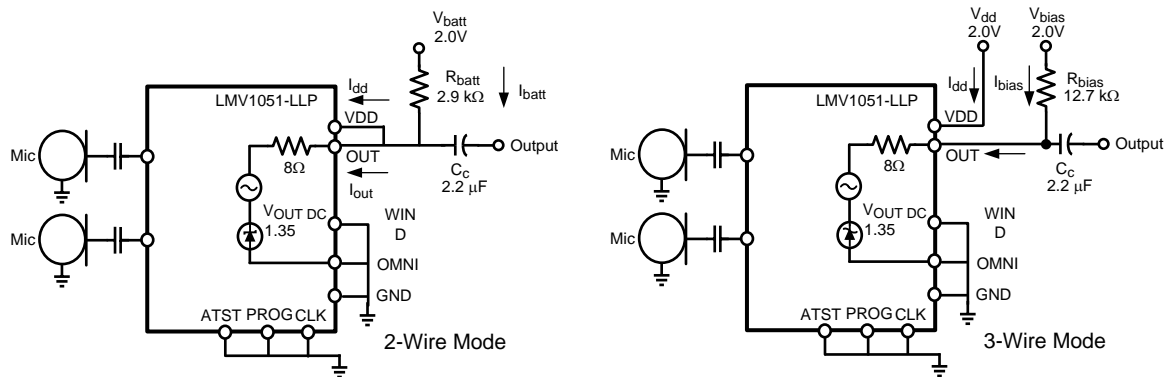
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## Block Diagram



## Typical Applications Circuit



## REVISION HISTORY

Changes from Original (May 2013) to Revision A	Page
<ul style="list-style-type: none"><li>Changed layout of National Data Sheet to TI format .....</li></ul>	<a href="#">2</a>

**PACKAGING INFORMATION**

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish	MSL Peak Temp (3)	Op Temp (°C)	Top-Side Markings (4)	Samples
LMV1051SDX-BA/NOPB	NRND	WSON	DSC	10	4500	Green (RoHS & no Sb/Br)	Call TI	Level-1-260C-UNLIM	0 to 60	L1051	

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

**TBD:** The Pb-Free/Green conversion plan has not been defined.

**Pb-Free (RoHS):** TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

**Pb-Free (RoHS Exempt):** This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

**Green (RoHS & no Sb/Br):** TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

(3) MSL, Peak Temp. -- The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) Multiple Top-Side Markings will be inside parentheses. Only one Top-Side Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Top-Side Marking for that device.

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**TAPE AND REEL INFORMATION**


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
LMV1051SDX-BA/NOPB	WSO	DSC	10	4500	330.0	12.4	3.3	3.3	1.0	8.0	12.0	Q1

## TAPE AND REEL BOX DIMENSIONS

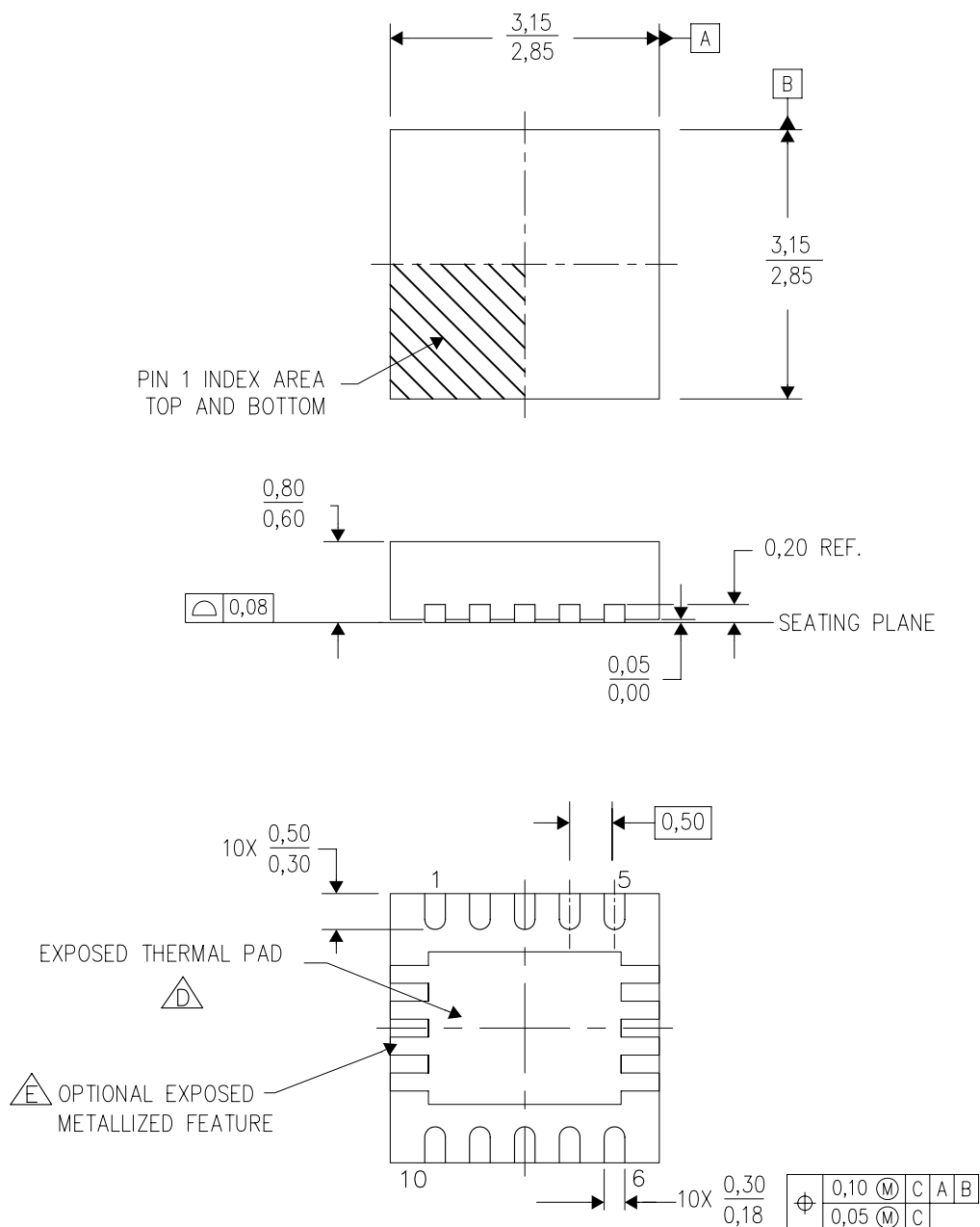


\*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
LMV1051SDX-BA/NOPB	WS0N	DSC	10	4500	367.0	367.0	35.0

DSC (S-PWSON-N10)

PLASTIC SMALL OUTLINE NO-LEAD



4207383/E 01/11

- NOTES: A. All linear dimensions are in millimeters. Dimensioning and tolerancing per ASME Y14.5M-1994.  
 B. This drawing is subject to change without notice.  
 C. Small Outline No-Lead (SON) package configuration.  
 D. The package thermal pad must be soldered to the board for thermal and mechanical performance.  
 E. See the Product Data Sheet for details regarding the exposed thermal pad features and dimensions.

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