



# XR-1075

BBE® Sound Enhancement  
Audio Processor

## FEATURES

- Recreate Concert Sound Without Initial Encoding
- Transducer Independent
- No Extra Speakers Needed
- Matched Circuits for Stereo Applications
- No Undesirable Audio Artifacts
- Fixed or Variable Definition and Bass Boost Control

## BENEFITS

- Smaller Package
- Fewer External Components
- Uses Less Space on PC Boards

## APPLICATIONS

- Stereo Systems for the Home
- Portable Stereo Systems (i.e. Boomboxes)
- Sound Systems for Automobiles
- Sound for Radios and Televisions
- Powered Speakers or Sound Cards for Personal Computers
- Karaoke Machines
- Electronics Musical Instruments

## GENERAL DESCRIPTION

BBE® sound enhancement provides more realism to music regardless of its source. It is designed for use in a variety of electronic sound systems. A single pass technique is used that does not require initial encoding. BBE® sound enhancement does not require additional speakers and is compatible with full-sized and

headphone transducers. The XR-1075 incorporates BBE® sound enhancement in a dual-channel audio integrated circuit.

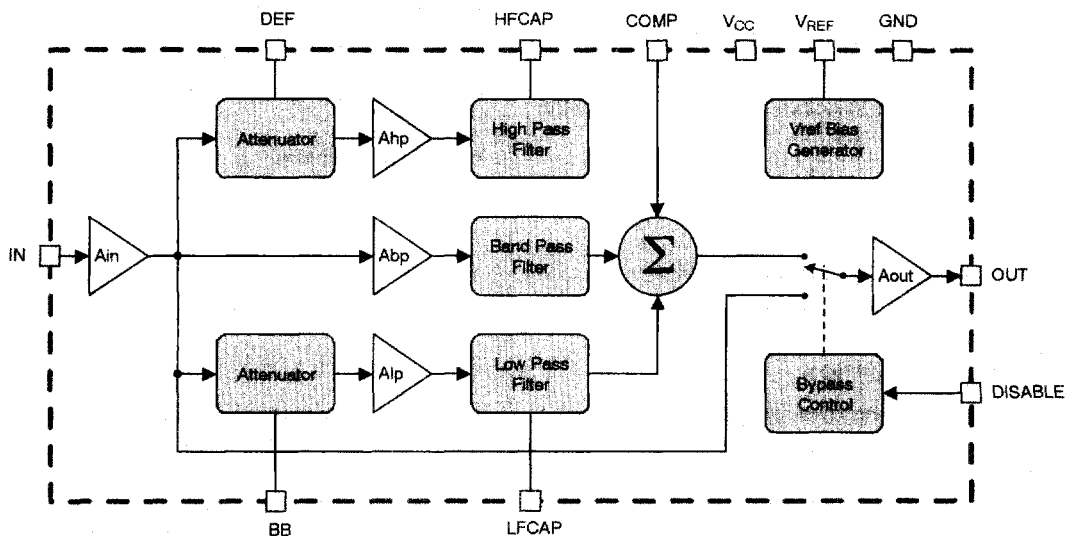
The XR-1075 is fabricated using bipolar technology for low noise, low distortion and low power consumption, and is available in 18-lead plastic DIP.

## ORDERING INFORMATION

Part No.	Package	Operating Temperature Range
XR-1075CP	18-LEAD 300 MIL PDIP	-30°C to 75°C

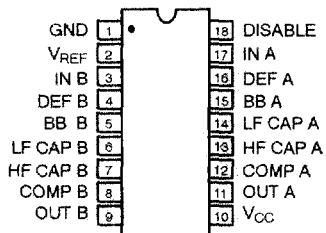


## BLOCK DIAGRAM




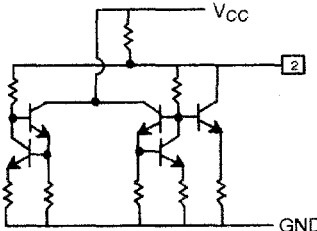
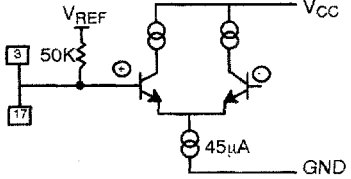
**Figure 1. Block Diagram  
One Channel of XR-1075**

**PIN CONFIGURATION**



**18-Lead PDIP (0.300")**

**PIN DESCRIPTION**

PIN #	SYMBOL	I/O	EQUIVALENT CIRCUIT	DESCRIPTION
1	DGN	I		Power Ground
2	V <sub>REF</sub>	O		Voltage Reference of Circuitry
3 17	IN B IN A	I I		Left, Right Channel Inputs

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PIN #	SYMBOL	I/O	EQUIVALENT CIRCUIT	DESCRIPTION
4 16	DEF B DEF A	O O		Left, Right Channel Connection Point for Resistivity Pot to Control High Pass Gain
5 15	BB B BB A	O O		Left, Right Channel Connection Point for Resistivity Pot to Control Low Pass Gain
6 14	LFCAP B LFCAP A	I I		Left, Right Channel Connection Point for Unity Gain Low Pass Filter
7 13	HFCAP B HFCAP A	I I		Left, Right Channel Connection Point for Unity Gain High Pass Filter

PIN #	SYMBOL	I/O	EQUIVALENT CIRCUIT	DESCRIPTION
8 12	COMP B COMP A	I I		Left, Right Channel Compensation Point for Summing Amplifier
9 11	OUT B OUT A	O O		Left, Right Channel Output of Summing Amplifier
10	V <sub>CC</sub>	I		Power Supply Voltage
18	DISABLE	I		Disable Input Pin. Controls Both Channels. BBE On: Short Disable Input Pin to Ground. BBE Bypass: Leave Disable Input Pin Open.

## DC ELECTRICAL CHARACTERISTICS

Test Conditions:  $V_{CC} = 12VDC$ ,  $T_A = +25^{\circ}C$  unless otherwise specified.

Symbol	Parameter	Min.	Typ.	Max.	Unit	Conditions
<b>Supply and Reference</b>						
$V_{CC}$	Supply Voltage	6.0		24.0	V	
$I_{CC}$	Supply Current			15.0	mA	
$V_{REF}$	Voltage Reference	5.4		6.2	V	No load
<b>Filter Section <math>V_{in} = 1 V_{rms}</math></b>						
ALBmin	Loband Minimum Gain	0.0		2.5	dB	$f = 40Hz$
ALBmax	Loband Maximum Gain	9.0		13.0	dB	$f = 40Hz$
AMBmin	Midband Minimum Gain	0.5		2.5	dB	$f = 700Hz$
AMBmax	Midband Maximum Gain	-2.5		-0.5	dB	$f = 700Hz$
AHBmin	Hiband Minimum Gain	-4.2		-1.2	dB	$f = 20kHz$
AHBmax	Hiband Maximum Gain	9.0		13.0	dB	$f = 20kHz$
AOFF	Gain of BBE Off	-1.0		1.0	dB	$f = 40 Hz, 700Hz$ and $20kHz$
<b>AC Characteristics</b>						
NOISE On	Noise in BBE On Mode		-86		dBA	Input is grounded
NOISE Off	Noise in BBE Off Mode		-95		dBA	Input is grounded
THD BBE On	Total Harmonic Distortion in BBE On Mode		0.05		%	$V_{in} = 245m V_{rms}$ @ $f = 1kHz$
THD BBE Off	Total Harmonic Distortion in BBE Off Mode		0.02		%	$V_{in} = 245m V_{rms}$ @ $f = 1kHz$
CS	Channel Separation		-63		dB	$V_{in} = 1 V_{rms}$ , $f = 1kHz$

Specifications are subject to change without notice

## ABSOLUTE MAXIMUM RATINGS

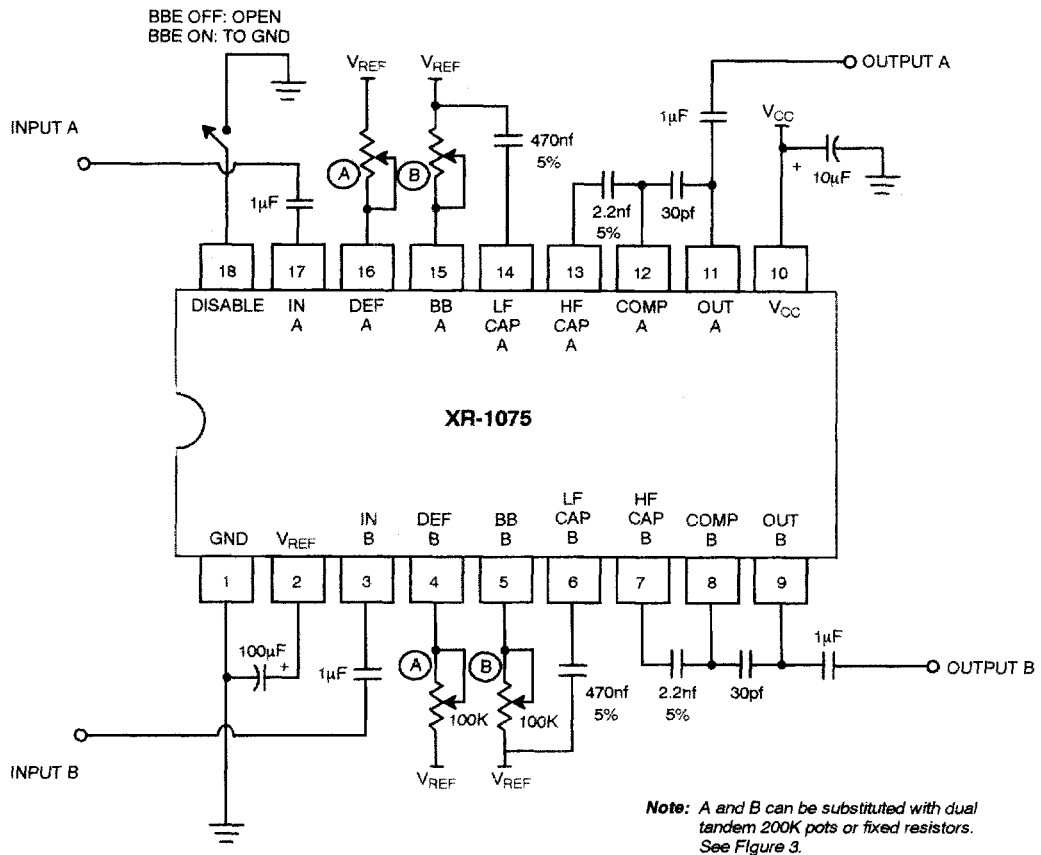
Power Supply Voltage ..... 26 Vdc  
 Package Dissipation (limitation) @  $25^{\circ}C$  .....  
     18-Pin PDIP Package ..... 1000mW  
     Derate above  $25^{\circ}C$  ..... 13mW/C

Storage Temperature .....  $-65^{\circ}C$  to  $+150^{\circ}C$   
 Maximum Input Voltage .....  $V_{CC} + 0.3V$   
 Minimum Input Voltage ..... GND - 0.3V

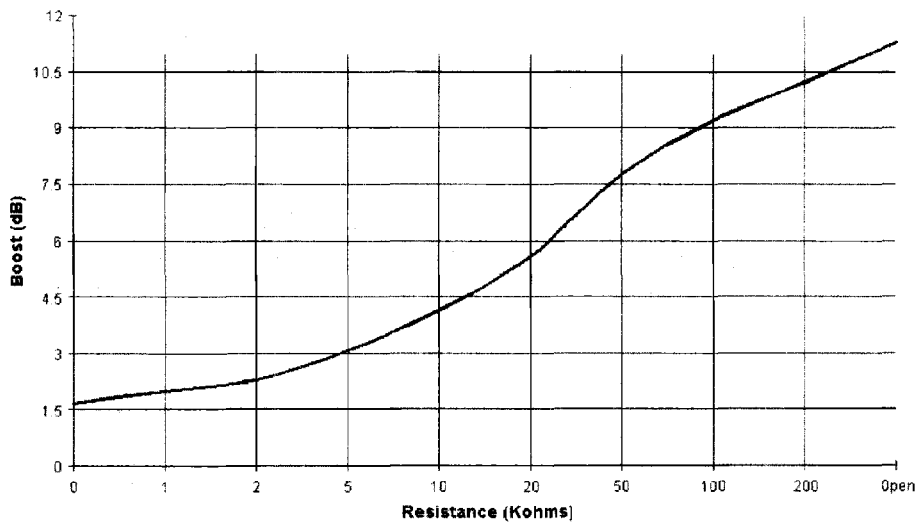
## LICENSE AGREEMENT

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(telephone 714-897-6766) is required before the XR-1075 can be purchased from EXAR.



**Figure 2. XR-1075 Single Supply Application Schematic**



**Figure 3. XR-1075 Definition and Bass Boost vs. External Resistance**