



High Performance and Low Power Mono Audio CODEC

■ Description

The MB66A8 is a high-performance, low-power mono audio CODEC optimized for use in portable applications. The device integrates support for a fully differential analog microphone input and mono line output driver.

The mono 24-bit multibit sigma delta ADC with digital decimation filters has programmable gain with automatic gain control (AGC). Digital audio output word length from 16 to 24 bits.



1. Electrical Characteristics

1.1 Absolute Maximum Ratings

Absolute maximum ratings are those values beyond which damage to the device may occur. Table 5-1 specifies the absolute maximum ratings over the operating junction temperature range of commercial and extended temperature devices.



CAUTION

beyond those listed under Table 5-1 may affect reliability or cause permanent damage to the device. These are stress ratings only. Functional operation of the device at these or any other conditions beyond those indicated under Section 5.2, *Recommended Operating Conditions*, is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

Table 5- 1. Absolute Maximum Ratings

Symbol	Parameter	Min	Max	Unit	
VCC	Digital power for digital I/O buffer (I2S&TWI) and supply for inner MLDO&DLDO&ALDO.	-0.3	3.63	V	
VDDC	Digital power for Audio CODEC, it can be generated by inner DLDO.	-0.3	1.98	V	
AVCC	Analog power for Audio CODEC, it can be generated by inner ALDO.	-0.3	1.98	V	
MBIAS	Analog power for microphone bias, it can be generated by inner MLDO.	-0.3	3.63	V	
T _A	Operating Ambient Temperature.	-40	85		
V _{ESD}	Electrostatic Discharge	Human Body Model(HBM) ⁽¹⁾	TBD	TBD	V
		Charged Device Model(CDM) ⁽²⁾	TBD	TBD	V
I _{Latch-up}	Latch-up I-test performance current-pulse injection on each IO pin ⁽³⁾		TB	D	
	Latch-up over-voltage performance voltage injection on each IO pin ⁽⁴⁾		TB	D	

(1). Test method: JEDEC JS-001-2012(Class-3A). JEDEC publication JEP155 states that 500V HBM allows safe manufacturing with a standard ESD control process.

(2). Test method: JESD22-C101F(Class-C1). JEDEC publication JEP157 states that 250V CDM allows safe manufacturing with a standard ESD control process.

(3). Current test performance: Pins stressed per JEDEC JESD78D(Class I, Level A) and passed with I/O pin injection current as defined in JEDEC.

(4). Over voltage performance: Supplies stressed per JEDEC JESD78D(Class I, Level A) and passed voltage injection as defined in JEDEC.

2. Block Diagram

Figure 2-1 shows the block diagram of MB66A8CODEC.

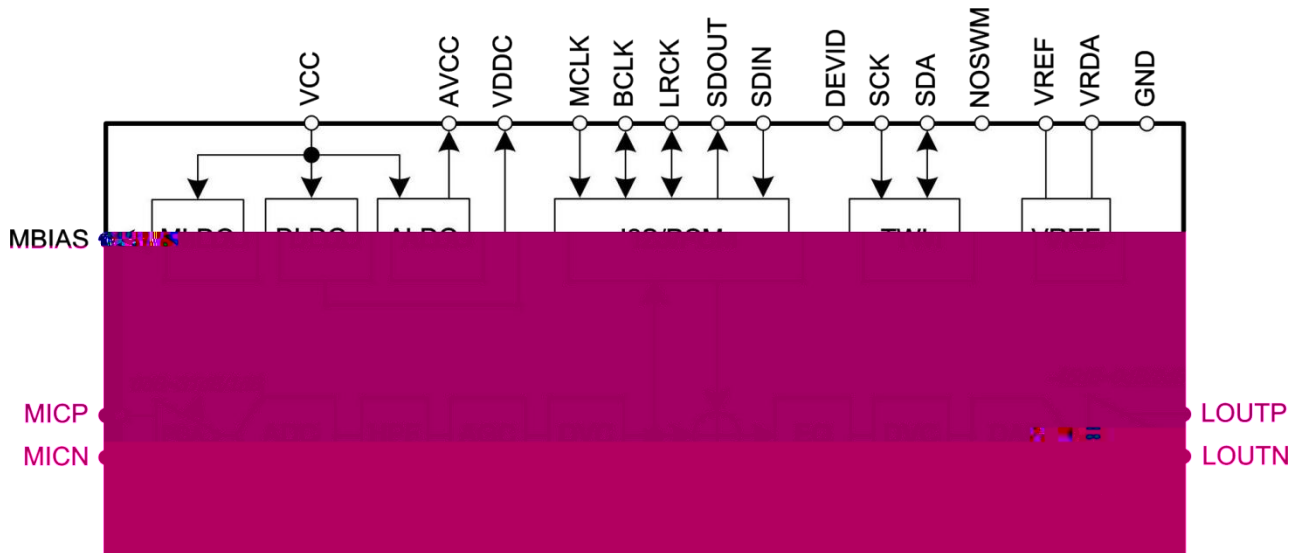
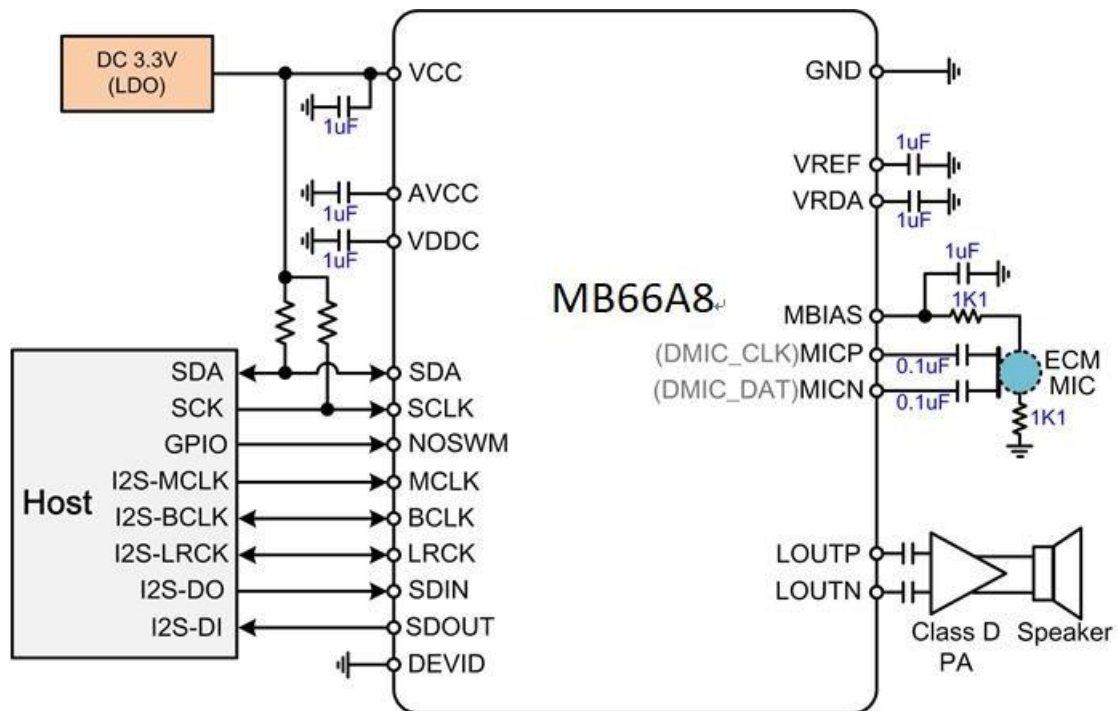


Figure 2-1 MB66A8 Block Diagram

3. Typical Application



4. Pin Assignment

Figure 3-1 shows the pin assignment of MB66A8 CODEC.

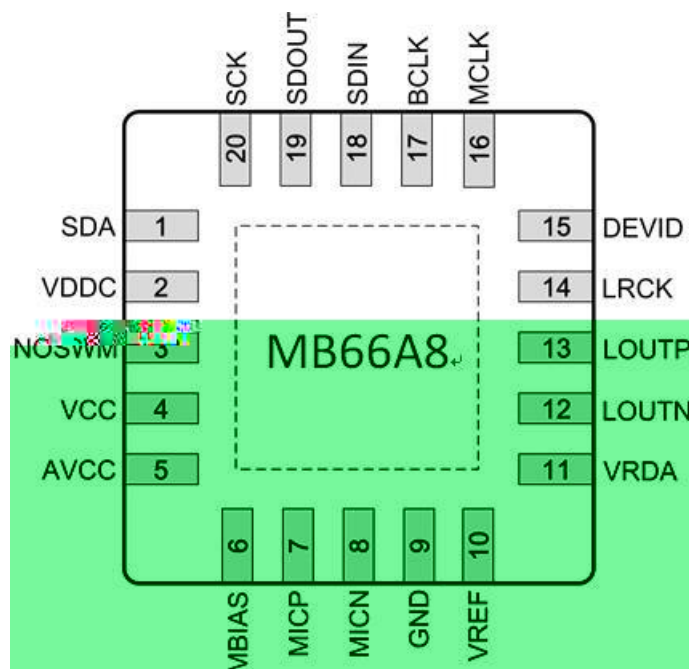


Figure 3-1 Pin Assignment

Table 3-1 Pin Function Descriptions

Pin Number	Signal Name	Type	Description
Digital IO Pins (9 pins)			
20	SCK	I	TWI interface serial clock input(Open-drain).
1	SDA	I/O	TWI interface serial data(Open-drain).
3	NOSWM	I	No software driver mode on.
14	LRCK	I/O	I2S interface synchronous clock.
15	DEVID	I	TWI interface device ID control.
16	MCLK	I	I2S interface master input clock.
17	BCLK	I/O	I2S interface serial bit clock.
18	SDIN	I	I2S interface serial data input.
19	SDOUT	O	I2S interface serial data output.
Analog IO Pins (4 pins)			
7	MICP	I	Positive differential input for MIC.
8	MICN	I	Negative differential input for MIC.
12	LOUTN	O	Differential negative output to line-out amplifier.
13	LOUTP	O	Differential positive output to line-out amplifier.

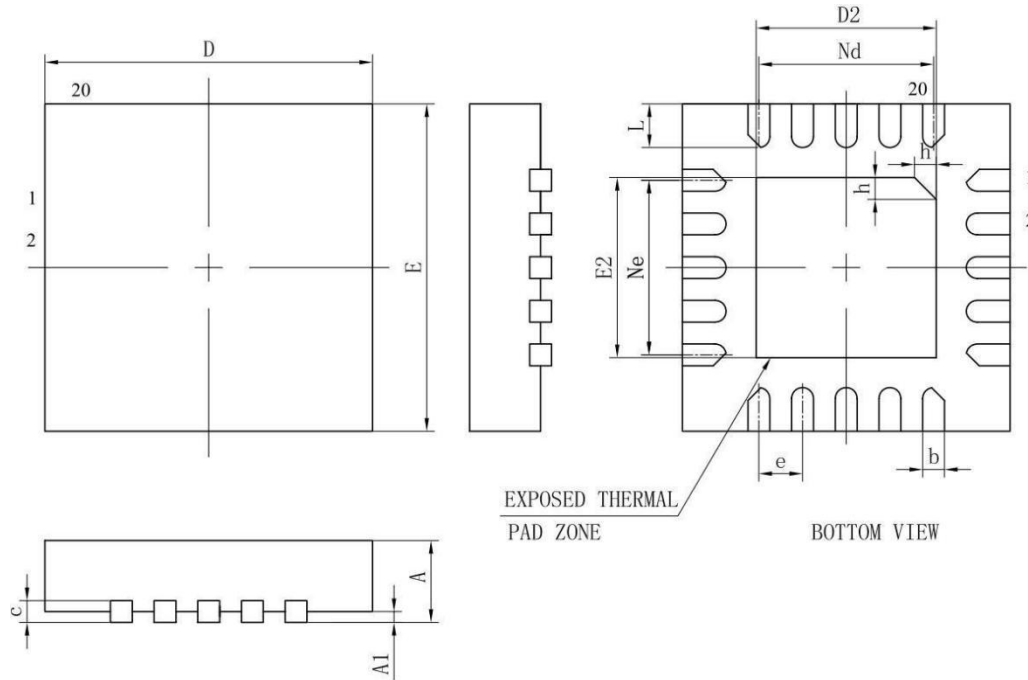


Filter/Reference Pins (2 pins)			
10	VREF	O	Internal reference voltage for ADC and DAC.
11	VRDA	O	Internal reference voltage for DAC.
Power/Ground Pins (6 pins)			
2	VDDC	P	The DLDO Power output 1.2V for digital part.
4	VCC	P	The MDLO&DLDO&ALDO Power input, also supply for digital IO.
5	AVCC	P	The ALDO Power output 1.8V for analog part.
6	MBIAS	P	The MLDO output for microphone.
9	GND	G	Chip ground.
21	GND	G	EPAD.

Note: O for output, I for input, I/O for input/output, P for power, and G for ground.

5. Package Dimension

Figure 4-1 shows the package dimension of MB66A8 CODEC.



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.15	0.20	0.25
c	0.18	0.20	0.25
D	2.90	3.00	3.10
D2	1.55	1.65	1.75
e	0.40BSC		
E	1.60BSC		
E2	1.60BSC		
L	1.60BSC		
h	0.20	0.25	0.30

Figure 4-1 Package Dimension