

◇Structure	Silicon monolithic integrated circuit
◇Classification	Stereo audio interface with CODEC
◇Product	BU7807—00KV
◇Features	•Microphone amplifier with stereo ALC functions + 16-bit $\Delta \Sigma$ CODEC + Stereo line amplifier + Stereo headphone amplifier + BTL speaker amplifier •Sound synthesis Function

◇Absolute Maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	Remarks
Power Supply voltage	VDDL	-0.3~4.5	V	
	VDDH	-0.3~7.0	V	
Terminal voltage	VIN	-0.3~VDDL/VDDH+0.3	V	
Storage temperature range	TSTG	-50~125	°C	
Operating temperature range	TOPE	-10~85	°C	
Permissible dissipation * 1	PD	900	mW	

* 1 : For installed glass epoxy board (copper plate:35 μ m in thickness, 70x70 mm, t=0.8 mm)

over Ta=25°C, loss decreases at a rate of 9.0mW each time the temperature rises 1°C.

◇Operating conditions

Parameter	Symbol	Limits			Unit	Condition
		MIN.	TYP.	MAX.		
Operating supply	VDDL	2.7	—	3.3	V	MVDD, AVDD, SPVDD, DVDD
voltage range	VDDH	4.5	—	5.5	V	HVDD
Serial clock frequency	fSCLK	—	—	5.0	MHz	
MCLK frequency	fMCLK	2.048	—	12.288	MHz	256fs
BCLK frequency	fBCLK	0.256	—	3.072	MHz	32fs/64fs
LRCLK frequency	fLRCLK	8	—	48	KHz	fs

* This product is no antiradiation design.

Status of this document

The Japanese version of this document is the formal specification.

A customer may use this translation version only for a reference to help reading the formal version.

If there are any differences in translation version of this document, formal version takes priority.

Application example

The application circuit is recommended for use. Make sure to confirm the adequacy of the characteristics.

When using the circuit with changes to the external circuit constants, make sure to leave an adequate margin for external components including static

and transitional characteristics as well as dispersion of the IC.

Note that ROHM cannot provide adequate confirmation of patents.

The Product described in this specification is designed to be used with ordinary electronic equipment or devices (such as audio -visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys).

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◇Electrical Characteristics

(Ta=25°C, MVDD=AVDD=CVDD=SPVDD=DVDD=3.0V, HVDD=5.0V, unless otherwise stated)

Parameter	Symbol	Limits			Unit	Condition
		MIN.	TYP.	MAX.		
Current consumption	IDDPD	–	1.3	2.6	mA	at power down mode
	IDDST	–	2.5	4.2	mA	at stand-by mode
	IDD	–	29.0	49.0	mA	at operating mode
Output level at recording	VO	–12.3	–10.3	–8.3	dBFS	INTMIN,EXTMIN→ADOUT
		–11.3	–10.3	–9.3	dBFS	LIN→ADOUT
Distortion at recording	THD	–	0.04	0.2	%	INTMIN,EXTMIN→ADOUT
		–	0.03	0.2	%	LIN→ADOUT
ALC output level at recording	DOALC	–7.3	–4.3	–1.3	dBFS	ADOUT
Output voltage for microphone	VOREG	2.1	2.3	2.5	V	
Input impedance	ZIN	35	70	105	KΩ	INTMIN,EXTMIN
		25	50	75	KΩ	LIN
Output level at playback	VO	0.6	1.6	2.6	dBV	DAIN→LINEOUT
		–14.7	–12.7	–10.7	dBV	DAIN→HPOUT
		–2.7	0.3	3.3	dBV	DAIN→SPOUT
		–4.7	–1.7	1.3	dBV	Sound synthesis→SPOUT
		–	0.02	0.1	%	DAIN→LINEOUT
Distortion at playback	THD+N	–	0.05	0.2	%	DAIN→HPOUT
		–	0.5	1.0	%	DAIN→SPOUT
		–	–	–	dB	DAIN→HPOUT
SNR at playback	SNR	–76	–82	–	dB	DAIN→HPOUT
Maximum Output voltage at playback	VOM	0.6	3.1	–	dBV	DAIN→HPOUT
Speaker output at playback	SPVOM	200	400	–	mW	
BEEP gain	GV	–2.6	0.4	3.4	dB	BEEPIN→SPOUT
L input voltage	VIL	DVSS	–	0.3DVDD	V	
H input voltage	VIH	0.7DVDD	–	DVDD	V	

◇Serial interface/Register map

CSB

SCLK

SDATA

x	A3	A2	A1	A0	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0	x
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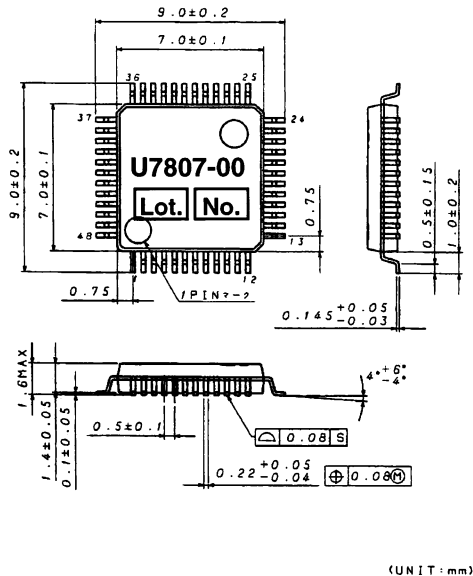
addr	register	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
1H	Power	0	0	0	0	PM MRG	PM BIS	PM REC	PM DA	PM LO	PM HP	PM SP	PM SS
2H	Mute	DAVL 6	DAVL 5	DAVL 4	DAVL 3	DAVL 2	DAVL 1	DAVL 0	MU AD	0	MU SP	0	MU EX
3H	MIC	0	0	0	0	0	0	0	0	0	M GAIN	PATH 1	PATH 0
4H	CODEC	0	0	0	0	0	0	SFS 1	AD DA	DEM 1	DEM 0	SFS 0	DIF
5H	EQ	MIX 1	MIX 0	HPFA 1	HPFA 0	HPFB 1	HPFB 0	HPFC	LPFA 1	LPFA 0	LPFB 2	LPFB 1	LPFB 0
6H	ADC Vol	0	0	0	0	ADVL 7	ADVL 6	ADVL 5	ADVL 4	ADVL 3	ADVL 2	ADVL 1	ADVL 0
7H	Fade	0	0	0	0	0	0	0	0	FDEN	FDPS 2	FDPS 1	FDPS 0
8H	EVR	0	0	0	0	0	EVR 6	EVR 5	EVR 4	EVR 3	EVR 2	EVR 1	EVR 0
9H	SoundSyn1	0	0	ST 5	ST 4	ST 3	ST 2	ST 1	ST 0	PH 3	PH 2	PH 1	PH 0
AH	SoundSyn2	0	0	0	0	0	0	0	0	SSLV 3	SSLV 2	SSLV 1	SSLV 0

◇Audio interface

<Digital audio format>

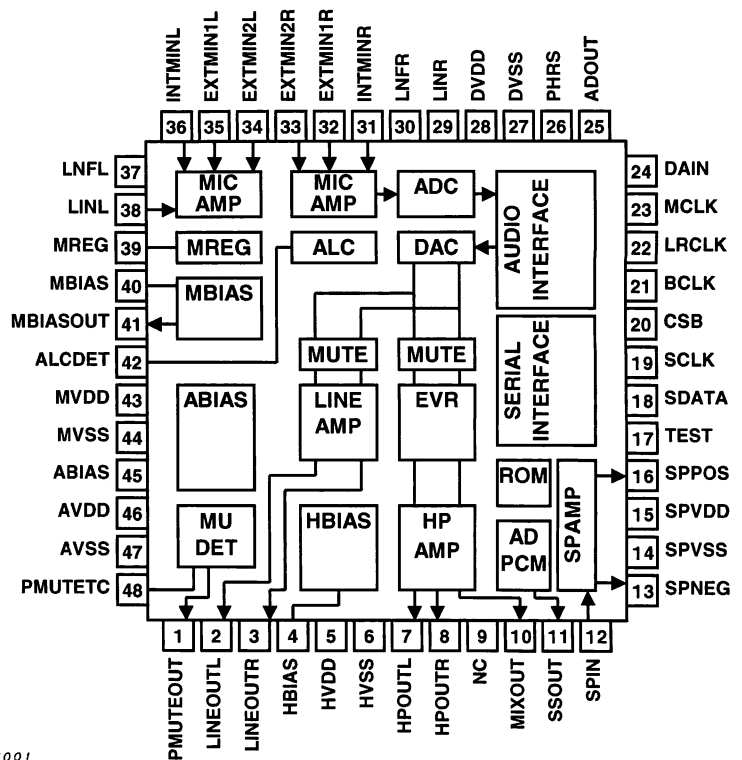
•(ADC MSB justified+DAC LSB justified) or IIS

◇External dimensions/Marking figure (VQFP48)



Drawing No.: E X 259-6001

◇Pin Number/Pin name/Block diagram



◇Cautions on use

- (1) Numbers and data in entries are representative design values and are not guaranteed values of the items.
- (2) Although we are confident in recommending the sample application circuits, carefully check their characteristics further when using them. When modifying externally attached component constants before use, determine them so that they have sufficient margins by taking into account variations in externally attached components and the Rohm LSI, not only for static characteristics but also including transient characteristics.
- (3) Absolute maximum ratings
If applied voltage, operating temperature range, or other absolute maximum ratings are exceeded, the LSI may be damaged. Do not apply voltages or temperatures that exceed the absolute maximum ratings. If you think of a case in which absolute maximum ratings are exceeded, enforce fuses or other physical safety measures and investigate how not to apply the conditions under which absolute maximum ratings are exceeded to the LSI.
- (4) GND potential
Make the GND pin voltage such that it is the lowest voltage even when operating below it. Actually confirm that the voltage of each pin does not become a lower voltage than the GND pin, including transient phenomena.
- (5) Thermal design
Perform thermal design in which there are adequate margins by taking into account the allowable power dissipation in actual states of use.
- (6) Shorts between pins and misinstallation
When mounting the LSI on a board, pay adequate attention to orientation and placement discrepancies of the LSI. If it is misinstalled and the power is turned on, the LSI may be damaged. It also may be damaged if it is shorted by a foreign substance coming between pins of the LSI or between a pin and a power supply or a pin and a GND.
- (7) Operation in strong magnetic fields
Adequately evaluate use in a strong magnetic field, since there is a possibility of malfunction.

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