

◇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
LRCLKfrequency	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).

Should you intend to use this product with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear -reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

ROHM assumes to responsibility for use of any circuits described herein, conveys no license under any patent or other right, and makes no representations that the circuits are free from patent infringement.

◇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
---	----	----	----	----	-----	-----	----	----	----	----	----	----	----	----	----	----	---

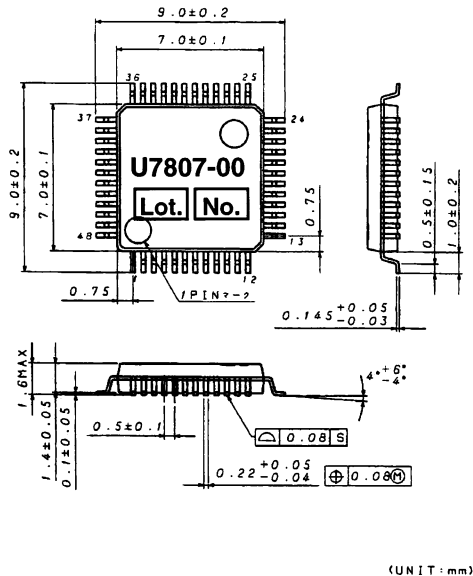
addr	register	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
1H	Power	0	0	0	0	PM MRG	PM BIS	PM REC	PM DA	PM LO	PM HP	PM SP	PM SS
2H	Mute	DAVL 6	DAVL 5	DAVL 4	DAVL 3	DAVL 2	DAVL 1	DAVL 0	MU AD	0	MU SP	0	MU EX
3H	MIC	0	0	0	0	0	0	0	0	0	M GAIN	PATH 1	PATH 0
4H	CODEC	0	0	0	0	0	0	SFS 1	AD DA	DEM 1	DEM 0	SFS 0	DIF
5H	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>

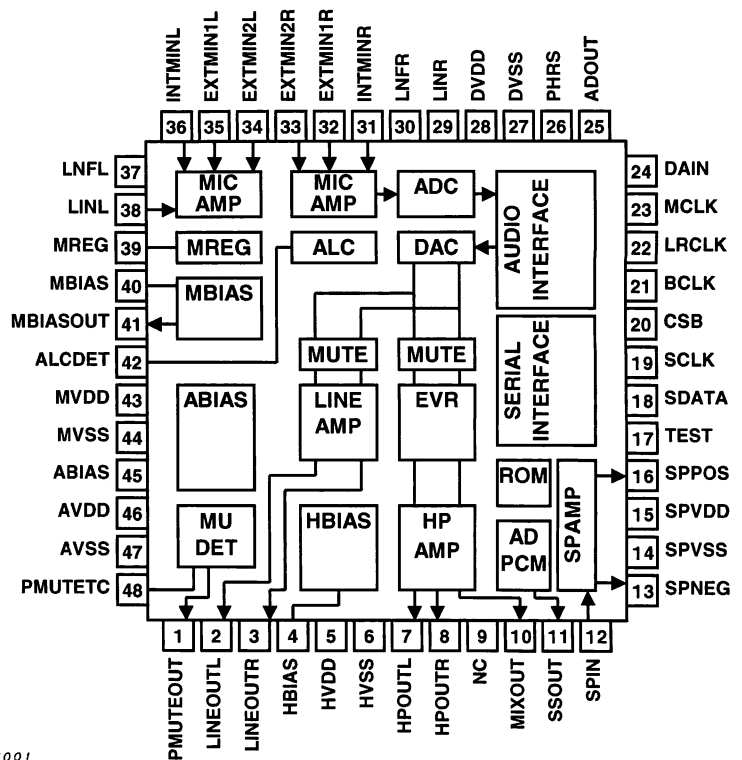
•(ADC MSB justified+DAC LSB justified) or IIS

◇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.

Notes

- No technical content pages of this document may be reproduced in any form or transmitted by any means without prior permission of ROHM CO.,LTD.
- The contents described herein are subject to change without notice. The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- Application circuit diagrams and circuit constants contained herein are shown as examples of standard use and operation. Please pay careful attention to the peripheral conditions when designing circuits and deciding upon circuit constants in the set.
- Any data, including, but not limited to application circuit diagrams information, described herein are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO.,LTD. disclaims any warranty that any use of such devices shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes no liability of whatsoever nature in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices, other than for buyer's right to use such devices itself, resell or otherwise dispose of the same, no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by
- ROHM CO., LTD. is granted to any such buyer.
- Products listed in this document are no antiradiation design.

The products listed in this document are 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).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

About Export Control Order in Japan

Products described herein are the objects of controlled goods in Annex 1 (Item 16) of Export Trade Control Order in Japan.

In case of export from Japan, please confirm if it applies to "objective" criteria or an "informed" (by MITI clause) on the basis of "catch all controls for Non-Proliferation of Weapons of Mass Destruction.

Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available,
please contact your nearest sales office.

Please contact our sales offices for details ;

U.S.A / San Diego	TEL : +1(858)625-3630	FAX : +1(858)625-3670
Atlanta	TEL : +1(770)754-5972	FAX : +1(770)754-0691
Dallas	TEL : +1(972)312-8818	FAX : +1(972)312-0330
Germany / Dusseldorf	TEL : +49(2154)9210	FAX : +49(2154)921400
United Kingdom / London	TEL : +44(1)908-282-666	FAX : +44(1)908-282-528
France / Paris	TEL : +33(0)1 56 97 30 60	FAX : +33(0) 1 56 97 30 80
China / Hong Kong	TEL : +852(2)740-6262	FAX : +852(2)375-8971
Shanghai	TEL : +86(21)6279-2727	FAX : +86(21)6247-2066
Dalian	TEL : +86(411)8230-8549	FAX : +86(411)8230-8537
Beijing	TEL : +86(10)8525-2483	FAX : +86(10)8525-2489
Taiwan / Taipei	TEL : +866(2)2500-6956	FAX : +866(2)2503-2869
Korea / Seoul	TEL : +82(2)8182-700	FAX : +82(2)8182-715
Singapore	TEL : +65-6332-2322	FAX : +65-6332-5662
Malaysia / Kuala Lumpur	TEL : +60(3)7958-8355	FAX : +60(3)7958-8377
Philippines / Manila	TEL : +63(2)807-6872	FAX : +63(2)809-1422
Thailand / Bangkok	TEL : +66(2)254-4890	FAX : +66(2)256-6334

Japan /
(Internal Sales)

Tokyo	2-1-1, Yaesu, Chuo-ku, Tokyo 104-0082	
	TEL : +81(3)5203-0321	FAX : +81(3)5203-0300
Yokohama	2-4-8, Shin Yokohama, Kohoku-ku, Yokohama, Kanagawa 222-8575	
	TEL : +81(45)476-2131	FAX : +81(45)476-2128
Nagoya	Dainagayo Building 9F 3-28-12, Meieki, Nakamura-ku, Nagoya, Aichi 450-0002	
	TEL : +81(52)581-8521	FAX : +81(52)561-2173
Kyoto	579-32 Higashi Shiokouji-cho, Karasuma Nishi-iru, Shiokoujidori, Shimogyo-ku, Kyoto 600-8216	
	TEL : +81(75)311-2121	FAX : +81(75)314-6559
(Contact address for overseas customers in Japan)		
Yokohama	TEL : +81(45)476-9270	FAX : +81(045)476-9271