

- ◆Structure : Silicon Monolithic integrated circuit
- ◆Product name : Voice Synthesis LSI
- ◆Type : BU6949FV

◆Features

- 1) Single playback mode, Available bit-rate is 16kbps(High compression) - 128kbps(High Quality) at 32kHz sampling or 16kHz sampling).
- 2) Voice/audio data is stored in serial Flash ROM which is connected to BU6949FV through SPI-serial Interface. Duration for playback is 32seconds/Mbits(standard) or max 64s/Mbits(Maximum).
- 3) Input system clock: 16.384MHz/8.192MHz/4.096MHz/2.048MHz.
- 4) Audio sampling rate is 32kHz or 16kHz and Built-in 16bits DAC
- 5) Operation by single power supply. Available voltage:2.7 to 3.6V.
- 6) Max numbers of tunes : 512
- 7) Maximum 10 phrase numbers memory as a ROM-phrase Number,and playback them only one command.(ROM_phrase number is available 0-46)
- 8) HOST-I/F is selectable from serial interface with status or direct-pin mode.
- 9) Enable to access(read/write) data stored in serial Flash ROM connected directly to BU6949FV.
- 10) Various play modes are available.

【play modes from serial Interface】

- decodable 2 channels simultaneously
- adjustable volume at each track independently
- enable to playback tunes which are registered in the sequencer list. Order of tunes are randomly selected. Max 16 tunes can be registered.
- For each track, enable to playback a selected tune or to playback tunes in the sequencer list with/without loop(except ROM_phrase mode).
- fade-in and fade-out functions are supported.

【Play modes from direct pin control】

- 2ch simultaneously playback available.(phrase0-phrase23 are playback track0, phrase24-31 are playback track1.)
- note) at ROM-phrase mode, phrase number exchange ROM-phrase number.
- maximum 31 tunes are registered to play.
- At normal play mode,available loop playback phrase28-phrase31(except ROM-phrase mode).

★Radiation resistance design is not arranged.

◆ Absolute maximum ratings (Ta = 25°C)

Item	Symbol	Ratings	Unit
Power dissipation*)	Pd	640	mW
Applied voltage	V _{DD}	-0.2~7.0	V
Input voltage	V _{IN}	-0.2~V _{DD} +0.3	V
Operating temperature range	T _{OPR}	-40~+85	°C
Storage temperature range	T _{STG}	-50~125	°C

*) Over Ta = 25°C or more, reducing 6.4mW per °C.

★ Radiation resistance design is not arranged.

◆ Operation Conditions

(Ta = -40~+85°C unless otherwise specified)

Item	Symbol	Specified value			Unit	Condition
		Min	Typ	Max		
Operation power-supply voltage	V _{DD_IN}	2.7	—	3.6	V	—

◆ Electric characteristic (DC characteristic)

DC Characteristics

■ V_{DD_IN}=3V (Ta=25°C)

Item	Symbol	Specified value			Unit	Condition	Circuit form
		Min	Typ	Max			
"H" Input Voltage	V _{IH}	0.7V _{DD}	—	—	V		2
"L" Input Voltage	V _{IL}	—	—	0.3V _{DD}	V		2
"H" Output Voltage	V _{OH}	V _{DD} -0.4	—	—	V	IO=2.0mA	2
"L" Output Voltage	V _{OL}	—	—	0.4	V	IO=2.0mA	2
"H" Input current	I _{IH}	—	—	10	μA	V _{IH} =V _{DD}	1
"L" Input current	I _{IL}	—	—	-10	μA	V _{IL} =GND	1
Static consumption current	I _{ST}	—	—	10	μA	V _i =V _{DD} orGND	3

DAC characteristics

■ V_{DD_IN}=3V (Ta=25°C)

Item	Symbol	Specified Value			Unit	Condition
		Min.	Typ.	max.		
DACOUToutput load registance	R _{AOUT}	10	—	—	KΩ	at No signal
DACOUT Output Voltage	V _{AOUT}	GND	—	V _{DD}	V	at No load

◆External dimensions ・ Block diagram

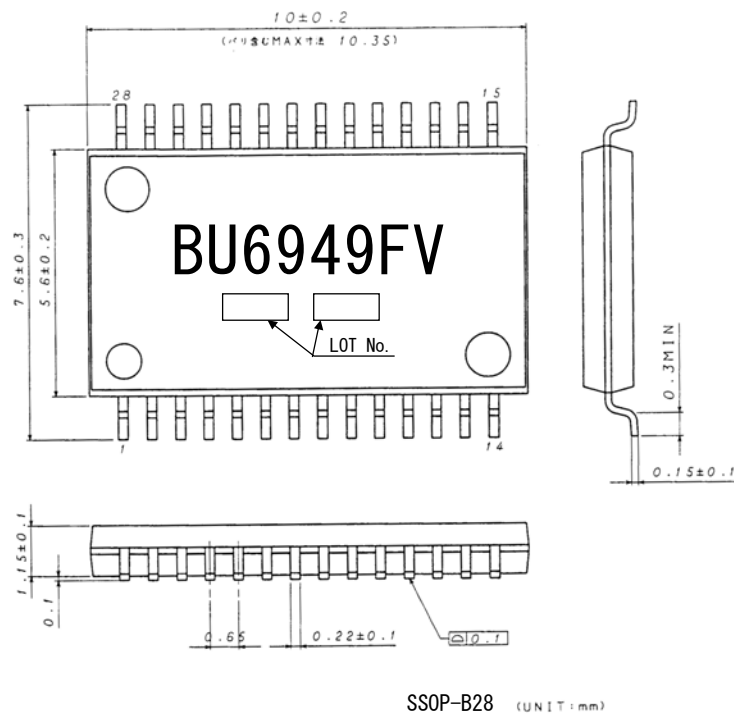


Figure1 External dimention

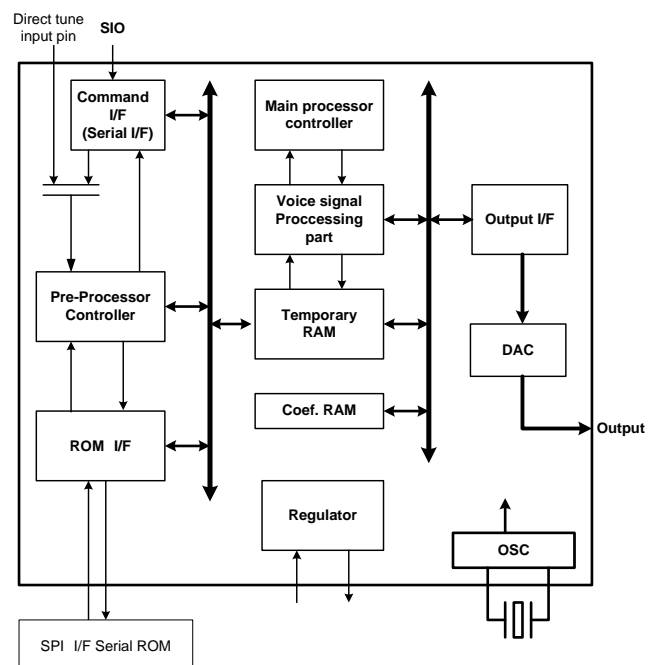


Figure 2. Block diagram

◆Pin name

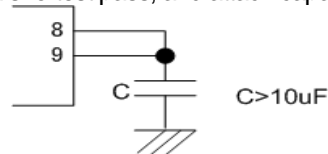
Table Pin name Detailed table

PIN NO.	Pin Name	I/O	Function
1	GND	—	GND
2	VSEL2/TXD	IO	tune number pin#2 / Serial Interface output data
3	VSEL1/RXD	I	tune number pin#1 / Serial Interface input data
4	VSEL0/RXCB	I	tune number pin#0 / Serial Interface CLK
5	TSEVENT/BUSY	O	Playing / ending flag("H":playing "L":stop) accessing Flash ROM ("H" : busy "L" : not busy)
6	VSEL3/SYNCREQ	IO	tune number pin#3 / Synchronous character request ("H" synchronization error)
7	GND	—	GND
8	VDD1.8_IN	I	Core power supply input ^{*3)}
9	REG18	O	Core power supply output ^{*3)}
10	STBY	I	Standby ("H" oscillation stop) normally "L"
11	TESTEN	I	Test Input("L" fixation)
12	VDD_IN	—	Power supply input
13	SPISCK	O	Clock for serial SPI-ROM
14	SPISO	O	Serial output data to serial SPI-ROM
15	SPISI	I	Serial Input data from serial SPI-ROM
16	SPICEB	O	chip enable for serial SPI-ROM
17	GND	—	GND
18	VSEL4/BFULLB	IO	tune number pin#4 /command buffer Full signal
19	APOFF	I	Analog Circuit Power off
20	CLK16SEL	I	Clock selection "H":16.384Mhz mode "L":4.096MHzmode
21	REFOUT	O	LSI TEST Pin (attach capacitance(>10uF))
22	DACOUT	O	DAC Output
23	GND	—	GND
24	VDD_IN	—	Power supply input
25	RESETB	I	Reset pin (low active)
26	SIO_ENBL	I	Selection of host interface(SIO or direction pin input ^{*1)})
27	XIN	I	Oscillation cell input ^{*2}
28	XOUT	O	Oscillation cell Output ^{*2}

*1) At SIO_ENBL ="L", VSEL4, VSEL3, VSEL2, VSEL1, VSEL0 is valid, and SIO is invalid.

*2) At no setting CLK setting Register, Clock is 16.384MHz at CLK16SEL="H", 4.096MHz at CLK16SEL ="L".

*3) pin #8 and pin #9 should be connected in a shortest pass, and attach capacitance(>10uF) as following figure.


[Cautions on use]

Pause Command is available for only 1ch playback. Not Available during 2ch simultaneously playback.

Notes

No copying or reproduction of this document, in part or in whole, is permitted without the consent of ROHM Co.,Ltd.

The content specified herein is subject to change for improvement without notice.

The content specified herein is for the purpose of introducing ROHM's products (hereinafter "Products"). If you wish to use any such Product, please be sure to refer to the specifications, which can be obtained from ROHM upon request.

Examples of application circuits, circuit constants and any other information contained herein illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.

Great care was taken in ensuring the accuracy of the information specified in this document. However, should you incur any damage arising from any inaccuracy or misprint of such information, ROHM shall bear no responsibility for such damage.

The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM and other parties. ROHM shall bear no responsibility whatsoever for any dispute arising from the use of such technical information.

The Products specified in this document are intended to be used with general-use electronic equipment or devices (such as audio visual equipment, office-automation equipment, communication devices, electronic appliances and amusement devices).

The Products specified in this document are not designed to be radiation tolerant.

While ROHM always makes efforts to enhance the quality and reliability of its Products, a Product may fail or malfunction for a variety of reasons.

Please be sure to implement in your equipment using the Products safety measures to guard against the possibility of physical injury, fire or any other damage caused in the event of the failure of any Product, such as derating, redundancy, fire control and fail-safe designs. ROHM shall bear no responsibility whatsoever for your use of any Product outside of the prescribed scope or not in accordance with the instruction manual.

The Products are not designed or manufactured to be used with any equipment, device or system which requires an extremely high level of reliability the failure or malfunction of which may result in a direct threat to human life or create a risk of human injury (such as a medical instrument, transportation equipment, aerospace machinery, nuclear-reactor controller, fuel-controller or other safety device). ROHM shall bear no responsibility in any way for use of any of the Products for the above special purposes. If a Product is intended to be used for any such special purpose, please contact a ROHM sales representative before purchasing.

If you intend to export or ship overseas any Product or technology specified herein that may be controlled under the Foreign Exchange and the Foreign Trade Law, you will be required to obtain a license or permit under the Law.



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

ROHM Customer Support System

<http://www.rohm.com/contact/>