Chipsmall

Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

16-bit stereo D / A converter
for audio applications
BU9480F

The BU9480F is a 16-bit stereo D / A converter designed for audio applications, and has an internal 2 × oversampling circuit.
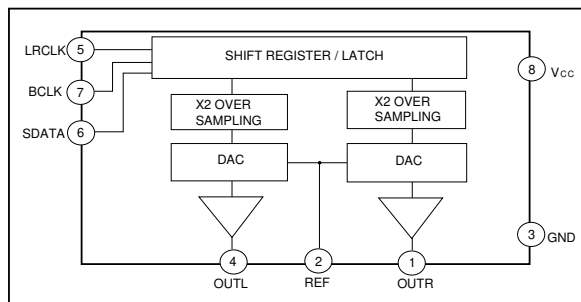
● Applications
16-bit stereo D / A converter for audio applications

● Features

1) 3.0 to 5.5V operating voltage.
2) Low current consumption because of the CMOS process.
3) Resistor strings method used.

4) 2-channel common phase output.
5) Internal 2 × oversampling interpolator.
6) 8 - pin plastic package.
7) Supports 4fs. (200kHz operation)

● Block diagram

● Pin descriptions

Pin No.	Pin name	Function	I / O	Voltage
1	R_{OUT}	Right channel analog signal output	Low-impedance output	$1 / 2V_{CC}$
2	REF	Connects the DA ref. voltage pin and ground	High-impedance input	$1 / 2V_{CC}$
3	GND	Ground	—	—
4	L_{OUT}	Left channel analog signal output	Low-impedance output	$1 / 2V_{CC}$
5	LRCK	The signal that distinguishes between left and right channels for serial data (left channe = high level, right channel = low level).	Logic input	—
6	SDAT	Serial data input Input with 2' compliment, MSB first.	Logic input	—
7	BCLK	Serial data shift clock input	Logic input	—
8	V_{CC}	Vcc	—	—

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Applied voltage	$V_{DDMax.}$	7.0	V
Power dissipation	Pd	450*	mW
Operating temperature	Topr	$-10 \sim +70$	°C
Storage temperature	Tstg	$-55 \sim +125$	°C
Input voltage	Topt	$-0.3 \sim V_{DD} + 0.3$	V

＊ When unmounted, reduced by 4.5mW for each increase in Ta of 1°C over 25°C.

● Recommended operating conditions

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{DD}	$3.0 \sim 5.5$	V
Input low level voltage	V_{IL}	$0.0 \sim 0.2 \times V_{DD}$	V
Input high level voltage	V_{IH}	$0.8 \times V_{DD} \sim V_{DD}$	V

● Electrical characteristics (unless otherwise noted, Ta = 25°C, V_{DD} = + 5.0V)
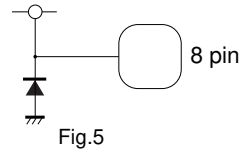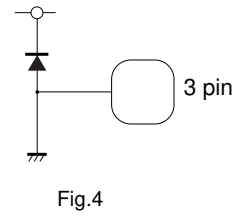
Analog unit characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement circuit
Current dissipation	I_{DD}	—	3.6	6	mA	f = 1kHz, 0dB	Fig.6,7
Resolution	RES	—	—	16	BIT	—	Fig.6,7
Noise distortion 1	THD1	—	0.05	0.12	%	f = 1kHz, 0dB	Fig.6,7
Noise distortion 2	THD2	—	0.07	0.4	%	f = 1kHz, -20dB	Fig.6,7
Full-scale output voltage	V_{FS}	1.8	2	2.2	V_{P-P}	—	Fig.6,7
Crosstalk	C.T	—	-92	-85	dB	Unmeasured channel output = 0 dB, f = 1kHz. DIN audio filter	Fig.6,7
S / N ratio	S / N	86	93	—	dB	DIN audio filter	Fig.6,7
Output pin load resistance	RL	10	—	—	kΩ	—	Fig.6,7

Logic input characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions	Measurement circuit
Input high level voltage	V_{IH}	$0.7 \times V_{DD}$	—	V_{DD}	V	Pins 5,6 and 7	Fig.6,7
Input low level voltage	V_{IL}	GND	—	$0.3 \times V_{DD}$	V	Pins 5,6 and 7	Fig.6,7
Leakage current, high level	I_{IH}	—	—	-10	μA	Pins 5,6 and 7 = V_{DD}	Fig.6,7
Leakage current, low level	I_{IL}	—	—	10	μA	Pins 5,6 and 7 = GND	Fig.6,7
DA conversion frequency	f_{SL}	—	—	200	kHz	—	Fig.6,7
BCLK period	T_{BCLK}	60	—	—	ns	—	Fig.6,7
SDAT.LRCK settling time	T_{ST}	60	—	—	ns	—	Fig.6,7
SDAT.LRCK holding time	T_{HD}	60	—	—	ns	—	Fig.6,7

ROHM

● Pin equivalent circuits

+
−

1, 4 pin

Fig.1

3 pin

Fig.4

2 pin

Fig.2

8 pin

Fig.5

5, 6, 7 pin

Fig.3

● Measurement circuits

V_{CC}

A

8

7

6

5

DIGITAL
AUDIO
DATA

BU9480F

1

2   10μF

3

4

THD   V

10kΩ

1μF

THD   V

10kΩ

1μF

Fig. 6

A

V

Fig. 7

● I / O signal timing chart

BCLK

SDAT

LRCK

L OUT

R OUT

LSB | MSB | LSB | MSB | LSB

N – 1 | N | N

L ch | R ch

D (N – 2) | Interpolation data (D (N – 2) + D (N – 1)) / 2 | D (N – 1) | (D (N – 1) + D (N)) / 2

D (N – 2) | Interpolation data (D (N – 2) + D (N – 1)) / 2 | D (N – 1) | (D (N – 1) + D (N)) / 2
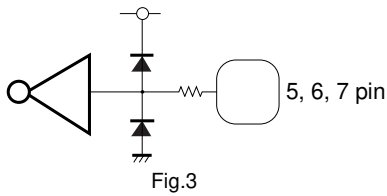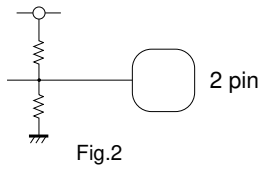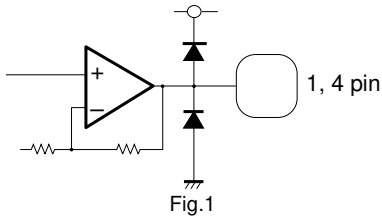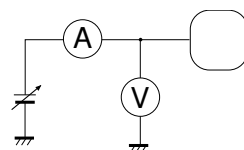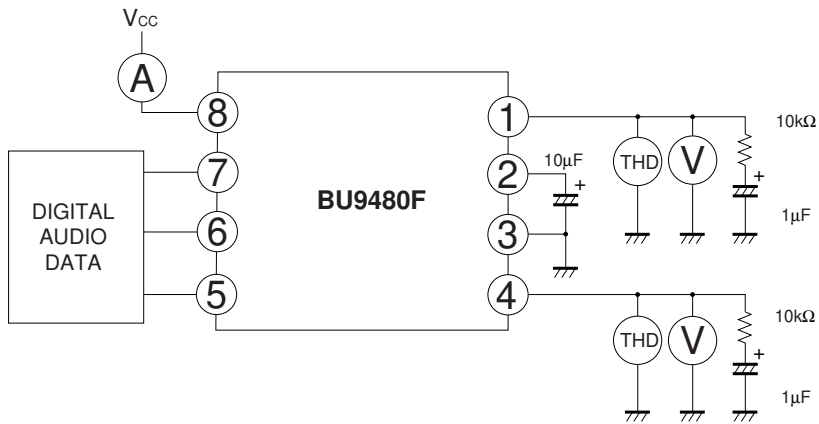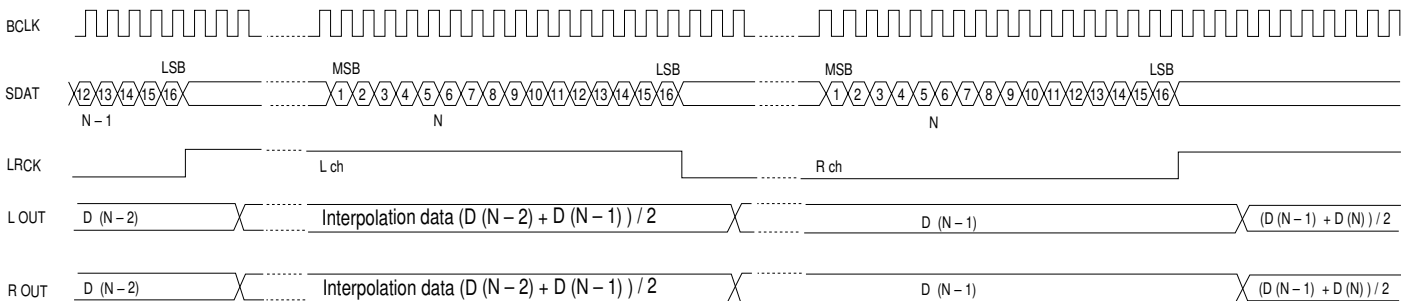
Note: Interpolation and original data output are timed respectively to the leading edge and leading edge of LRCK, and so LRCK should be set to a duty of 50%.
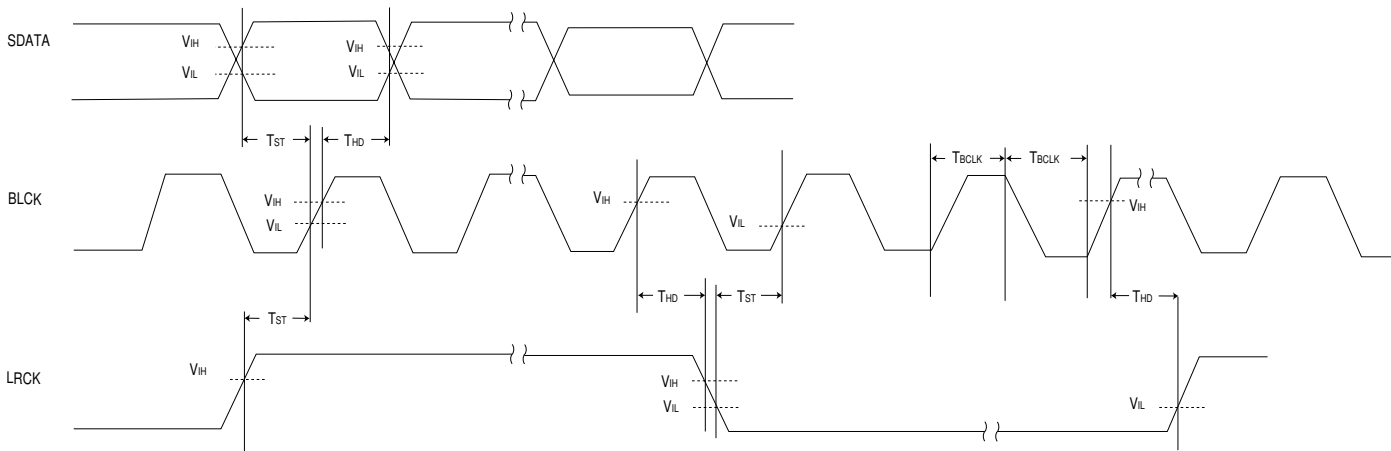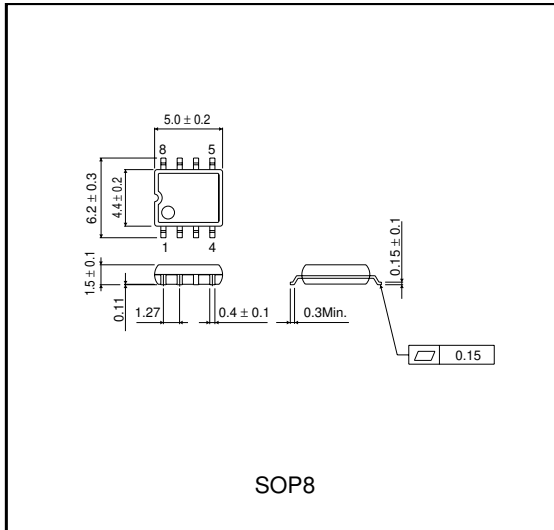
Fig. 8

SDATA

V_{IH}
V_{IL}

T_{ST} | T_{HD}

BLCK

V_{IH}
V_{IL}

T_{BCLK} | T_{BCLK}

T_{HD} | T_{ST}

LRCK

V_{IH}

V_{IH}
V_{IL}

V_{IL}

T_{ST}

T_{HD}

●External dimensions (Units: mm)

5.0 ± 0.2

8   5

6.2 ± 0.3

4.4 ± 0.2

1   4

1.5 ± 0.1

0.11

1.27

0.4 ± 0.1

0.3Min.

0.15 ± 0.1

0.15

SOP8

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 use silicon as a basic material.
  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 with 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.