

Structure:

Silicon Monolithic Integrated Circuit

Product:

Stereo pre-amplifire with mute detection circuits for car audio systems

Type:

BA3430FS

Function:

- 1. Compact configuration of between music cassette tape forwarding function and preamplifier
- 2. Built in control logic, each mode selectable with microcomputer control
- 3. Compatible with auto reversing of normal and metal tapes

Absolute Maximum Ratings (Ta=25°C)

	Symbol	Rating	Unit
Power Supply voltage	Vcc	18	V
Power dissipation	Pd	800*	mW
Operating temperature	Topr	-30~+85	°C
Storage temperature	Tastg	−55∼+125	°C

[※]This value decreases 8.0 mW/°C for Ta=25°C or more.

A standard board, $70 \times 70 \times 1.6$ mm, shall be mounted.

Operating Voltage Range

Symbol	Range	Unit		
Vcc	7.0~18.0	٧		

(Basic operation shall be available upon Ta=25°C.)

Application example

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.

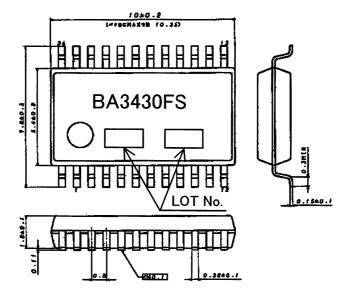


Electrical Characteristics

(Unless specified particularly, Ta=25°C, Vcc=9V, f=1KHz, Rg=600Ω, Vo=-10dBV)

Parameter	Symbol	Limit			Unit	Conditions		
1 di dillocol	Cymbol	Min.	Тур.	Max.	Offic	Conditions		
Circuit current	I_{cc}	-	10.3	16	mA	No signal		
Open loop voltage gain	G_{VO}	72	85	_	dB			
Closed loop voltage gain 1	G _{VC1}	37	40	43	dB			
Closed loop voltage gain 2	G _{VC2}	29	32	35	dB	f=10kHz,during metal playback		
Maximum output voltage	V _{om}	0.5	0.9	_	V_{rms}	THD=1%		
Total harmonic distortion ratio	THD	-	0.05	0.2	%			
Input conversion noise voltage	V _{NIN}		0.7	1.5	μV_{rms}	20~20kHz BPF		
Ripple rejection ratio	RR	40	50	_	dB	$V_{RR} = -20 \text{dBV}, f_{RR} = 100 \text{Hz}$		
A-B Cross-talk level	CT	55	65	_	dB			
Channel separation	CS	55	65		dB			
Mute level	ML	55	70	_	dB			
Song detection input level1	V _{on1}	-96.5	-93.5	-90.5	dBV	f=5kHz,during playback		
Song detection input level 2	V_{ON2}	-84	-81	-78	dBV	f=10kHz, during fast-forward		
Song detection time	τ,	_	6	_	ms			
Mute detection input level	τ₂	_	45	_	ms			
Logic low output sink current	I _{oL}	2	4	_	mA			
Logic high output leekage current	I _{OH}	_	1	3	μΑ			
Logic input low level voltage	V _{IL}	_	_	0.2	٧			
Logic input high level voltage	V _{IH}	4.7	_		٧			
Control pin outflow current	I_{lL}	_	_	200	μΑ	V _{IL} =0V		
Control pin inflow current	\mathbf{I}_{IH}	_	_	300	μΑ	V _{IL} =5V		

Outline Dimension

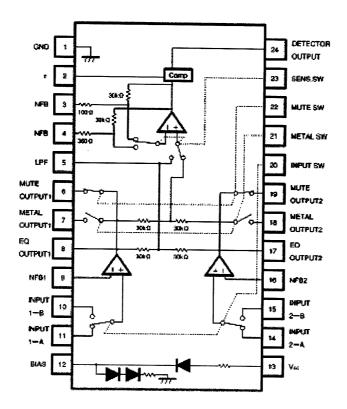


SSOP-A24

(Unit:mm)



Block Diagram



Terminal Number/ Terminal Name

Terminal Number	Terminal Name	Terminal Number	Terminal Name
1	GND	13	Vcc
2	τ	14	INPUT 2-A
3	NFB	15	INPUT 2-B
4	NFB	16	NFB2
5	LPF	17	EQ OUTPUT2
6	MUTE OUTPUT1	18	METAL OUTPUT2
7	METAL OUTPUT1	19	MUTE OUTPUT2
8	EQ OUTPUT1	20	INPUT SW
9	NFB1	21	METAL SW
10	INPUT 1-B	22	MUTE SW
11	INPUT 1-A	23	SENS SW
12	BIAS	24	DETECTOR OUTPUT



Application example

- (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.

(8) Resister of each switching terminal

To prevent the malfunction of switching terminal, set the resister value of $3k-10k\Omega$ for 20 and 23 pins, and $2k-22k\Omega$ for 21 and 22 pin.

(9) Condensers for each switching terminal

The condensers of 20 pin and 23 pin are designed for malfunction prevention of the detection circuit between the music. Without these condensers, the between music detection output terminal (24pin) becomes low due to no signal caused by the pop sound generated when internal switch is activated. This malfunction continues during the between music detection time. By making the time for the between music detection shorter, this malfunction can be permitted to omit condensers. The condensers of 21pin and 22 pin are for pop sound prevention for voice signal. When the mute function is used at the latter part of setting to shut off the pup sound, the condensers can be omitted. This omission will not cause the malfunction of between music detection circuits.

- (10) Music presence detection input level can be set by the resister of 3 pin and 4 pin. As the smaller this resister value the larger, the amplifier gain is, the music detection input level is smaller. Music presence detection input level of applicable circuit is set at 93.5dBV (5kHz) for reproduction, and at -81dBV(10kHz) for fast forwarding
- (11) Frequency characteristics for amplifier frequency characteristic reproduction when sensitivity is switched can be set by the C of 3pin, low range cut-off frequency by time constant of R can be set. The frequency characteristics for fast forwarding can be set by the C of 4pin, low range cut-off frequency by time constant of R can be set
- (12) Music Detection Time

The music detection time setting is done with the 2 pin condenser. If this time is too short, short noise signal will activate the between music detection circuit, and it should be set longer as much as possible.

(13) Between Music Detection Time

Between music detection time is proportional to the product of power voltage and 2 pin condenser and 2 pin resister. Set the resister value at more than $22k\Omega$ in consideration of allowable current of IC.

	20pinC		21pinC		22pinC		23pinC	
	Yes	No	Yes	No	Yes	No	Yes	No
Pop sound in audio signal	Δ	×	0	Δ	0	×	0	0
Mute detection circuit error	0	×	0	0	0	0	0	*

× ··· Occurs

O··· Not occurs

△··· May occur due to gain in following stage

* ··· Possibly of incorrect operation

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 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.





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
       Dilian
                        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