

Structure Silicon monolithic integrated circuit
Product name Monaural speaker amplifier for Mobile-phone

Type **BH7824FVM**

Functions

- BTL monaural audio power amplifier
- High power 500mW / 8Ω / BTL.
Correspond to dynamic speaker load (8/12/16Ω).
- Wide operating voltage range.
- Correspond to active / shutdown mode.
- Built in soft-mute circuit. (It is effective with the external resistor and capacitor)
- Built in anti-pop circuit and thermal shutdown circuit.
- The most suitable for mobile-phone, mobile-game machine etc.

Absolute Maximum Ratings (Ta=+25°C)

Parameter	Symbol	Ratings	Units
Supply voltage	Vcc	6.0	V
Power dissipation	Pd	470 (*1)	mW
Storage temperature range	Tstg	-55~+125	°C
SUSPEND input range	Vsusin	-0.1~Vcc	V

(*1)ROHM standard board (70mm×70mm×1.6mm) mounted, deratings is done at 4.7mW/°C above Ta=+25°C.

Operating Range

Parameter	Symbol	Range	Units	Note
Operating temperature range	Topr	-30~85	°C	
Supply voltage	Vcc1	+2.4~+5.5	V	
	Vcc2	+1.8~+5.5	V	Ta=+25°C only

※ This product is not designed for protection against radioactive rays.

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

- 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 no 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.

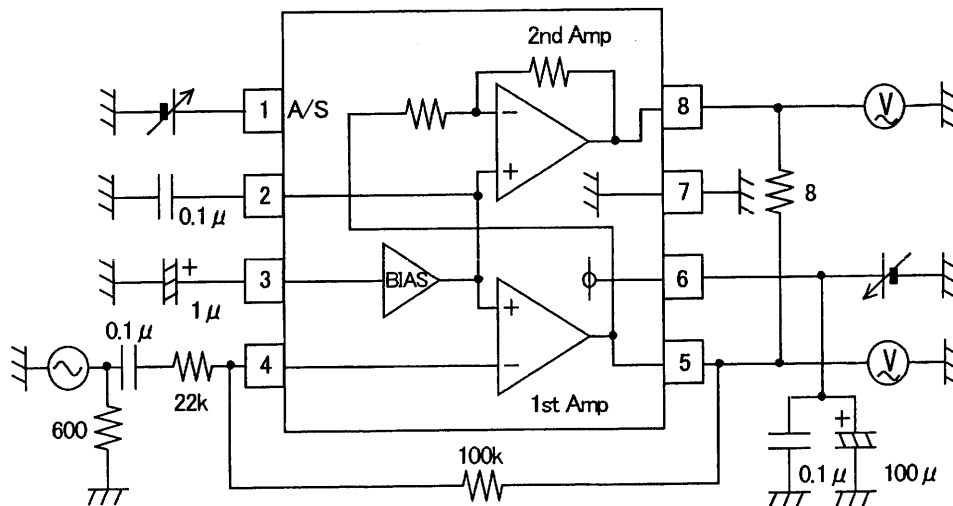
DESIGN <i>y. yoshimatsu</i>	CHECK <i>K. I. Ito</i>	APPROVAL <i>K. Ito</i>	DATE: Mar./15/2006	SPECIFICATION No. : TSZ02201-BH7824FVM-1-2
			REV. E	ROHM CO., LTD.

●Electrical characteristics (Unless otherwise noted, $T_a=+25^\circ\text{C}$, $V_{cc}=+3.6\text{V}$, $f=1\text{kHz}$, $R_L=8\Omega$)

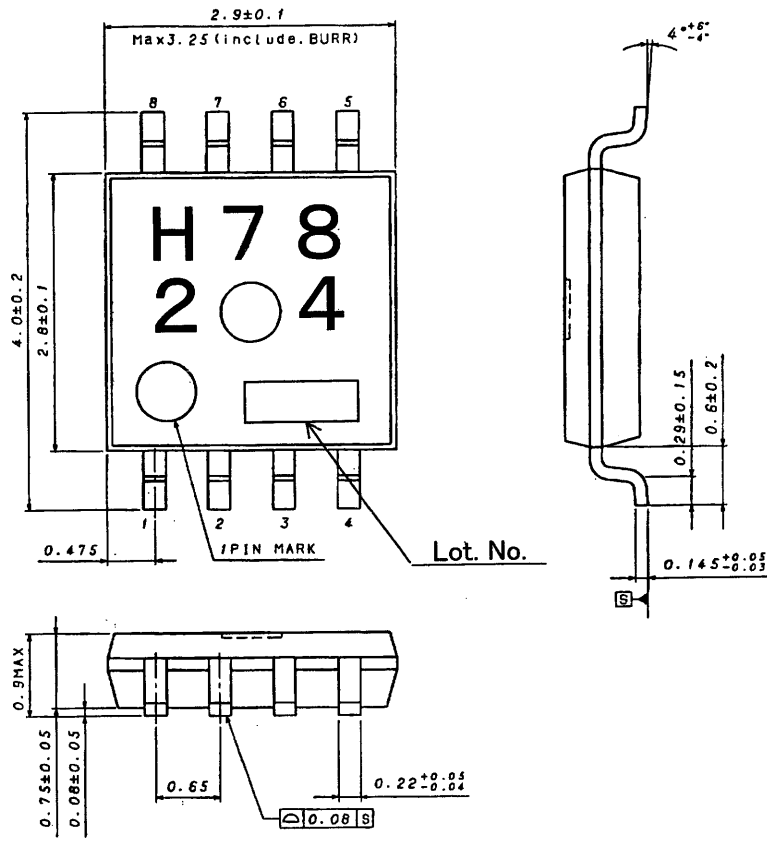
Parameter	Symbol	Limits			Units	monitor terminal	Conditions
		Min	Typ	Max			
Supply current	I _{cc}	—	3.5	7	mA	6	No signal Active mode
Suspend supply current	I _{sus}	—	0	2	μA	6	No signal Suspend mode
Voltage gain 1	G _{v1}	+9.5	+11.5	+13.5	dB	5	V _{IN} =-20 dBV 1st Amp
Voltage gain 2	G _{v2}	-2.0	0	+2.0	dB	8	V _{IN} =-20 dBV 2nd Amp
Maximum output level	V _{om}	+4.0	+6.0	—	dBV	5 & 8	THD+N=1% BTL *1
Distortion	THD+N	—	0.07	0.5	%	5, 8	V _{IN} =-20 dBV SE *1
Noise level	V _{noise}	—	-94	-80	dBV	5, 8	No signal, SE Active mode *2
Suspend attenuation	G _{sus}	—	-107	-80	dBV	5 & 8	V _{IN} =-20 dBV BTL *2
Bias voltage	V _{bias}	1.6	1.8	2.0	V	3	3PIN voltage
Suspend release voltage	V _{act}	$V_{cc} \times 0.8$	—	V_{cc}	V	1	Active mode
Suspend hold voltage	V _{sus}	0	—	0.5	V	1	Suspend mode

* 1: B.W.=400~30kHz, * 2: DIN AUDIO, SE: Single End, BTL: The voltage between 5pin and 8pin

●Measurement Circuit Diagram

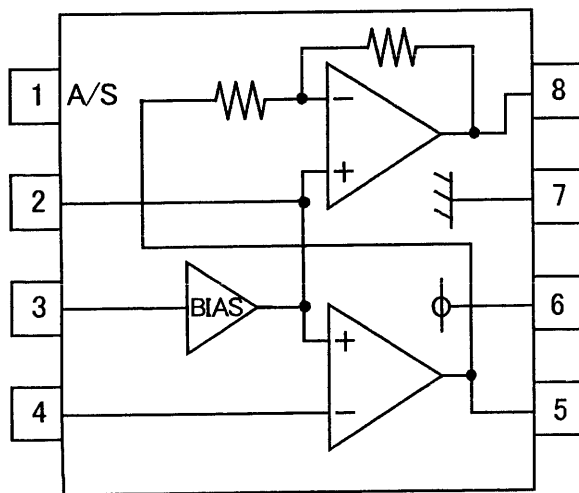


●Outer dimensions



MSOP8 (Unit: mm)

●Block diagram



●Pin assignment

PIN No.	PIN Name
1	SUSPEND CTRL
2	BIAS OUT
3	BIAS IN
4	SP IN
5	SP OUT1
6	VCC
7	GND
8	SP OUT2

●Cautions on use

(1) Absolute maximum ratings

This IC may be damaged if the absolute maximum ratings for the applied voltage, temperature range, or other parameters are exceeded. Therefore, avoid using a voltage or temperature that exceeds the absolute maximum ratings.

If it is possible that absolute maximum ratings will be exceeded, use fuses or other physical safety measures and determine ways to avoid exceeding the IC's absolute maximum ratings.

(2) GND pin's potential

Try to set the minimum voltage for GND pin's potential, regardless of the operation mode.

Check that the voltage of each pin does not go below GND pin's voltage, including transient phenomena.

(3) Shorting between pins and mounting errors

When mounting the IC chip on a board, be very careful to set the chip's orientation and position precisely.

When the power is turned on, the IC may be damaged if it is not mounted correctly. The IC may also be damaged if a short occurs (due to a foreign object, etc.) between two pins, between a pin and the power supply, or between a pin and the GND.

(4) Operation in strong magnetic fields

Note with caution that operation faults may occur when this IC operates in a strong magnetic field.

(5) Output pin's load

This IC is correspond to dynamic speaker load (8/12/16Ω), not correspond to the load except for dynamic speakers.

Don't use this IC on condition that there is no-load.

(6) Thermal design

Ensure sufficient margins to the thermal design by taking in to account the allowable power dissipation during actual use modes, because this IC is power amp.

When excessive signal inputs which the heat dissipation is insufficient condition, it is possible that TSD(thermal shutdown circuit) is active.

(7) Operating range

The rated operating power supply voltage range(VCC=+1.8~+5.5V) and the rated operation temperature range (Ta=-30~+85°C) are the range by which basic circuit functions is operated.

It is not guaranteed a specification and a rated output power about all operating power supply voltage range or operation temperature range.