

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

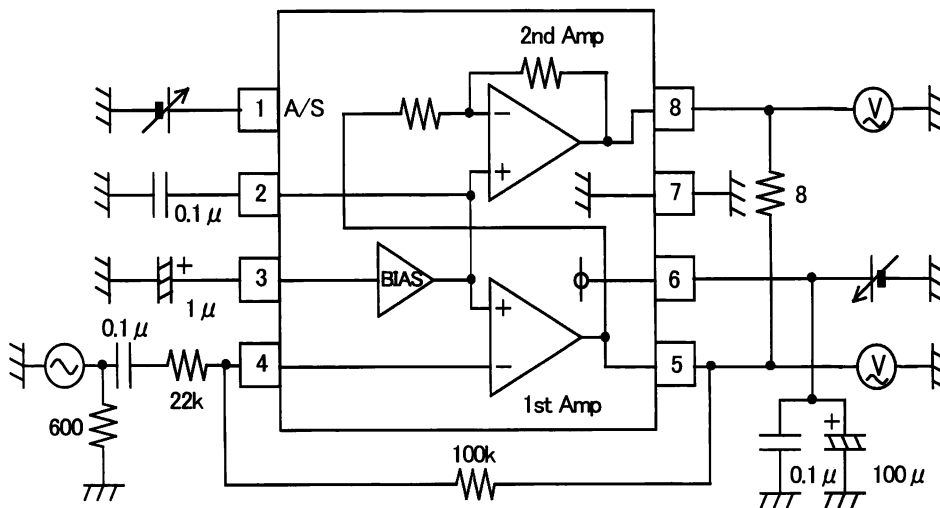
※ This product is not designed for protection against radioactive rays.

●Electrical characteristics (Unless otherwise noted, Ta=+25°C, Vcc=+3.6V, f=1kHz, RL=8Ω)

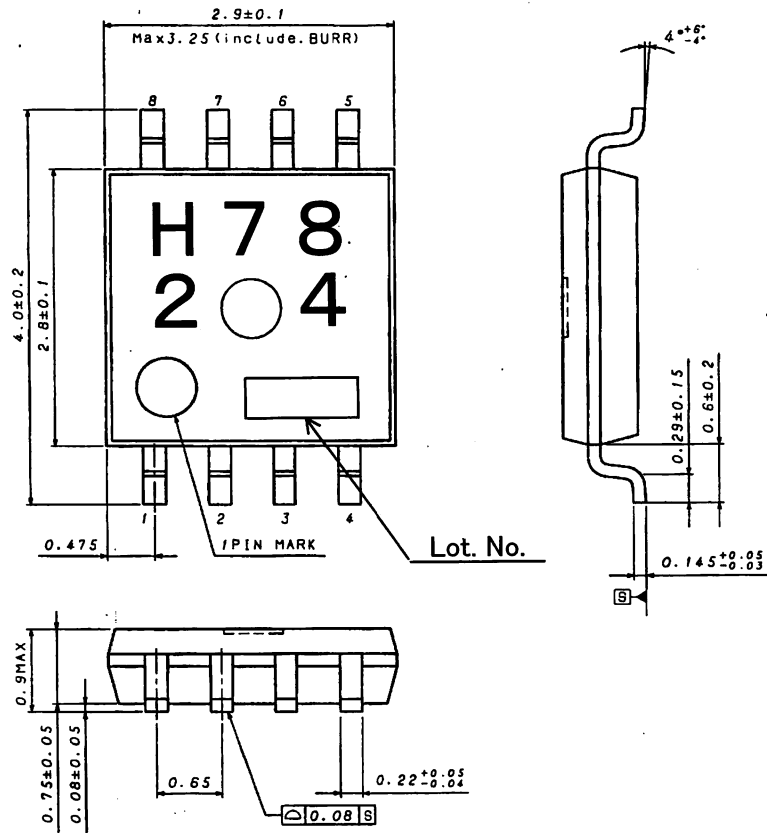
Parameter	Symbol	Limits			Units	monitor terminal	Conditions
		Min	Typ	Max			
Supply current	Icc	—	3.5	7	mA	6	No signal Active mode
Suspend supply current	Isus	—	0	2	μA	6	No signal Suspend mode
Voltage gain 1	Gv1	+9.5	+11.5	+13.5	dB	5	VIN=-20 dBV 1st Amp
Voltage gain 2	Gv2	-2.0	0	+2.0	dB	8	VIN=-20 dBV 2nd Amp
Maximum output level	Vom	+4.0	+6.0	—	dBV	5 & 8	THD+N=1% BTL * 1
Distortion	THD+N	—	0.07	0.5	%	5, 8	VIN=-20 dBV SE * 1
Noise level	Vnoise	—	-94	-80	dBV	5, 8	No signal, SE Active mode * 2
Suspend attenuation	Gsus	—	-107	-80	dBV	5 & 8	VIN=-20 dBV BTL * 2
Bias voltage	Vbias	1.6	1.8	2.0	V	3	3PIN voltage
Suspend release voltage	Vact	Vcc × 0.8	—	Vcc	V	1	Active mode
Suspend hold voltage	Vsus	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

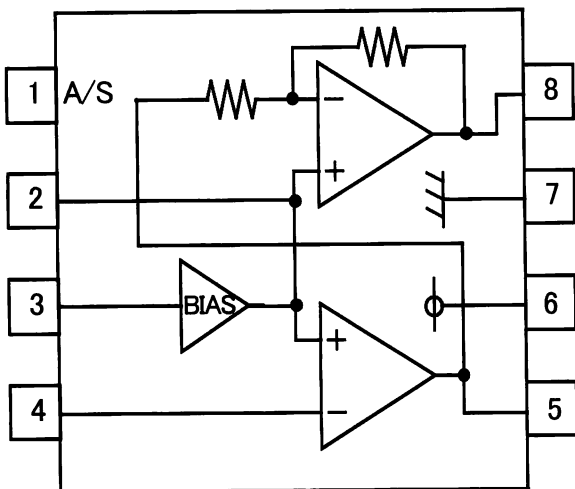


●Outer dimensions



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( $V_{CC}=+1.8\sim+5.5V$ ) and the rated operation temperature range ( $T_a=-30\sim+85^{\circ}C$ ) 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.

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