

<b>STRUCTURE</b>	Silicon Monolithic Integrated Circuit
<b>TYPE</b>	<b>BH1418FV</b>
<b>PRODUCT SERIES</b>	FM stereo transmitter IC for audio systems.
<b>PACKAGE OUTLINES</b>	Figure 1 ( Plastic Mold )
<b>BLOCK DIAGRAM</b>	Figure 2
<b>TEST CIRCUIT</b>	Figure 3

**FUNCTIONS**

- It is possible to attempt to improve a timbre because it has the pre-emphasis circuit, limiter circuit and low-pass filter circuit.
- Built-in the pilot-tone system FM stereo modulator circuit.
- The transmission frequency is stable because it has PLL system FM transmitter circuit.
- PLL data input (CE, CK, DA) by serial input.
- It is possible for the monaural mode.
- Built-in the sound muting circuit.
- Operation voltage range 2.7V to 4.0V.
- Package SSOP-B24

**ABSOLUTE MAXIMUM RATINGS**

( Ta=25°C, In test circuit. )

Parameter	Symbol	Limits	Unit	Conditions
Supply voltage	V <sub>CC</sub>	+7.0	V	Pin 8, 13
Data input voltage	V <sub>IN-D</sub>	-0.3 to V <sub>CC</sub> +0.3	V	Pin 17, 18, 19, 20
Phase comparator output voltage	V <sub>OUT-P</sub>	-0.3 to V <sub>CC</sub> +0.3	V	Pin 7
Power dissipation	P <sub>d</sub>	630	mW	( NOTE 1 )
Storage temperature	T <sub>stg</sub>	-55 to +125	°C	

( NOTE 1 ) To use at a temperature higher than Ta=25 °C, derate 6.3mW per 1 °C.

**Application example**

The application circuit is recommended for use. Make sure to confirm the adequacy of the characteristics.

When using the circuit with changes to the external circuit constants, make sure to leave an adequate margin for external components including static and transitional characteristics as well as dispersion of the IC.

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.

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.

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			REV. A	<b>ROHM CO., LTD.</b>

### OPERATING RANGE

Parameter	Symbol	Limits	Unit	Conditions
Operating supply voltage	V <sub>CC</sub>	2.7 to 4.0	V	Pin 8, 13
Operating temperature	T <sub>opr</sub>	-40 to +85	°C	
Audio input level	V <sub>IN-A</sub>	to -10	dBV	Pin 1, 24
Audio input frequency band	f <sub>IN-A</sub>	20 to 15k	Hz	Pin 1, 24
Pre-emphasis time constant set up range	τ <sub>PRE</sub>	to 155	μ sec	Pin 2, 23
Transmission frequency	f <sub>TX</sub>	70 to 120	MHz	Pin 10, 12
Control terminal "H" level input voltage	V <sub>IH</sub>	0.8V <sub>CC</sub> to V <sub>CC</sub>	V	Pin 17, 18, 19, 20
Control terminal "L" level input voltage	V <sub>IL</sub>	GND to 0.2V <sub>CC</sub>	V	Pin 17, 18, 19, 20

### ELECTRICAL CHARACTERISTICS

Unless otherwise specified, T<sub>a</sub>=25°C, V<sub>CC</sub>=3.3V  
Signal source: f<sub>IN</sub>=400Hz

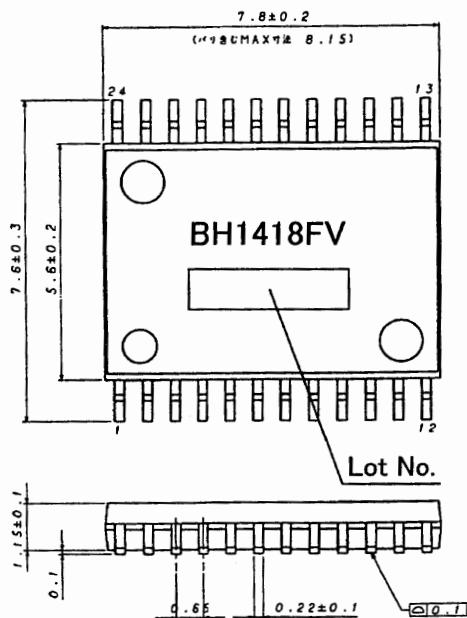
Parameter	Symbol	Limits			Unit	Conditions	Test cir.
		Min.	Typ.	Max.			
Quiescent current	I <sub>Q</sub>	13	18.5	28	mA		Fig. 3-1
Channel separation	Sep	25	40	—	dB	V <sub>IN</sub> =-20dBV, L→R, R→L	Fig. 3-2
Total harmonic distortion	THD	—	0.1	0.3	%	V <sub>IN</sub> =-20dBV, L+R	Fig. 3-3
Channel balance	C.B	-2	0	+2	dB	V <sub>IN</sub> =-20dBV, L+R	Fig. 3-2
Input output gain	G <sub>v</sub>	-2	0	+2	dB	V <sub>IN</sub> =-20dBV, L+R	Fig. 3-3
Pilot modulation rate	M <sub>P</sub>	12	15	18	%	V <sub>IN</sub> =-20dBV, L+R, Pin 5	Fig. 3-3
Sub carrier rejection ratio	SCR	—	-30	-20	dB	V <sub>IN</sub> =-20dBV, L+R	Fig. 3-3
Pre-emphasis time constant	τ <sub>PRE</sub>	40	50	60	μ sec	V <sub>IN</sub> =-20dBV, L+R	Fig. 3-3
Limiter input level	V <sub>IN(LIM)</sub>	-16	-13	-10	dBV	Output level at 1dB gain compression	Fig. 3-4
LPF cut off frequency	f <sub>C(LPF)</sub>	12	15	18	kHz	V <sub>O</sub> =-3dB, Pin 2, 23 Open	Fig. 3-5
Mute attenuation volume	V <sub>O(MUTE)</sub>	—	-48	-42	dB	V <sub>IN</sub> =-20dBV, L+R	Fig. 3-3
Transmission output level	V <sub>TX</sub>	96	99	102	dBμV	f <sub>TX</sub> =100MHz	Fig. 3-6
"H" level input current	I <sub>IH</sub>	—	—	1.0	μA	Pin 17, 18, 19, 20 V <sub>IN</sub> =3.3V	Fig. 3-7
"L" level input current	I <sub>IL</sub>	-1.0	—	—	μA	Pin 17, 18, 19, 20 V <sub>IN</sub> =0V	Fig. 3-7
"H" level output voltage	V <sub>OH</sub>	V <sub>CC</sub> -1.0	V <sub>CC</sub> -0.15	—	V	Pin 7 I <sub>OUT</sub> =-1.0mA	Fig. 3-7
"L" level output voltage	V <sub>OL</sub>	—	0.15	1.0	V	Pin 7 I <sub>OUT</sub> =1.0mA	Fig. 3-7
"off" level leak current 1	I <sub>OFF1</sub>	—	—	100	nA	Pin 7 V <sub>OUT</sub> =3.3V	Fig. 3-8
"off" level leak current 2	I <sub>OFF2</sub>	-100	—	—	nA	Pin 7 V <sub>OUT</sub> =GND	Fig. 3-8

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

©The specification of transmission output level must be based on the Radio Law in every country and the area.

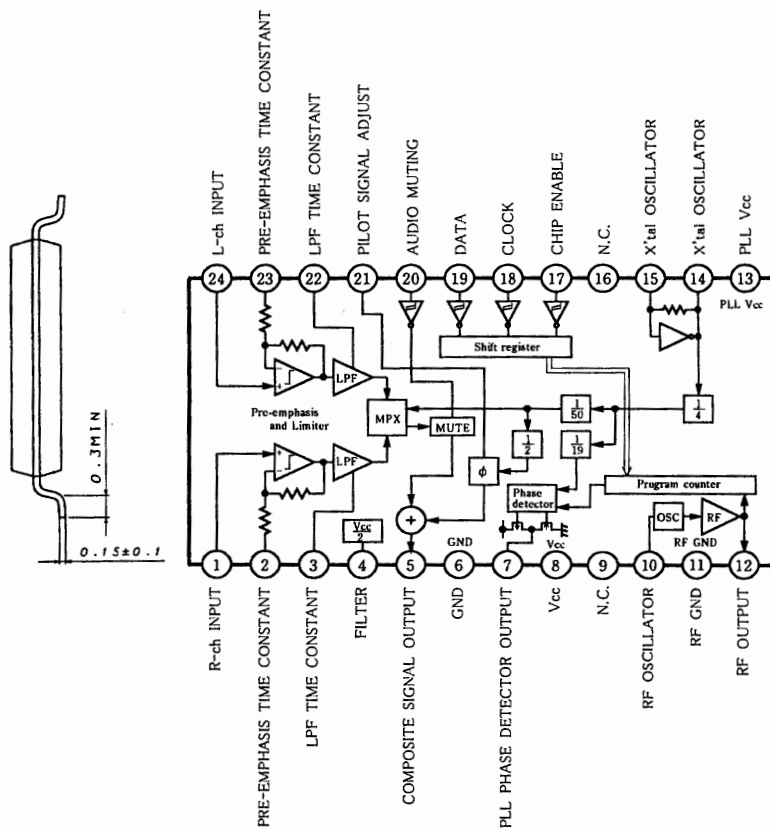
### PACKAGE OUTLINES (mm)

Figure 1



### BLOCK DIAGRAM

Figure 2



### TEST CIRCUIT

Figure 3-1 Quiescent current

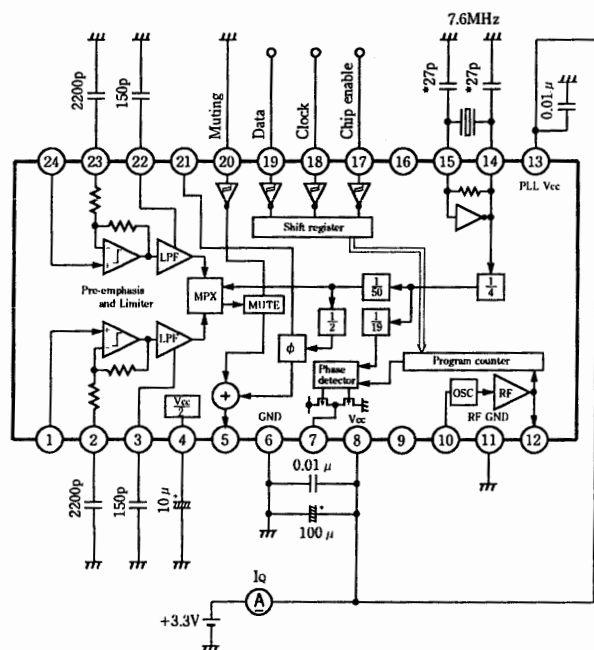
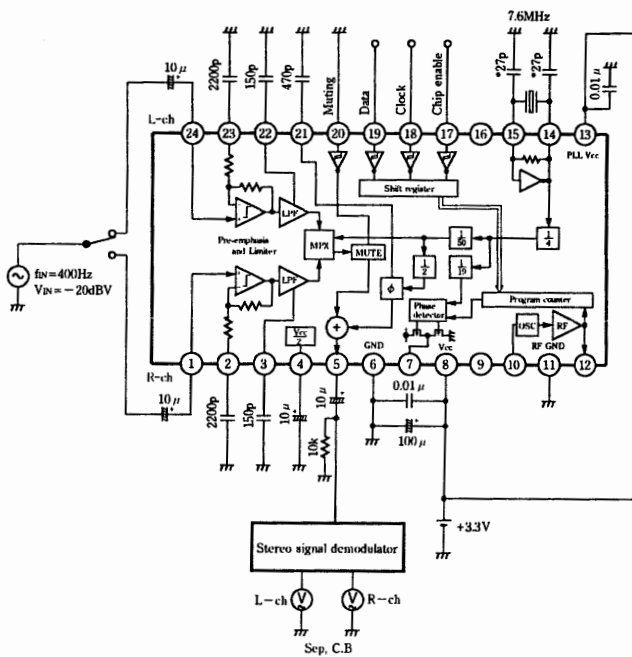


Figure 3-2 Channel separation

Channel balance



### TEST CIRCUIT

Figure 3-3

Total harmonic distortion / Input output gain  
Pilot index of modulation / Sub carrier rejection ratio  
Pre-emphasis time constant / Mute attenuation volume

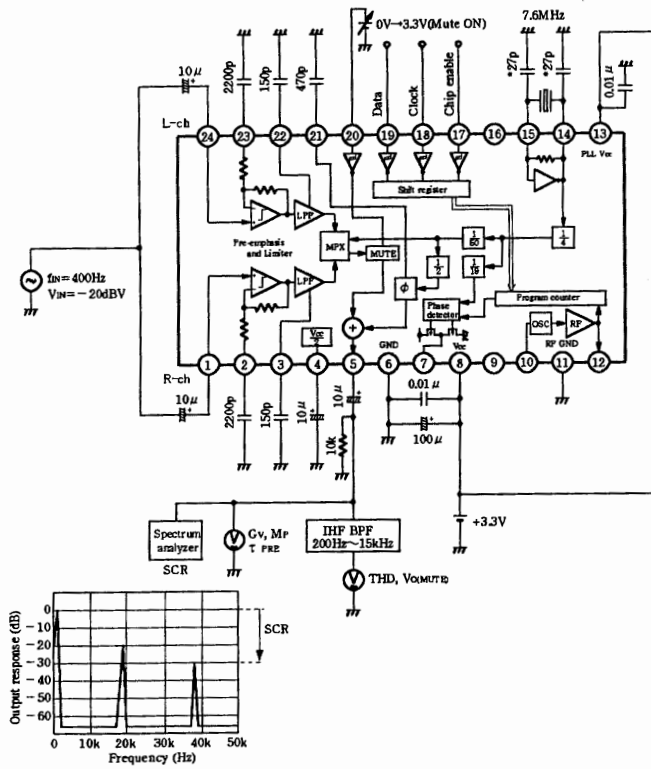


Figure 3-4

Limiter input level

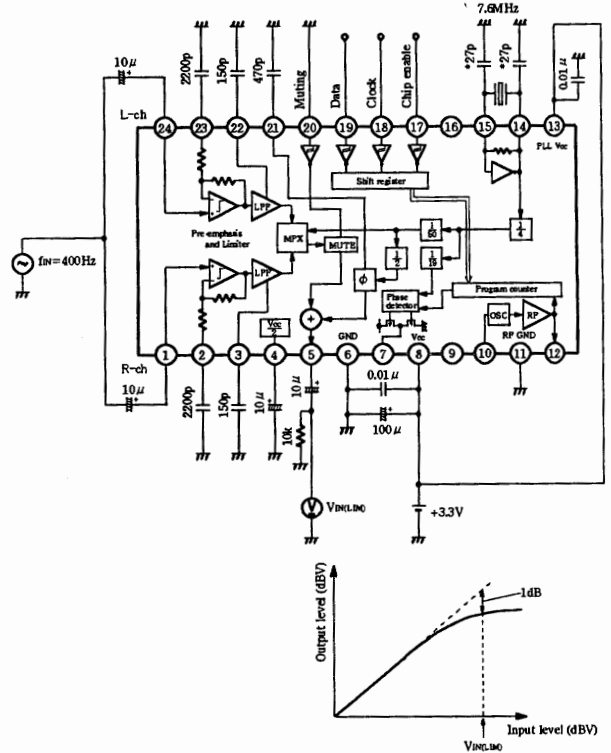


Figure 3-5 LPF cut off frequency

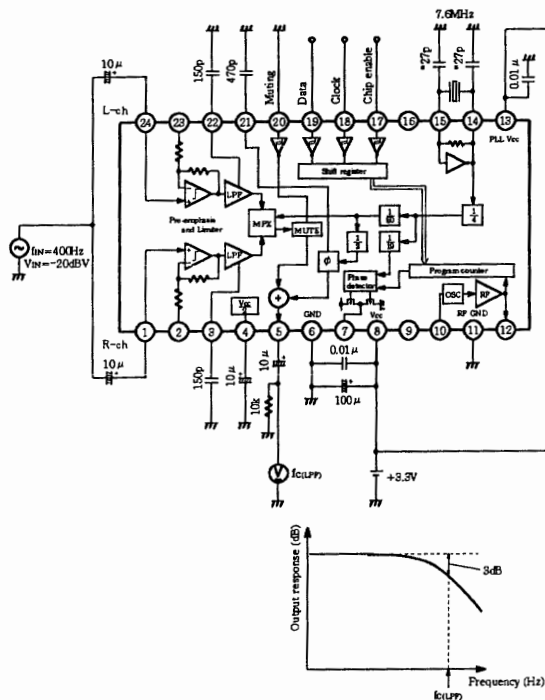
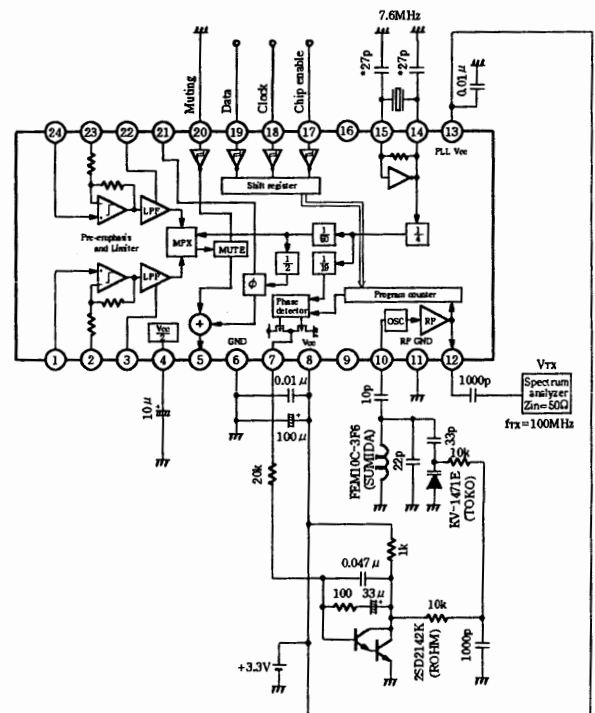


Figure 3-6 Transmission output level



### TEST CIRCUIT

Figure 3-7

"H" level input current / "L" level input current  
"H" level output voltage / "L" level output voltage

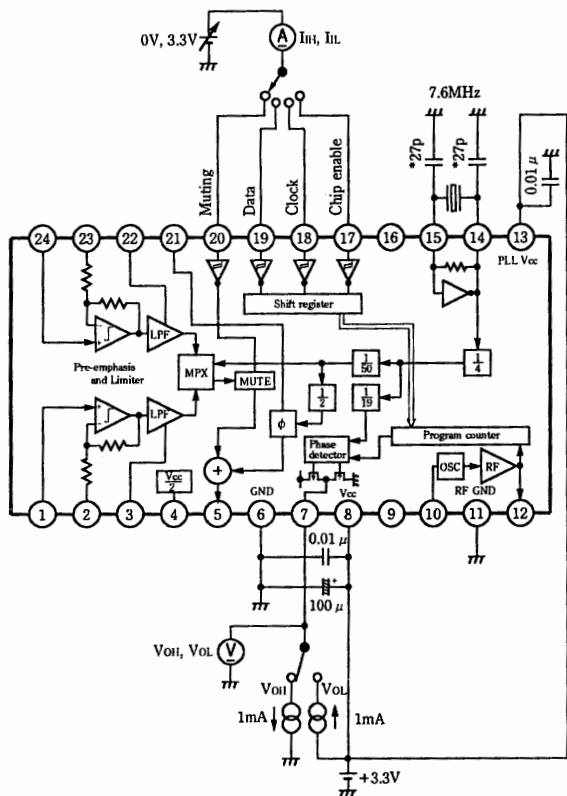
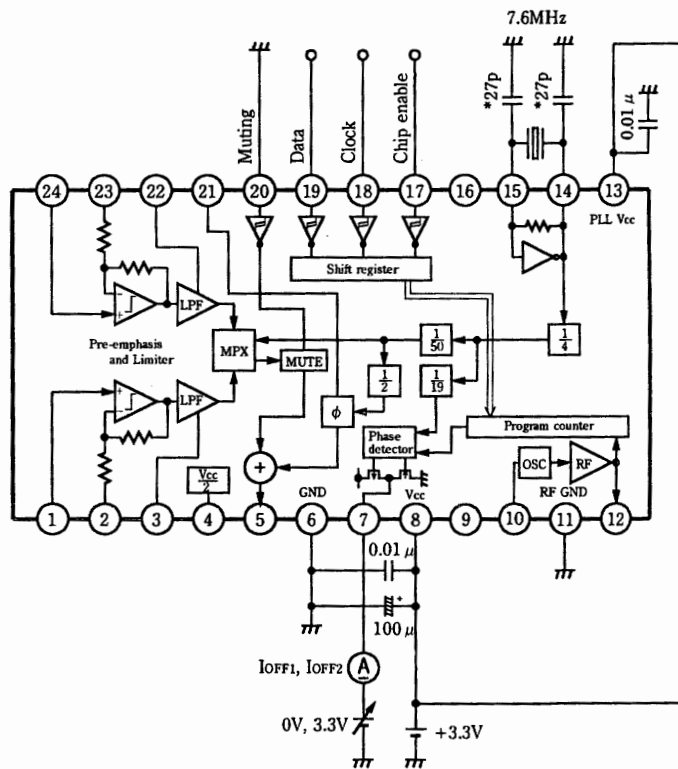


Figure 3-8

"off" level leak current 1  
"off" level leak current 2



\* Please ask the crystal manufacturer about the load capacitance value of the crystal resonator.

### CAUTIONS ON USE

#### CAUTION ON LOW VOLTAGE USE

The distortion characteristic become worse when the power supply voltage is lower than 3V because the output dynamic range become narrow. Lower the input level in advance, in the low voltage use.