

4-channel BTL driver for CD players and CD-ROM

BA5918FP-Y

The BA5918FP-Y is an IC included actuator for CD players and CD-ROM, 4ch BTL driver for motor drive and general purpose operational amplifiers. HSOP25pin package is comprised in the IC, so it enables much smaller configuration.

●Applications

CD players, CD-ROM, other related optical discs

●Features

- 1) Available in a HSOP25 package.
- 2) Wide dynamic range. (3.6V typically at $V_{CC}=5V$, $R_L=8\Omega$)
- 3) Built-in thermal shutdown circuit.
- 4) Gain of driver output can be changed by changing a single external resistor.(CH2, CH3)
- 5) Includes general purpose operational amplifier with wide dynamic range.
- 6) A stand-by terminal enables a power-saving mode.

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	7	V
Power dissipation	P_D	1.45 *	W
Operating temperature	T_{opr}	-35 to +85	°C
Storage temperature	T_{stg}	-55 to +150	°C

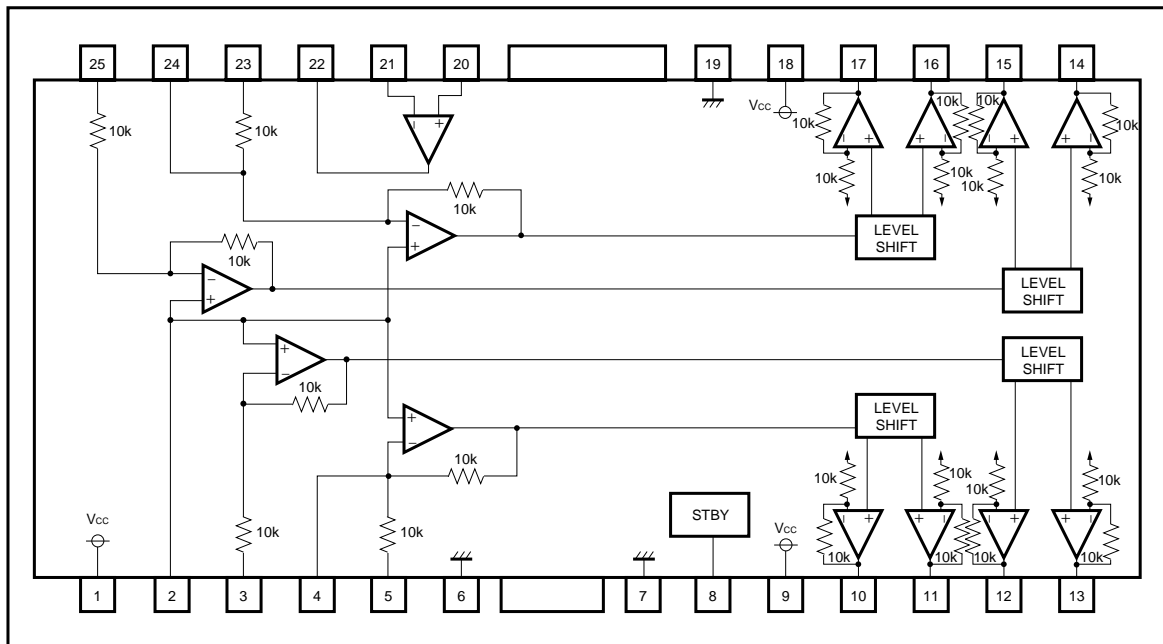
* On less than 3% (percentage occupied by copper foil), 70 x 70mm², t =1.6mm, glass epoxy mounting.
Reduce power by 11.6mW for each degree above 25°C.

●Recommended operating conditions (Ta=25°C)

Parameter	Symbol	Limits	Unit
Supply voltage	V_{CC}	4.3 to 6.6	V

Optical disc ICs

●Block diagram



●Pin description

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	Vcc	Vcc	14	VO4 (+)	Driver CH4 noninverted output
2	BIAS IN	Bias amplifier input	15	VO4 (-)	Driver CH4 inverted output
3	VIN1	Driver CH1 input	16	VO3 (+)	Driver CH3 noninverted output
4	VIN2'	Driver CH2 input, gain Adjustment pin	17	VO3 (-)	Driver CH3 inverted output
			18	Vcc	Vcc
5	VIN2	Driver CH2 input	19	GND	Substrate Ground
6	GND	Substrate Ground	20	OP IN (+)	Op-amp input, positive
7	GND	Substrate Ground	21	OP IN (-)	Op-amp input, negative
8	STBY	Input for stand-by control	22	OP OUT	Op-amp output
9	Vcc	Vcc	23	VIN3	Driver CH3 input
10	VO2 (-)	Driver CH2 inverted output	24	VIN3'	Driver CH3 input, gain adjustment pin
11	VO2 (+)	Driver CH2 noninverted output			
12	VO1 (-)	Driver CH1 inverted output	25	VIN4	Driver CH4 input
13	VO1 (+)	Driver CH1 noninverted output			

*Symbol of + and - (output of DRIVERS) means polarity to input pin. (For example if voltage of pin3 is high, pin13 is high.)

Optical disc ICs

●Electrical characteristics (Unless otherwise noted, $T_a=25^\circ\text{C}$, $V_{CC}=5\text{V}$, $\text{BIAS}=2.5\text{V}$, $R_L=8\Omega$)

Parameter	Symbol	Limit			Unit	Condition
		Min.	Typ.	Max.		
Stand-by quiescent current	I _{ST}	–	–	200	μA	
Quiescent current	I _{CC}	–	15	22	mA	No load
Output voltage offset	V _{OO}	–40	–	40	mV	
Output amplitude	V _{OM}	3.1	3.6	–	V	
Gain (close circuit)	G _{VC}	10.4	11.8	13.2	dB	V _{IN} =0.1Vrms, f=1kHz
Stand-by on voltage	V _{STBY}	–	–	0.5	V	
Stand-by off voltage	V _{STOFF}	2.0	–	–	V	

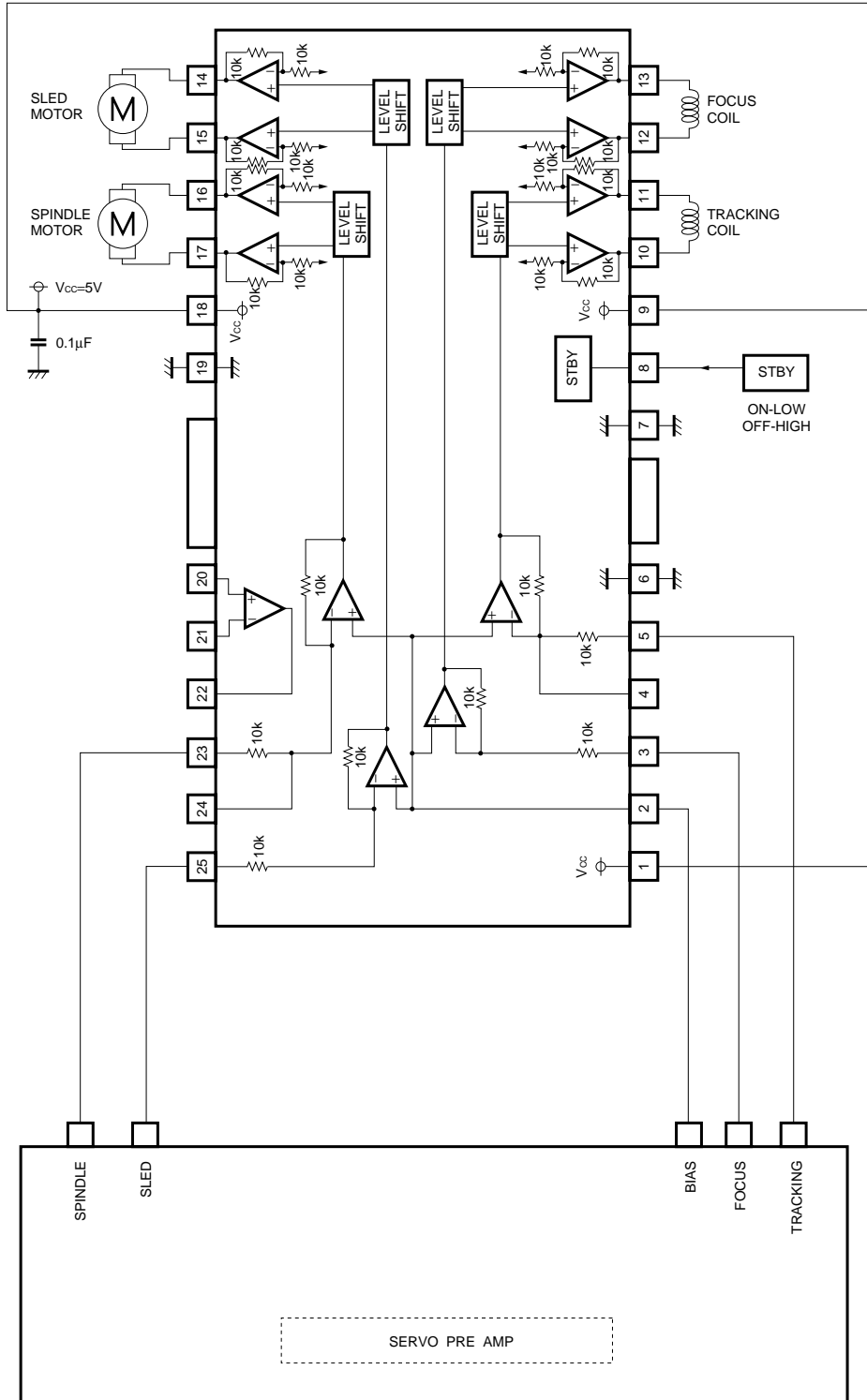
(Operating amplifier)

Offset voltage	V _{OPOP}	–6	0	6	mV	
Input bias current	I _{BOP}	–	–	300	nA	
High level output voltage	V _{OHOPE}	4.6	4.8	–	V	
Low level output voltage	V _{OLOPE}	–	0.2	0.4	V	
Output drive current (sink)	I _{SINK}	10	30	–	mA	50Ω, at V _{CC}
Output drive current (source)	I _{SOURCE}	2	–	–	mA	50Ω, at ground
Slew rate	S _{ROP}	–	1	–	V/μs	100kHz square wave, 2V _{PP}

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

Optical disc ICs

●Application circuit



Unit for resistance value : (Ω)

Fig.1

Optical disc ICs

●Operation notes

- (1) A thermal shutdown circuit is built into the BA5918FP-Y.
When the temperature of the chip reaches 175°C (typically), the output current is muted.
The thermal shutdown switch resets when the temperature falls below 150°C (typically).
- (2) If stand-by-pin voltage (pin8) is open or less than 0.5V, quiescent current is muted.
Under normal operating conditions, make sure to pull pin8 above 2.0V.
- (3) If the bias pin (pin2) drops below 0.85V, output current is muted.
Make sure that under normal operating conditions, this pin is at 1.2V or above.
- (4) The output current is muted in the event of a thermal shut down or a bias voltage drop.
Other sections are not muted.
When muted, the internal bias voltage of the output pin becomes roughly $(V_{CC}-V_F) / 2$.
- (5) Make sure to connect a 0.1μF capacitor to the dc supplied power main input to filter out voltage ripples.
- (6) Heat dissipation fins are attached to the GND on the inside of the package.
Make sure to connect these to the external GND.

●Electrical characteristics curves

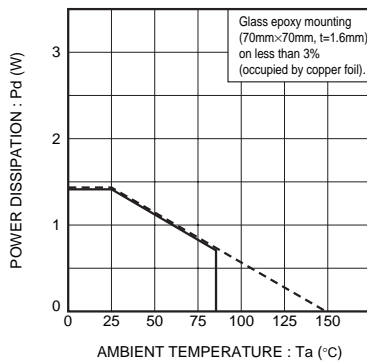


Fig.2 Thermal dissipation curve

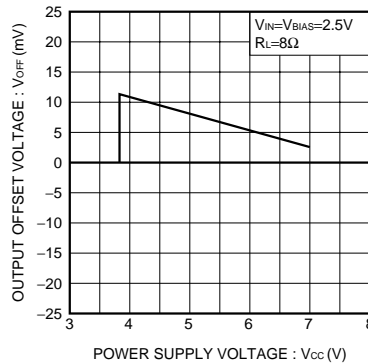


Fig.3 Power supply voltage vs. output offset voltage

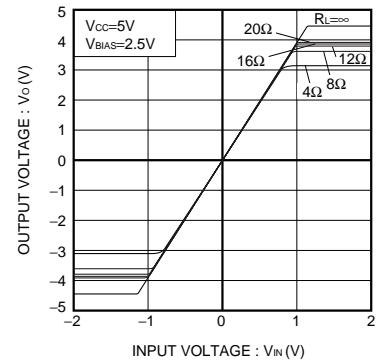


Fig.4 Driver input / output characteristics

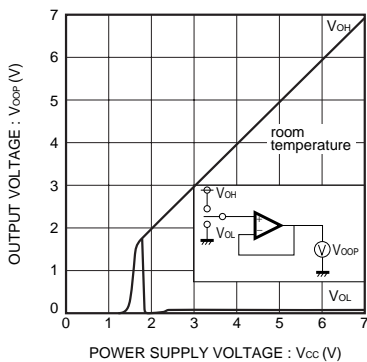


Fig.5 Power supply voltage vs. op-amplifier "H" and "L" level output voltage

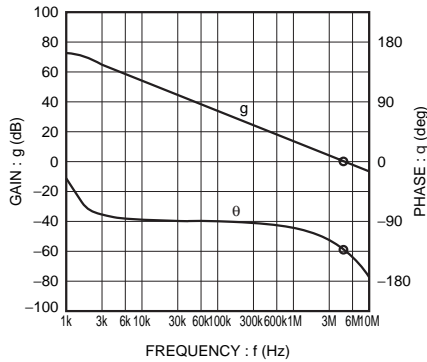
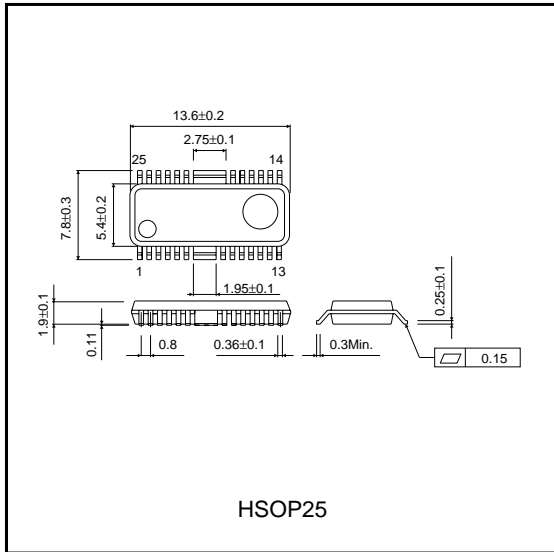


Fig.6 Op-amplifier open loop characteristics

Optical disc ICs

●External dimensions (Unit : mm)



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