STRUCTURE	Silicon Monolithic Integrated Circuit
PRODUCT SERIES	BTL driver for CD/CD-ROM
TYPE	BA 5 9 8 3 FP
PACKAGE OUTLINES	Figure 1 (Plastic Mold)
POWER DISSIPATION	Figure 2
BLOCK DIAGRAM	Figure 3
APPLICATION	Figure 4
TEST CIRCUIT	Figure 5

FUNCTIONS

- 4ch BTL Driver.
- Small surface mounting power package (HSOP 28) .
- Wide dynamic range. (4V(typ.) at PreVcc=12V,PowVcc=5V,RL=8Ω)
- Thermal shut down circuit built in.
- Separating Vcc into Pre and Power (Power divides into CH1/2 and CH3/4) , can make better power efficiency, by low supply voltage drive.
- Mute operated individually CH4 and CH1/2/3.
- All channels mute is stand by mode.
- Suitable for low operation voltage DSP by wide D-range pre opamp.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Limits	Unit
Supply voltage	PreVcc,PowVcc	13.5	V
Power dissipation	Pd	1.7 #1	W
Max output current	I_{OMAX}	1 #2	A
Operating temperature	Topr	-35~ 85	℃
Storage temperature	Tstg	-55~ 150	℃

#1 On less than 3% (percentage occupied by copper foil) , 70× 70mm² ,t=1.6mm, glass epoxy mounting. Reduce power by 13.6mW for each degree above 25℃ .
#2 The output current must not exceed the maximum Pd and ASO.

GUARANTEED OPERATING RANGES

Parameter	Symbol	Limits	Unit
Vcc for pre block	PreVcc	4.5~ 13.2	V
Vcc for power block	PowVcc	4.5~ PreVcc	V

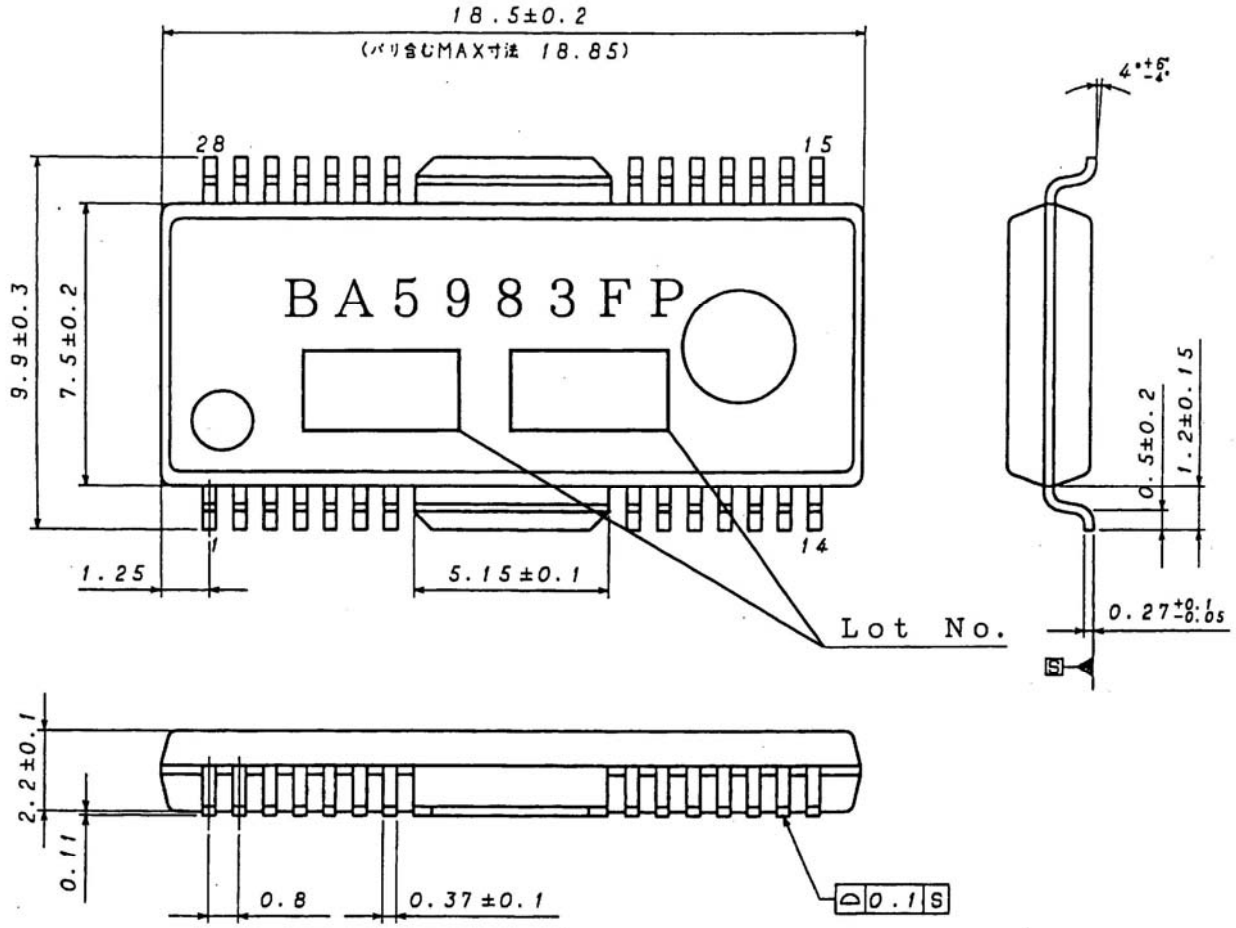
ELECTRICAL CHARACTERISTICS

(Unless otherwise noted, Ta=25℃, PreVcc=8V,PowVcc1=5V,PowVcc2=8V,V_{BIAS} =1.65V,RL=8Ω)

Parameter	Symbol	Min.	Typ.	Max.	UNIT	Conditions	Test circuit
Quiescent current	IQ	—	20	32	mA	R_L=∞	Fig.5
CH1-3 Standby Current	I_{QST1}	—	6.2	13	mA	R_L=∞	Fig.5
CH4 Standby Current	I_{QST2}	—	16	26	mA	R_L=∞	Fig.5
All Channel Standby Current	I_{QST3}	—	—	1	mA	R_L=∞	Fig.5
<Driver block>							
Output offset voltage	V_{OOF}	-70	—	70	mV		Fig.5
Maximum output voltage 1	V_{OM1}	3.6	4.0	—	V	CH1,2 VIN=V_{BIAS} ± 1.65V	Fig.5
Maximum output voltage 2	V_{OM2}	5.4	6.0	—	V	CH3,4 VIN=V_{BIAS} ± 1.65V	Fig.5
Closed loop voltage gain 1	G_{VC1}	10	12	14	dB	CH1,2 VIN=V_{BIAS} ± 0.5V	Fig.5
Closed loop voltage gain 2	G_{VC2}	16	18	20	dB	CH3,4 VIN=V_{BIAS} ± 0.5V	Fig.5
Slew Rate	SR_{DRV}	—	2	—	V	Input pulse 100kHz,2Vp-p	Fig.5
Standby on voltage	VST_{ON}	—	—	0.5	V		Fig.5
Standby off voltage	VST_{OFF}	2.0	—	—	V		Fig.5
Bias drop mute on voltage	VBM_{DN}	—	—	0.7	V		Fig.5
Bias drop mute off voltage	VBM_{DFF}	1.3	—	—	V		Fig.5
<Pre operational amplifier>							
Common mode input range	V_{ICM}	0	—	6.8	V		Fig.5
Input offset voltage	V_{OFOP}	-6	0	6	mV		Fig.5
Input bias current	I_{BOP}	—	—	300	nA		Fig.5
High level output voltage	V_{OHOP}	7	7.8	—	V	V_{BIAS} =4V	Fig.5
Low level output voltage	V_{OLOP}	—	—	0.3	V	V_{BIAS} =4V	Fig.5
Output sink current	I_{SI}	1	—	—	mA	output to PreVcc by 50Ω, V_{BIAS} =4V	Fig.5
Output source current	I_{SO}	300	500	—	μA	output to GND by 50Ω, V_{BIAS} =4V	Fig.5
Slew rate	SROP	—	2	—	V/μs	Input pulse 100kHz,2Vp-p	Fig.5

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

PACKAGE OUTLINES (mm)

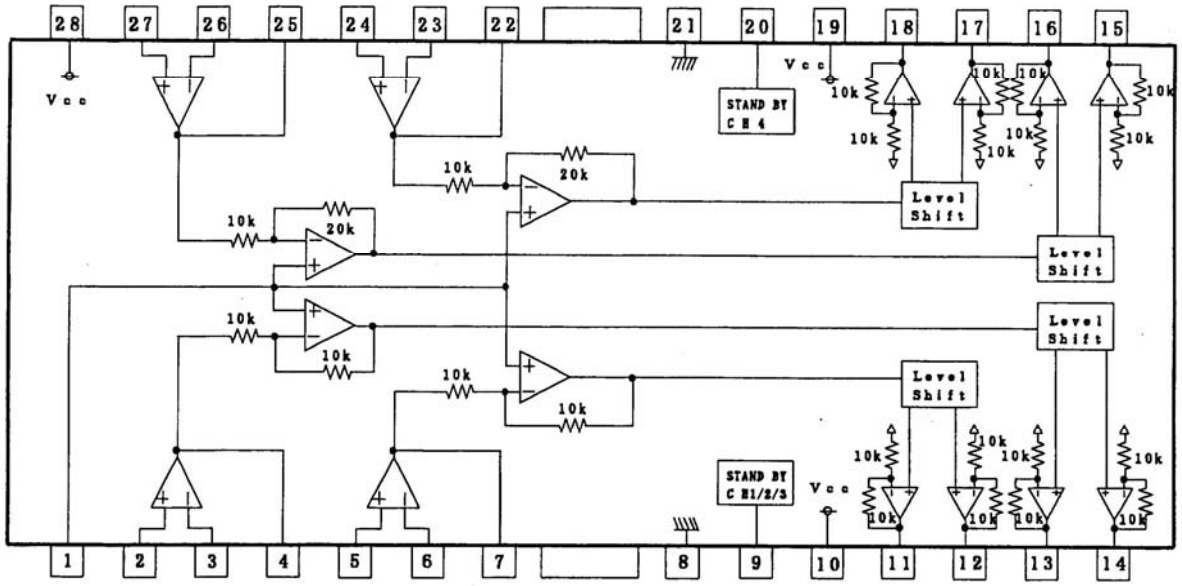


(UNIT: mm)

図番: EX140-5001-1

Figure 1

BLOCK DIAGRAM



resistor unit : Ω

Figure 3

Pin description

NO	Symbol	Function	NO	Symbol	Function
1	BIAS IN	Input for Bias-amplifier	15	VO4(+)	Non inverted output of CH4
2	OPIN1(+)	Non inverting input for CH1 OP-AMP	16	VO4(-)	Inverted output of CH4
3	OPIN1(-)	Inverting input for CH1 OP-AMP	17	VO3(+)	Non inverted output of CH3
4	OPOUT1	Output for CH1 OP-AMP	18	VO3(-)	Inverted output of CH3
5	OPIN2(+)	Non inverting input for CH2 OP-AMP	19	PowVcc2	Vcc for CH3/4 power block
6	OPIN2(-)	Inverting input for CH2 OP-AMP	20	STBY2	Input for CH4 stand by control
7	OPOUT2	output for CH2 OP-AMP	21	GND	Substrate ground
8	GND	Substrate ground	22	OPOUT3	Output for CH3 OP-AMP
9	STBY1	Input for CH1/2/3 stand by control	23	OPIN3(-)	Inverting input for CH3 OP-AMP
10	PowVcc1	Vcc for CH1/2 power block	24	OPIN3(+)	Non inverting input for CH3 OP-AMP
11	VO2(-)	Inverted output of CH2	25	OPOUT4	Output for CH4 OP-AMP
12	VO2(+)	Non inverted output of CH2	26	OPIN4(-)	Inverting input for CH4 OP-AMP
13	VO1(-)	Inverted output of CH1	27	OPIN4(+)	Non inverting input for CH4 OP-AMP
14	VO1(+)	Non inverted output of CH1	28	PreVcc	Vcc for pre block

notes) Symbol of + and - (output of drivers) means polarity to input pin.
(For example if voltage of pin4 high,pin14 is high.)