Preservo amplifier for CD players BA6377K

The BA6377K is a preservo amplifier that generates RF, focus error and tracking error signals from the signals output by current output optical pickups. Using this IC in combination with the ROHM's DSP can significantly reduce the number of attached components for CD player servos and signal processing circuits.

Applications

CD players

Features

- 1) Internal focus search sequence, for better playability.
- 2) Internal disk defect detector.
- 3) Internal auto asymmetry circuit.

- 4) Internal APC circuit.
- 5) Internal focus protection against disk defects.

● Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits	Unit
Power supply voltage	Vcc	9	V
Power dissipation	Pd	400*	mW
Operating temperature	Topr	-25~ + 75	°C
Storage temperature	Tstg	−55~ +125	Č

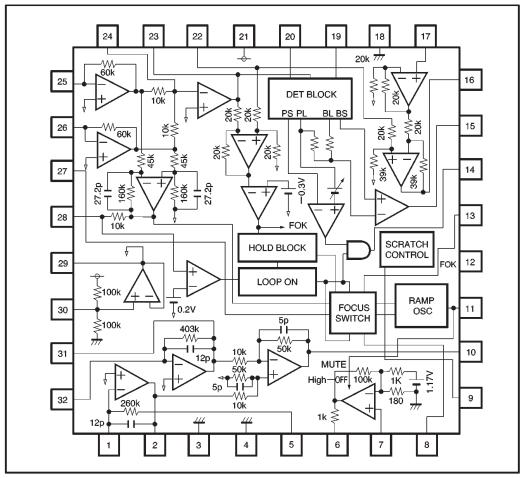
^{*} Reduced by 4.0 mW for each increase in Ta of 1 $^{\circ}$ C over 25 $^{\circ}$ C.

\bullet Recommended operating conditions (Ta = 25°C)

Parameter	Symbol	Min.	Тур.	Max.	Unit
Power supply voltage	Vcc	3.3	5.0	5.5	V

Optical disc ICs

●Block diagram



Pin descriptions

Pin No.	Pin name	Function			
1	F	FI-V amplifier current input			
2	FO	FI-V amplifier output			
3	AGND	Analog ground			
4	DGND	Digital ground			
5	FI	FI-V amplifier gain adjustment feedback			
6	LD	APC amplifier output			
7	PD	APC amplifier input			
8	R/H	Attached ramp wave/loop-off capacitor			
9	SC	Attached scratch depth adjustment resistor			
10	TE	Tracking error output			
11	FON	Focus-on control			
12	FOK	Focus OK comparator output			
13	FE	Focus error output			
14	DEFECT	Defect signal output			
15	MIRR	Mirror signal output			
16	EFM	EFM signal output			

Pin No.	Pin name	Function
17	ASY	Auto asymmetry control input
18	DETGND	Detector ground
19	BLH	Attached bottom-long capacitor
20	PLH	Attached peak-long capacitor
21	Vcc	Power supply
22	RFI	RF output capacity coupled reinput
23	RFO	RF summing amplifier output
24	RF-	RF summing amplifier feedback input
25	BD	(B+D) I-V amplifier current input
26	AC	(A+C) I-V amplifier current input
27	FEB	Focus error bias input
28	FEC	Attached focus error low-bias capacitor
29	VBO	Bias amplifier output
30	VBI	Bias amplifier input
31	EO	EI-V amplifier output
32	E	EI-V amplifier current input

●Electrical characteristics (unless otherwise noted, Ta = 25°C, Vcc = 5V)

Quiese ont current Isable — 8,5 13,5 mA — — (Bias amplifier) 8 2,30 2,50 2,70 V — — Maximum output (HIGH) 10x 5,0 2,70 — — mA Maximum bias differential = 200 mV Missimum output (HIGH) 10x 5,0 — — — A Maximum bias differential = 200 mV KFE amplifier) Voltage gain More P —110 — 160 mV — — — — Voltage gain Maximum output amplitude (HIGH) Vore P — 200 2,30 — V VS—1,5V, SQ4=30mV»-p., 1kHz Maximum output amplitude (LOW) Vous P — 0 — 0 — 0 V VS—1,6V, SQ4=30mV»-p., 1kHz Voltage gain (RD) Graco — 29.5 32.5 35.5 dB SG4=30mV»-p., 1kHz Voltage gain (RD) Graco — 29.5 32.5 35.5 dB SG4=30mV»-p., 1kHz Voltage gain (BD Graco — 29.5 32.5 35.5 dB SG4=30mV»-p., 1kHz Volt	Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
Blas voltage	Quiescent current	la	_	9.5	13.5	mA	_
Maximum output (HIGH*) Idea 5.0 — — m.M. Maximum bias differential = 200 mV Maximum output (LOW) Io. 5.0 — — m.M. Maximum bias differential = 200 mV (FR amplifier) Cutput offset voltage Vorse — 110 — 160 mV — Voltage gain Gev 27 30 33 dB V7=1,5V, SG4=30mVr-P, 1kHz Maximum output amplitude (HIGH) Voere 2.00 2.30 — V Simultaneous input of AC and BD Maximum output amplitude (LOW) Voere — — — — — V3 — V8=1/2Vc±0.2V (FE amplifier) Cutput offset voltage Voree — — 100 mV — — — — — V8=1/2Vc±0.2V V3 — — — — — — — — — — — — — — — — — — —	⟨Bias amplifier⟩						
Maximum output (LOW) lo. 5.0 — mA Maximum bias differential = 200 mV (FF amplifier) Output offset voltage Vorser −110 — 160 mV — Voltage gain Gsr 27 30 33 dB V7=1,5V, SG4=90mVs-r, 1kHz Maximum output amplitude (HIGH) Vorser 200 2.30 — V Simultaneous input of AC and BD Maximum output amplitude (LOW) Vouse — —0.6 —0.3 V Simultaneous input of AC and BD Voltage gain (RC) Vorser —100 — 100 mV — Voltage gain (RC) Greuc 29.5 32.5 35.5 dB SQ4=30mVr-r, 1kHz Voltage gain (RD) Gress 29.5 32.5 35.5 dB SQ4=30mVr-r, 1kHz Voltage gain (BD) Gress 29.5 32.5 35.5 dB SQ4=30mVr-r, 1kHz Voltage gain differential A Gree —3 0 3 dB SQ4=30mVr-r, 1kHz	Bias voltage	Vв	2.30	2.50	2.70	V	_
⟨RF amplifier⟩ Cutput offset voltage Voere −110 − 160 mV −<	Maximum output (HIGH)	Іон	5.0	_	_	mA	Maximum bias differential = 200 mV
Output offset voltage Vorse −110 − 160 mV − Voltage gain Gar 27 30 33 dB V7=1.5V, SG4=30mVρ-ρ, 1kHz Maximum output amplitude (HIGH) Vo-rep 200 2.30 − V Simultaneous input of AC and BD W8=1/2Vc±0.2V Maximum output amplitude (LOW) Vouse − 0-6 −0.3 V V8=1/2Vc±0.2V (FE amplifier) Voltage gain (AC) Vorept −100 − 100 mV − Voltage gain (AC) Greac 29.5 32.5 35.5 dB SG4=30mVρ-p, 1kHz Voltage gain (BD) Greac 29.5 32.5 35.5 dB SG4=30mVρ-p, 1kHz Voltage gain (BD) Greac 29.5 32.5 35.5 dB SG4=30mVρ-p, 1kHz Voltage gain (BD) Greac 29.0 2.30 − V Saparate measurement of inputs AC and BD Maximum output amplitude (HIGH) Vorac − 60 mV — — — <	Maximum output (LOW)	loL	5.0	_	_	mA	Maximum bias differential = 200 mV
Voltage gain Gre 27 30 33 dB V7=1.5V, SG4=30mVρ, 1kHz	⟨RF amplifier ⟩						
Maximum output amplitude (HIGH) Vo-ee 2.00 2.30 — V Simultaneous input of AC and BD V8=1/2Voc±0.2V (FE amplifier) Output offset voltage Vores — — — 100 mV — — — — V8=1/2Voc±0.2V — — — V8=1/2Voc±0.2V — <td>Output offset voltage</td> <td>Vofre</td> <td>-110</td> <td> -</td> <td>160</td> <td>mV</td> <td>_</td>	Output offset voltage	Vofre	-110	-	160	mV	_
Maximum output amplitude (LOW) Voure — −0.6 −0.3 V V8=1/2Vcc±0.2V ⟨FE amplifier⟩ Output offset voltage Vorre −100 — 100 mV — Voltage gain (AC) Greac 29.5 32.5 35.5 dB SG4=30mVρ-p, 1kHz Voltage gain (BD) Greac 29.5 32.5 35.5 dB SG4=30mVρ-p, 1kHz Voltage gain (BD) Greac 29.5 32.5 35.5 dB SG4=30mVρ-p, 1kHz Voltage gain (BF) Greac -3 0 3 dB — Maximum output amplitude (LICW) Vorre 2.00 2.30 — V Separate measurement of inputs AC and BD Voltage gain (E) Vorre −60 — 0 MP — Voltage gain (F) Gree 11 14 17 dB SG1=100mVp-p, 1kHz Voltage gain differential Δ Gree -3 0 3 dB — Voltage gain (F) Gree 111 1	Voltage gain	GRF	27	30	33	dB	V7=1.5V, SG4=30mV _{P-P} , 1kHz
(FE amplifier) Vormal 0.0 0.5	Maximum output amplitude (HIGH)	Vohre	2.00	2.30	_	V	Simultaneous input of AC and BD
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Voltage gain (BD) GFEBD 29.5 32.5 35.5 dB SG4=30mVp-p, 1kHz Voltage gain differential ∆ GFE −3 0 3 dB — Maximum output amplitude (HGH) Vorre 2.00 2.30 — V Separate measurement of inputs AC and BD W8=1/2Vcc±0.2V Maximum output amplitude (LOW) Vorre — −2.30 −2.00 V Separate measurement of inputs AC and BD W8=1/2Vcc±0.2V Voltage gain (E) Orre —60 — 60 mV — — Voltage gain (E) Gree 11 14 17 dB SG1=100mVr-p, 1kHz Voltage gain (IF) Gree 11 14 17 dB SG1=100mVr-p, 1kHz Voltage gain (IF) Gree 11 14 17 dB SG1=100mVr-p, 1kHz Voltage gain (IF) Gree 11 14 17 dB SG1=100mVr-p, 1kHz Voltage gain (IF) Vorre 2.00 2.30 — V Separate measurement of inputs Ex and F <	Output offset voltage	Voffe	-100	_	100	mV	_
Voltage gain differential Δ GFE −3 0 3 dB − Maximum output amplitude (HIGH) Vorte 2.00 2.30 − V Separate measurement of inputs AC and BD V8=1/2Vcc±0.2V (TE amplifier) Output offset voltage Vorte − − 0 MV − Voltage gain (E) Gree 11 14 17 dB SG1=100mVρ-p, 1kHz Voltage gain (F) Gree 11 14 17 dB SG1=100mVρ-p, 1kHz Voltage gain differential Δ Gre −3 0 3 dB − Maximum output amplitude (HIGH) Vorre 2.00 2.30 − V Separate measurement of inputs E and F Maximum output amplitude (HIGH) Vorre 2.00 2.30 − V Separate measurement of inputs E and F Maximum output amplitude (LOW) Volte − −2.30 −2.00 V V1=1/2Vcc±0.8V Maximum output amplitude (Voltage Vorre − − 0.6 V	Voltage gain (AC)	GFEAC	29.5	32.5	35.5	dB	SG4=30mV _{P-P} , 1kHz
Maximum output amplitude (HIGH) Vorre 2.00 2.30 - V Vere - -2.30 -2.00 V Vere - -2.30 -2.00 V Vere Vere - -2.30 -2.00 V Vere Ver	Voltage gain (BD)	GFEBD	29.5	32.5	35.5	dB	SG4=30mV _{P-P} , 1kHz
Maximum output amplitude (LOW) Vo.re - −2.30 −2.00 V V8=1/2Vcc±0.2V ⟨TE amplifier⟩ Output offset voltage Vorre −60 − 60 mV − Voltage gain (E) Gree 111 14 17 dB SG1=100mVe-p, 1kHz Voltage gain differential A Gree 11 14 17 dB SG1=100mVe-p, 1kHz Voltage gain differential A Gree -3 0 3 dB − Maximum output amplitude (HIGH) Vome 2.00 2.30 − V Separate measurement of inputs E and F Maximum output amplitude (LOW) Volte − 2.00 V V 1=1/2Vcc±0.8V FOK Comparator ⟩ - - -2.00 V Bias reference Output high level voltage Volter 4.5 - - V V6=1/2Vcc=0.4V Output offset voltage Volter 4.5 - - kHz - - Voltage gain (1) <td>Voltage gain differential</td> <td>ΔGFE</td> <td>-3</td> <td>0</td> <td>3</td> <td>dB</td> <td>_</td>	Voltage gain differential	ΔGFE	-3	0	3	dB	_
Maximum output amplitude (LOW)	Maximum output amplitude (HIGH)	Vонте	2.00	2.30	_	V	Separate measurement of inputs AC and BD
Output offset voltage VoFTE -60 - 60 mV - Voltage gain (E) GTEE 11 14 17 dB SG1=100mVp-p, 1kHz Voltage gain (F) GTEF 11 14 17 dB SG1=100mVp-p, 1kHz Voltage gain differential ΔGTE -3 0 3 dB - Maximum output amplitude (HIGH) VoHE 2.00 2.30 - V Separate measurement of inputs E and F Maximum output amplitude (LOW) VoLE - -2.30 -2.00 V V1=1/2Vcc±0.8V FOK comparator / - - -2.30 -2.00 V V1=1/2Vcc±0.8V FOK comparator / - - -2.30 - V V6=1/2Vcc=0.4V Output high level voltage VoHER 4.5 - - V 6=1/2Vcc=0.4V Output low level voltage VOFAR 45 - - kHz - Output offset voltage VOFAR -60 - 60	Maximum output amplitude (LOW)	VOLTE	_	-2.30	-2.00	V	
Voltage gain (E) Gree 11 14 17 dB SG1=100mV _{P-P} , 1kHz Voltage gain (F) Gree 11 14 17 dB SG1=100mV _{P-P} , 1kHz Voltage gain differential ∆ Gre -3 0 3 dB — Maximum output amplitude (HIGH) Vohre 2.00 2.30 — V Separate measurement of inputs E and F Maximum output amplitude (LOW) Volte — —2.30 —2.00 V V1=1/2Vcc±0.8V (FOK comparator) — — — —2.30 —2.00 V V1=1/2Vcc±0.8V (FOK comparator) — — — — V Bias reference Output low lovelage Voltex 4.5 — — V V6=1/2Vcc=0.4V Output low level voltage Voltex — — 0.6 V V6=1/2Vcc=0.2V Maximum operating frequency FMEK 45 — — kHz — Voltage gain (1) G1 G1	⟨TE amplifier⟩	•			'		
Voltage gain (F) GTEF 11 14 17 dB SG1=100mVP-P, 1kHz Voltage gain differential ∆ GTE -3 0 3 dB — Maximum output amplitude (HIGH) Vohe 2.00 2.30 — V Separate measurement of inputs E and F Maximum output amplitude (LOW) Volte — -2.30 -2.00 V VI=1/2Voc±0.8V (FOK comparator) — — -2.30 -2.00 V Pin 22 input Threshold voltage Vohek 4.5 — — V Bias reference Output high level voltage Vohek 4.5 — — V V6=1/2Voc=0.4V Output low level voltage Volek 4.5 — — V V6=1/2Voc=0.4V Maximum operating frequency FMMFK 45 — — kHz — — Voltage gain (1) GLAS 3 6 9 dB Pin 22 input, 100mVP-P, 1kHz Voltage gain (2) GLAS	Output offset voltage	Vofte	-60	_	60	mV	_
Voltage gain differential ∆ GTE −3 0 3 dB — Maximum output amplitude (HIGH) Vohte 2.00 2.30 — V Separate measurement of inputs E and F Maximum output amplitude (LOW) Volte — —2.30 —2.00 V V1=1/2Vcc±0.8V (FOK comparator) — — — Pin 22 input Threshold voltage Vohex — — V Bias reference Output high level voltage Vohex — — — V V6=1/2Vcc—0.4V Output low level voltage Volex — — 0.6 V V6=1/2Vcc—0.2V Maximum operating frequency FMXFK 45 — — kHz — Voltage gain (1) GIAS 3 6 9 dB Pin 22 input, 100mVe-p, 1kHz Voltage gain (2) GRAS 8.5 11.5 14.5 dB Pin 17 input, 100mVe-p, 1kHz Maximum output amplitude (HIGH) Vohas — — —	Voltage gain (E)	GTEE	11	14	17	dB	SG1=100mV _{P-P} , 1kHz
Maximum output amplitude (HIGH) Vohre 2.00 2.30 − V Separate measurement of inputs E and F V1=1/2Vcc±0.8V Maximum output amplitude (LOW) Volte − −2.30 −2.00 V V1=1/2Vcc±0.8V FOK comparator ⟩ Pin 22 input Pin 22 input Pin 22 input Threshold voltage Vohek 4.5 − − V V6=1/2Vcc−0.4V Output high level voltage Volek − − 0.6 V V6=1/2Vcc−0.4V Output low level voltage Volek − − 0.6 V V6=1/2Vcc−0.2V Maximum operating frequency FMXRK 45 − − kHz − Voltage gain (1) G168 7 60 mV − − Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVp-p, 1kHz Maximum output amplitude (HIGH) Vohas − −1.4 −1.0 V Pin 22 or 17 input, 100mVp-p, 1kHz VAPC amplifier) Volap 4.0 4.5 − <td< td=""><td>Voltage gain (F)</td><td>GTEF</td><td>11</td><td>14</td><td>17</td><td>dB</td><td>SG1=100mV_{P-P}, 1kHz</td></td<>	Voltage gain (F)	GTEF	11	14	17	dB	SG1=100mV _{P-P} , 1kHz
Maximum output amplitude (LOW) Volte — 2.30 — 2.00 V V1=1/2Vcc±0.8V ⟨FOK comparator⟩ Pin 22 input Threshold voltage VTHEK 0.2 0.3 0.4 V Bias reference Output high level voltage VOHEK 4.5 — V V6=1/2Vcc−0.4V Output low level voltage VOLEK — — 0.6 V V6=1/2Vcc−0.2V Maximum operating frequency FMXFK 45 — — kHz — ✓Asymmetry amplifier) Output offset voltage VoFAS —60 — 60 mV — Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVe-p, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVe-p, 1kHz Maximum output amplitude (HIGH) VoHAS 1.30 1.60 — V Pin 22 or 17 input, 100mVe-p, 1kHz VAPC amplifier) VOLAS — —1.4 —1.0 V Pin 22 or 17 input	Voltage gain differential	ΔGτε	-3	0	3	dB	_
Maximum output amplitude (LOW) Volte − −2.30 −2.00 V V1=1/2Vcc±0.8V ⟨FOK comparator⟩ Universal (FOK comparator) Pln 22 input Threshold voltage Volhek 0.2 0.3 0.4 V Bias reference Output high level voltage Volhek 4.5 − − V V6=1/2Vcc−0.4V Output low level voltage Volhek − − 0.6 V V6=1/2Vcc−0.2V Maximum operating frequency FMXFK 45 − − kHz − Asymmetry amplifier) Voltage gain (1) G148 3 6 9 dB Pin 22 input, 100mVp-p, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVp-p, 1kHz Maximum output amplitude (HIGH) Volas − −1.4 −1.0 V Pin 22 or 17 input, 100mVp-p, 1kHz APC amplifier) Volas − −1.4 −1.0 V Pin 22 or 17 input, 100mVp-p, 1kHz Output voltage (1) Volap	Maximum output amplitude (HIGH)	Vонте	2.00	2.30	-	V	Separate measurement of inputs E and F
Threshold voltage VTHEK 0.2 0.3 0.4 V Bias reference Output high level voltage VOHEK 4.5 — — V V6=1/2Vcc−0.4V Output low level voltage VOLEK — — 0.6 V V6=1/2Vcc−0.2V Maximum operating frequency FMXFK 45 — — kHz — CAsymmetry amplifier) Output offset voltage VOFAS —60 — 60 mV — Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVP-P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVP-P, 1kHz Maximum output amplitude (HIGH) VOHAS 1.30 1.60 — V Pin 22 or 17 input V5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V (APC amplifier) Output voltage (1) VOHAP 4.0 4.5 — V Pin 7 input 220 mV Output voltage (2) VOZAP — 0.9 1.5 <td< td=""><td>Maximum output amplitude (LOW)</td><td>VOLTE</td><td>_</td><td>-2.30</td><td>-2.00</td><td>V</td><td></td></td<>	Maximum output amplitude (LOW)	VOLTE	_	-2.30	-2.00	V	
Output high level voltage Vohek 4.5 — V V6=1/2Vcc-0.4V Output low level voltage Volek — — 0.6 V V6=1/2Vcc-0.2V Maximum operating frequency FMXFK 45 — — kHz — (Asymmetry amplifier) — — 60 mV — Output offset voltage Voras — 60 mV — Voltage gain (1) Gnas 3 6 9 dB Pin 22 input, 100mVP-P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pln 17 input, 100mVP-P, 1kHz Maximum output amplitude (HIGH) Vohas 1.30 1.60 — V Pin 22 or 17 input V5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V (APC amplifier) Output voltage (1) Vohap 4.0 4.5 — V Pin 7 input 220 mV Output voltage (2) Volap — 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH)	〈FOK comparator 〉						Pin 22 input
Output low level voltage Volfik - - 0.6 V V6=1/2Vcc-0.2V Maximum operating frequency FMXFK 45 - - kHz - (Asymmetry amplifier) Output offset voltage VoFAS -60 - 60 mV - Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVP-P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVP-P, 1kHz Maximum output amplitude (HIGH) VOHAS 1.30 1.60 - V Pin 22 or 17 input v5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V (APC amplifier) VOLAS - -1.4 -1.0 V Pin 7 input 220 mV Output voltage (1) VO1AP 4.0 4.5 - V Pin 7 input 160 mV Maximum output amplitude (HIGH) VOHAP 4.2 4.5 - V Pin 7 input 300 mV	Threshold voltage	VTHFK	0.2	0.3	0.4	V	Bias reference
Maximum operating frequency F _{MXFK} 45 - - kHz - ✓Asymmetry amplifier) Output offset voltage VoFAS -60 - 60 mV - Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVP-P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVP-P, 1kHz Maximum output amplitude (HIGH) VoHAS 1.30 1.60 - V Pin 22 or 17 input, 100mVP-P, 1kHz Maximum output amplitude (LOW) VoLAS - -1.4 -1.0 V Pin 22 or 17 input, 100mVP-P, 1kHz V5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V ⟨APC amplifier⟩ Output voltage (1) Vo1AP 4.0 4.5 - V Pin 7 input 220 mV Output voltage (2) Vo2AP - 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VoHAP 4.2 4.5 - V Pin 7 input 300 mV	Output high level voltage	Vohek	4.5	_	_	V	V6=1/2Vcc-0.4V
✓Asymmetry amplifier) Output offset voltage VoFAS −60 − 60 mV − Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVP−P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVP−P, 1kHz Maximum output amplitude (HIGH) VOHAS 1.30 1.60 − V Pin 22 or 17 input, 100mVP−P, 1kHz Maximum output amplitude (LOW) VOHAS − −1.4 −1.0 V Pin 22 or 17 input, 100mVP−P, 1kHz Maximum output amplitude (LOW) VOHAS − −1.4 −1.0 V Pin 22 or 17 input, 100mVP−P, 1kHz V6=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V APC amplifier> Output voltage (1) V01AP 4.0 4.5 − V Pin 7 input 220 mV Output voltage (2) VO2AP − 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VOHAP 4.2 4.5 −	Output low level voltage	Volfk	_	_	0.6	V	V6=1/2Vcc-0.2V
Output offset voltage VoFAS -60 - 60 mV - Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVP-P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVP-P, 1kHz Maximum output amplitude (HIGH) VOHAS 1.30 1.60 - V Pin 22 or 17 input, 100mVP-P, 1kHz Maximum output amplitude (LOW) VOHAS - -1.4 -1.0 V VS=1/2Vcc±0.8V VS=1/2Vcc±0.8V VS=1/2Vcc±1.2V (APC amplifier) Output voltage (1) VO1AP 4.0 4.5 - V Pin 7 input 220 mV Output voltage (2) VO2AP - 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VOHAP 4.2 4.5 - V Pin 7 input 300 mV	Maximum operating frequency	Г мхғк	45	-	-	kHz	_
Voltage gain (1) G1AS 3 6 9 dB Pin 22 input, 100mVe-P, 1kHz Voltage gain (2) G2AS 8.5 11.5 14.5 dB Pin 17 input, 100mVe-P, 1kHz Maximum output amplitude (HIGH) VoHAS 1.30 1.60 — V Pin 22 or 17 input, 100mVe-P, 1kHz Maximum output amplitude (LOW) VoHAS — — V Pin 22 or 17 input, 100mVe-P, 1kHz Maximum output amplitude (LOW) VoLAS — — V Pin 22 or 17 input, 100mVe-P, 1kHz V5=1/2Vcc±0.8V V5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V V6=1/2Vcc±1.2V V6=1/2Vcc±1.2V V6=1/2Vcc±1.2V VAPC amplifier> VO1AP 4.0 4.5 — V Pin 7 input 220 mV Output voltage (2) VO2AP — 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VOHAP 4.2 4.5 — V Pin 7 input 300 mV	(Asymmetry amplifier)	•			'		
Voltage gain (2) G₂AS 8.5 11.5 14.5 dB Pin 17 input, 100mV _{P-P} , 1kHz Maximum output amplitude (HIGH) VoHAS 1.30 1.60 — V Pin 22 or 17 input V5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V Maximum output amplitude (LOW) VoLAS — — 1.4 — 1.0 V V6=1/2Vcc±1.2V APC amplifier> Output voltage (1) VolAP 4.0 4.5 — V Pin 7 input 220 mV Output voltage (2) Vo2AP — 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VoHAP 4.2 4.5 — V Pin 7 input 300 mV	Output offset voltage	Vofas	-60	-	60	mV	_
Maximum output amplitude (HIGH) VoHAS 1.30 1.60 − V Pin 22 or 17 input V5=1/2Vcc±0.8V V6=1/2Vcc±1.2V Maximum output amplitude (LOW) VoLAS − −1.4 −1.0 V V6=1/2Vcc±1.2V ⟨APC amplifier⟩ Output voltage (1) Vo1AP 4.0 4.5 − V Pin 7 input 220 mV Output voltage (2) Vo2AP − 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VoHAP 4.2 4.5 − V Pin 7 input 300 mV	Voltage gain (1)	G _{1AS}	3	6	9	dB	Pin 22 input, 100mV _{P-P} , 1kHz
Maximum output amplitude (HIGH) VoHAS 1.30 1.60 − V Pin 22 or 17 input V5=1/2Vcc±0.8V V6=1/2Vcc±0.8V V6=1/2Vcc±1.2V Maximum output amplitude (LOW) VoLAS − −1.4 −1.0 V V6=1/2Vcc±1.2V ✓APC amplifier〉 Output voltage (1) VolAP 4.0 4.5 − V Pin 7 input 220 mV Output voltage (2) VolAP − 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VoHAP 4.2 4.5 − V Pin 7 input 300 mV	Voltage gain (2)	G _{2AS}	8.5	11.5	14.5	dB	Pin 17 input, 100mV _P -P, 1kHz
Maximum output amplitude (LOW) Volas − −1.4 −1.0 V V6=1/2Vcc±1.2V ⟨APC amplifier⟩ Output voltage (1) VolaP 4.0 4.5 − V Pin 7 input 220 mV Output voltage (2) VolaP − 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VolaP 4.2 4.5 − V Pin 7 input 300 mV		Vohas	1.30	1.60	_	V	
Vanish Votage Votage<	Maximum output amplitude (LOW)	Volas	_	-1.4	-1.0	٧	
Output voltage (2) Vo2AP - 0.9 1.5 V Pin 7 input 160 mV Maximum output amplitude (HIGH) VoHAP 4.2 4.5 - V Pin 7 input 300 mV	〈APC amplifier〉		,	,	•		
Maximum output amplitude (HIGH) VOHAP 4.2 4.5 - V Pin 7 input 300 mV	Output voltage (1)	V _{01AP}	4.0	4.5	_	V	Pin 7 input 220 mV
	Output voltage (2)	V _{O2AP}	_	0.9	1.5	٧	Pin 7 input 160 mV
Maximum output amplitude (LOW) Volar – 1.9 2.2 V Pin 7 input 0V with 0.8mA flowing through Pin 6	Maximum output amplitude (HIGH)	VOHAP	4.2	4.5	_	V	Pin 7 input 300 mV
	Maximum output amplitude (LOW)	VOLAP	_	1.9	2.2	V	Pin 7 input 0V with 0.8mA flowing through Pin 6

Parameter	Symbol	Min.	Тур.	Max.	Unit	Conditions
⟨Mirror detector⟩						
Output high level voltage	Vohmr	4.5	_	_	V	_
Output low level voltage	Volmr	_	_	0.5	V	_
Minimum operating frequency	FMNMR	_	_	600	Hz	Pin 23=1.5V _{P-P}
Maximum operating frequency	FMXMR	30	_	_	kHz	Pin 23=1.5V _{P-P}
Minimum operating input voltage	VMNMR	_	_	0.2	V _{P-P}	Pin 23=1kHz
Maximum operating input voltage	VMXMR	1.8	_	_	V _{P-P}	Pin 23=1kHz
⟨Defect detector⟩		•	'	•	•	
Output high level voltage	Vohde	4.5	_	_	٧	_
Output low level voltage	Voldf	_	_	0.5	V	_
Minimum operating frequency	FMNDF	_	_	1	kHz	Pin 23=1.5V _{P-P}
Maximum operating frequency	FMXDF	2	_	_	kHz	Pin 23=1.5V _{P-P}
Minimum operating input voltage	VMNDF	_	_	0.5	V _P -P	Pin 23=1kHz
Maximum operating input voltage	VMXDF	1.8	_	_	V _P -P	Pin 23=1kHz
Pin 9 voltage	V9	0.95	1.20	1.45	V	_
〈Ramp generator circuit〉		'				
Capacitance charging current	İsira	-3.45	-2.50	-1.85	μΑ	_
Capacitance discharging current	Isora	20.0	27.0	34.0	μΑ	_
High level limit voltage	VLHRA	0.24	0.44	0.64	V	Bias reference
Low level limit voltage	VLLRA	-0.64	-0.44	-0.24	V	Bias reference
⟨FON pin⟩			1			
Sink current	lifon	18.0	27.0	36.0	μA	_
Input threshold voltage	VTHFO	1.30	1.65	2.00	٧	_
〈Loop on〉		•	1	•	1	
Loop off delay time	toflo	3.8	5.5	8.5	msec	_

^{*} When FON is LOW, pin 8 voltage is 1/2 Vcc.

^{*} The ramp wave begins at the bottom.

 $[\]ensuremath{\boldsymbol{\ast}}$ The loop will not turn on when the ramp wave is at the bottom.

st Pin 8 is charged rapidly when the loop turns on.

Measurement circuit

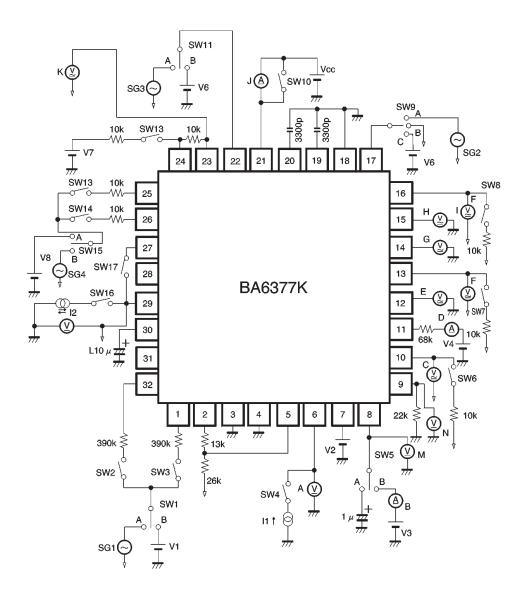


Fig.1

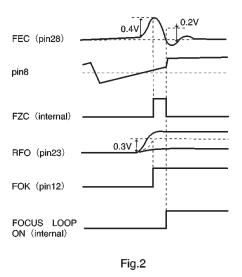
Optical disc ICs BA6377K

Circuit operation

Focus search sequence operations

When the loop turns on

The focus loop turns on when the fall of FEC is detected while FOK is at the HIGH level.



When the loop turns off

The focus loop turns off after the elapse of a delay (T[S], see below) after FOK changes to the LOW state.

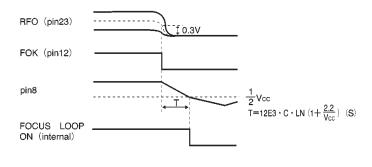


Fig.3

Application example

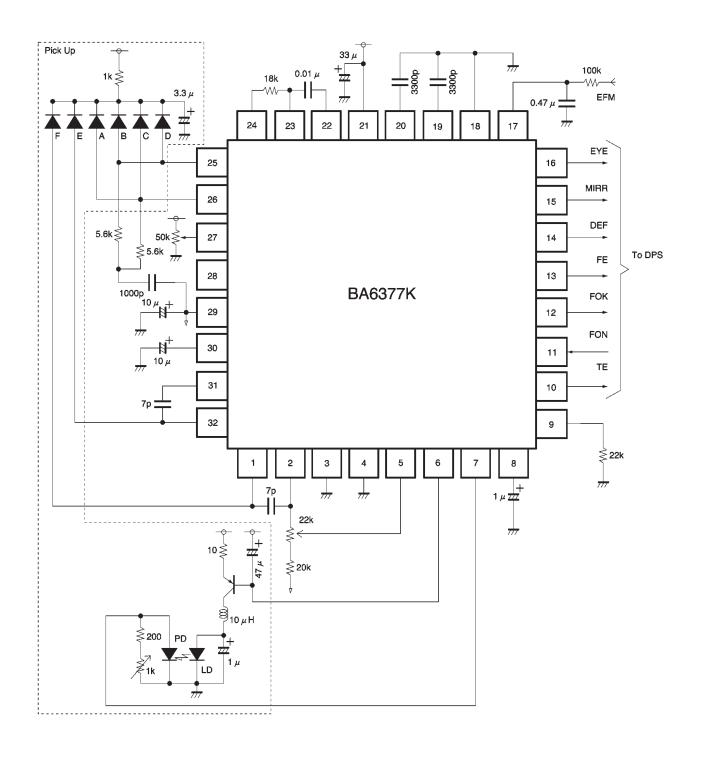
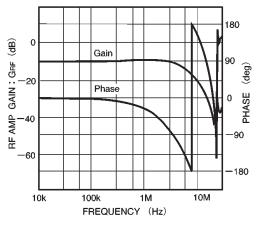


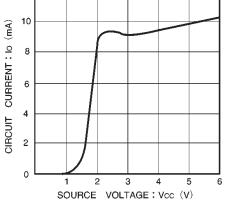
Fig.4

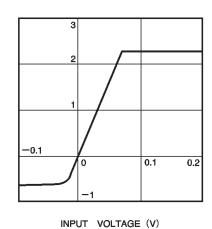
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Electrical characteristic curves





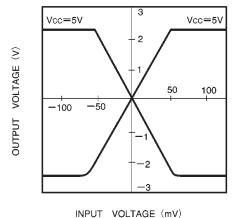


OUTPUT VOLTAGE (V)

Fig. 5 Radio frequency amplifier frequency characteristics

Fig. 6 Power supply voltage vs. supply current

Fig. 7 RF amplifier I/O characteristics



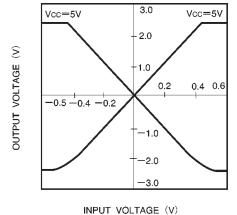


Fig. 8 FE amplifier I/O characteristics

Fig. 9 TE amplifier I/O characteristics

External dimensions (Units: mm)

