Dual high slew rate operational amplifier

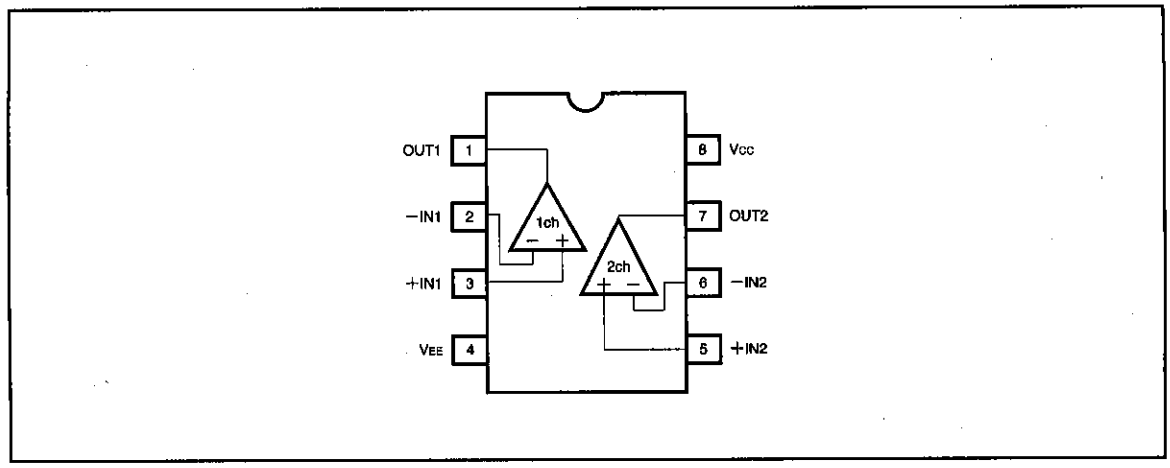
BA4510F/BA4510FV

The BA4510F and BA4510FV are monolithic ICs that contain two operational amplifiers with high slew rate, featuring phase compensation. These ICs can be driven with a low-voltage power supply, requiring a power supply range of ±1 to ±3.5V for a dual power supply and 2 to 7V for a single power supply. In addition, an unbuffered type is used which enables ample output even in low voltage ranges, enabling swing at up to nearly the power supply voltage.

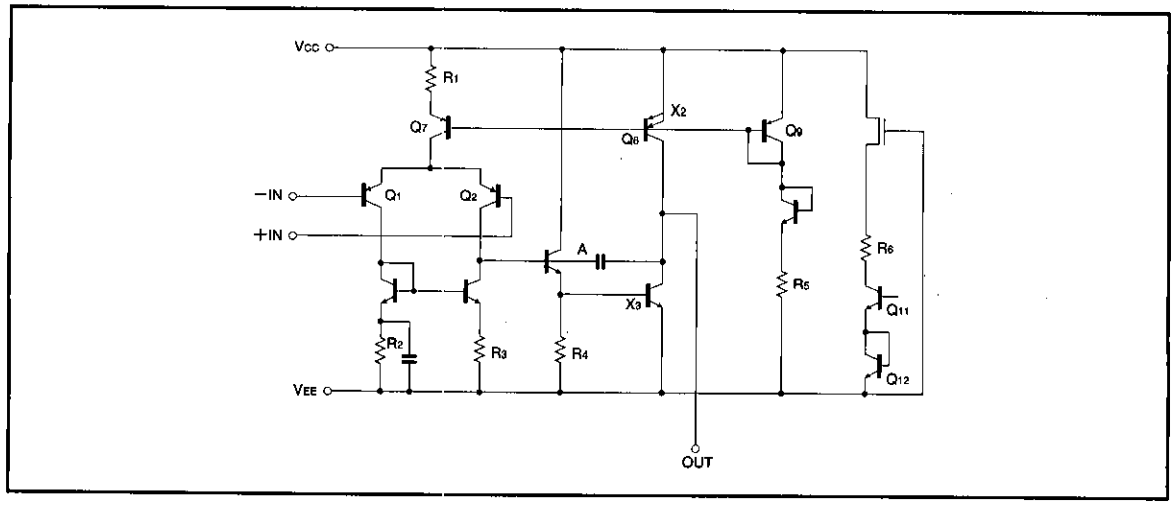
●Features

1) Low-voltage operation.
2) High slew rate.
3) Wide dynamic output range.
4) Compact 8-pin SSOP-B package. (BA4510FV)

●Block diagram



●Internal circuit configuration diagram



●Absolute maximum ratings (Ta=25℃)

Parameter		Symbol	Limits	Unit
Power supply voltage		Vcc	±5	V
Power dissipation	BA4510F	Pd	550*1 (SOP)	mW
	BA4510FV		350*2 (SSOP)	
Differential input voltage		VID	±Vcc	V
In-phase input voltage		VI	0～Vcc	V
Operating temperature		Topr	−20～75	℃
Storage temperature		Tstg	−40～125	℃

*1 If used at temperatures higher than 25°C, reduce power by 5.5 mW for each 1°C above Ta = 25°C.
This value is the value measured when mounted on a glass epoxy board (50 mm × 50 mm × 1.6 mm).

*2 If used at temperatures higher than 25°C, reduce power by 3.5 mW for each 1°C above Ta = 25°C.
This value is the value measured when mounted on a glass epoxy board (70 mm x 70 mm x 1.6 mm).
The value is 300 mW when the IC is used alone.

●Electrical characteristics (Unless otherwise noted, Ta = 25℃, V_{CC} = ±2.5V)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input offset voltage		V_{IO}	—	1	6	mV	R_S=50Ω
Input offset current		I_{IO}	—	2	200	nA	
Input bias current		I_B	—	80	500	nA	*1
High-amplitude voltage gain		A_V	60	90	—	dB	R_L≧2kΩ, V_{CC}=15V
Common mode input voltage range		V_{ICM}	−1.3	—	1.5	V	
Common mode rejection ratio		CMRR	60	80	—	dB	
Power supply voltage rejection ratio		PSRR	60	80	—	dB	R_S=50Ω
Quiescent circuit current		I_Q	2.5	5.0	7.5	mA	R_L=∞ALL AMPS
Output voltage range	Hi	V_{OH}	2.0	2.4	—	V	R_L=2kΩ
	Low	V_{OL}	—	−2.4	−2.0	V	R_L=2kΩ
Slew rate		S.R.	—	5	—	V / μs	

*1 Because the initial stage is configured by the PNP transistor, the direction of the input bias current is the direction of the flow from the IC.

●Electrical characteristic curve

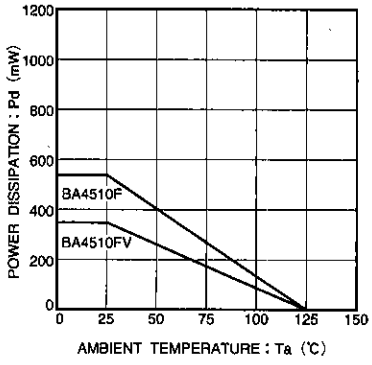


Fig. 1 Power dissipation - ambient temperature characteristic

●Operation notes

- Unused circuit connections
  If there are any circuits which are not being used, we recommend making connections as shown in Figure 2, with the non-inverted input pin connected to the potential within the in-phase input voltage range (V_{ICM}).
- If used with a voltage follower, be careful of oscillation which may cause problems with the in-line input voltage range or the capacitance load.
- If using at power supply voltage +5.0 or higher, be sure the gain is reduced sufficiently to prevent oscillation.

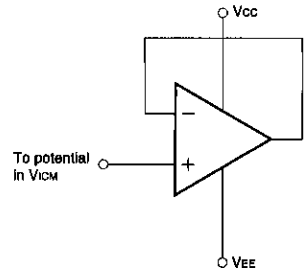
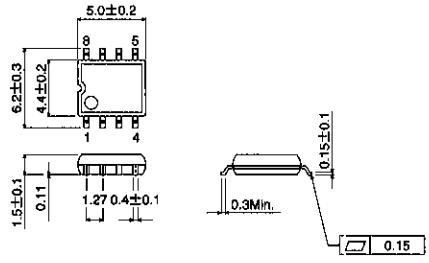


Fig. 2 Unused circuit connections

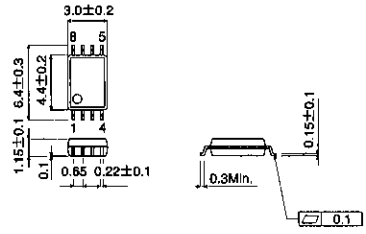
●External dimensions (Units: mm)

BA4510F



SOP8

BA4510FV



SSOP-B8

Notes

- The contents described in this catalogue are correct as of March 1997.
- No unauthorized transmission or reproduction of this book, either in whole or in part, is permitted.
- The contents of this book are subject to change without notice. Always verify before use that the contents are the latest specifications. If, by any chance, a defect should arise in the equipment as a result of use without verification of the specifications, ROHM CO., LTD., can bear no responsibility whatsoever.
- Application circuit diagrams and circuit constants contained in this data book are shown as examples of standard use and operation. When designing for mass production, please pay careful attention to peripheral conditions.
- Any and all data, including, but not limited to application circuit diagrams, information, and various data, described in this catalogue are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO., LTD., disclaims any warranty that any use of such device shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes absolutely no liability in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices; other than for the buyer's right to use such devices itself, resell or otherwise dispose of the same; no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by ROHM CO., LTD., is granted to any such buyer.
- The products in this manual are manufactured with silicon as the main material.
- The products in this manual are not of radiation resistant design.

The products listed in this catalogue are 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 these products 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, or other safety devices) please be sure to consult with our sales representatives in advance.

- Notes when exporting
  - It is essential to obtain export permission when exporting any of the above products when it falls under the category of strategic material (or labor) as determined by foreign exchange or foreign trade control laws.
  - Please be sure to consult with our sales representatives to ascertain whether any product is classified as a strategic material.