Quad operational amplifier
BA14741 / BA14741F

The BA14741 and BA14741F are monolithic ICs with four operational amplifiers featuring internal phase compensation mounted on a single silicon chip. Either a dual or single power supply can be driven.
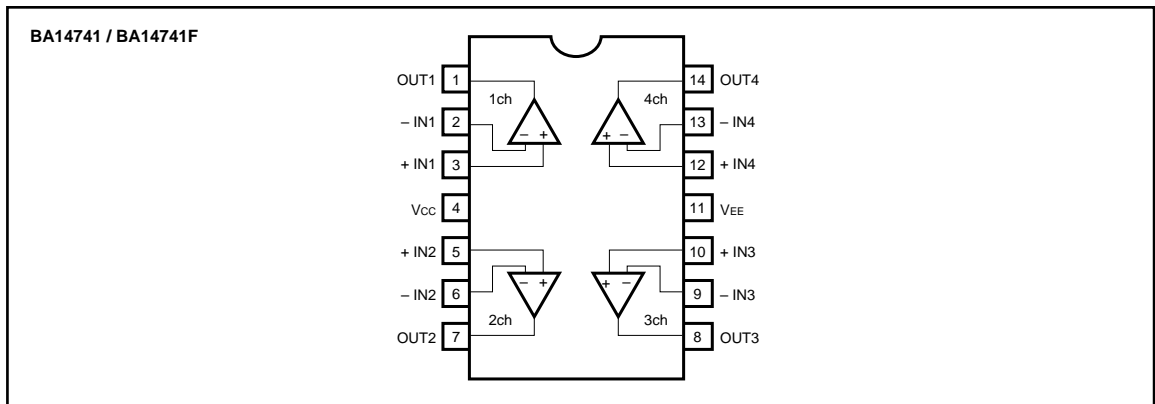
●Applications
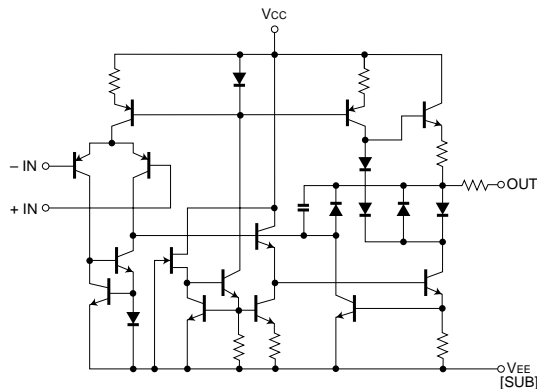Active filters
Audio amplifiers
VCOs
Other electronic circuits

●Features
1) Built-in phase compensation circuit.
2) Wide range of operating power supply voltages.
   (± 2 to ± 18V)
3) Can be connected to other standard quad operational amplifiers.

4) High gain and low noise.
5) Compatible with model 741 operation amplifiers of other manufacturers.

●Block diagram

●Internal circuit configuration

●Absolute maximum ratings (Ta = 25°C)

Parameter	Symbol	Limits		Unit
		BA14741	BA14741F	
Power supply voltage	V_{CC}	36 (± 18)	36 (± 18)	V
Power dissipation	Pd	950*	450*	mW
Differential input voltage	V_{ID}	± V_{CC}	± V_{CC}	V
Common-mode input voltage	V_I	– V_{CC} ~ V_{CC}	– V_{CC} ~ V_{CC}	V
Operating temperature	Topr	– 40 ~ + 85	– 40 ~ + 85	°C
Storage temperature	Tstg	– 55 ~ + 125	– 55 ~ + 125	°C

∗ Refer to Pd characteristics diagram.
  The values for the BA14741F are those when it is mounted on a glass epoxy board (50mm × 50mm × 1.6mm).

●Electrical characteristics (unless otherwise noted, Ta = 25°C, V_{CC} = + 15V, V_{EE} = - 15V)

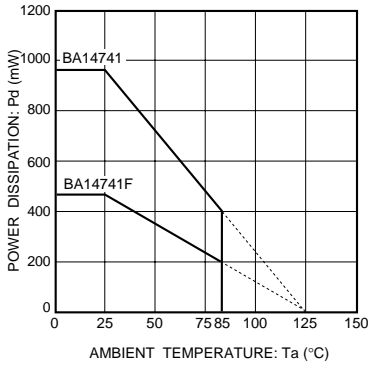| Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input offset voltage		V_{IO}	—	1	5	mV	$R_S ≦ 10kΩ$
Input offset current		I_{IO}	—	10	50	nA	—
Input bias current		I_B	—	60	300	nA	—
High-amplitude voltage gain		A_V	86	100	—	dB	$R_L = 2kΩ$, $V_O = ± 10V$
Common-mode input voltage		V_{ICM}	± 12	± 13.5	—	V	—
Maximum output voltage		V_{OM}	± 10	± 12.5	—	V	$R_L = 2kΩ$
Common-mode rejection ratio		CMRR	80	100	—	dB	—
Power supply voltage rejection ratio		PSRR	80	100	—	dB	—
Quiescent current		I_Q	—	3.0	7.0	mA	$R_L = ∞$, on All Op - Amps
Channel separation		CS	—	100	—	dB	f = 1kHz input conversion
Maximum output current	source	I_{source}	10	20	—	mA	$V_O = 0$
	sink	I_{sink}	5	10	—	mA	$V_O = 0$
Slew rate		S. R.	—	1	—	V / μs	$A_V = 1$, $R_L = 2kΩ$
Maximum frequency		f_T	—	2	—	MHz	—
Input conversion noise voltage		V_n	—	2	4.0	μVrms	RIAA, $R_S = 2.2kΩ$, 10Hz ~ 30kHz

ROHM

●Electrical characteristic curves

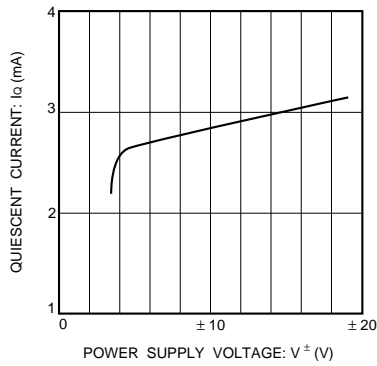Fig.1 Power dissipation vs. ambient
temperature

Fig.2 Quiescent current vs. power
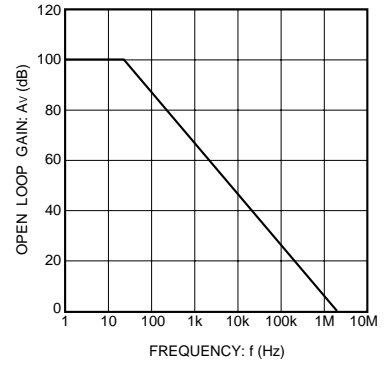supply voltage

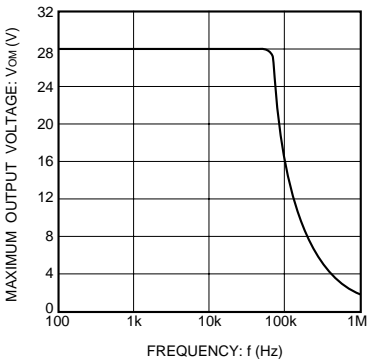Fig.3 Open loop voltage gain vs.
frequency

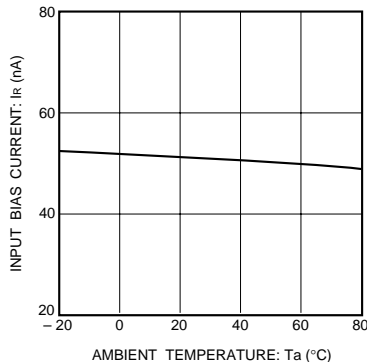Fig.4 Maximum output voltage vs.
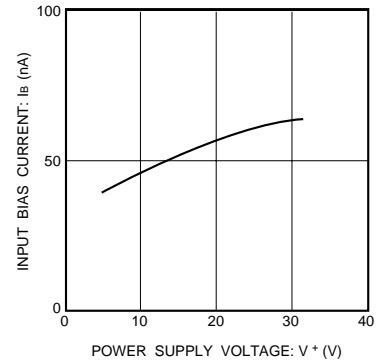frequency

Fig.5 Input bias current vs. ambient
temperature
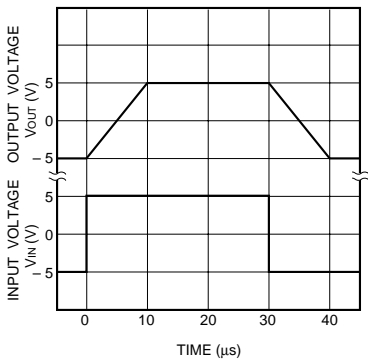
Fig.6 Input bias current vs. power
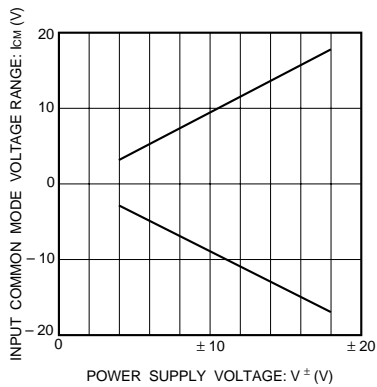supply voltage

Fig.7 Output response characteristics

Fig.8 Common mode input voltage vs.
power supply voltage

●Operation notes

(1) Handling unused circuits

If there are any circuits which are not being used, we recommend making connections as shown in Figure 9, with the non-inverted input pin connected to the potential within the in-phase input voltage range (V_{ICM}).
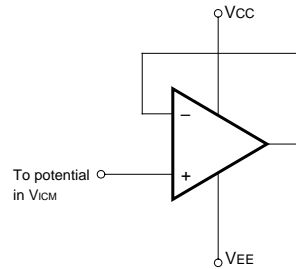

Fig.9 Unused circuit connections

●External dimensions (Units: mm)

BA14741

19.4 ± 0.3

6.5 ± 0.3

4.25 ± 0.3   0.51Min.

3.2 ± 0.2

2.54   0.5 ± 0.1   0° ~ 15°

7.62

0.3 ± 0.1

DIP14

BA14741F

8.7 ± 0.2

6.2 ± 0.3

4.4 ± 0.2

1.5 ± 0.1

0.11

1.27   0.4 ± 0.1   0.3Min.

0.15 ± 0.1

0.15

SOP14