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# HA17474/P

## Quad Operational Amplifier

# HITACHI

ADE-204-041 (Z)  
Rev. 0  
Dec. 2000

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### Description

HA17474/P is a quad operational amplifier with provided internal frequency compensation and high performance. It can be applied widely to measuring control equipment and to general use.

### Features

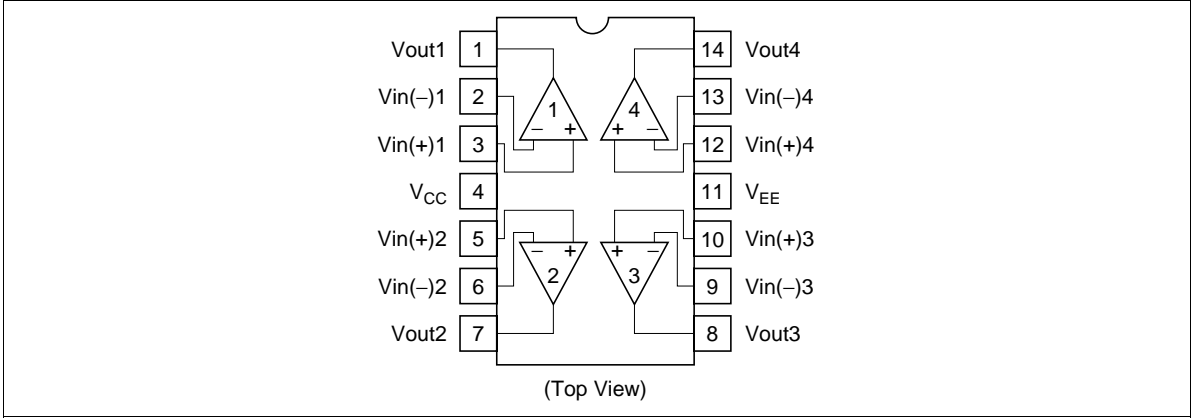
- High speed: 1.6 V/ $\mu$ s
- Continuous short-circuit protection
- Low-noise operational amplifiers
- Internal frequency compensation
- Wide operating power supply voltage range:  $V = \pm 2$  V to  $\pm 20$  V
- Pin compatible with HA17324, HA17902

### Ordering Information

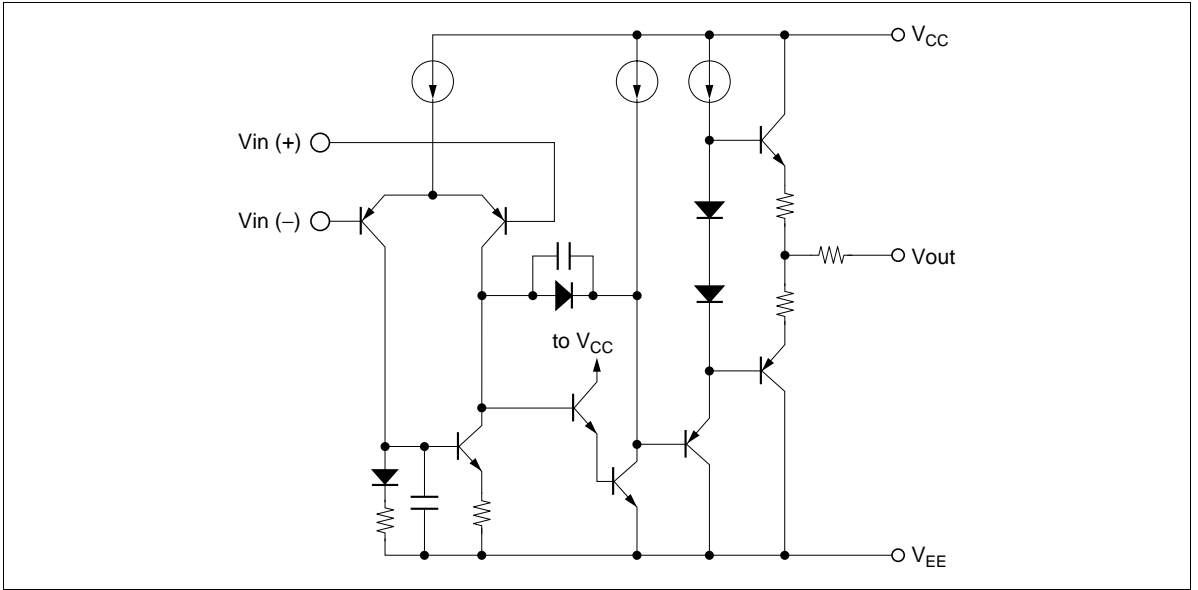
Type No.	Application	Package
HA17474P	Industrial use	DP-14
HA17474	Commercial use	

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## Pin Arrangement



## Circuit Schematic



## Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings			Unit
		HA17474	HA17474P	HA17474RP	
Power supply	V <sub>CC</sub>	+20	+20	+20	V
	V <sub>EE</sub>	-20	-20	-20	V
Common-mode differential voltage	V <sub>in(diff)</sub>	±30	±30	±30	V
Common-mode input voltage	V <sub>CM</sub>	±15 * <sup>1</sup>	±15 * <sup>1</sup>	±15 * <sup>1</sup>	V
Power dissipation	P <sub>T</sub>	670 * <sup>2</sup>	670 * <sup>2</sup>	670 * <sup>2</sup>	mW
Operating temperature range	Topr	-20 to +75	-20 to +75	-20 to +75	°C
Storage temperature range	Tstg	-55 to +125	-55 to +125	-55 to +125	°C

Notes: 1. For supply voltage less than ±15 V, the absolute maximum input voltage is equal to the supply voltage.

2. Value under Ta ≤ 35°C. In case of more than it, 8.3 mW/°C derating shall be done.

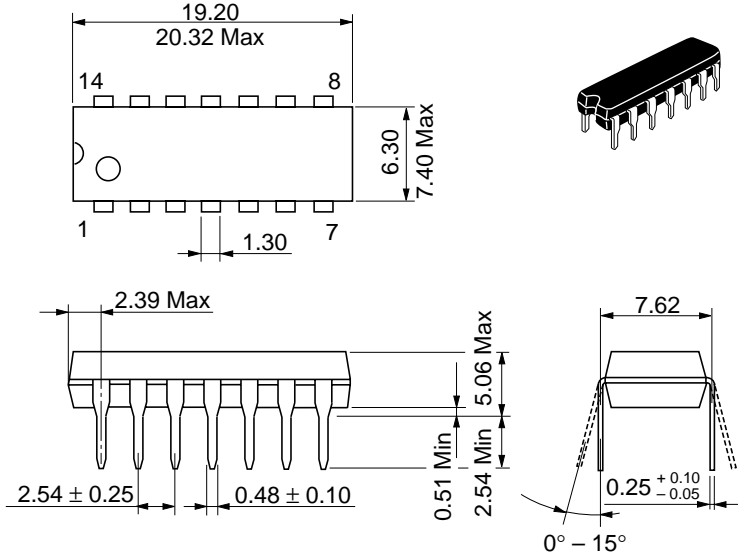
Electrical Characteristics (Ta = 25°C, V<sub>CC</sub> = +15 V, V<sub>EE</sub> = -15 V)

Item	Symbol	Min	Typ	Max	Unit	Test conditions
Input offset voltage	V <sub>IO</sub>	—	1.0	5.0	mV	R <sub>S</sub> ≤ 10 kΩ
Input offset current	I <sub>IO</sub>	—	30	50	nA	
Input bias current	I <sub>IB</sub>	—	100	300	nA	
Voltage gain	A <sub>VD</sub>	88	94	—	dB	R <sub>L</sub> ≥ 2 kΩ, V <sub>O</sub> = ±10 V
Maximum output voltage	V <sub>op-p</sub>	±12	±13.7	—	V	R <sub>L</sub> ≥ 10 kΩ
		±10	±12.5	—	V	R <sub>L</sub> ≥ 2 kΩ
Common-mode input voltage range	V <sub>CM</sub>	±12	±14	—	V	
Common-mode rejection ratio	CMR	80	90	—	dB	R <sub>S</sub> ≤ 10 kΩ
Supply voltage rejection ratio	PSRR	—	50	100	μV/V	R <sub>S</sub> ≤ 10 kΩ
Power dissipation	P <sub>d</sub>	—	150	210	mW	4-channel, No load
Slew rate	SR	—	1.6	—	V/μs	A <sub>VD</sub> = 1
Equivalent input noise voltage	V <sub>NI</sub>	—	9	—	nV/√Hz	R <sub>S</sub> = 1 kΩ, f = 1 Hz to 1 kHz
Channel separation	CS	—	108	—	dB	f = 1 kHz

Note: Since these products provide a high slew rate, oscillation may occur due to load capacitance. An allowable capacitor value is minimum at voltage follower.

Package Dimensions

Unit: mm



Hitachi Code	DP-14
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.97 g

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