HA17904GS, HA17904PS, HA17358 ●Dual Operational Amplifier

HA17904 is a dual operational amplifier, which provides internal phase compensation and high gain, and mono power source operation is possible. It can be widely applied to control equipment and to general use.

Industrial Use HA17904GS, HA17904PS
Commercial Use HA17358

HA17904GS

(DG-8)

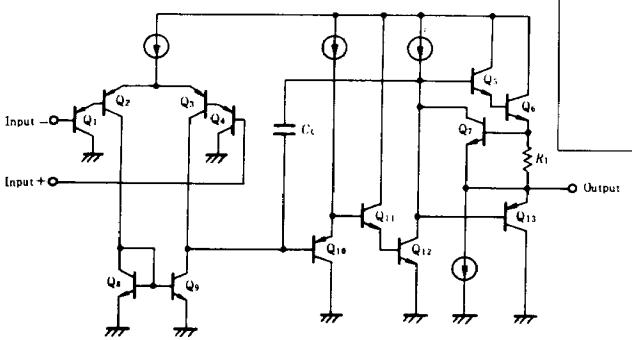
HA17904PS
HA17358

(DP-8)

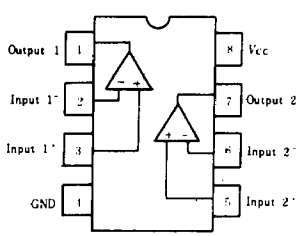
■ FEATURES

- Wide Range of Operating Supply Voltage and Mono Power Source Operation is possible.
- Wide range of Common Mode Input Voltage. Possible to operate with an input around 0V, and output around 0V is available.
- Frequency Characteristics and Input Bias Current are temperature compensated.

■ CIRCUIT SCHEMATIC(1/2)



■ PIN ARRANGEMENT



(Top View)

HITACHI

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■ ABSOLUTE MAXIMUM RATINGS ($Ta = 25°C$)

Item	Symbol	1) HA17904GS	2) HA17904PS	2) HA17358	Unit
Supply Voltage	V_{CC}	32	32	32	V
Output Sink Current	I_{Osink}	50	50	50	mA
Power Dissipation	P_T*	570	570	570	mW
Common Mode Input Voltage	V_{CM}	0.3 to V_{CC}	0.3 to V_{CC}	0.3 to V_{CC}	V
Differential Input Voltage	V_{ID}	$\pm V_{CC}$	$\pm V_{CC}$	$\pm V_{CC}$	V
Operating Temperature	T_{opr}	−40 to +85	20 to +75	0 to +70	°C
Storage Temperature	T_{stg}	−65 to +150	−55 to +125	−55 to +125	°C

* 1) : Value at $Ta = 75°C$. In case of more than it, 7.6mW/°C derating shall be done in HA17904GS.
2) : Value at $Ta = 55°C$. In case of more than it, 8.3mW/°C derating shall be done in HA17904PS and HA17358.

■ ELECTRICAL CHARACTERISTICS ($V_{CC} = 15V$, $Ta = 25°C$)

Item	Symbol	Test Condition	min	typ	max	Unit
Input Offset Voltage	V_{IO}	$V_{CM} = 7.5V$, $R_S = 50\Omega$, $R_f = 50k\Omega$	—	3	7	mV
Input Offset Current	I_{IO}	$V_{CM} = 7.5V$, $I_{IO} = \lvert I_{IB(-)} - I_{IB(+)} \rvert$	—	5	50	nA
Input Bias Current	I_B	$V_{CM} = 7.5V$	—	30	250	nA
Power Source Rejection Ratio	$PSRR$	$f = 100Hz$, $R_S = 1k\Omega$, $R_f = 100k\Omega$	—	93	—	dB
Voltage Gain	A_{VD}	$R_L = \infty$, $R_S = 1k\Omega$, $R_f = 100k\Omega$	75	90	—	dB
Common Mode Rejection Ratio	CMR	$R_S = 50\Omega$, $R_f = 5k\Omega$	—	80	—	dB
Common Mode Input Voltage Range	$V_{CM(+)}$	$R_S = 1k\Omega$, $R_f = 100k\Omega$	13.5	—	—	V
	$V_{CM(-)}$	$R_S = 1k\Omega$, $R_f = 100k\Omega$	—	—	−0.3	V
Peak-to-peak Output Voltage	V_{OP-P}	$f = 100Hz$, $R_L = 20k\Omega$, $R_S = 1k\Omega$, $R_f = 100k\Omega$	—	13.6	—	V
Output Source Current	$I_{Osource}$	$V_{ID(+)} = 1V$, $V_{ID(-)} = 0V$	20	40	—	mA
Output Sink Current	I_{Osink}	$V_{ID(+)} = 1V$, $V_{ID(-)} = 0V$	10	20	—	mA
Output Sink Current	I_{Osink}	$V_{ID(+)} = 1V$, $V_{ID(-)} = 0V$, $V_{out} = 200mV$	15	50	—	μA
Supply Current	I_{CC}	$V_{ID} = GND$, $R_L = \infty$	—	0.8	2	mA
Power Dissipation at no Load	P_T	$R_L = \infty$, $V_{ID} = GND$	—	12	30	mW
Slew Rate	SR	$R_L = \infty$, $V_{CM} = 7.5V$, $f = 1.5kHz$	—	0.6	—	V/μs
Channel Separation	V_{O1}/V_{O2}	$f = 1kHz$	—	65	—	dB

Note As for the characteristic curve, see the HA17902.

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