

OPERATIONAL AMPLIFIERS

MC1748G MC1748CG

Advance Information

HIGH PERFORMANCE MONOLITHIC OPERATIONAL AMPLIFIER

... designed for use as a summing amplifier, integrator, or amplifier with operating characteristics as a function of the external feedback components.

- Noncompensated MC1741G
- Single 30 pF Capacitor Compensation Required For Unity Gain
- Short-Circuit Protection
- Offset Voltage Null Capability
- Wide Common-Mode and Differential Voltage Ranges
- Low-Power Consumption
- No Latch Up

OPERATIONAL AMPLIFIER INTEGRATED CIRCUIT

MONOLITHIC SILICON EPITAXIAL PASSIVATED

METAL PACKAGE
CASE 601
TO-99



(bottom view)

FIGURE 1 — POWER BANDWIDTH
(LARGE SIGNAL SWING versus FREQUENCY)

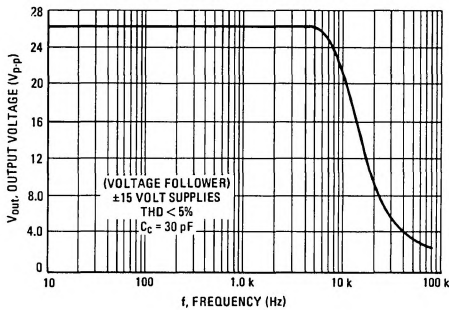


FIGURE 2 — OPEN LOOP FREQUENCY RESPONSE

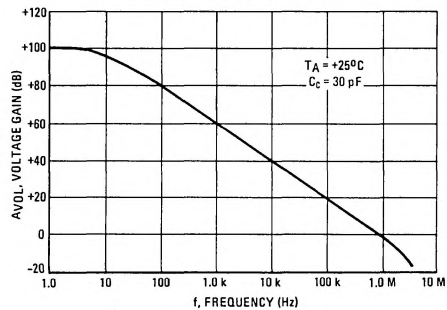


FIGURE 3 — CIRCUIT SCHEMATIC

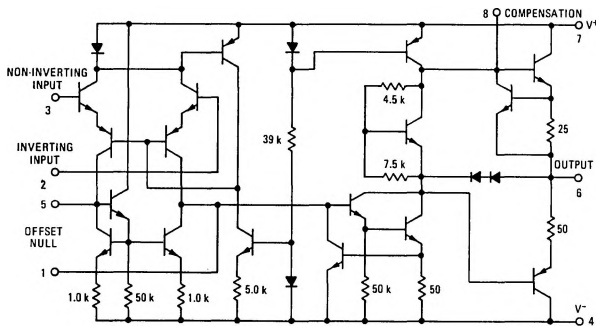
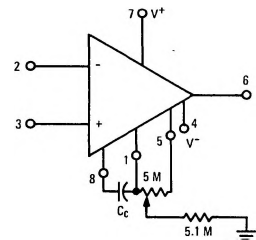


FIGURE 4 — OFFSET ADJUST AND
FREQUENCY COMPENSATION



This is advance information and specifications are subject to change without notice.

See Packaging Information Section for outline dimensions.

See current MCC1748/1748C data sheet for standard linear chip information.

MC1748G, MC1748CG (continued)

MAXIMUM RATINGS (T_A = +25°C unless otherwise noted)

Rating	Symbol	MC1748G	MC1748CG	Unit
Power Supply Voltage	V ⁺ V ⁻	+22 -22	+18 -18	Vdc
Differential Input Signal	V _{in}	±30		Volts
Common-Mode Input Swing ①	CMV _{in}	±15		Volts
Output Short Circuit Duration	t _s	Continuous		
Power Dissipation (Package Limitation) Derate above T _A = +25°C	P _D	680 4.6		mW mW/°C
Operating Temperature Range	T _A	-55 to +125	0 to +75	°C
Storage Temperature Range	T _{stg}	-65 to +150	-65 to +150	°C

ELECTRICAL CHARACTERISTICS (V⁺ = +15 Vdc, V⁻ = -15 Vdc, T_A = +25°C unless otherwise noted)

Characteristics	Symbol	MC1748G			MC1748CG			Unit
		Min	Typ	Max	Min	Typ	Max	
Input Bias Current T _A = +25°C T _A = T _{low} to T _{high} ②	I _b	— —	0.08 0.3	0.5 1.5	— —	0.08 —	0.5 0.8	μAdc
Input Offset Current T _A = +25°C T _A = T _{low} to T _{high}	I _{io}	— —	0.02 0.08	0.2 0.5	— —	0.02 —	0.2 0.3	μAdc
Input Offset Voltage (R _S ≤ 10 k Ω) T _A = +25°C T _A = T _{low} to T _{high}	V _{io}	— —	1.0 —	5.0 6.0	— —	1.0 —	6.0 7.5	mVdc
Differential Input Impedance (Open-Loop, f = 20 Hz) Parallel Input Resistance Parallel Input Capacitance	R _p C _p	0.3 —	2.0 1.4	— —	0.3 —	2.0 1.4	— —	Megohm pF
Common-Mode Input Impedance (f = 20 Hz)	Z _(in)	—	200	—	—	200	—	Megohms
Common-Mode Input Voltage Swing	CMV _{in}	±12	±13	—	±12	±13	—	V _{pk}
Common-Mode Rejection Ratio (f = 100 Hz)	CM _{rej}	70	90	—	70	90	—	dB
Open-Loop Voltage Gain, (V _O = ±10 V, R _L = 2.0 k ohms) T _A = +25°C T _A = T _{low} to T _{high}	A _{VOL}	50,000 25,000	200,000 —	— —	20,000 15,000	200,000 —	— —	V/V
Step Response (V _{in} = 20 mV, C _C = 30 pF, R _L = 2 k Ω, C _L = 100 pF) Rise Time Overshoot Percentage Slew Rate	t _r dV _{out} /dt	— — —	0.3 5.0 0.8	— — —	— — —	0.3 5.0 0.8	— — —	μs % V/μs
Output Impedance (f = 20 Hz)	Z _{out}	—	75	—	—	75	—	ohms
Short-Circuit Output Current	I _{SC}	—	25	—	—	25	—	mA _{dc}
Output Voltage Swing (R _L = 10 k ohms) R _L = 2 k ohms (T _A = T _{low} to t _{high})	V _O	±12 ±10	±14 ±13	— —	±12 ±10	±14 ±13	— —	V _{pk}
Power Supply Sensitivity V ⁻ = constant, R _S ≤ 10 k ohms V ⁺ = constant, R _S ≤ 10 k ohms	S ⁺ S ⁻	— —	30 30	150 150	— —	30 30	150 150	μV/V
Power Supply Current	I _D ⁺ I _D ⁻	— —	1.67 1.67	2.83 2.83	— —	1.67 1.67	2.83 2.83	mA _{dc}
DC Quiescent Power Dissipation (V _O = 0)	P _D	—	50	85	—	50	85	mW

① For supply voltages less than ±15 V, the Maximum Input Voltage is equal to the Supply Voltage.

② T_{low}: 0°C for MC1748CG
-55°C for MC1748G
T_{high}: +75°C for MC1748CG
+125°C for MC1748G