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

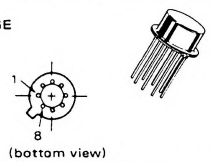


FIGURE 1 – POWER BANDWIDTH (LARGE SIGNAL SWING versus FREQUENCY)

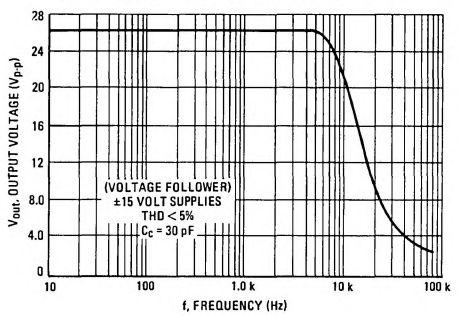


FIGURE 2 – OPEN LOOP FREQUENCY RESPONSE

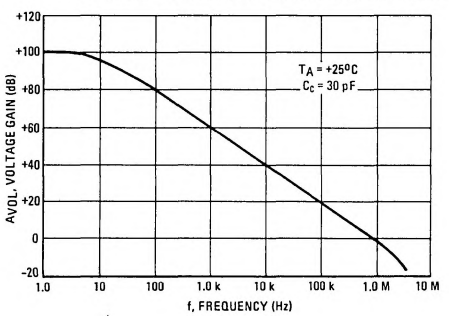


FIGURE 3 – CIRCUIT SCHEMATIC

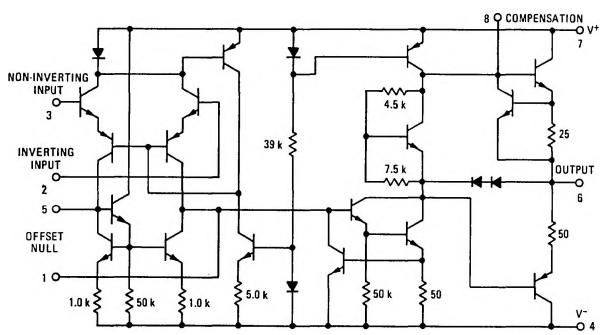
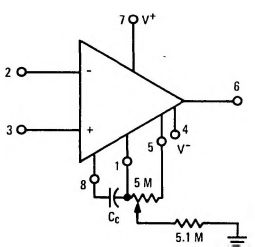


FIGURE 4 – OFFSET ADJUST AND FREQUENCY COMPENSATION



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.

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	I_b							µAdc
T_A = +25°C		–	0.08	0.5	–	0.08	0.5	
$T_A = T_{low}$ to T_{high} ②		–	0.3	1.5	–	–	0.8	
Input Offset Current	$\|I_{io}\|$							µAdc
T_A = +25°C		–	0.02	0.2	–	0.02	0.2	
$T_A = T_{low}$ to T_{high}		–	0.08	0.5	–	–	0.3	
Input Offset Voltage ($R_S \leq 10$ k Ω)	$\|V_{io}\|$							mVdc
T_A = +25°C		–	1.0	5.0	–	1.0	6.0	
$T_A = T_{low}$ to T_{high}		–	–	6.0	–	–	7.5	
Differential Input Impedance (Open-Loop, f = 20 Hz)								
Parallel Input Resistance	R_p	0.3	2.0	–	0.3	2.0	–	Megohm
Parallel Input Capacitance	C_p	–	1.4	–	–	1.4	–	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)	A_{VOL}							V/V
T_A = +25°C		50,000	200,000	–	20,000	200,000	–	
$T_A = T_{low}$ to T_{high}		25,000	–	–	15,000	–	–	
Step Response (V_{in} = 20 mV, C_c = 30 pF, R_L = 2 kΩ, C_L = 100 pF)								
Rise Time	t_r	–	0.3	–	–	0.3	–	µs
Overshoot Percentage		–	5.0	–	–	5.0	–	%
Slew Rate	dV_{out}/dt	–	0.8	–	–	0.8	–	V/µs
Output Impedance (f = 20 Hz)	Z_{out}	–	75	–	–	75	–	ohms
Short-Circuit Output Current	I_{SC}	–	25	–	–	25	–	mAdc
Output Voltage Swing (R_L = 10 k ohms)	V_o	±12	±14	–	±12	±14	–	Vpk
R_L = 2 k ohms ($T_A = T_{low}$ to t_{high})		±10	±13	–	±10	±13	–	
Power Supply Sensitivity								µV/V
V^- = constant, $R_s \leq 10$ k ohms	S+	–	30	150	–	30	150	
V^+ = constant, $R_s \leq 10$ k ohms	S-	–	30	150	–	30	150	
Power Supply Current	I_D^+	–	1.67	2.83	–	1.67	2.83	mAdc
	I_D^-	–	1.67	2.83	–	1.67	2.83	
DC Quiescent Power Dissipation	P_D							mW
(V_O = 0)		–	50	85	–	50	85	

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