MCC1748
MCC1748C

Advance Information

HIGH PERFORMANCE MONOLITHIC OPERATIONAL AMPLIFIER CHIP

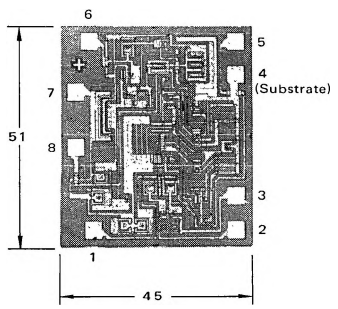
. . . designed for use as a summing amplifier, integrator, or amplifier with operating characteristics as a function of the external feedback components.

The MCC1748 and MCC1748C employ phosphorsilicate passivation that protects the entire die surface area, including metalization interconnects. All dice have a minimum gold-backed thickness of 4000 Angstroms. The interconnecting metalization and bonding pads are of evaporated aluminum.

- 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 CHIP INTEGRATED CIRCUIT

MONOLITHIC SILICON
EPITAXIAL PASSIVATED



All dimensions are nominal and in mils (10^{-3} inches).
Die Dimensions
Thickness = 8.0
Bonding Pads = 4.0 x 4.0

FIGURE 1 – CIRCUIT SCHEMATIC

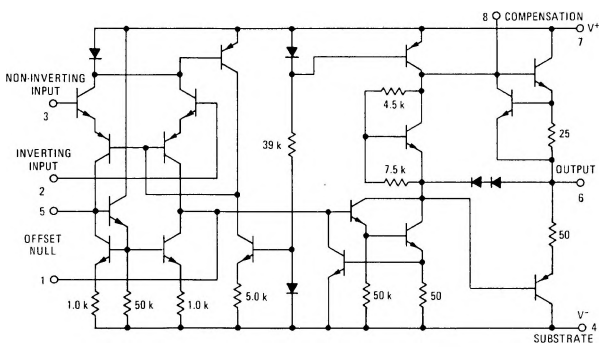
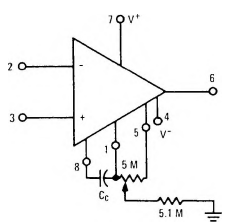


FIGURE 2 – OFFSET ADJUST AND FREQUENCY COMPENSATION



This is advance information on a new introduction and specifications are subject to change without notice.

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

Rating	Symbol	MCC1748	MCC1748C	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		
Operating Temperature Range	T_A	-55 to +125		°C
Junction Temperature Range	T_J	-65 to +150		°C

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

Characteristics	Symbol	MCC1748 Min	MCC1748 Typ	MCC1748 Max	MCC1748C Min	MCC1748C Typ	MCC1748C Max	Unit
Input Bias Current	I_b	–	0.08	0.5	–	0.08	0.5	μAdc
Input Offset Current	$\|I_{io}\|$	–	0.02	0.2	–	0.02	0.2	μAdc
Input Offset Voltage ($R_S \leq 10$ k Ω)	$\|V_{io}\|$	–	1.0	5.0	–	1.0	6.0	mVdc
Differential Input Impedance (Open-Loop, f = 20 Hz)								
Parallel Input Resistance	R_p	–	2.0	–	–	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}	–	±13	–	–	±13	–	V_{pk}
Common-Mode Rejection Ratio (f = 100 Hz)	CM_{rej}	–	90	–	–	90	–	dB
Open-Loop Voltage Gain, (V_o = ±10 V, R_L = 2.0 k ohms)	A_{VOL}	50,000	200,000	–	20,000	200,000	–	V/V
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.
See current MC1748/1748C data sheet for additional information.

PACKAGING AND HANDLING

The MCC1748/MCC1748C operational amplifier is now available as a single monolithic die or encapsulated in the TO-99 hermetic package. The phosphorsilicate passivation protects the metalization and active area of the die but care must be exercised when removing the dice from the shipping carrier to avoid scratching the bonding pads. A vacuum pickup is useful for handling of dice. Tweezers are not recommended for this purpose.

The non-spill type shipping carrier consists of a compartmentalized tray and fitted cover. Die are placed in the carrier with geometry side up.