1.0 SCOPE

This specification covers the detail requirements for a quad 741 operational amplifier.

It is highly recommended that this data sheet be used as a baseline for new military or aerospace spec control drawings.

1.2 Part Number. The complete part numbers per Table I of this specification follow:

Device	Part Number	Package

NO LONGER OFFERED AS STANDARD PRODUCT

1.2.3 Case Outline.

Letter	Case Outline (Lead finish per MIL-M-38510)
Y	14-lead ceramic dual-in-line package (CERDIP)

1.3 Absolute Maximum Ratings. (T_A = 25°C, unless otherwise noted)

Supply Voltage	±22V
Differential Input Voltage	±44V
Input Voltage	±22V
Output Short-Circuit Duration	Indefinite
Power Dissipation (P_d at 25°C)	900mW
Maximum Junction Temperature (T_J)	+150°C
Operating Temperature Range	-55°C to +125°C
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 60 sec)	+300°C

NOTES:
1. Any of the amplifier outputs can be shorted to ground indefinitely; however, more than one should not be simultaneously shorted as the maximum junction temperature will be exceeded.

1.5 Thermal Characteristics:

Thermal Resistance, CERDIP (Z) package:
Junction-to-Case (Θ_{JC}) = 29°C/W MAX
Junction-to Ambient (Θ_{JA}) = 100°C/W MAX

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TABLE 1

V_S = ±15V; R_S = 50Ω; V_{CM} = 0V; T_A = 25°C unless otherwise specified.

Characteristics	Symbol	Special Conditions	PM-148/883 LIMITS X Min	Max	Units
Input Offset Voltage	V_{OS}	$R_S \leq 10k\Omega$	–	2.5	mV
		-55°C ≤ T_A ≤ +125°C	–	6.0	mV
Input Offset Current	I_{OS}		–	10	nA
		-55°C ≤ T_A ≤ +125°C	–	25	nA
Input Bias Current	I_B		–	±75	nA
		-55°C ≤ T_A ≤ +125°C	–	±100	nA
Input Voltage Range (Note 1)	IVR	-55°C ≤ T_A ≤ +125°C	±12	–	V
Common-Mode Rejection	CMR	V_{CM} = IVR = ±12V $R_S \leq 10k\Omega$ -55°C ≤ T_A ≤ +125°C	80	–	dB
Power Supply Rejection	PSR	V_S = ±13.5V to ±16.5V $R_S \leq 10k\Omega$	85	–	dB
		V_S = ±13.5V to ±16.5V $R_S \leq 10k\Omega$ -55°C ≤ T_A ≤ +125°C	80	–	dB
Output Voltage Swing	V_O	R_L = 10kΩ -55°C ≤ T_A ≤ +125°C	±12.0	–	V
		R_L = 2kΩ	±11.0	–	V
		R_L = 2kΩ -55°C ≤ T_A ≤ +125°C	±10.0	–	V
Large-Signal Voltage Gain	A_{VO}	V_O = ±10V, $R_L \geq 2k\Omega$	50	–	V/mV
		V_O = ±10V, $R_L \geq 2k\Omega$ -55°C ≤ T_A ≤ +125°C	25	–	V/mV
Supply Current (All Four Amplifiers)	I_{SY}	+25°C ≤ T_A ≤ +125°C	–	3.6	mA
		$T_A \geq$ -55°C	–	4.5	mA

TABLE 1 (Continued)

V_S = ±15V; R_S = 50Ω; V_{CM} = 0V; T_A = 25°C unless otherwise specified.

Characteristics	Symbol	Special Conditions	PM-148/883 LIMITS X Min	Max	Units
Input Resistance Differential-Mode (Note 2)	R_{IN}		0.8	–	MΩ

NOTES:
1. IVR is defined as the V_{CM} range used for the CMR test.
2. R_{IN} is derived from I_B by the relationship $R_{IN} = \frac{4kT}{qI_B}$, where $\frac{kT}{q} = 0.026V$ @ +25°C

TABLE 2

PM-148/883

Electrical Test Requirements
For Class B Devices

MIL-STD-883 Test Requirements	Subgroups (see Table 3)
Interim Electrical Parameters (pre Burn-In)	1
Final Electrical Test Parameters	1*, 2, 3, 4, 5, 6
Group A Test Requirements	1, 2, 3, 4, 5, 6

* PDA applies to Subgroup 1 only.
No other Subgroups are included in PDA.

TABLE 3

Group A Inspection

V_{CM} = 0V; R_S = 50Ω; V_S = ±15V; T_A = T_J unless otherwise specified.

Subgroup	Symbol	Special Conditions	PM-148/883 LIMITS X Min	Max	Units
Subgroup 1	V_{OS}	R_S = 50Ω, 10kΩ	–	2.5	mV
T_A = +25°C	I_{OS}		–	10	nA
	I_B		–	±75	nA
	CMR	V_{CM} = ±12V; R_S = 50Ω, 10kΩ	80	–	dB
	PSR	V_S = ±13.5V, ±16.5V R_S = 50Ω, 10kΩ	85	–	dB
	I_{SY}		–	3.6	mA
Subgroup 2	V_{OS}	R_S = 50Ω, 10kΩ	–	6.0	mV
T_A = +125°C	I_{OS}		–	25	nA
	I_B		–	±100	nA
	CMR	V_{CM} = ±12V; R_S = 50Ω, 10kΩ	80	–	dB
	PSR	V_S = ±13.5V, ±16.5V R_S = 50Ω, 10kΩ	80	–	dB
	I_{SY}		–	3.6	mA
Subgroup 3	I_{SY}		–	4.5	mA
T_A = -55°C	All remaining Tests, Limits and Conditions are the same as for Subgroup 2.				
Subgroup 4	V_O	R_L = 10kΩ	±12	–	V
T_A = +25°C		R_L = 2kΩ	±11	–	V
	A_{VO}	V_{OUT} = ±10V, R_L = 2kΩ	50	–	V/mV

TABLE 3

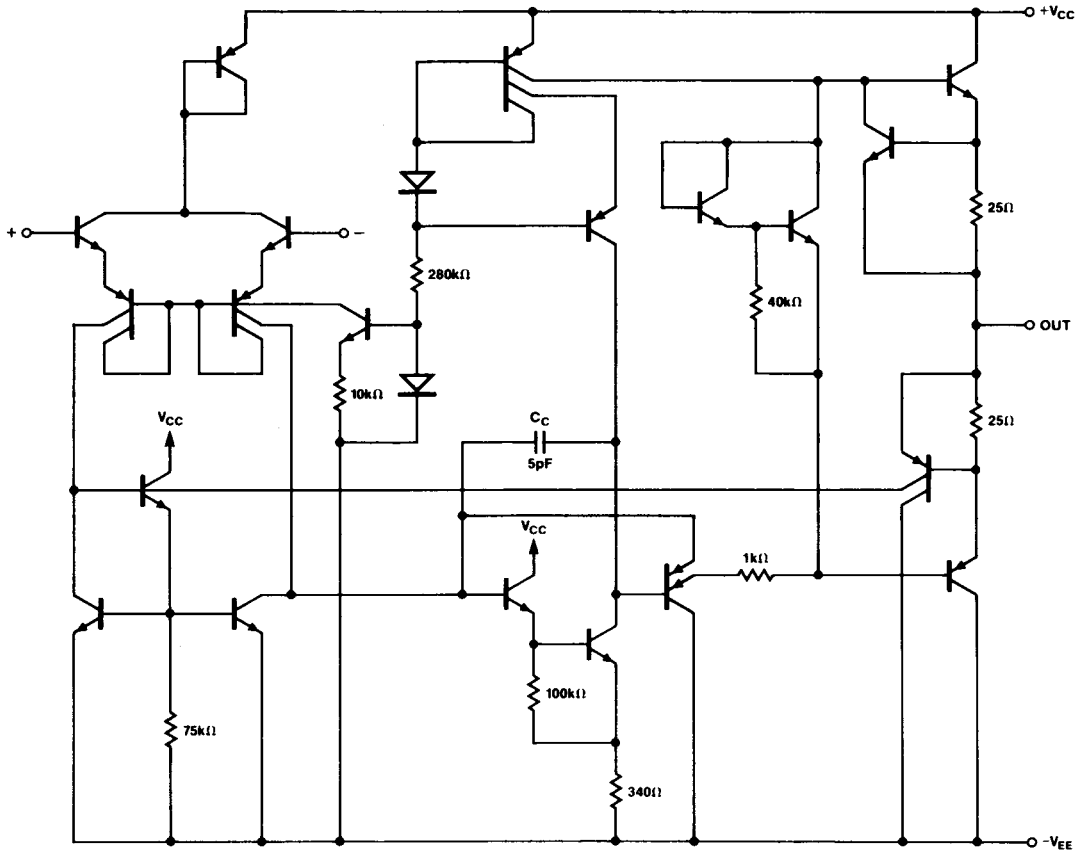
Group A Inspection (Continued)

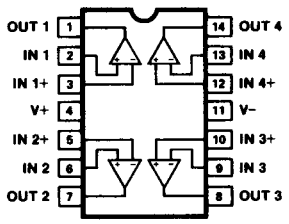
V_{CM} = 0V; R_S = 50Ω; V_S = ±15V; T_A = T_J unless otherwise specified.

Subgroup	Symbol	Special Conditions	PM-148/883 LIMITS X Min	Max	Units
Subgroup 5	V_O	R_L = 10kΩ	±12	–	V
		R_L = 2kΩ	±10		
T_A = +125°C	A_{VO}	V_{OUT} = ±10V, R_L = 2kΩ	25	–	V/mV
Subgroup 6 T_A = -55°C		All Tests, Limits and Conditions are the same as for Subgroup 5.			

3.2.1 Simplified Schematic and Pin Connections.

(One of Four Amplifiers)

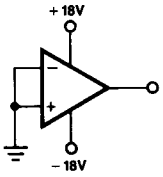


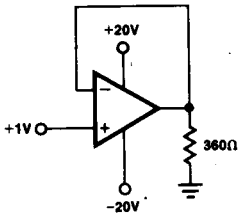


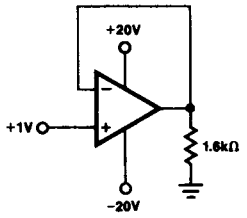
14-PIN HERMETIC DIP
(Y-Suffix)

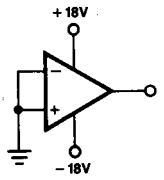
3.2.4 Microcircuit Group Assignment. This microcircuit is covered by microcircuit group 49.

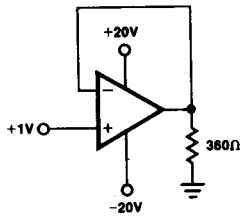
4.2 Life Test/Burn-In Circuit.

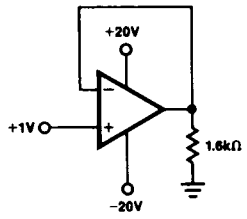


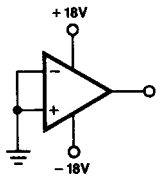


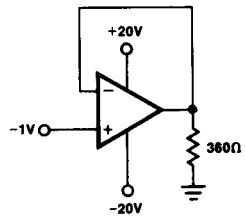


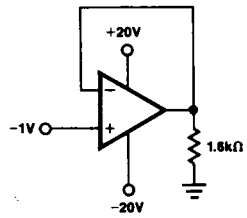


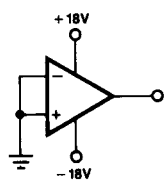


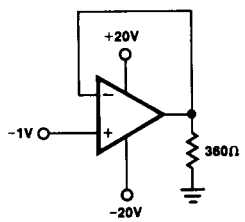




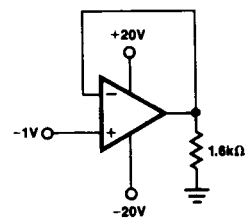








(Alternate)



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