

1.0 SCOPE

This specification covers the detail requirements for a monolithic dual 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:

<u>Device</u>	<u>Part Number</u>	<u>Package</u>
A	OP-200AZ/883	Z
A	OP-200ARC/883	RC

1.2.3 Case Outline.

<u>Letter</u>	<u>Case Outline (Lead finish per MIL-M-38510)</u>
Z	8-lead ceramic dual-in-line package (CERDIP)
RC	20-contact hermetic leadless chip carrier (LCC)

1.3 Absolute Maximum Ratings. ($T_A = 25^\circ\text{C}$, unless otherwise noted)

Supply Voltage.....	$\pm 20\text{V}$
Input Voltage.....	Supply Voltage
Output Short-Circuit Duration.....	Indefinite
Differential Input Voltage.....	$\pm 30\text{V}$
Storage Temperature Range.....	-65°C to $+150^\circ\text{C}$
Operating Temperature Range.....	-55°C to $+125^\circ\text{C}$
Lead Temperature (Soldering, 60 sec).....	$+300^\circ\text{C}$
Maximum Junction Temperature (T_J).....	$+150^\circ\text{C}$

1.5 Thermal Characteristics:

Thermal Resistance, CERDIP (Z) package:

Junction-to-Case (θ_{JC}) = 26°C/W MAX

Junction-to Ambient (θ_{JA}) = 119°C/W MAX

Thermal Resistance, LCC (RC) package:

Junction-to-Case (θ_{JC}) = 30°C/W MAX

Junction-to Ambient (θ_{JA}) = 120°C/W MAX

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TABLE 1

$V_S = \pm 15V$; $R_S = 50\Omega$; $T_A = T_J = 25^\circ C$ unless otherwise specified.

Characteristics	Symbol	Special Conditions	OP-200/883		Units
			LIMITS A		
			Min	Max	
Input Offset Voltage	V_{OS}		–	75	μV
		$-55^\circ C \leq T_A \leq +125^\circ C$	–	125	μV
Input Offset Current	I_{OS}	$V_{CM} = 0V$	–	1.0	nA
		$V_{CM} = 0V$ $-55^\circ C \leq T_A \leq +125^\circ C$	–	2.5	nA
Input Bias Current	I_B	$V_{CM} = 0V$	–	± 2	nA
		$V_{CM} = 0V$ $-55^\circ C \leq T_A \leq +125^\circ C$	–	± 5	nA
Input Noise Voltage	E_{nt}	$f_O = 1\text{Hz to } 100\text{Hz}$, see test circuit	–	250	nV_{RMS}
Large-Signal Voltage Gain	A_{VO}	$V_O = \pm 10V$, $R_L = 10k\Omega$	5000	–	V/mV
		$V_O = \pm 10V$, $R_L = 10k\Omega$ $-55^\circ C \leq T_A \leq +125^\circ C$	3000	–	V/mV
		$V_O = \pm 10V$, $R_L = 2k\Omega$	2000	–	V/mV
		$V_O = \pm 10V$, $R_L = 2k\Omega$ $-55^\circ C \leq T_A \leq +125^\circ C$	1000	–	V/mV
Common-Mode Rejection (Note 1)	CMR	$V_{CM} = IVR = \pm 11V$	120	–	dB
		$V_{CM} = IVR = \pm 11V$ $-55^\circ C \leq T_A \leq +125^\circ C$	115	–	dB
Power Supply Rejection Ratio	PSRR	$V_S = \pm 3V \text{ to } \pm 18V$ $V_S = \pm 3V \text{ to } \pm 18V$ $-55^\circ C \leq T_A \leq +125^\circ C$	–	1.8 3.2	$\mu V/V$ $\mu V/V$
Output Voltage Swing	V_O	$R_L = 10k\Omega$	± 12	–	V
		$R_L = 10k\Omega$ $-55^\circ C \leq T_A \leq +125^\circ C$	± 12	–	V
		$R_L = 2k\Omega$	± 11	–	V
		$R_L = 2k\Omega$ $-55^\circ C \leq T_A \leq +125^\circ C$	± 11	–	V

TABLE 1 (Continued)

$V_S = \pm 15V$; $R_S = 50\Omega$; $T_A = T_J = 25^\circ C$ unless otherwise specified.

Characteristics	Symbol	Special Conditions	OP-200/883		Units
			LIMITS A		
			Min	Max	
Supply Current	I_{SY}		-	1.45	mA
No Load (Note 2)		$-55^\circ C \leq T_A \leq +125^\circ C$	-	1.55	mA
Slew Rate	SR		0.1	-	V/ μs
Input Offset Voltage Temperature Coefficient	TCV_{OS}	$-55^\circ C \leq T_A \leq +125^\circ C$	-	0.5	$\mu V/^\circ C$

NOTES:

1. IVR is defined as the V_{CM} range used for the CMR test.
2. I_{SY} limit = total all four amplifiers.

TABLE 2

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**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, 7, 8

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

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TABLE 3

Group A Inspection

$V_S = \pm 15V$; $R_S = 50\Omega$; $T_A = T_J$ unless otherwise specified.

Subgroup	Symbol	Special Conditions	OP-200/883		Units
			LIMITS A		
			Min	Max	
Subgroup 1	V_{OS}		--	75	μV
$T_A = +25^\circ C$	I_{OS}	$V_{CM} = 0V$	--	1.0	nA
	I_B	$V_{CM} = 0V$	--	± 2	nA
	CMR	$V_{CM} = \pm 11V$ (Note 1)	120	--	dB
	PSRR	$V_S = \pm 3V, \pm 18V$	--	1.8	$\mu V/V$
	I_{SY}	No Load (Note 2)	--	1.45	mA
	Subgroup 2	V_{OS}		--	125
$T_A = +125^\circ C$	I_{OS}	$V_{CM} = 0V$	--	2.5	nA
	I_B	$V_{CM} = 0V$	--	± 5	nA
	CMR	$V_{CM} = \pm 11V$ (Note 1)	115	--	dB
	PSRR	$V_S = \pm 3V, \pm 18V$	--	3.2	$\mu V/V$
	I_{SY}	No Load (Note 2)	--	1.55	mA
	Subgroup 3		All Tests, Limits and Conditions are the same as for Subgroup 2.		
$T_A = -55^\circ C$					
Subgroup 4	V_O	$R_L = 10k\Omega$	± 12	--	V
		$R_L = 2k\Omega$	± 11	--	V
	A_{VO}	$V_O = \pm 10V, R_L = 10k\Omega$	5000	--	V/mV
		$V_O = \pm 10V, R_L = 2k\Omega$	2000	--	V/mV

TABLE 3

Group A Inspection (Continued)

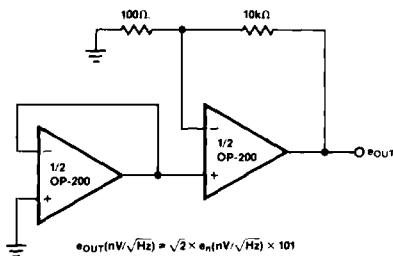
$V_S = \pm 15V$; $R_S = 50\Omega$; $T_A = T_J$ unless otherwise specified.

Subgroup	Symbol	Special Conditions	OP-200/883		Units
			LIMITS A		
			Min	Max	
Subgroup 5 $T_A = +125^\circ C$	V_O	$R_L = 10k\Omega$	± 12	-	V
		$R_L = 2k\Omega$	± 11	-	V
	A_{VO}	$V_O = \pm 10V, R_L = 10k\Omega$	3000	-	V/mV
		$V_O = \pm 10V, R_L = 2k\Omega$	1000	-	V/mV
Subgroup 6 $T_A = -55^\circ C$	All Tests, Limits and Conditions are the same as for Subgroup 5.				
Subgroup 7 $T_A = +25^\circ C$	SR		0.1	-	V/ μs
	E_{nt}	$f_O = 1Hz$ to 100Hz See test circuit	-	250	nV _{RMS}
Subgroup 8 $T_A = -55^\circ C, +125^\circ C$	TCV_{OS}		-	0.5	$\mu V/^\circ C$

NOTES:

1. IVR is defined as the V_{CM} range used for the CMR test.
1. I_{SY} limit = total all four amplifiers.

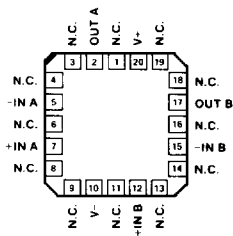
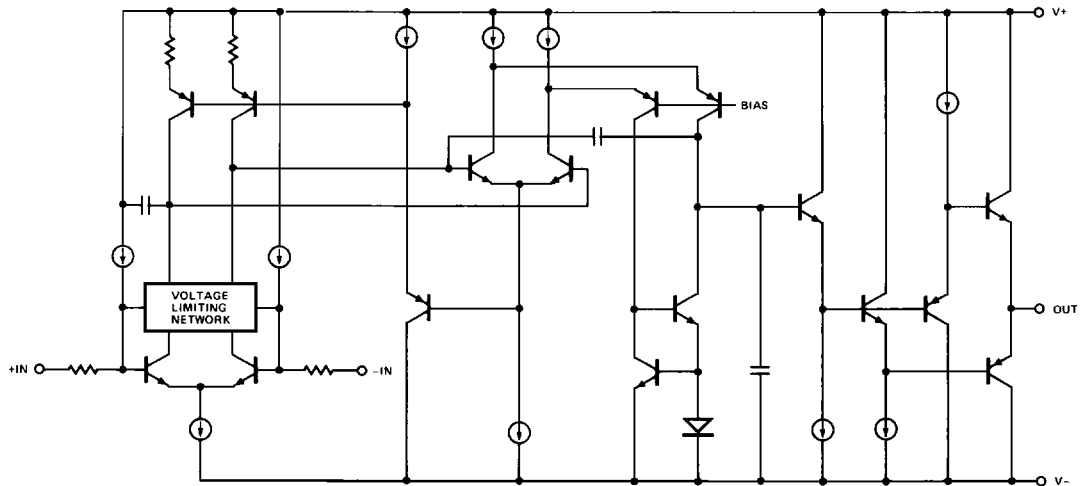
Noise Test Circuit Schematic



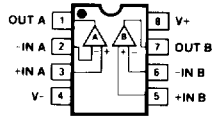
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3.2.1. Simplified Schematic and Pin Connections.

(One of two amplifiers is shown.)



LCC
(RC-Suffix)



8-PIN HERMETIC DIP
(Z-Suffix)

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

4.2 Life Test/Burn-In Circuit.

