

1.0 DESCRIPTION

1.1 THIS SPECIFICATION DEFINES THE REQUIREMENTS FOR A LOW NOISE PRECISION OPERATIONAL AMPLIFIER.

2.0 APPLICABLE DOCUMENTS

- 2.1 REFERENCED DOCUMENTS FORM A PART OF THIS SPECIFICATION, TO THE EXTENT SPECIFIED HEREIN.
- 2.2 MIL-STD-1285 MARKING OF ELECTRICAL AND ELECTRONIC PARTS
- 2.3 MIL-STD-883 TEST METHODS AND PROCEDURES FOR MICROELECTRONICS

3.0 REQUIREMENTS

3.1 ABSOLUTE MAXIMUM RATINGS

SUPPLY	±18VDC
INTERNAL POWER DISSIPATION ⁽¹⁾	500mW
DIFFERENTIAL INPUT VOLTAGE ⁽²⁾	±36VDC
INPUT VOLTAGE RANGE ⁽²⁾	±18VDC
STORAGE TEMPERATURE RANGE	-65°C to +150°C
OPERATING TEMPERATURE RANGE	-55°C to +125°C
LEAD TEMPERATURE (SOLDERING, 10 SEC)	+300°C
OUTPUT SHORT CIRCUIT DURATION	Continuous
JUNCTION TEMPERATURE	+175°C

NOTES:

- (1) PACKAGES MUST BE DERATED BASED ON $\theta_{JC} = 150^{\circ}\text{C/W}$, OR $\theta_{VA} = 300^{\circ}\text{C/W}$
- (2) FOR SUPPLY VOLTAGES LESS THAN ±18VDC THE ABSOLUTE MAXIMUM INPUT VOLTAGE IS EQUAL TO THE SUPPLY VOLTAGE.
- (3) SHORT CIRCUIT MAY BE TO POWER SUPPLY COMMON ONLY. RATING APPLIES TO +25°C AMBIENT. OBSERVE DISSIPATION LIMIT AND T_J .

3.2 ELECTRICAL SPECIFICATIONS

$V_{CC} = \pm 15\text{VDC}$ AND $T_A = +25^\circ\text{C}$ UNLESS OTHERWISE NOTED. PIN 8 CONNECTED TO GROUND.

PARAMETER	CONDITIONS	MIN	MAX	UNITS
INPUT				
NOISE				
Voltage, $f_o=10\text{Hz}$			80	nV/ $\sqrt{\text{Hz}}$
$f_o=100\text{Hz}$			40	nV/ $\sqrt{\text{Hz}}$
$f_o=1\text{kHz}$			15	nV/ $\sqrt{\text{Hz}}$
$f_o=10\text{kHz}$			8	nV/ $\sqrt{\text{Hz}}$
$f_B=10\text{Hz}$ to 10kHz			1.2	μV , rms
OFFSET VOLTAGE NOTE 1				
Input Offset Voltage	$V_{cm} = 0\text{VDC}$		± 500	μV
Average Drift	$T_A = T_{MIN}$ to T_{MAX}		$\pm 5 (-01)$ $\pm 10 (-02)$	$\mu\text{V}/^\circ\text{C}$
Supply Rejection		90	± 31	dB $\mu\text{V}/\text{V}$
BIAS CURRENT NOTE 1				
Input Bias Current	$V_{cm} = 0\text{VDC}$		± 2	pA
OFFSET CURRENT NOTE 1				
Input Offset Current	$V_{cm} = 0\text{VDC}$		± 1.5	pA
VOLTAGE RANGE				
Common-Mode Input Range		± 10		V
Common-Mode Rejection	$V_{IN} = \pm 10\text{VDC}$	90		dB
OPEN-LOOP GAIN, DC				
Open-Loop Voltage Gain	$R_L \geq 2\text{k}\Omega$	114		dB
FREQUENCY RESPONSE				
Full Power Response	20V p-p, $R_L = 2\text{K}$	16		kHz
Slew Rate	$V_o = \pm 10\text{v}$, $R_L = 2\text{k}$	1		V/ μsec
RATED OUTPUT				
Voltage Output	$R_L = 2\text{k}\Omega$	± 10		V
Current Output	$V_o = \pm 10\text{VDC}$ DC, open loop Gain = +1	± 5		mA
Short Circuit Current		10		mA

CONTINUED...

PARAMETER	CONDITIONS	MIN	MAX	UNITS
POWER SUPPLY				
Voltage Range Derated Performance Current, Quiescent	$I_o = 0\text{mADC}$	± 5	± 18 3.5	VDC mA
TEMPERATURE RANGE				
Specification	Ambient temp.	-55	+125	$^{\circ}\text{C}$
Operating	Ambient temp.	-55	+125	$^{\circ}\text{C}$
Storage	Ambient temp.	-55	+150	$^{\circ}\text{C}$

NOTE 1: OFFSET VOLTAGE, OFFSET CURRENT, AND BIAS CURRENT MEASURED WITH UNITS FULLY WARMED UP.

3.3 ELECTRICAL [FULL TEMPERATURE RANGE SPECIFICATIONS]

V_{cc} 15VDC and $T_A = T_{MIN}$ to T_{MAX} UNLESS OTHERWISE NOTED.

PARAMETER	CONDITIONS	MIN	MAX	UNITS
INPUT				
OFFSET VOLTAGE ^{NOTE 1} Input Offset Voltage Average Drift	$V_{cm} = 0\text{VDC}$		± 1500 $\pm 5 (-01)$ $\pm 10 (-02)$	μV $\mu\text{V}/^{\circ}\text{C}$ $\mu\text{V}/^{\circ}\text{C}$
Supply Rejection		86	± 50	dB $\mu\text{V}/\text{V}$
BIAS CURRENT ^{NOTE 1}				
Input Bias Current	$V_{cm} = 0\text{VDC}$		± 4100	pA
OFFSET CURRENT ^{NOTE 1}				
Input Offset Current	$V_{cm} = 0\text{VDC}$		± 3100	pA
VOLTAGE RANGE				
Common-Mode Input Range Common-Mode Rejection	$V_{IN} = \pm 10\text{VDC}$	± 10 86		V dB
OPEN-LOOP GAIN, DC				
Open-Loop Voltage Gain	$R_L = 2\text{k}\Omega$	110		dB
RATED OUTPUT				
Voltage Output Current Output Short Circuit Current	$R_L = 2\text{k}\Omega$ $V_o = \pm 10\text{VDC}$ $V_o = 0\text{VDC}$	± 10 ± 5 10		V mA mA

BF Goodrich B-18
Aerospace
Jet Electronics and Technology, Inc.

TITLE
MICROCIRCUIT, LINEAR,
LOW NOISE PRECISION,
OPERATIONAL AMPLIFIER

NO: 577-1144

REV
C

CAGE CODE 25583

SH

CONTINUED...

PARAMETER	CONDITIONS	MIN	MAX	UNITS
POWER SUPPLY				
Current, Quiescent	$I_o = 0\text{mADC}$		3.5	mA

NOTE 1: OFFSET VOLTAGE, OFFSET CURRENT, AND BIAS CURRENT ARE MEASURED WITH UNIT FULLY WARMED UP.

3.4 PIN CONFIGURATION: SEE FIGURE 1.

3.5 DESIGN: 8-PIN HERMETIC CAN IN ACCORDANCE WITH FIGURE 1.

3.6 SOLDERABILITY

3.6.1 WIRE AND PART LEADS WITH OR WITHOUT ATTACHED TERMINALS SHALL BE INSPECTED AND ACCEPTED FOR 95% WETTING. PARTS ARE TO BE TESTED IN THE "AS RECEIVED" CONDITION. LEADS SHALL BE DIPPED IN A NON-ACTIVATED ROSIN FLUX; THEN DIPPED IN A SOLDER POT CONTAINING AN SN60 OR SN63 SOLDER AT 250°C FOR 4.5 TO 5.5 SECONDS.

3.6.2 PARTS MEETING EQUIVALENT MILITARY, COMMERCIAL, OR J.E.T. 515-1051 STANDARDS WILL BE ACCEPTABLE.

3.7 RELIABILITY PREDICTION INFORMATION (FOR REFERENCE ONLY)
 NO. OF TRANSISTORS 50 TOTAL
 12 BIFET
 38 BIPOLAR

3.8 SCREENING: SHALL BE SCREENED IN ACCORDANCE WITH MIL-STD-883 CLASS B SCREENING -02 ONLY.

4.0 ITEM IDENTIFICATION

4.1 IDENTIFY ITEM IN ACCORDANCE WITH MIL-STD-1285. INCLUDE THE FOLLOWING IN THE ORDER SHOWN AS SPACE PERMITS. THE MANUFACTURER SHALL DETERMINE SPACE REQUIREMENTS. *INDICATES MINIMUM MARKING REQUIREMENTS.

- *A. INDEX (THE INDEX POINT, TAB OR OTHER MARKING INDICATING POINT FOR NUMBERING OF LEADS)
- B. MANUFACTURERS' PART NUMBER OR TYPE
- C. MANUFACTURERS' CAGE CODE, NAME OR SYMBOL

5.0 PART NUMBER

J.E.T. PART NO.	BURR BROWN PART NO.
577-1144-01	OPA111SM
577-1144-02	OPA111VM/883B

BF Goodrich
 Aerospace
 Jet Electronics and Technology, Inc.

B-18

TITLE

MICROCIRCUIT, LINEAR,
 LOW NOISE PRECISION,
 OPERATIONAL AMPLIFIER

NO:

577-1144

REV

C

CAGE CODE 25583

SH

5

6.0 SOURCE IDENTIFICATION

6.1 SPECIFICATION CONTROL DRAWING - IDENTIFICATION OF THE SUGGESTED SOURCE(S) OF SUPPLY HEREON IS NOT TO BE CONSTRUED AS A GUARANTEE OF PRESENT OR CONTINUED AVAILABILITY AS A SOURCE OF SUPPLY FOR THE ITEM(S).

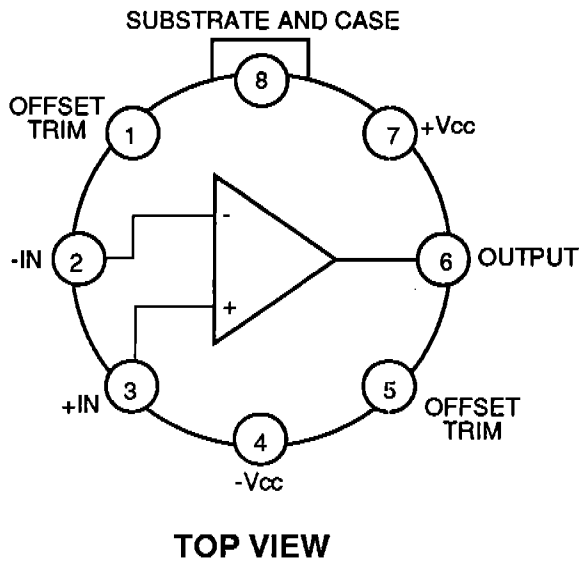
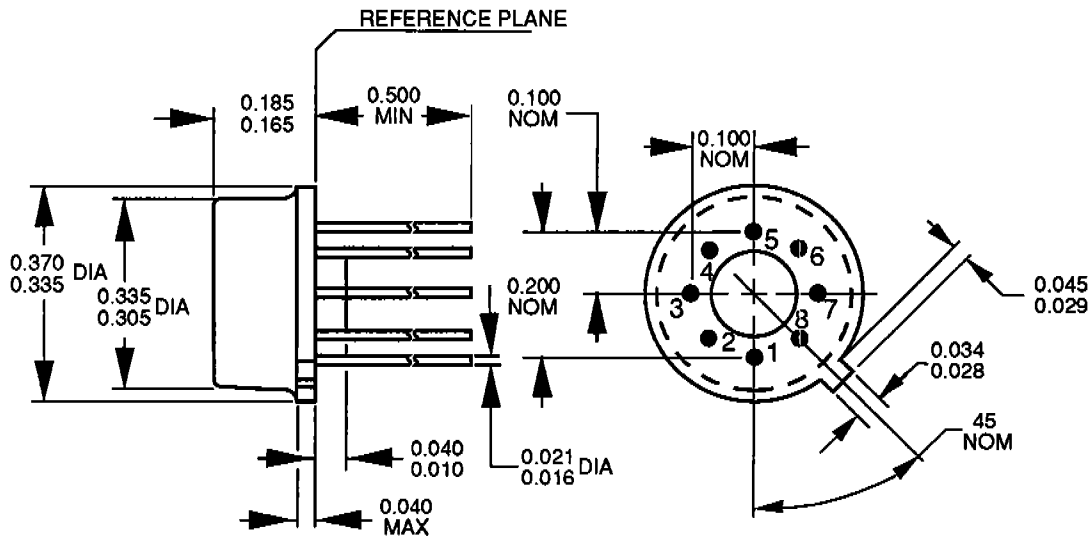


FIGURE 1.