

VLBA Technical Report No. 38

**VLBA 5 MHZ Distributor
Module L121**

**Alan E.E. Rogers
October 1988**

VLBA 5 MHZ DISTRIBUTOR - MODULE L121

Alan E.E. Rogers
October 1988

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Drawing Number	Title	Type
54130S001	5 MHz Distributor	Circuit Diagram
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54130M006	Short bar supports	Mechanical
54130M007	PC board support	Assembly
54130M008	Mounting plate	Drilling plan
54130M009	Expansion sub assembly	Mechanical
54130M010	Expansion sub assembly	Drilling plan

Specifications:

Gain	0 +0.5 dB -1.0 dB
Input and Output Impedance	50 ohm
Input and Output VSWR	< 1.1:1
Isolation Between Outputs	Better than 80 dB
Reverse Isolation	Better than 80 dB
Noise Figure	< 20 dB
Frequency Range	100 KHz -- 20 MHz
Temperature Coefficient of Phase Delay	< 5 ps/deg C

I/O Connections:

PIN #	FUNCTION
1	Ground
2	NC
3	5 MHz Input +13 dBm Nominal
4	5 MHz output #1 +13 dBm Nominal
5	5 MHz Output #2
6	5 MHz Output #3
7	5 MHz Output #4
8	NC
9	5 MHz Output #5
10	5 MHz Output #6
11	5 MHz Output #7
12	5 MHz Output #8
13	5 MHz Output #9
14	NC
15	+15v Supply 270 ma
16	5 MHz secondary output #12
17	5 MHz secondary output #13
18	5 MHz secondary output #14
19	Output #10-- connected in
20	Output #10-- parallel

Test Procedures:

Connect clean +13 dBm (1 volt r.m.s.) 5 MHz signal to input and carefully examine outputs for distortion and/or high frequency oscillation.

Replacement Instructions:

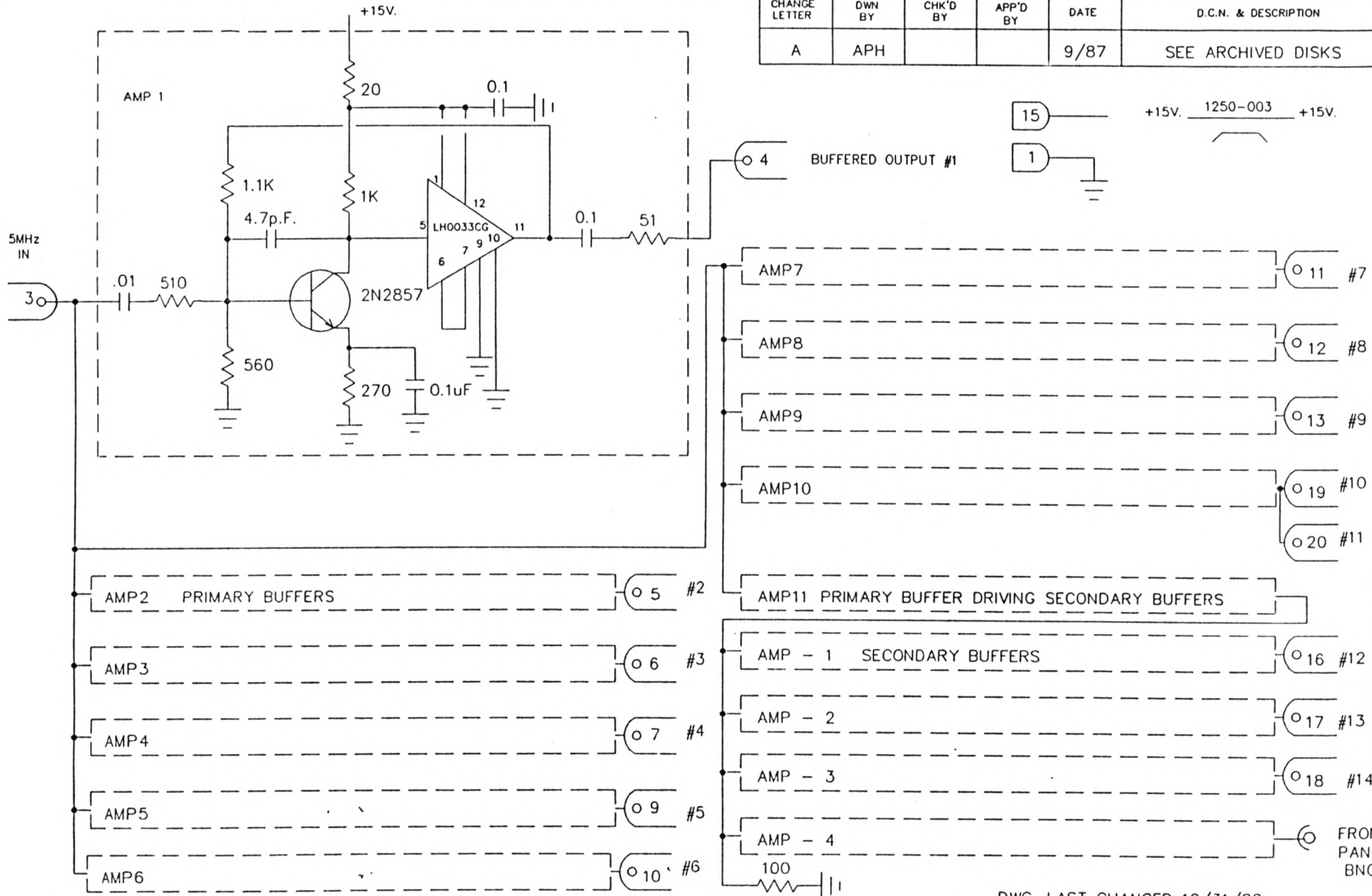
Determine faulty component by comparing voltages with working section. Replace faulty component using "solder wick" to remove component.

Parts List:

Data Sheet:

LH0033CG

CHANGE LETTER	DWN BY	CHK'D BY	APP'D BY	DATE	D.C.N. & DESCRIPTION
A	APH			9/87	SEE ARCHIVED DISKS



NOTES:

1. N.F. APPROX. 20dB
2. REVERSE ISOL. 90dB
3. DELAY APPROX. 5ns
4. OUTPUT #10 IS USED FOR BOTH IF DISTRIBUTORS
5. TEMP COEFF. APPROX. +3ps/°C
6. VERSIONS WITHOUT SECONDARY BUFFER HAVE AMP11 CONNECTED DIRECTLY TO FRONT PANEL BNC

ELECTRONIC NOTES:

UNLESS OTHERWISE NOTED:

RESISTORS:

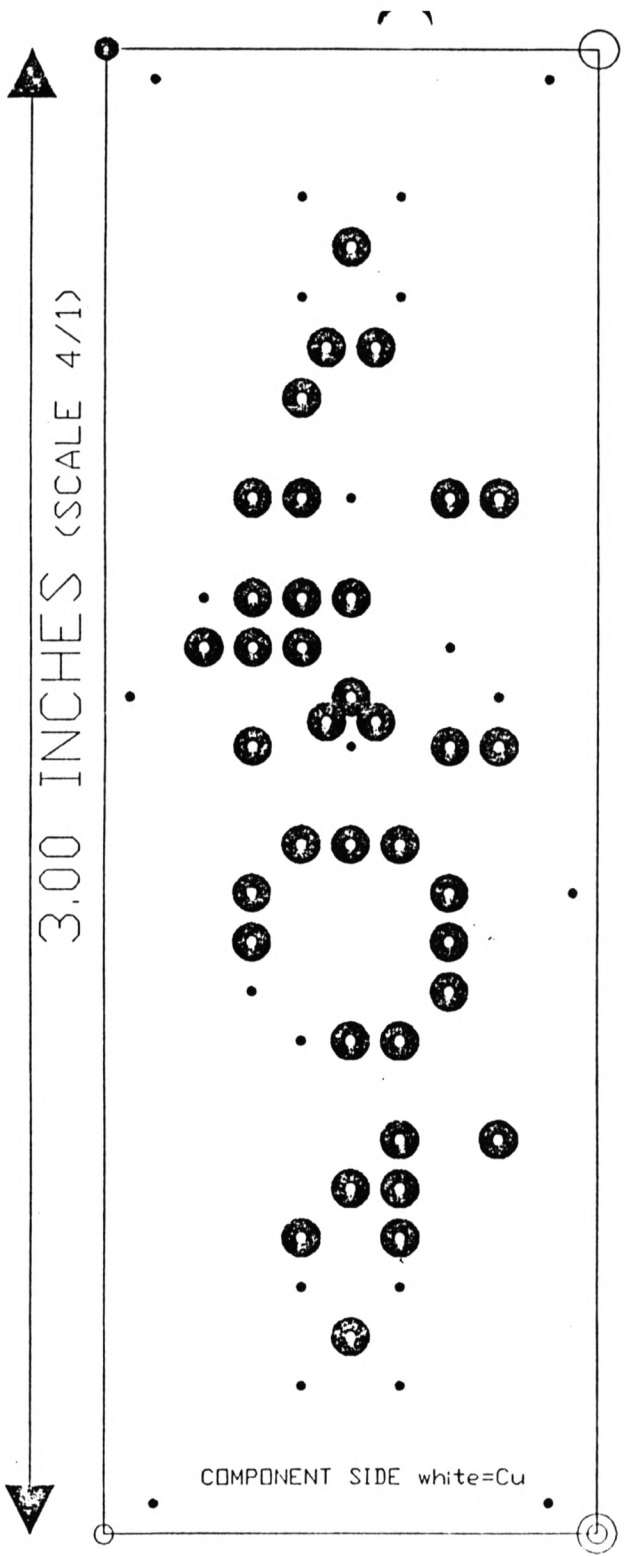
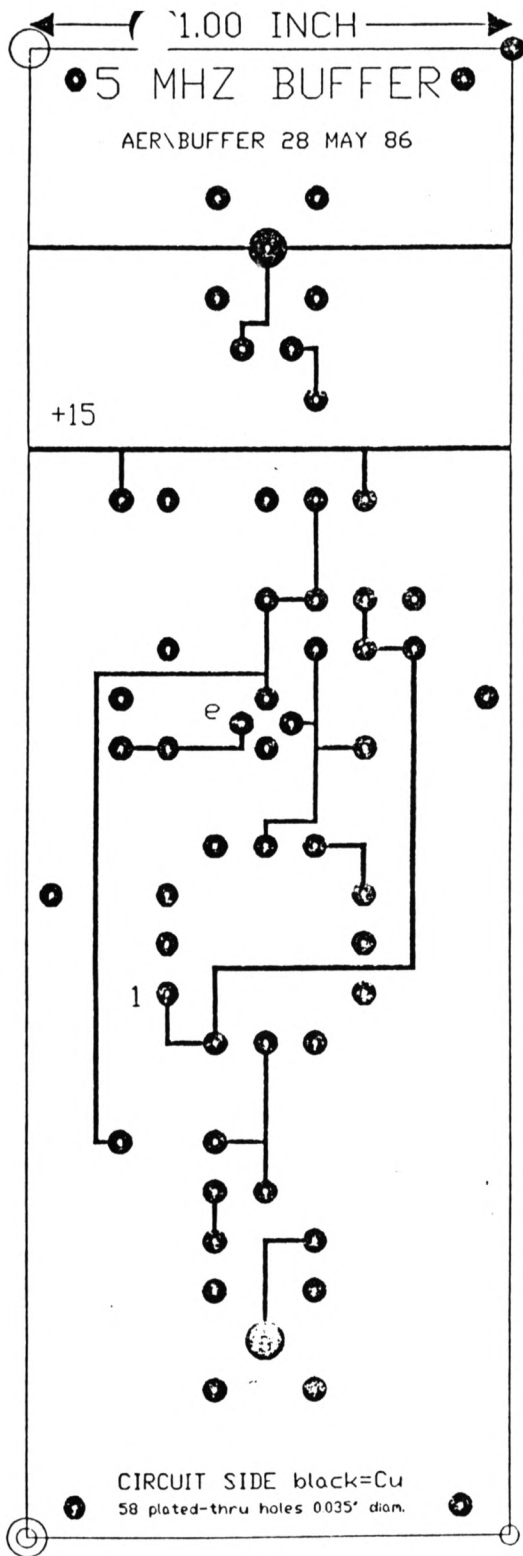
CAPACITORS:

INDUCTORS:

USED ON	DRAWN FOR:	DATE:	NORTHEAST RADIO OBSERVATORY CORPORATION HAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS			
	DRAWN BY:	7-87	5MHz DISTRIBUTOR			
SCALE NONE	CHECKED BY:	7-87				
	CLASSIFICATION	PROJECT	DWG SIZE	DWG NO	REV	

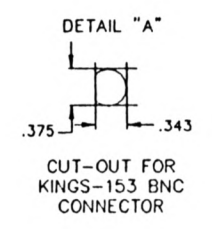
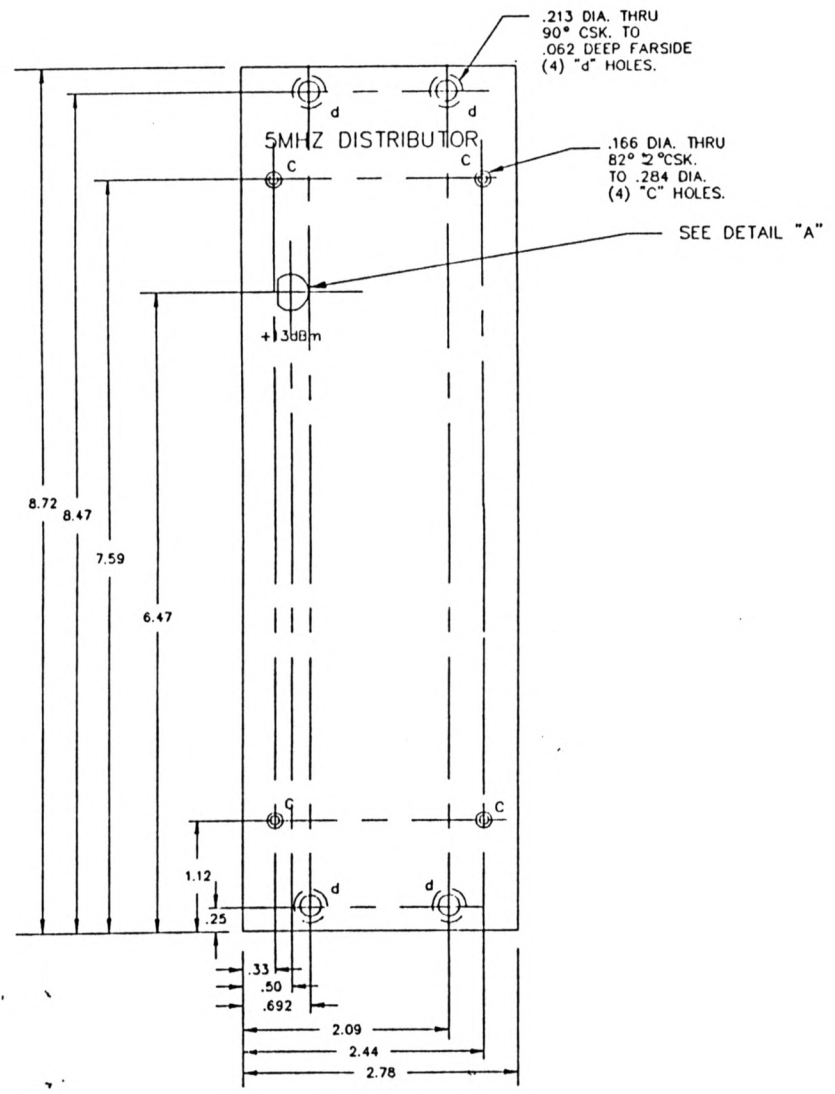
DWG. LAST CHANGED 10/31/88

C-54130S001



Drawing Number: 54130Q004

CHANGE LETTER	DWN BY	CHD BY	APP'D BY	DATE	D.C.N. & DESCRIPTION



C-54130M002

NOTES

MATERIAL
 .125 THICK ALUM. 6061-T6
 REMOVE ALL BURRS AND SHARP EDGES.

FINISH AND/OR HEAT TREATMENT
 YELLOW CHROMATE
 CONVERSION ALL OVER

- SHOP NOTES: UNLESS OTHERWISE SPECIFIED**
1. DIMENSIONS ARE IN INCHES
 2. TOLERANCE ON DIMENSIONS
 FRACTIONAL ± 1/64
 DECIMAL .XX ± .01
 DECIMAL .XXX ± .005
 ANGULAR ± 0.30°
 3. SURFACE ROUGHNESS
 PER MIL-STD-10 ✓
 4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX.
 5. SCREW THREADS PER MIL-STD-8
 6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING

USED ON

NEXT ASSEMBLY

WEIGHT

SCALE FULL

CLASSIFICATION

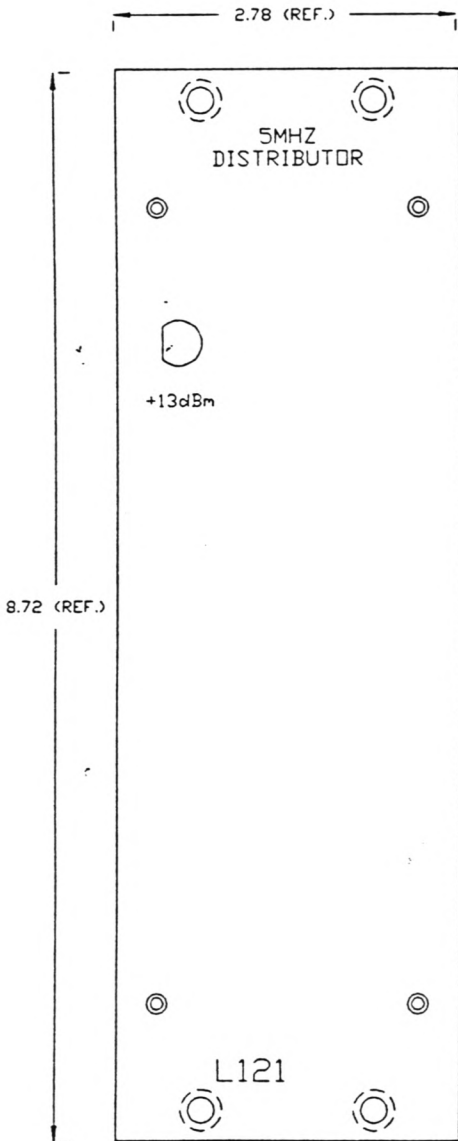
DRAWN FOR	A.E. ROGERS	DATE	7-87
DRAWN BY	A. PHILBROOK	DATE	7-87
CHECKED BY			
PROJECT			
ENGINEER			
MATL. & PROCESS			
STRUCTURES			
TERMINAL			

NORTHEAST RADIO OBSERVATORY CORPORATION
 HAYSTACK OBSERVATORY
 WESTFORD, MASSACHUSETTS

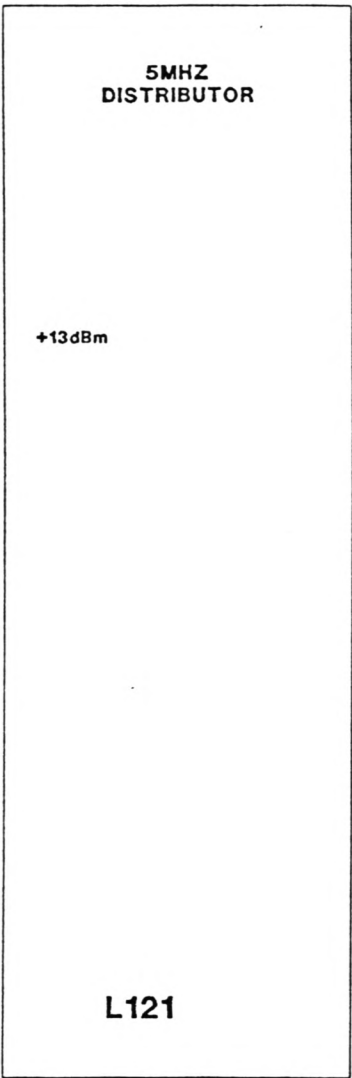
DRILLING PLAN FOR
 5MHZ DISTRIBUTOR
 FRONT PANEL

C 54130M002

UNIT 1



SILK SCREENED PANEL



ARTWORK

NOTES:
 1. SILK SCREEN CHARACTERS AND LINES BLACK.
 2. PAINT: HEWLETT PACKARD MINT GRAY.
 P/N 6010-0977, FRONT AND EDGES ONLY,
 PER NRAO SPEC. NO. A13030N1.

CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

DESIGNER	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE
A. ROGERS	7-87							

APPROVED	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

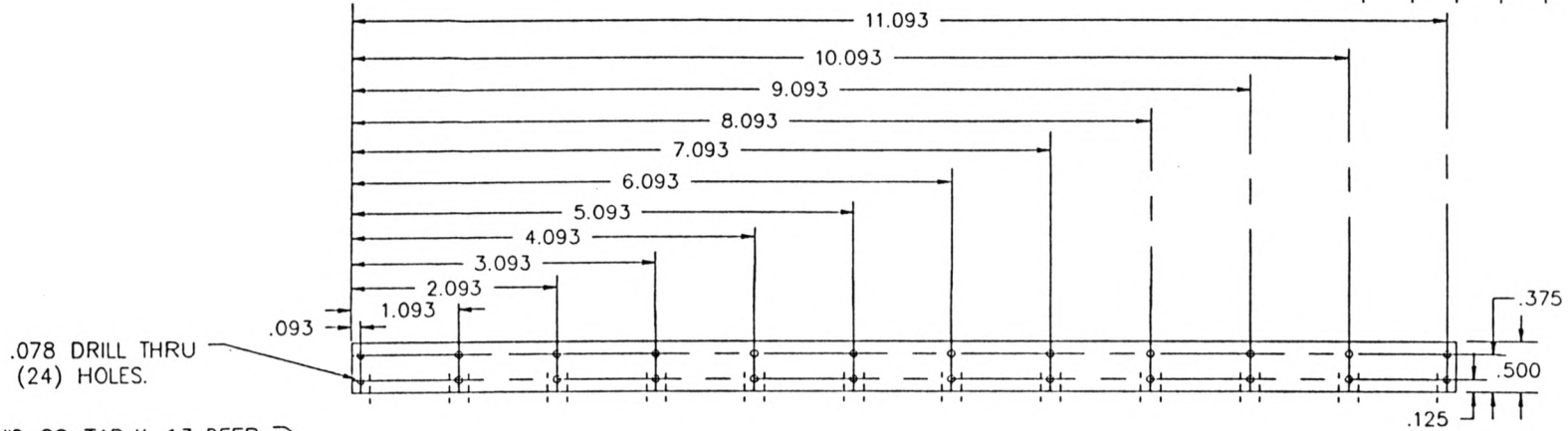
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PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

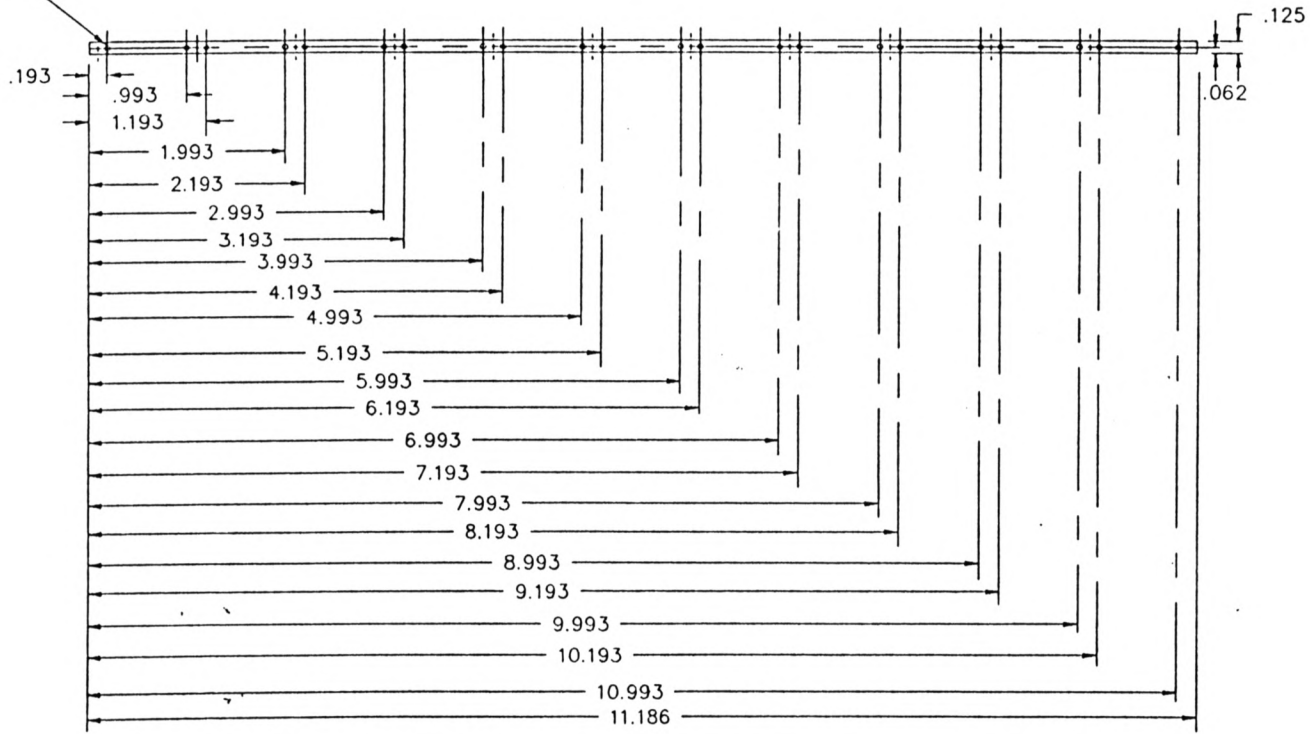
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PROJECT	DATE	SCALE	CLASSIFICATION	DATE	SCALE	CLASSIFICATION	DATE	SCALE

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	DCN. & DESCRIPTION



#0-80 TAP X .13 DEEP (22) HOLES.



NOTES

MP13 AND MP14 (1) OF EACH REQ'D

MATERIAL
ALUM. #6061-T6

FINISH AND/OR HEAT TREATMENT
CLEAR ALODINE

- SHOP NOTES: UNLESS OTHERWISE SPECIFIED
1. DIMENSIONS ARE IN INCHES
 2. TOLERANCE ON DIMENSIONS
FRACTIONAL ± 1/64
DECIMAL .XX ± .01
DECIMAL .XXX ± .005
ANGULAR ± 0'30"
 3. SURFACE ROUGHNESS
PER MIL-STD-10
 4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX.
 5. SCREW THREADS PER MIL-STD-9
 6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING.
- 125

USED IN

NEXT ASSEMBLY

WEIGHT

SCALE FULL

CLASSIFICATION

DRAWN FOR	A.E. ROGERS	DATE	10-86
DRAWN BY	A. PHILBROOK	DATE	10-86
CHECKED BY			
PROJECT			
ENGINEER			
MAT'L & PROCESS			
STRUCTURES			
THERMAL			

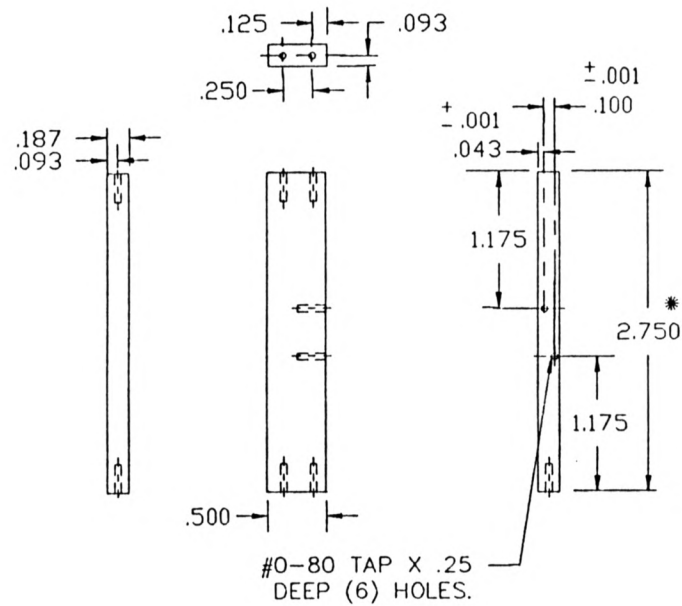
NORTHEAST RADIO OBSERVATORY CORPORATION
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS

DRILLING PLAN FOR LONG BAR
P.C. BOARD SUPPORT
5MHz DISTRIBUTOR

C 54130M005

C-54130M005

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	DC.N. & DESCRIPTION



* 2.750 LENGTH IS THE SAME FOR
ALL SHORT BARS - MACHINE TOGETHER

1. MP2 THRU MP11 (1) OF EACH REQ'D
MATERIAL: ALUM. 6061-T6
FINISH: CLEAR ALODINE

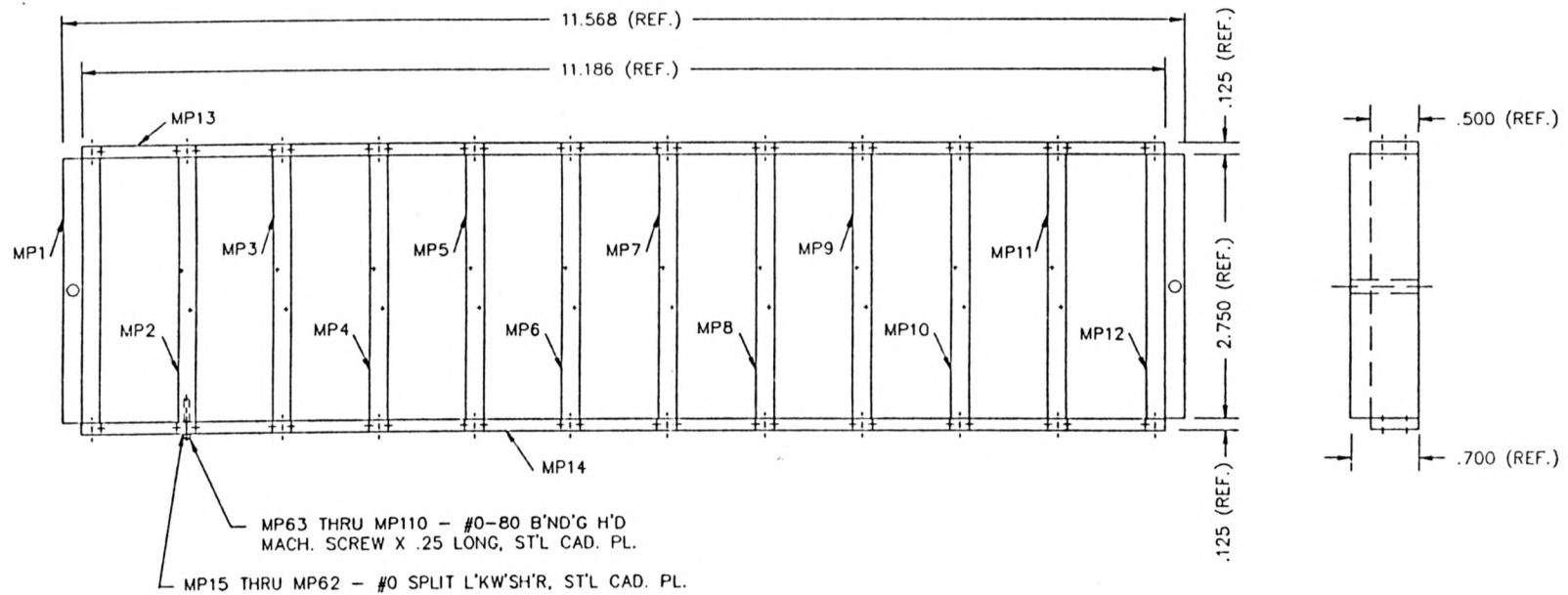
SHOP NOTES: UNLESS OTHERWISE SPECIFIED

- DIMENSIONS ARE IN INCHES
- TOLERANCE ON DIMENSIONS
FRACTIONAL $\pm 1/64$
DECIMAL $.xx \pm .01$
DECIMAL $.xxx \pm .005$
ANGULAR $\pm 0^{\circ}30'$
- SURFACE ROUGHNESS
PER MIL-STD-10
- REMOVE BURRS AND BREAK
SHARP EDGES $1/64$ MAX.
- SCREW THREADS PER MIL-STD-9
BEFORE PLATING OR CON-
VERSION COATING.

63

USED ON		DRAWN FOR	DATE	NORTHEAST RADIO OBSERVATORY CORPORATION HAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS		
		A.E. ROGERS	8/87			
		DRAWN BY	A. PHILBROOK	8/87		
		CHECKED BY				
		PROJECT				
		ENGINEER				
		MATL. & PROCESS				
		STRUCTURES				
		THERMAL				
		MECH. ANALYSIS				
				B	54130M006	
				AER\SBARS5MHZ	DWG. SIZE	DWG. NO.
						REV.

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	D.C.N. & DESCRIPTION



C-54130M007

NOTES

1. SEE DWG B-54220M007 FOR MP1 AND MP12
2. SEE DWG B-54130M006 FOR MP2 THRU MP11.
3. SEE DWG C-54130M005 FOR MP13 AND MP14.

MATERIAL

FINISH AND/OR HEAT TREATMENT

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS
 FRACTIONAL ± 1/64
 DECIMAL .XX ± .01
 DECIMAL .XXX ± .005
 ANGULAR ± 0'30"
3. SURFACE RAUGHNESS
 PER MIL-STD-10
4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX
5. SCREW THREADS PER MIL-STD-9
6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING

USED ON

NEXT ASSEMBLY

WEIGHT

SCALE FULL

CLASSIFICATION

DRAWN FOR	A.E. ROGERS	DATE	12/86
DRAWN BY	A. PHILBROOK	CHECKED BY	12/86

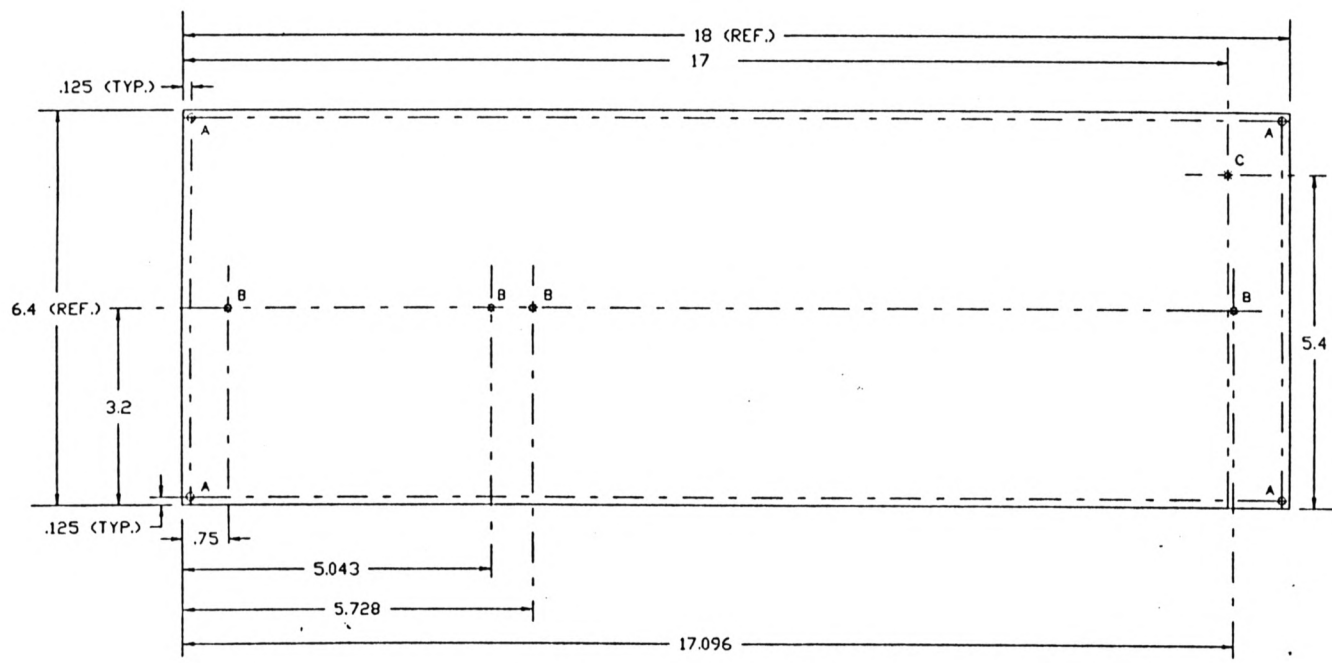
PROJECT	
ENGINEER	
MAT'L & PROCESS	
STRUCTURES	
THERMAL	

NORTHEAST RADIO OBSERVATORY CORPORATION
 HAYSTACK OBSERVATORY
 WESTFORD, MASSACHUSETTS

SUB ASSEMBLY
 P.C. BOARD SUPPORTS
 5MHz DISTRIBUTOR

54	07	54	07
AER (SUB-5MHz)	DWG. SIZE	DWG. NO.	REV.

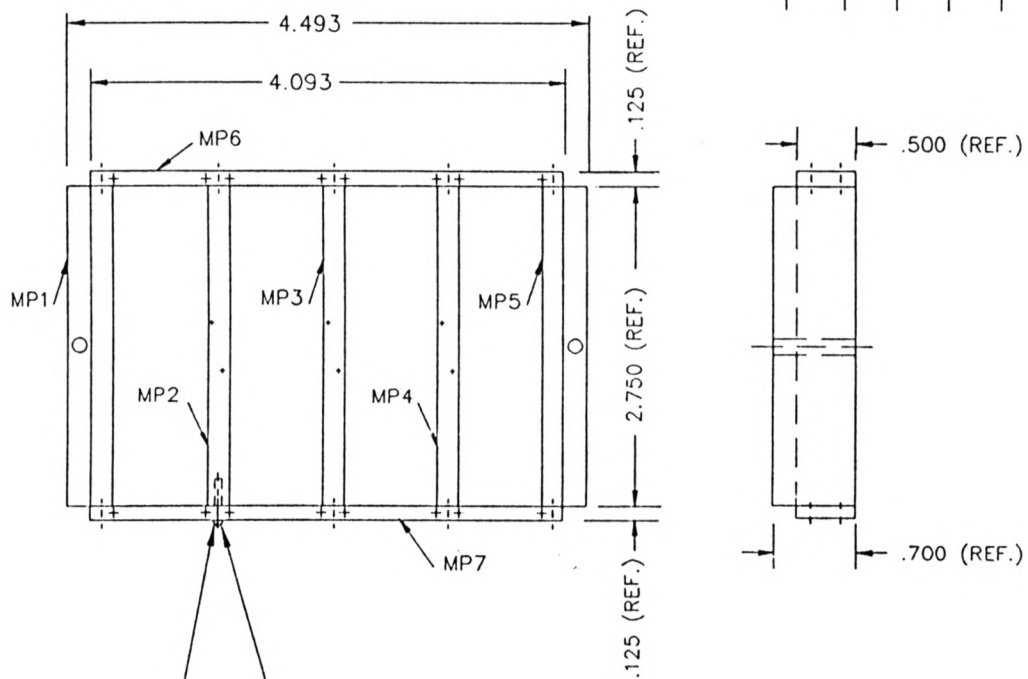
CHANGE LETTER	DATE	BY	APP'D BY	DATE	DESCRIPTION



- NOTES:
- "A" .140 DIA. (4) CORNER HOLES.
 - "B" #6-32 TAPPED (4) HOLES.
 - "C" #8-32 TAPPED HOLE.

MATERIAL: .125 ALUM. 6061-T6	<p>DEP NOTED UNLESS OTHERWISE SPECIFIED</p> <p>1. DIMENSIONS ARE IN INCHES 2. TOLERANCES UNLESS OTHERWISE SPECIFIED: FRACTIONS & DECIMALS: .015 3. HOLE SIZE: .0015 4. SURFACE FINISH: 125 5. HOLE SIZES AND DEPT: HOLE SIZE: .0015 IN DIA. DEPT: .0015 IN DIA. ALL DIMENSIONS TO UNLESS OTHERWISE SPECIFIED</p>	<p>DESIGNED BY: A. E. ROGERS</p> <p>DRAWN BY: A. PHILBROCK</p> <p>DATE: 12-86</p>	<p>NORTHEAST RADIO OBSERVATORY CORPORATION MAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS</p>
FINISH AND/OR HEAT TREATMENT: LIGHT GOLD ALODINE		<p>APPROVED BY: [Signature]</p> <p>DATE: [Date]</p>	<p>DRILLING PLAN FOR 5MHz DISTRIBUTOR MOUNTING PLATE</p>
		<p>PROJECT: [Blank]</p> <p>FILE: [Blank]</p>	<p>ACR/SWH/PL D 54130M00B</p>

D-54130M00B



MP8 THRU MP27 - #0-80 B'ND'G 'HD
MACH. SCREW X .25 LONG, ST'L CAD. PL.
MP28 THRU MP47 - #0 SPLIT L'KW'SH'R, ST'L CAD. PL.

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	DCN. & DESCRIPTION

NOTES:

1. SEE DWG B-54220M007 FOR MP1 AND MP5
2. SEE DWG B-54130M006 FOR MP2 THRU MP4
3. SEE DWG B-54130M010 FOR MP6 AND MP7

SHOP NOTES, UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS
FRACTIONAL ± 1/64
DECIMAL .XX ± .01
DECIMAL .XXX ± .005
3. SURFACE RUGGINESS
PER MIL-STD-10
4. REMOVE BURRS AND BREAK
SHARP EDGES 1/64 MAX.
5. SCREW THREADS PER MIL-STD-9
6. ALL DIMENSIONS TO APPLY
BEFORE PLATING OR CON-
VERSION COATING.

125 ✓

USED ON

NEXT ASSEMBLY
WEIGHT
SCALE FULL
CLASSIFICATION

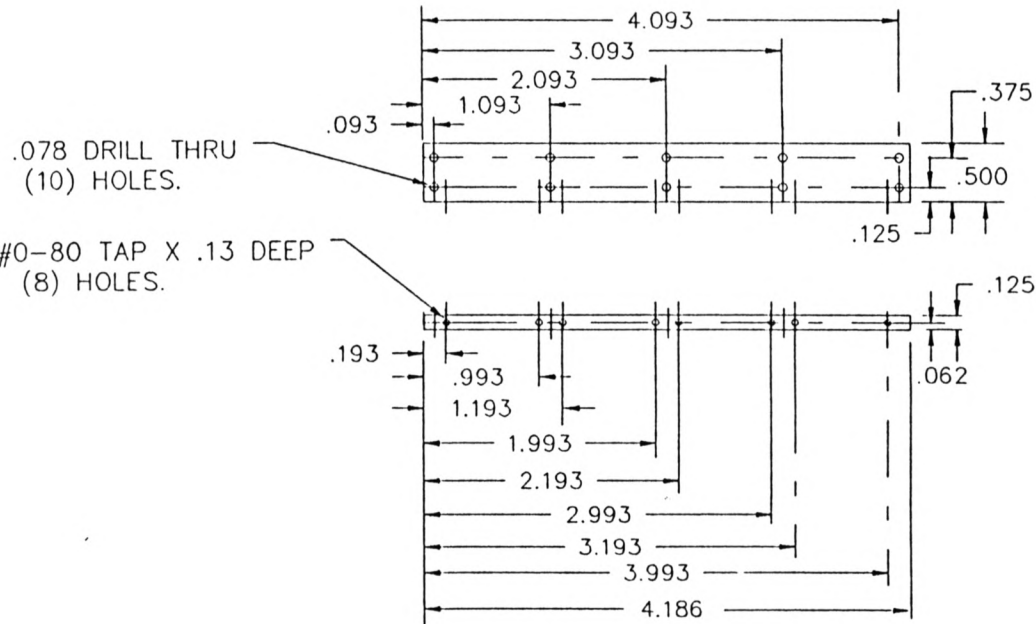
DRAWN FOR		DATE
A.E. ROGERS		12/87
DRAWN BY		DATE
A.P. HEBERT		12/87
CHECKED BY		
APPROVALS	PROJECT	
	ENGINEER	
	MATERIAL & PROCESS	
	STRUCTURES	
	THERMAL	
	MECHANICAL ANALYSIS	

NORTHEAST RADIO OBSERVATORY CORPORATION
HAYSTACK OBSERVATORY
WESTFORD, MASSACHUSETTS

SUB-ASSEMBLY, EXPANSION UNIT
P.C. BOARDS SUPPORT
5MHZ DISTRIBUTOR

	B	54130M009	
5SUBEX	DWG. SIZE	DWG. NO.	REV.

CHANGE LETTER	D'WN BY	CHK'D BY	APP'D BY	DATE	DC.N. & DESCRIPTION



.078 DRILL THRU
(10) HOLES.

#0-80 TAP X .13 DEEP
(8) HOLES.

NOTES:

1. MATERIAL: ALUM. #6061-T6
2. FINISH: CLEAR ALODINE

SHOP NOTES: UNLESS OTHERWISE SPECIFIED

1. DIMENSIONS ARE IN INCHES
2. TOLERANCE ON DIMENSIONS
FRACTIONAL $\pm 1/64$
DECIMAL .XX $\pm .01$
DECIMAL .XXX $\pm .005$
ANGULAR $\pm 0^{\circ}30'$
3. SURFACE ROUGHNESS
PER MIL-STD-10 125
4. REMOVE BURRS AND BREAK SHARP EDGES 1/64 MAX.
5. SCREW THREADS PER MIL-STD-9
6. ALL DIMENSIONS TO APPLY BEFORE PLATING OR CONVERSION COATING.

USED ON	DRAWN FOR	DATE	NORTHEAST RADIO OBSERVATORY CORPORATION HAYSTACK OBSERVATORY WESTFORD, MASSACHUSETTS				
	A.E. ROGERS	12/87	DRILLING PLAN, SHORT BAR EXPANSION UNIT, P.C. BOARD SUPPORT, 5MHZ DISTRIBUTOR				
	DRAWN BY	A.P. HEBERT					12/87
	CHECKED BY						
	PROJECT						
	ENGINEER						
	MAT'L. & PROCESS						
	STRUCTURES						
	THERMAL						
	MCH ANALYSIS						
			5MHZCX	B	54130M010		
			DWG. SIZE		DWG. NO.	REV.	

PARTS LIST FROM DBASE FILE:PARTS.DBF

REF	SUBMOD	PART	DESC	MFR	COST	QTY	TOTAL COST
MP1	5M	1009-1511-000	SMC PC CONN	AEP	2.25	12	27.00
C03	5M	103K	0.01 UF	AVX	0.10	11	1.10
C01	5M	104K	0.1 UF	AVX	0.10	33	3.30
MP	5M	1105-7521-003	SMC CABLE PLUG	AEP	2.49	15	37.35
MP2	5M	1250-003	FEED THRU	ERIE	1.53	1	1.53
MPX	5M	200458-1	BLOCK	AMP	3.00	1	3.00
MPX	5M	200833-4	GUIDE PINS	AMP	0.36	2	0.72
MPX	5M	200835-4	GUIDE SOCKETS	AMP	0.48	2	0.96
MPX	5M	201142-2	SPRING	AMP	0.05	11	0.55
MPX	5M	201143-5	COAXICON PIN	AMP	2.70	11	29.70
MPX	5M	202394-2	HOOD	AMP	1.04	1	1.04
MPX	5M	202422-1	POWER PINS	AMP	0.50	4	2.00
Q01	5M	2N2857	2N2857	MOTOROLA	0.81	11	8.91
MPX	5M	328666	FERRULE	AMP	0.08	11	0.88
C02	5M	4R7J	4.7 PF	AVX	0.50	11	5.50
SS	5M	54130I003	F.P.SILK SCREEN	NYES	100.00	1	100.00
MS	5M	54130M002	FRONT PANEL	HAYSTACK	100.00	1	100.00
MS	5M	54130M007	PC BOARD SUPPORT	HAYSTACK	100.00	1	100.00
MS	5M	54130M008	CENTER PLATE	HAYSTACK	20.00	1	20.00
MPX	5M	5807-1501-000	SMC TEE	AEP	12.70	1	12.70
PC	5M	AER\BUFFER	PC BOARD	PACLAB	40.00	11	440.00
MS	5M	C53306M013-2UA	FRONT PANEL	PREC.MACHINE	20.00	1	20.00
MS	5M	C53306M014-2UA	PERFORATED COVER	PREC.MACHINE	10.00	2	20.00
MS	5M	C53306M015-2UA	MODULE REAR PANEL	PREC.MACHINE	20.00	1	20.00
MS	5M	C53306M016	BAR SUPPORT	PREC.MACHINE	10.00	4	40.00
MS	5M	C53306M017	SIDE PLATE	PREC.MACHINE	10.00	2	20.00
WORK	5M	ENGINEER	CHECKOUT	HAYSTACK	100.00	1	100.00
MP19	5M	KC19-153	F.P.BNC	KINGS	6.76	1	6.76
U001	5M	LH0033CG	LH0033	ANALOG DEV	22.00	11	242.00
R02	5M	RCR05G112J	1.1K OHM 1/8W	AB	0.20	22	4.40
R03	5M	RCR05G200J	20 OHM 1/8W	AB	0.20	11	2.20
R05	5M	RCR05G271J	270 OHM 1/8W	AB	0.20	11	2.20
R04	5M	RCR05G510J	51 OHM 1/8W	AB	0.20	11	2.20
R01	5M	RCR05G511J	510 OHM 1/8W	AB	0.20	11	2.20
R06	5M	RCR05G561J	560 OHM 1/8W	AB	0.20	11	2.20
WORK	5M	TECH	ASSEMBLY WORK	HAYSTACK	10.00	24	240.00
*** Total ***							1620.40

ADLH0033G/ADLH0033CG

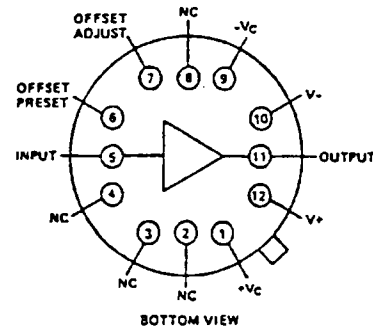
FEATURES

- 2nd Source—Replaces All LH0033G Series
- Wide Bandwidth—dc to 100MHz
- High Slew Rate—1500V/ μ s
- Operates on Single or Dual Power Supplies
- Operation Guaranteed -55°C to +125°C (ADLH0033G)
- High $10^{11} \Omega$ Input Impedance

APPLICATIONS

- High-Speed Line Drivers
- Video Impedance Transformation
- High-Speed A/D Input Buffers
- Nuclear Instrumentation Amplifiers
- Coaxial Cable Drive

ADLH0033G/ADLH0033CG PIN DESIGNATIONS



TO-8 PACKAGE

GENERAL DESCRIPTION

The ADLH0033G and ADLH0033CG are superhigh speed (1500V/ μ s slew rate) and high input impedance ($10^{11} \Omega$) buffer amplifiers, designed to replace all LH0033 series amplifiers in applications such as high-speed line drivers or as high impedance buffers for fast A/D converters and comparators.

The ADLH0033G and ADLH0033CG are rated for operation over the voltage range of $\pm 5V$ to $\pm 20V$. The ADLH0033G is guaranteed over the temperature range of -55°C to +125°C, while the commercial grade ADLH0033CG is guaranteed over the range of -25°C to +85°C.

Guaranteed operation over temperature of the ADLH0033G is achieved by using specially selected junction FET's and the latest state-of-the-art laser trimming techniques. They are available in the industry standard 12 pin TO-8 metal can.

OPERATION WITHIN AN OP AMP LOOP

When using the ADLH0033G/ADLH0033CG as a current booster or isolation buffer with op amps such as LH0032, 118, 741, etc., an isolation resistor of at least 47Ω must be

used between the op amp's output and the input of the ADLH0033G.

HEAT SINKING

To assure maximum output drive capability of the ADLH0033G/ADLH0033CG over temperature, heat sinks should be used. The cases are electrically isolated from the circuit and thus may be connected to system grounds.

POWER SUPPLY BYPASSING

To prevent oscillation, power supply bypassing is recommended. Use low-inductance ceramic disc caps, keeping lead lengths as short as possible ($1/4"$ to $1/2"$ max from device package), connected between ground plane and each supply lead. Use one or two $0.1\mu F$ caps in parallel with a $4.7\mu F$ tantalum for best results.

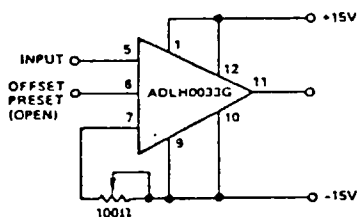


Figure 1. Offset Adjustment

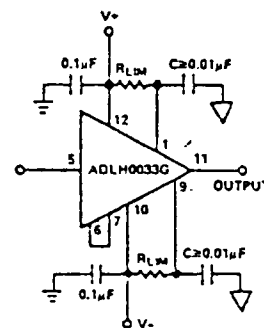


Figure 2. Short Circuit Protection Using Current Limiting Resistors (R_{LIM})

SPECIFICATIONS

	ADLH0033G	ADLH0033CG
ABSOLUTE MAXIMUM RATINGS		
Supply Voltage (V_+ - V_-)	40V	
Maximum Power Dissipation (see curves)	1.5W	
Maximum Junction Temperature	175°C	
Input Voltage	Equal to Supplies	
Continuous Output Current	±100mA	
Peak Output Current	±250mA	
Operating Temperature	ADLH0033G	-55°C to +125°C
	ADLH0033CG	-25°C to +85°C
Storage Temperature Range	-65°C to +150°C	
Lead Temperature (Soldering, 10 sec.)	300°C	

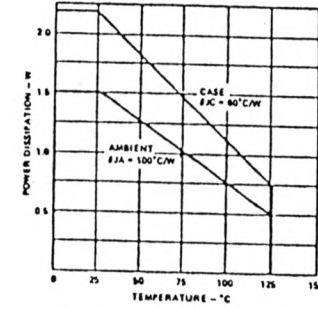
Parameter	Conditions	ADLH0033G			ADLH0033CG			Units
		min	typ	max	min	typ	max	
DC ELECTRICAL CHARACTERISTICS^{1,2}								
Input Bias Current	$T_C = 25^\circ\text{C}$		0.1	0.15	0.15	0.15	5	nA nA
Input Impedance	$R_L = 1\text{k}\Omega$	10^{10}	10^{11}		10^{10}	10^{11}		Ω
Voltage Gain	$V_{IN} = 1\text{V rms}, f = 1\text{kHz}, R_L = 1\text{k}\Omega, R_S = 100\text{k}\Omega$	0.96	0.98	1.0	0.96	0.98	1.0	V/V
Output Offset Voltage	$R_S = 100\text{k}\Omega, T_C = 25^\circ\text{C}$		5	10		12	20	mV
Output Offset Voltage TC	$R_S = 100\text{k}\Omega$		50	100		50	100	$\mu\text{V}/^\circ\text{C}$
Output Impedance	$V_{IN} = 1\text{V rms}, f = 1\text{kHz}, R_S = 100\text{k}\Omega, R_L = 1\text{k}\Omega$		6	10		6	10	Ω
Output Voltage Swing	$R_L = 1\text{k}\Omega, R_L = 100\Omega, T_C = 25^\circ\text{C}, V_S = \pm 5\text{V}, R_L = 1\text{k}\Omega$	± 12 19	± 13		± 12 19	± 13		V V V p-p
Supply Current	$V_{IN} = 0\text{V}, V_S = \pm 15\text{V}, V_S = \pm 5\text{V}$	20 18	25		21 18	25		mA mA
Power Consumption	$V_{IN} = 0\text{V}, V_S = \pm 15\text{V}, V_S = \pm 5\text{V}$	600 180	660		630 180	720		mW mW

AC ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}, V_S = \pm 15\text{V}, R_S = 50\Omega, R_L = 1\text{k}\Omega$)								
Slew Rate	$V_{IN} = \pm 10\text{V}$	1000	1500		1000	1400		V/ μs
Bandwidth	$V_{IN} = 1\text{V rms}$		100			100		MHz
Phase Nonlinearity	$\text{BW} = 1 \text{ to } 20\text{MHz}$		2			2		Degrees
Rise Time	$\Delta V_{IN} = 0.5\text{V}$		2.9			3.2		ns
Propagation Delay	$\Delta V_{IN} = 0.5\text{V}$		1.2			1.5		ns
Harmonic Distortion	$f > 1\text{kHz}$		<0.1			<0.1		%
MTBF	Mean Time Between Failure	1.962X10 ⁷ hours						
PACKAGE OPTION ³		III2A			III2A			

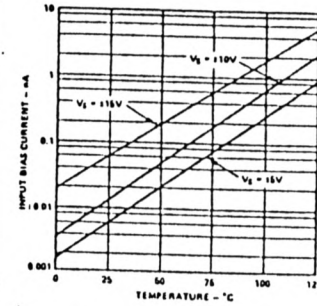
NOTES
¹ Unless otherwise specified, these specifications apply for +15V applied to pins 1 and 12, -15V applied to pins 9 and 10, and pin 6 connected to pin 7.
² Unless otherwise noted, specifications apply over a temperature range, -55°C < T_C < +125°C for the ADLH0033G, and -25°C < T_C < +85°C for the ADLH0033CG. Typical values shown are for $T_C = 25^\circ\text{C}$.
³ See Section 19 for package outline information.
 Specifications subject to change without notice.

ORDERING INFORMATION
 Model
 ADLH0033CG Temperature Range
 ADLH0033G -25°C to +85°C
 -55°C to +125°C

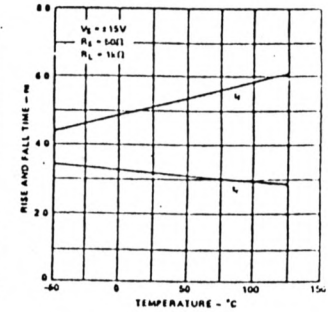
Typical Performance Curves



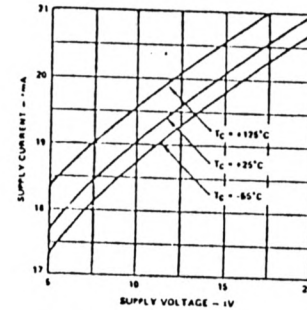
Power Dissipation vs Temperature



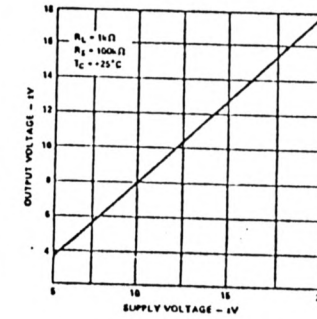
Input Bias Current vs Temperature



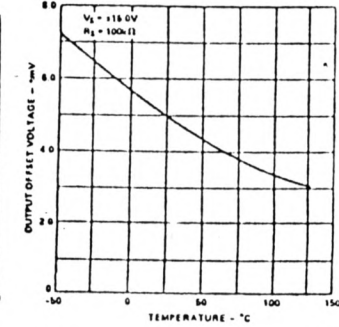
Rise and Fall Time vs Temperature



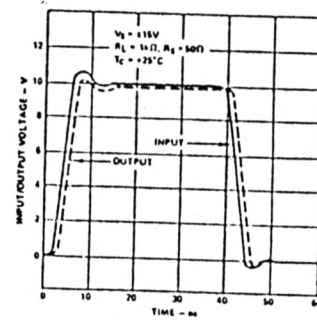
Supply Current vs Supply Voltage



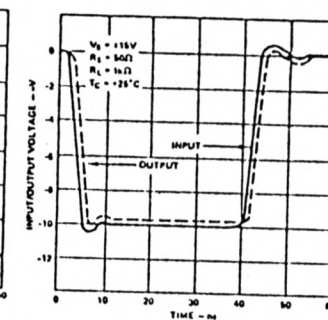
Output Voltage vs Supply Voltage



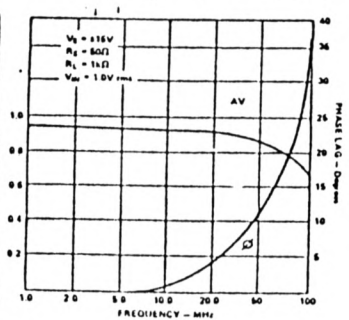
Output Offset Voltage vs Temperature



Positive Pulse Response



Negative Pulse Response



Frequency Response