

Item #	Item Name Error:Manufacturer	#Column Name Error:Manufacturer No	Quantity	#Column Name Error:Note	Designator
1			1		A1R3
2			1		A3A1R1
3			1		A3R2
4			1		A3R3
5			1		BNC1
6			1		BNC2
7			2		C1, C9
8			4		C2, C3, C7, C8
9			3		C4, C12, C14
10			1		C5
11			1		C8
12			1		C10
13			1		C11
14			1		C13
15			1		CHS-GND
16			1		Fuse
17			2		IBC1, IBC2
18			1		L1
19			4		L, N, SW-1, SW-2
20			1		P6
21			1		P7
22			1		P8
23			1		P9
24			1		P10
25			2		Q1, Q2
26			1		Q3
27			1		R1
28			1		R2
29			1		R3
30			1		R4
31			2		R5, R5a
32			1		R6
33			1		R7
34			1		R8
35			1		R9
36			1		R10
37			1		R11
38			1		R12
39			1		R13
40			2		R14, R14b
41			2		R15, R15a
42			2		R16, R16a
43			1		R17
44			1		R18
45			2		R19, R19a
46			1		R20
47			1		R21
48			1		R29
49			2		R31, R33
50			3		R32, R34, R35
51			1		R36
52			1		R37
53			1		R38
54			1		RT1
55			2		SC1, SC2
56			1		SW1
57			1		SW2
58			1		SW3
59			1		SW4
60			1		T1
61			1		Trm1
62			1		U1

Description	Footprint	Comment	LibRef
Resistor 196K 1% 0805 1/8W 10ppm/C	RESC2013X70X40LL20T20	RES 196K 1% 0805	CMP-2001-00110-5
Resistor 464K 1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	464K 1% 0805	CMP-2001-00110-5
Resistor 3K16 1% 0805 1/8W 10ppm/C	RESC2013X70X40LL20T20	RES 3K16 1% 0805	CMP-2001-00110-5
Resistor 316 1% 0805 1/8W 10ppm/C	RESC2013X70X40LL20T20	RES 316 1% 0805	CMP-2001-00110-5
BNC PCB Mount	BNC PCB Plastic	Ref Out	BNC PCB
BNC Ref Out	BNC PCB Plastic	Ref In	BNC PCB
47uF Tant 4V 1411	FP-TAUB-MFG	47uF TA	CMP-04424-000035-1
100pF 0805	CAPC2113X88X50NL30T25	100pF 0805	CMP-2007-00001-1
1206 (3216 Metric) Chip Capacitor	CAPC1206(3216)150 L	3.3uF	CMP-1590-00001-1
0.1uF 0805	CAPC2113X88X50NL30T25	0.1uF 0805	CMP-2007-00001-1
0.01uF 0805	CAPC2113X88X50NL30T25	0.01uF 0805	CMP-2007-00001-1
CAP TANT 100u 10V	FP-TPE-D4-MFG	100u 10V TA	CMP-05428-000010-1
CAP TANT 10u 25V	FP-TPE-D4-MFG	10u 25V TA	CMP-05428-000010-1
1uF 0805	CAPC2113X88X50NL30T25	1uF 0805	CMP-2007-00001-1
Socket	PIN1	T0 Chassis Gnd	Socket
Fuse	Fuse Holder 20mm PCB with Cover	Fuse 50mA T	Fuse
Header, 4-Pin	HDR1X4	Header 4	Header 4
Inductor 6.8uH	2.5x2 Inductor	6.8uH	Inductor
Socket	PIN1	Socket	Socket
Header, 2-Pin	HDR1X2	Power In	Header 2
Header, 2-Pin	HDR1X2	Power Ref	Header 2
Header, 2-Pin	HDR1X2	Power LED	Header 2
Header, 8-Pin	HDR1X8	Header 8	Header 8
Header, 2-Pin	HDR1X2	Ex 18-24V	Header 2
JFET - VHF / UJFET Chopper	ONSC-SOT-23-3-318-08_V SC-59	MMBFJ111 2SC3837K	CMP-1062-00038-1
Resistor 31.6 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 31.6 0.1% 0805	CMP-2001-00110-5
Resistor 0.02 1% 0805 0.5W 50ppm/C	RESC2013X70X40LL20T20	RES 0.02 1% 0805	CMP-2001-00110-5
Resistor 68.1 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 68.1 0.1% 0805	CMP-2001-00110-5
Resistor 0.27 1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 0.27 1% 0805	CMP-2001-00110-5
Resistor 432 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 432 0.1% 0805	CMP-2001-00110-5
Resistor 0.39 1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 0.39 1% 0805	CMP-2001-00110-5
Resistor 22.6 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 22.6 0.1% 0805	CMP-2001-00110-5
Resistor 665 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 665 0.1% 0805	CMP-2001-00110-5
Resistor 2K2 0.5% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 2K2 0.5% 0805	CMP-2001-00110-5
Resistor 7.32 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 7.32 0.1% 0805	CMP-2001-00110-5
Resistor 7.15K 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 7.15K 0.1% 0805	CMP-2001-00110-5
Resistor 59 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 59 0.1% 0805	CMP-2001-00110-5
Resistor 100 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 100 0.1% 0805	CMP-2001-00110-5
Resistor 53.6K 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 53.6K 0.1% 0805	CMP-2001-00110-5
Resistor 160 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 160 0.1% 0805	CMP-2001-00110-5
Resistor 274K 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 274K 0.1% 0805	CMP-2001-00110-5
Resistor 2.8K 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 2.8K 0.1% 0805	CMP-2001-00110-5
Resistor 536K 0.1% 0805 1/8W 10ppm/C	RESC2013X70X40LL20T20	RES 536K 0.1% 0805	CMP-2001-00110-5
Resistor 25K 0.1% 0805 0.1W 10ppm/C	RESC2013X70X40LL20T20	RES 25K 0.1% 0805	CMP-2001-00110-5
Resistor 360K 0.1% 0805 1/8W 10ppm/C	RESC2013X70X40LL20T20	RES 360K 0.1% 0805	CMP-2001-00110-5
Resistor 3K3 0.1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 3K3 0.1% 0805	CMP-2001-00110-5
Resistor 196 1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RE196 1% 0805	CMP-2001-00110-5
Resistor 15 1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 15 1% 0805	CMP-2001-00110-5
Resistor 1K 1% 0805 0.2W 10ppm/C, Resistor 1K1% 0805 0.2W 10ppm/C, Resistor 1K1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 1K 1% 0805	CMP-2001-00110-5
Resistor 240 1% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 240 1% 0805	CMP-2001-00110-5
Resistor 2k2 5% 0805 0.2W 10ppm/C	RESC2013X70X40LL20T20	RES 2k2 5% 0805	CMP-2001-00110-5
Resistor 10K 5% 0805 0.2W 50ppm/C	RESC2013X70X40LL20T20	RES 10K 5% 0805	CMP-2001-00110-5
RES 31.6 250ppm 0805	RESC2013X70X40LL20T20	RES 31.6 250ppm 0805	CMP-2001-00110-5
Rotary Switch 10way PCB CKN10954-ND	ScreenConnection SW_ROT 4x12	ScreenConnection Rotary Switch 10way	ScreenConnection Rotary_Switch_1x10
DPDT Switch	DPDT Toggle E switch	DPDT Switch POL	DPDT Switch
CAL/SDBY DPDT	DPDT Toggle E switch	CAL/SBY DPDT	DPDT Switch
DPDT Switch	DPDT Toggle E switch	INT/EXT DPDT	DPDT Switch
AC-DC Regulated Module 24V	IRM-02 Module SM	AC-DC Reg	AC-DC Reg Module
Trimmer	3214W Trimmer	Trm 1k	Trimmer
500mA, Medium Current 1.2 to 37 V Adjustable Voltage Regulator, 3-Pin DPAK, Tape and Reel	TO-252_L	LM317MDT-TR	CMP-0244-00074-1

L. . N

24V DC

M.O.R 11683A

Version 1.1

50mA T Fuse 20x5

T1

R37

Trm1

C11

R36

C14

L1

C13

P7

Do not connect GND to PE

+ Trim for 15.8V

SW-1

P8

R38

Power LED

IBC2

1

SW3

SW4

P6

+

SW2

M.O.R 11683A  
Version 1.1

BNC1

BNC2

IBC1

1

GND TP

A3A1R1

A1R3

Affix Switch Other Side

R19

R19a

R18

R21

R20

R17

R16a

R16

R15

R15a

R14b

R14

R13

R12

P9

C7

C6

A3R3

C4

R29

C2

Q1

R32

C5

A3R2

C8

C1

C3

R31

R33

Q2

R34

R35

RT1

C10

C9

11683A

CHS-GND

M.O.R 11683A  
Version 1.1.1

GND TP

R2

R1

R3

R4

R5

R5a

R6 R7 R8 R9 R10 R11

1

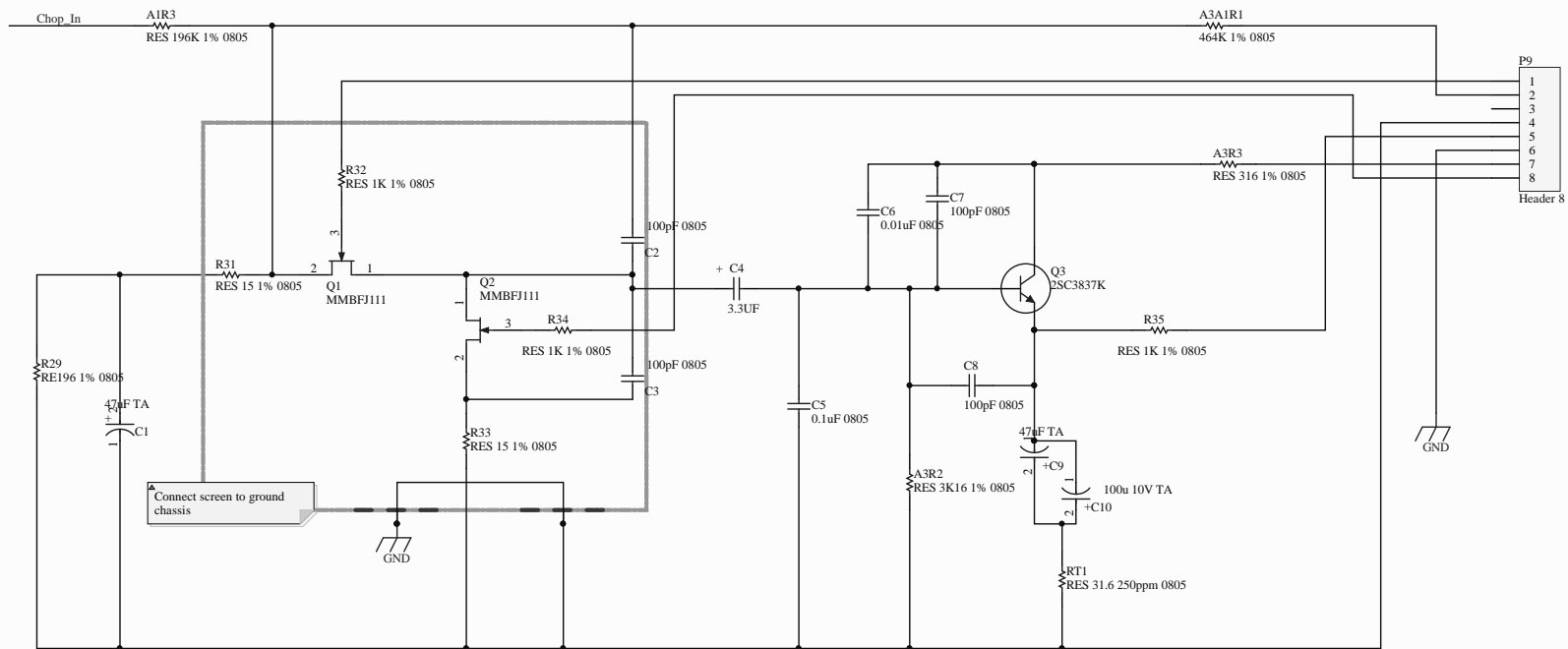
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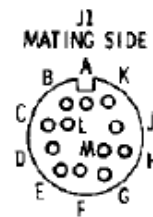
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1



1 - H 220Hz  
 2 - L Auto Zero  
 3 -  
 4 - E Signal Ground  
 5 - D Feedback Return  
 6 - M J F K Guard/Chassis Gnd  
 7 - C Samples 220 Output  
 8 - G 220HZ gate  
 Also Chassis to connector body/screen



Title		
ChopperAmp.SchDoc		
Size	Number	Revision
A3		1.1
Date:	08/01/2025	Sheet 1 of 8
File:	X:\HP Cal\HP-Cal\ChopperAmp.SchDoc	Drawn By: P Shersby



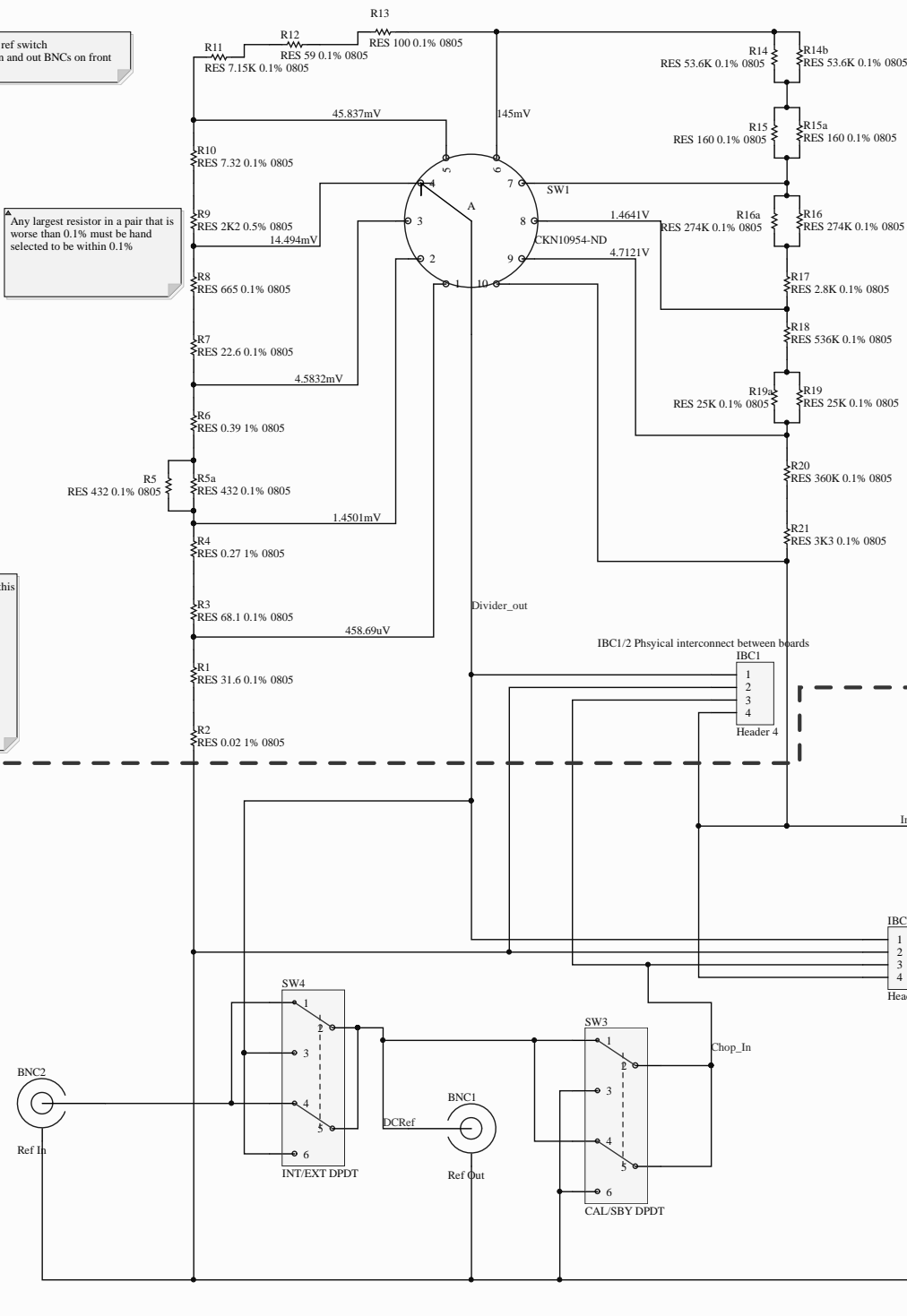
Keysight Model 11683A

Need to add int/ext ref switch  
would like the ref in and out BNCs on front  
panel

Any largest resistor in a pair that is  
worse than 0.1% must be hand  
selected to be within 0.1%

Voltages shown on switch are measured from the ref out connection with this  
circuit connected to the chopper/amp circuit  
Using a 15.8V internal reference  
All voltages assume that the reference voltage has trimmed for a value of  
145.00mVDC, with range switch set at 1mW position

ICB1/2 Pinout  
1 - DividerSelection  
2 - Signal Ground  
3 - Cal Level For Chopper  
4 - Internal Ref power (+/-15.8V) for divider



Switch pos	Watts	dBm
10	100m	20
9	30m	15
8	10m	10
7	3m	5
6	1m	0
5	300u	-5
4	100u	-10
3	30u	-15
2	10u	-20
1	3u	-30

1. use star gnd and connect that to chassis  
2. do not loop gnd from psu through chassis  
Note PSU is floating so ref can be +/- 15.8V  
All leads are screened for DC

Rotary Switch Board  
Front Panel Switch/conn board

1 = +12.8V  
2 = 0V  
Floating PSU

Title Power Meter Calibrator HP11683A Replacement VoltageRef.SchDoc		
Size A3	Number 1	Revision 1.1
Date: 08/01/2025	Sheet of	
File: X:\HP Cal\HP-Cal\VoltageRef.SchDoc	Drawn By: P Shersby	



