

# SA818/DRA818 500mW/1W TRANSMITTER

## AUDIO ONLY

HAYWIRE SHOWN ON PWA (TOP)  
NO RF SECTION (TALKIE TOASTER)

### -22 TO -23 CHANGES

U4-18 (MIC-IN) IS NOW DC ISOLATED

### -23 TO -24 CHANGES

ADD D4 TO PROVIDE HI/LO POWER CONTROL;  
CONNECTION TO BRD\$4-CTL

NOTE ON USE OF D2/VR1

ADD DS1 (SCHOTTKY DIODE) TO ELIMINATE NEED FOR VR2

SA818 SYMBOL UPDATED

17 NOV 2022

CHANGE C13 TO 10UF TO ALLOW TIME FOR DRA818  
TO INITIALIZE AND BE SETUP FOR OPERATION  
THROUGH THE SERIAL INTERFACE. (1000ms)

16 FEB 2023

ADD NOTES ON SCHEMATIC FOR TEST CONFIGURATION  
SAME NOTES ON BOARD LAYOUT

### -24 TO -29 CHANGES

CHANGE TO SPLIT PD\* AND PTT\* SIGNALS

HI(100mW)/LOW(500mW) IS JUMPER

AUDIO TEST PATH BYPASSES ATTENUATORS

ADD LEDs TO PTT AND PD SIGNALS

FIX R8/R9 ORIENTATION (SWAP RX/TX)

R37 MOVE TO OTHER SIDE OF R15

REWORK INPUT TO U10 SO BOTH DRA818 AND  
HOST CAN DRIVE AUDIO AMP

### -29 TO -32 CHANGES

ADD PAD AND ISOLATION FOR POWER CONTROL

ADD 0.050" (v) TO 'HAMMOND\_1599E\_SA181H' LIBRARY PART

### -32 TO -33 CHANGES

ADD STATIC DRAIN RESISTORS  
R7, R10, R17, R19

### -33 TO -34 CHANGES

ADD ATTENUATOR  
R2, R21, R22

### -34 TO -36 CHANGES

CORRECT VR1 PINOUT

### -36 UPDATES

UPDATE 'HAMMOND\_1599E\_SA818L' PACKAGE  
WITH DRILL DIMENSIONS

ADD MCMaster SPACER LIST

#### McMASTER-CARR SPACER PART NUMBERS

SCREW M2.5x0.45	92000A104
SCREW M3.0x0.5	92000A116
12mm SPACER M2.5x0.45	95947A007
14mm SPACER M2.5x0.45	95947A009
12mm SPACER M3.0x0.5	95947A008
14mm SPACER M3.0x0.5	95947A010

#### ATTENUATOR NETWORK PART NUMBERS

CRCW120611R5FKEA	541-11.5FCT-ND
CRCW120617R4FKEA	541-17.4FCT-ND
CRCW120623R7FKEA	541-23.7FCT-ND
CRCW120637R4FKEA	541-37.4FCT-ND
CRCW120645R3FKEA	541-45.3FCT-ND
CRCW120652R3FKEA	541-52.3FCT-ND
CRCW120671R5FKEA	541-71.5FCT-ND
CRCW120695R3FKEA	541-95.3FCT-ND
CRCW1206115RFKEA	541-115FCT-ND
CRCW1206130RFKEA	541-130FCT-ND
CRCW1206150RFKEA	541-150FCT-ND
CRCW1206221RFKEA	541-221FCT-ND
CRCW1206294RFKEA	541-294FCT-ND
CRCW1206432RFKEA	541-432FCT-ND

PWA RELEASED AS 2D354 102 - 73181 -36

PWB RELEASED AS 2D354 102 - 73181 -36

The University of Iowa  
Department of Physics & Astronomy  
Iowa City, IA, USA

TITLE: DRA818 AMP (SPLIT PTT/PD) A102\_73181\_36

CAGE	Series	B	Number	2 Layers	Rev
2D354	102		73181		36

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THIS BOARD CONTAINS  
STATIC SENSITIVE  
DEVICES. HANDLE  
ONLY IN STATIC SAFE  
ENVIRONMENT

TOP\_FULL BOARD ASSY BOT\_COMPACT BOARD-ID

DRAWING FRAME SHOWN ON CIRCUIT BOARD

Drawn Date

KC0JFQ 2019-05-13

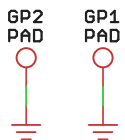
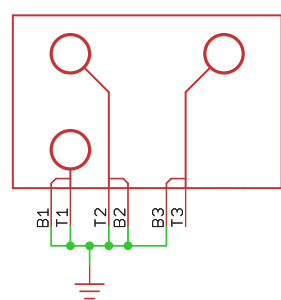
Designed Date

KC0JFQ 2019-05-13

MARK ZERO POINT FOR  
PICK & PLACE FILE ON  
PRINTED CIRCUIT BOARD

# SA818 RF AMPLIFIER

RF\_DB\$0 2 LAYERS 102-73181-29



INSTALL FOR  
SOFTWARE DEBUG

JP3  
PBC02SAAN

.7V  
VOLTAGE  
DROP  
D6  
1N4148

U5.0

INSTALL FOR  
SOFTWARE  
DEBUG

JP1  
PBC02SAAN

HAYWIRE TO U4.2  
RAIL TO LOAD  
REGULATOR  
(CONNECTION SHOWN  
ON ARTWORK)

USE 270 OHM  
RESISTOR TO  
LOAD 4.2V RAIL  
(\*9mA)

R3  
470

R6  
470

R18  
680

D5  
LTL-4223

D4  
LTL-4223

D3  
LTL-4223

R2  
1.21K

R12  
1.21K

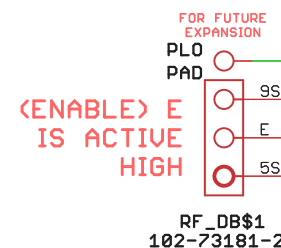
R11  
1.21K

R7  
47K

R10  
47K

R13  
4.99K

R14  
1.21K



FOR FUTURE  
EXPANSION

U2\$1  
74LUC1617

U1\$1  
74LUC1614

U9.0

U5.0

U3.3

U1\$0

U2\$0

BYPASS BY  
C1 & C19

U1\$0

U2\$0

U1\$0

U2\$0

U1\$0

U2\$0

U1\$0

U2\$0

U1\$0

U2\$0

U1\$0

U2\$0

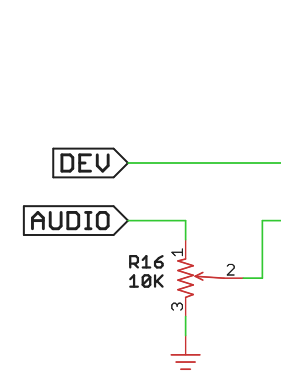
U1\$0

U2\$0

U1\$0

U2\$0

## AUDIO AMPLIFIER



U10  
LM4871  
TPA301

R4  
100K

C14  
4.7PF

R1  
47K

R5  
47K

C5  
.47UF

C16  
.47UF

R16  
10K

C15  
1UF

C18  
1UF

C17  
.01UF

C19  
.01UF

C20  
.01UF

C21  
.01UF

C22  
.01UF

C23  
.01UF

C24  
.01UF

C25  
.01UF

C26  
.01UF

C27  
.01UF

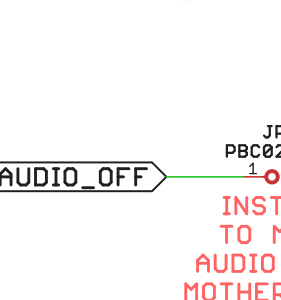
C28  
.01UF

C29  
.01UF

C30  
.01UF

C31  
.01UF

C32  
.01UF



U10  
LM4871  
TPA301

R4  
100K

C14  
4.7PF

R1  
47K

R5  
47K

C5  
.47UF

C16  
.47UF

R16  
10K

C15  
1UF

C18  
1UF

C17  
.01UF

C19  
.01UF

C20  
.01UF

C21  
.01UF

C22  
.01UF

C23  
.01UF

C24  
.01UF

C25  
.01UF

C26  
.01UF

C27  
.01UF

C28  
.01UF

C29  
.01UF

C30  
.01UF

C31  
.01UF

C32  
.01UF



U10  
LM4871  
TPA301

R4  
100K

C14  
4.7PF

R1  
47K

R5  
47K

C5  
.47UF

C16  
.47UF

R16  
10K

C15  
1UF

C18  
1UF

C17  
.01UF

C19  
.01UF

C20  
.01UF

C21  
.01UF

C22  
.01UF

C23  
.01UF

C24  
.01UF

C25  
.01UF

C26  
.01UF

C27  
.01UF

C28  
.01UF

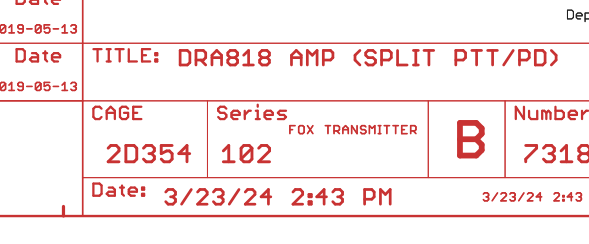
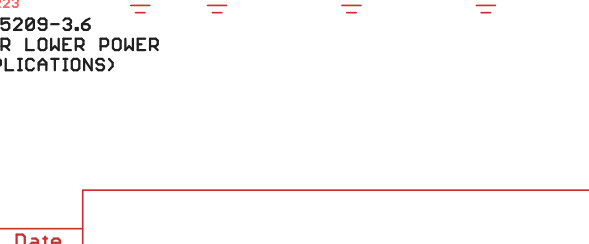
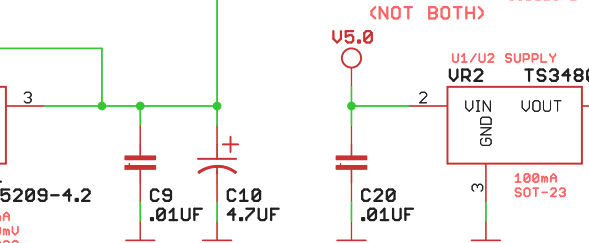
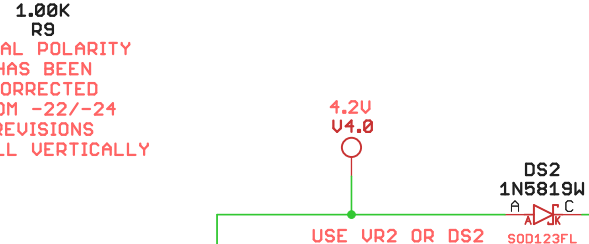
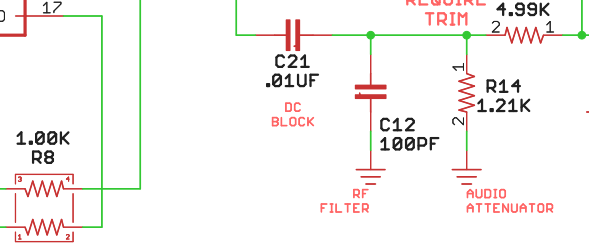
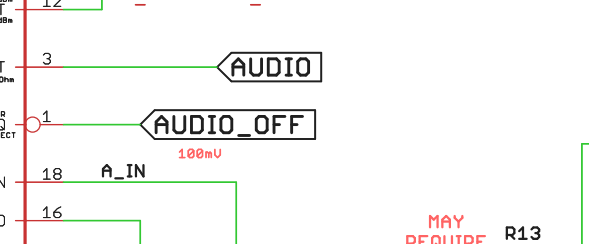
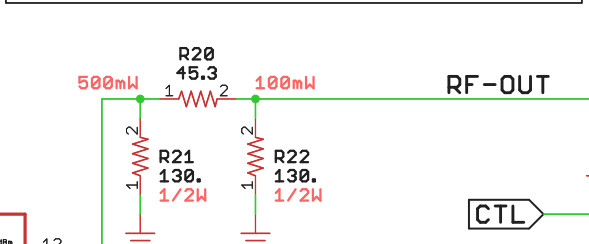
C29  
.01UF

C30  
.01UF

C31  
.01UF

C32  
.01UF

R20	R21	R22	500mW	1000mW
0.0	0dB	N/A	500	1000
11.5	11.6	-2dB	436	631
17.4	17.6	-3dB	292	500
23.7	23.8	-4dB	221	398
37.4	37.6	-6dB	150	251
45.3	44.8	-7dB	130	200
52.3	52.8	-8dB	116	158
71.5	71.2	-10dB	96.2	100



Drawn  
KC0JFQ  
Date  
2019-05-13

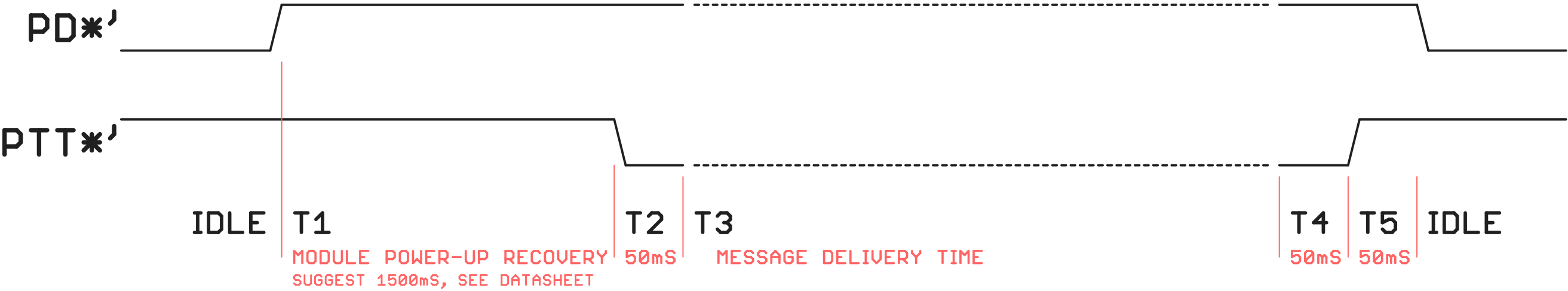
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# MODULE TIMING



Drawn	KC0JFQ	Date	2019-05-13	The University of Iowa Department of Physics & Astronomy Iowa City, IA, USA			
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Date: 3/23/24 2:43 PM		3/23/24 2:43 PM		Sheet:	3/3		