EK86

Evaluation Kit

APPLICABLE PARTS (SOLD SEPARATELY)

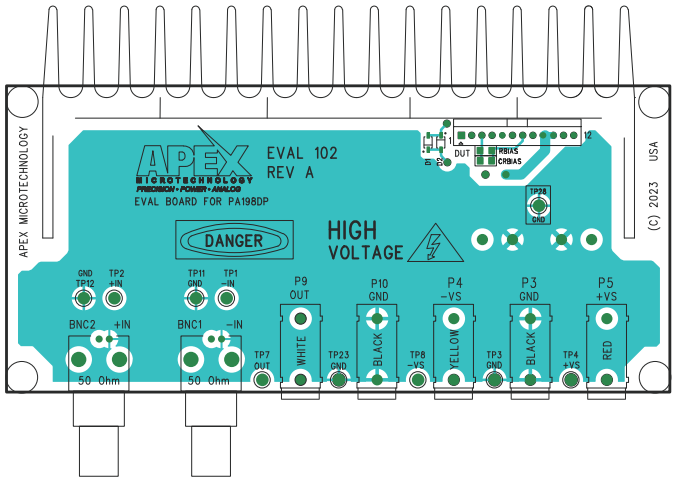
- PA198

INTRODUCTION

This easy-to-use kit provides a platform for the evaluation of linear power amplifier circuits using the PA198 high speed amplifier. Efficient PCB layout allows for evaluation of maximum slew rate capability of amplifier. Critical connections for power supply bypassing, compensation and current limiting are pre-wired through PCB trace. Components that are not normally available in engineering labs are provided in the evaluation kit for convenience. External connections to the evaluation kit can be made via the terminals at the edge of the circuit board. These terminal pads are suitable for standard banana jacks or direct soldering of wires. The schematic is shown in Figure 2.

Figure 1: PCB Layout

TOP SIDE



BOTTOM SIDE

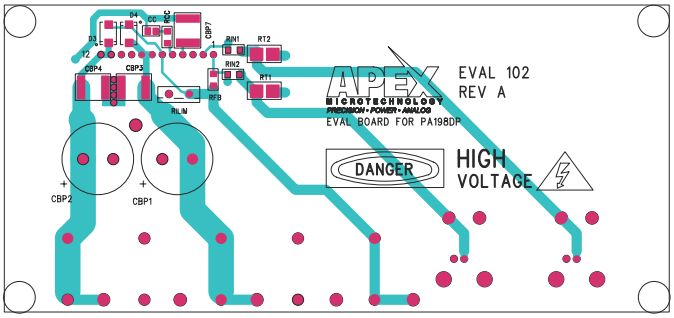


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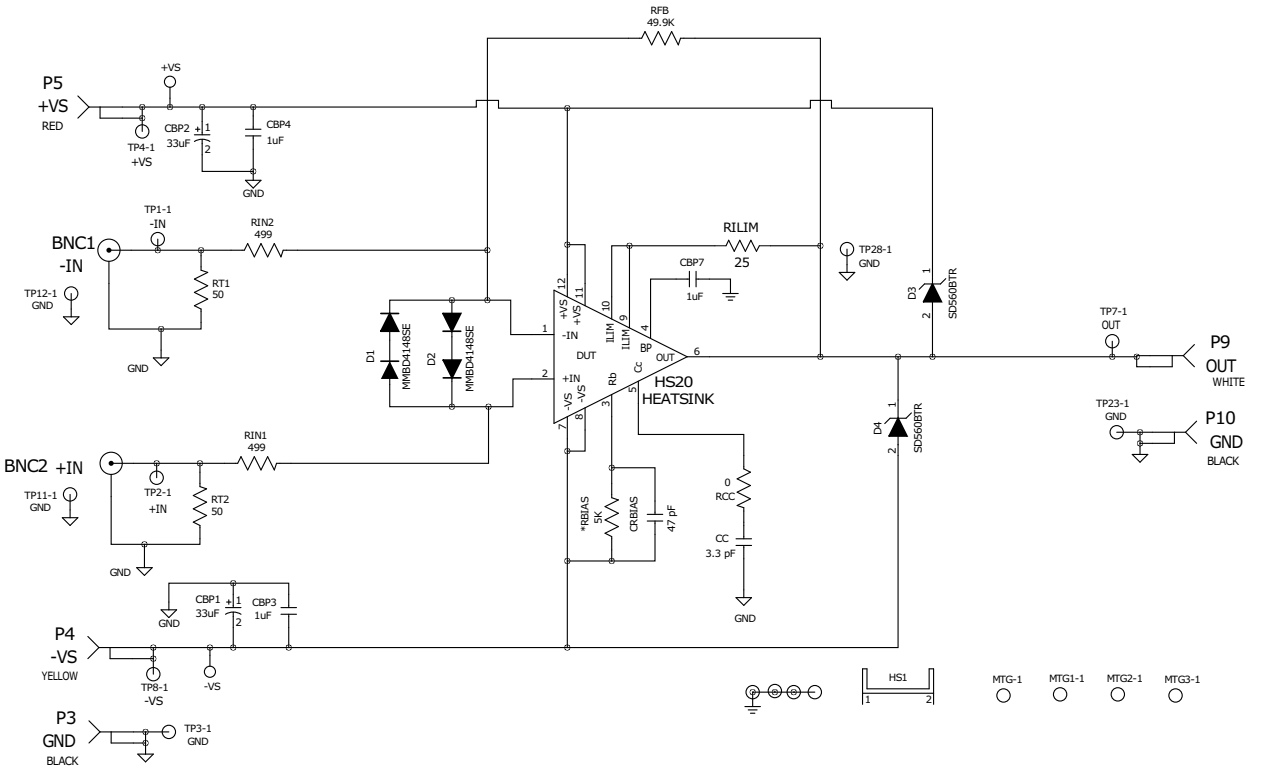
Figure 2: EK Schematic



*OPTIONAL COMPONENTS NOT SUPPLIED WITH EVALUATION KIT

Figure 2 shows the schematic of the evaluation kit's pre-wired connections. Components not supplied with the kit are marked with an asterisk (*).

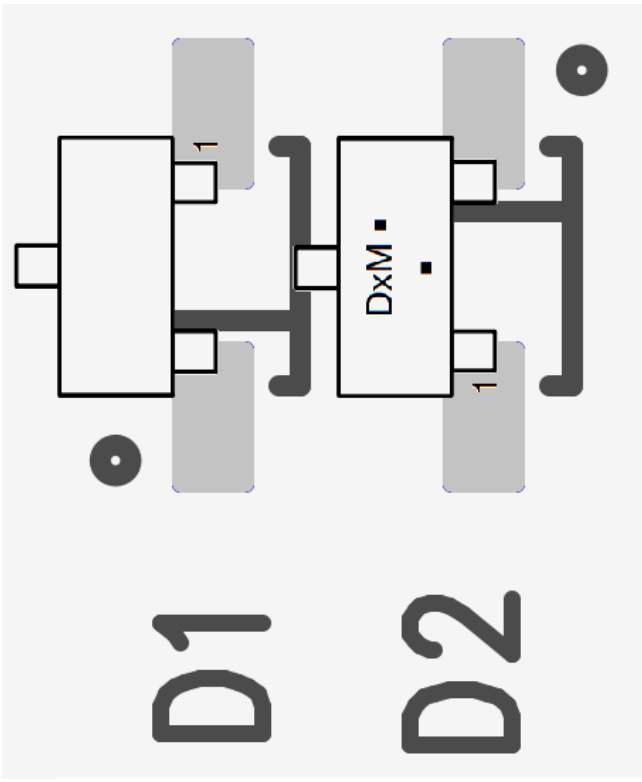
PARTS LIST

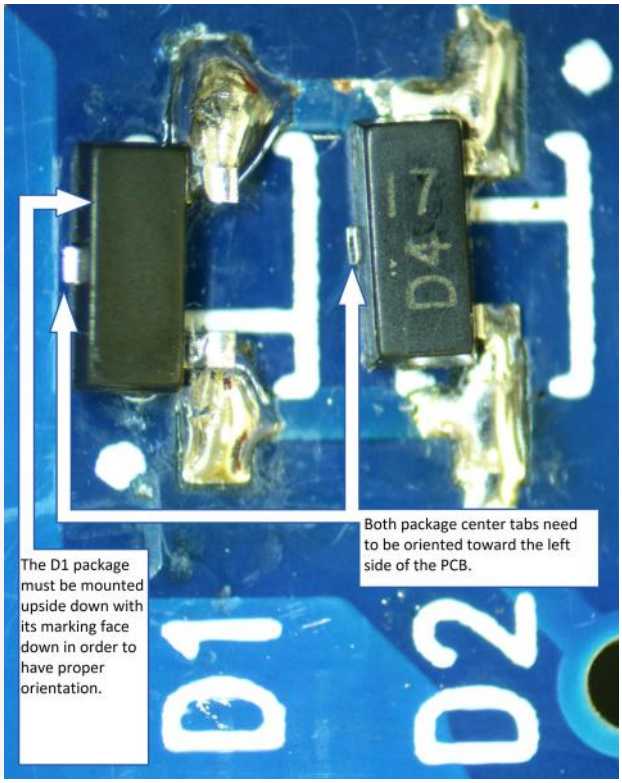
Reference	Manufacturer Part #	Description	QTY
D1-D2	MMBD4148SE	Dual Diode Gen Purp 100V	2
D3-4	SD560BTR	Diode Standard 600V	2
CBP3-4, 7	2220Y5000105KJTWS2	Capacitor, 1 µF Ceramic	3
CBP1-2	UCY2H330MHD3TN	Capacitor, 33 µF Electrolytic	2
CC	C0805C100JCGAC7800	Capacitor, 10 pF	1
CRBIAS	C1206N470K501RT	Capacitor, 47 pF	1
RCC	CRCW12060000Z0EBC	Resistor, 0 Ohms Jumper	1
RFB	RMCF1206FT49K9	Resistor, 49.9 kOhms	1
RFB1	RMCF1206FT24K9	Resistor, 24.9 kOhms	1
RBIAS	Optional(Not included)		
RIN1-2	CRCW1206499RFKEAC	Resistor, 499 Ohms	2
RILIM	MP930-4.00-1%	Resistor, 4 Ohms	1
RT1-2	RCP2512W50R0GEB	Resistor, 50 Ohms	2
DUT	PA198DP(Not included)		
TP1-4, TP7-9, TP11-17, TP20-23, TP26, TP28	5009	Yello PC Test Point	20
HS1	HS20	PA198 Package Heatsink	1
BNC1-2	731385033	BNC Connector Jack, Female	2
P3, P10	571-0100	Test Sockets BLACK	2
P4	571-0500	Test Sockets RED	1
P9	571-0600	Test Sockets WHITE	1
P5	571-0700	Test Sockets YELLOW	1
PCB	EVAL102	EK Kit PCB	1
Sockets	MS06	Op-amp PCB Mating Sockets	1
Thermal Washer	TW07	SIP Package Thermal Interface	1

ASSEMBLY INSTRUCTIONS

1. See Figure 1. Solder all surface mount components including ceramic capacitors and film resistors tothe TOP side of the circuit board at CRbias, do not install D1 and D2 yet. For the BOTTOM side of the circuit board, besure to attach CBP3, CBP4, CBP7, Rin1, Rin2, Rfb, RCc, Cc, D3 and D4.

2. When installing D1 and D2, please pay attention to the following mounting diagram:





The diagram shows that both D1 and D2 are installed with their center tab pointing to the left with respect to the D1 and D2 designators. In order for this to happen D1 must be soldered in upside down while D2 will be soldered in right side up. This installation will ensure that D1 and D2 are in antiparallel configuration.

3. Solder the electrolytic capacitors to the circuit board at C3 and C4. Match the polarity markings onthe circuit board with those on the capacitor body.
4. Install the through hole current limiting resistor provided. Solder this resistor to the circuit board at R_{LIM}.
5. Examine the large heat sink. Notice that there are several holes in the face of the heat sink. These are for mounting various Apex Microtechnology amplifier models. The circuit board aligns the amplifier with the correct mounting hole once the heat sink is attached to the circuit board. The heatsink can be mounted in either of two positions. One position is used for mounting the amplifier to the heat sink **without** the mating socket strip (the mounting hole of the amplifier is closer to the circuit board). Rotating the heat sink 180 degrees allows mounting the amplifier **with** the mating socket strip (the mounting hole of the amplifier is further from the circuit board).
6. While developing your application circuit you will probably want to use the mating socket strip. Insert the strip into the circuit board from the TOP side and solder one pin on the BOTTOM side. Check that the mating socket strip is fully seated against the circuit board then solder the remaining pins. Insert the amplifier fully into the mating socket strip, noting the pin 1 locations on the amplifier and the circuit board.
7. The four holes at the corners of the circuit board are for mounting #6 standoff spacers if desired. The remaining two slotted holes are for mounting the large heat sink to the DUT side of the circuit board. Temporarily mount the heat sink with 2 #6 X 1/2” self tapping screws from the opposite side of the circuit board. Do not fully tighten the screws at this time. Check for alignment of the slot in the mounting tab of

the amplifier with a hole in the heat sink. Dismount and rotate the heat sink if necessary to achieve an alignment with a hole in the heat sink. Position the heat sink so that the back of the amplifier mounting tab is flush with the heat sink then tighten the heat sink mounting screws.

8. Hang the thermal washer near the end of a 6-32 X 1/2” screw. Slightly pull the amplifier away from the heat sink face. Use the screw to position the thermal washer behind the amplifier and insert the screw.
9. While developing your application circuit you will probably want to use the mating socket strip. Insert the strip into the circuit board from the TOP side and solder one pin on the BOTTOM side. Check that the mating socket strip is fully seated against the circuit board then solder the remaining pins. Insert the amplifier fully into the mating socket strip, noting the pin 1 locations on the amplifier and the circuit board.
10. The four holes at the corners of the circuit board are for mounting #6 standoff spacers if desired. The remaining two slotted holes are for mounting the large heat sink to the DUT side of the circuit board.Temporarily mount the heat sink with 2 #6 X 1/2” self tapping screws from the opposite side of the circuit board. Do not fully tighten the screws at this time. Check for alignment of the slot in the mounting tab of the amplifier with a hole in the heat sink. Dismount and rotate the heat sink if necessary to achieve an alignment with a hole in the heat sink. Position the heat sink so that the back of the amplifier mounting is flush with the heat sink then tighten the heat sink mounting screws.
11. Hang the thermal washer near the end of a 6-32 X 1/2” screw. Slightly pull the amplifier away from the heat sink face. Use the screw to position the thermal washer behind the amplifier and insert the screw into the mounting hole of the heat sink. Secure the screw from the opposite side of the heat sink using a nut holder.
12. Finally, install BNC connectors and banana jacks at the edge of the PCB to make it easier to connect to any peripheral devices like power supplies, function generators and/or loads.

NEED TECHNICAL HELP? CONTACT APEX SUPPORT!

For all Apex Microtechnology product questions and inquiries, call toll free 800-546-2739 in North America. For inquiries via email, please contact apex.support@apexanalog.com. International customers can also request support by contacting their local Apex Microtechnology Sales Representative. To find the one nearest to you, go to www.apexanalog.com

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