



EK56

INTRODUCTION

This easy-to-use kit provides a platform for the evaluation of PWM circuits using the MSA240/260 pin out. With ample bread boarding areas it is flexible enough to analyze a multitude of standard or proprietary circuit configurations. Critical connections for power supply bypassing are pre-wired. Components not usually readily available in engineering labs are provided. External connection to the evaluation kit can be made via the terminal block and terminal pads at the edges of the circuit board. The terminal pads are suitable for soldering standard banana jacks or direct wiring of wires. Additionally, banana jacks and a BNC connector can be inserted into the holes at the edge of the board and wired to the numbered terminal pads.

BEFORE YOU GET STARTED

- All Apex amplifiers should be handled using proper ESD precautions.
- Do not change connections while the circuit is powered.
- Initially set all power supplies to the minimum operating voltage allowed in the device data sheet.

PARTS LIST

Ref	Apex Part No.	Description/Vendor	Qty
NA	HS28	Heat Sink/Apex	2
NA	HS26	Heat Sink/Apex	1
NA	MS08	PC mount cage jack	4/15 ea
NA	EVAL56	PC Board	1
NA	60SPG00004	Spacer Grommets/ Micro Plastics	4
C1,3	OX7R105KWN	1uF Cap/ Novacap 1825B105K201N	2
TS1	TS02	Terminal Strip	1
C2*	EC05	220uF 100V/ United Chemi-Con 82DA222M100KC2D	1
C2*	EC06	470uF 450V/ United Chemi-Con KMH450VN471M35X50T2	1
R1,2*	CSR22	0.020 Ohm Resistor/ Isotek PBV-R020-1	2
R1,2*	CSR20	0.010 Ohm Resistor/ Isotek PBV-R010-1	2
R1,2*	CSR21	0.015 Ohm Resistor/ Isotek PBV-R015-1	2
NA	HRDW003	#2 self tapping screw	4

*Chosen per directions

ASSEMBLY

During assembly refer to Figure 1 and the data sheet for the product you are using, either the MSA240 or MSA260.

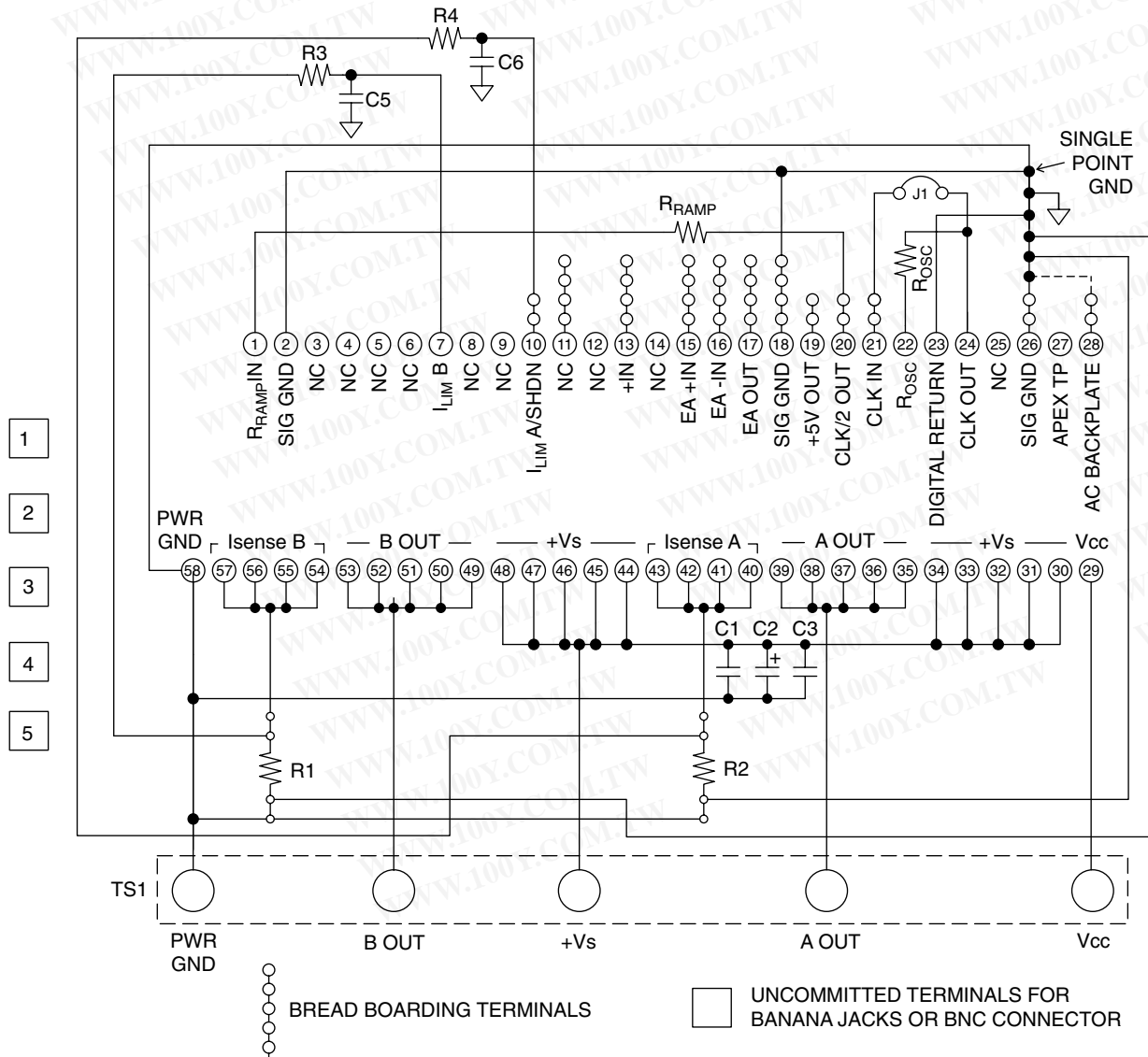
1. Note that each side of the circuit board is identified as either the "component side" or "DUT side".
2. From the "DUT side" of the board insert and solder the MS08 cage jacks at pin locations 1-58 except for pin locations that have no solder pads. Be sure that the cage jacks are fully seated before soldering. Be careful that solder does not flow into the cage jack.
3. Solder the surface mount capacitors at C1 and C3 on the "component side" of the board.
4. Mount the electrolytic capacitor at C2 from the "component side" of the PCB. Match the polarity markings on the capacitor with the polarity markings on the PCB. Use the correct voltage capacitors for the product you are using: A 100V capacitor for the MSA240 or a 450V capacitor for the MSA260. Be sure the capacitors have snapped into the PCB and solder from the "DUT side" of the PCB. Be sure to fill the holes with solder.
5. Several low ohm value resistors are provided with this evaluation kit: 0.020 ohm, 0.015 ohm and 0.010 ohm. These are used to implement current limiting in the output circuit. Select the value most appropriate for your application. Refer to the product data sheet to determine which resistor value you should use.
6. Apply a thin layer of thermal grease on the back of the chosen current limiting sense resistors (R1, R2). Mount the resistors to the HS28 heat sink using #4 screw and nut hardware (not supplied).
7. Mount the HS28 heat sinks to the PCB and solder the mounting tabs of the heat sinks, then solder the leads of the resistors to the PCB.
8. Mount the terminal strip to the "component side" of the PCB. Make sure the terminal strip is fully seated and solder the pins from the "DUT side" of the PCB. Be sure to fill the mounting holes with solder.
9. Mount and wire the banana jacks and BNC connector (neither supplied) to the PCB pads at locations 1-5 as needed or desired.
10. Mount other components to complete your application circuit using the pads and holes provided.
11. From the "DUT side" of the PCB snap the spacer-grommets into the holes at the four corners of the PCB. Notice that the holes are slightly rectangular and match the spacer-grommet's long and short sides to the holes in the PCB.
12. Partially insert the MSA240 or MSA260 into the cage jacks from the "DUT side" of the PCB. Apply a thin layer of thermal grease the amplifier.
13. Place the PCB assembly over the HS26 heat sink so that the four spacer-grommets line-up with the mounting holes in the heat sink and also that the four mounting holes of the amplifier line up with the mounting holes in the heat sink. Use the access holes in the PCB to see the mounting holes in the heat sink.

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ASSEMBLY cont.

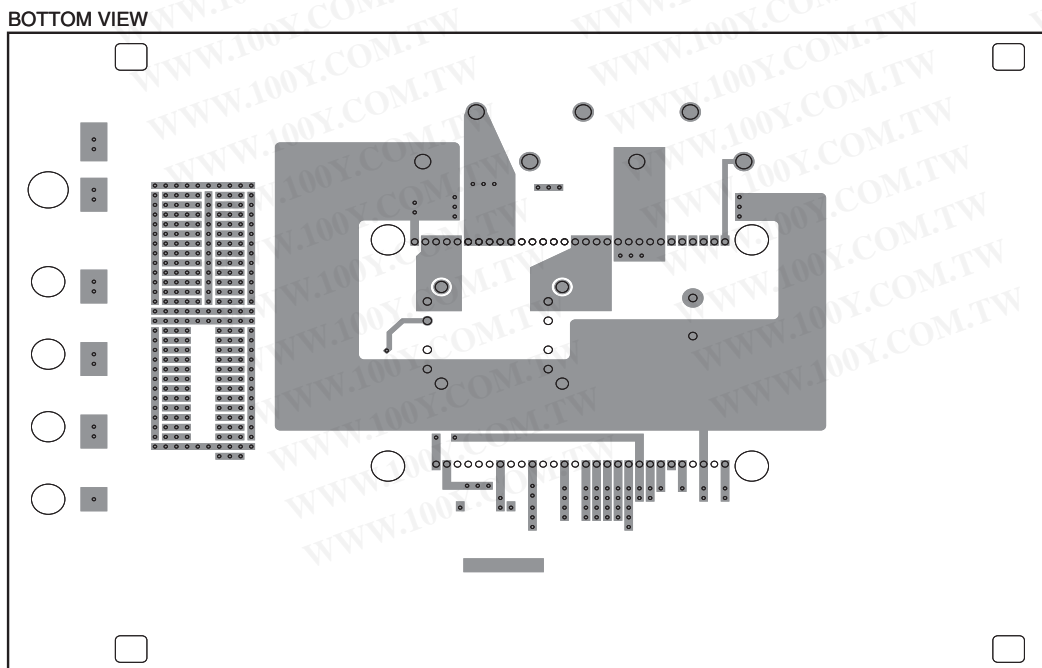
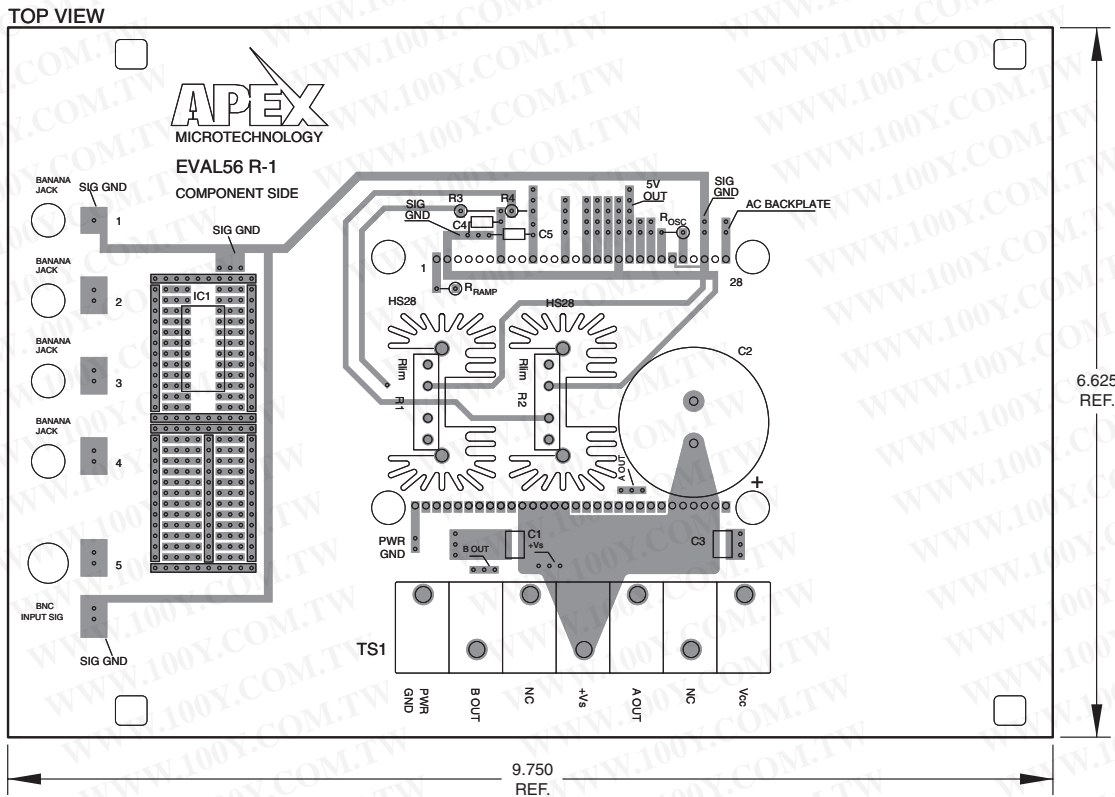
14. Mount the amplifier to the heat sink with #4 X 1/4 screws. It will be helpful to use either a magnetic tipped screwdriver or a screwdriver that has screw-holding feature. Alternately a #4 X 1/2 male-female hex spacer may be inserted into the mounting holes and tightened with a hex nut driver. Make the screws or hex spacers snug but do not over tighten, as this provides no benefit and may break the screws.
15. Using two hands push the PCB down onto the pins of the amplifier until the spacer grommets touch the heat sink mounting holes. The PCB should not be bowed at this point.
16. Using the provided #2 self-threading screws mount the PCB to the heat sink at the four spacer-grommets.
17. Select R3, R4, C5 and C6 per the amplifier datasheet SHUTDOWN section. If the internal clock is to be used, install jumper J1. Refer to the OSCILLATOR section of the amplifier datasheet for details on R_{RAMP} and R_{OSC} .
18. Hook up power and signals as necessary. The amplifier is now ready for testing.
19. Should it be necessary to remove the amplifier from the PCB remove the PCB and amplifier from the heat sink and then carefully pry up each edge of the amplifier near the amplifier's lead frames using a curved tool against the PCB. A small wrench with a right-angle jaw is a convenient tool. In turn pry each side of the amplifier slightly until the amplifier can be easily lifted off the cage jacks in the PCB.

FIGURE 1: SCHEMATIC DIAGRAM



NOTE: BREAD BOARDING ARRAY NOT SHOWN

FIGURE 2:



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EVALUATION KIT FOR
MSA240KC & MSA260KC

FIGURE 3:

