

The Toymakers @ [tymkrs.com](http://tymkrs.com)  
Questions? Please contact us:  
[feedback@tymkrs.com](mailto:feedback@tymkrs.com)

## DATASHEET



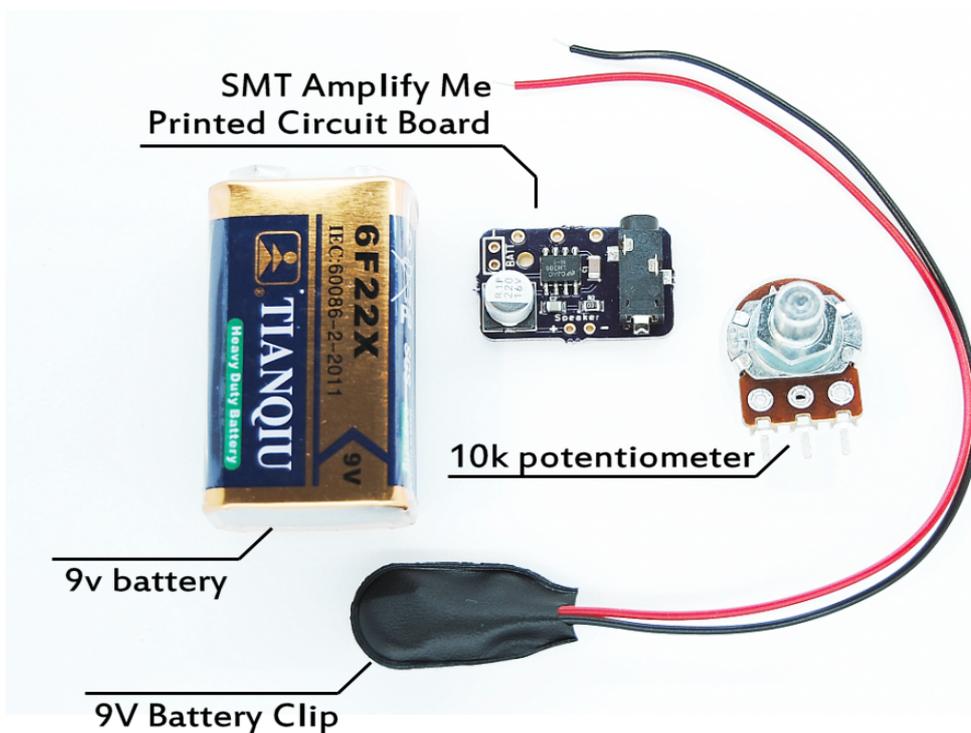
## SMT Amplify Me

### LM386 Audio Amplifier Kit

The SMT Amplify Me kit is a LM386-based audio amplifier that is great for hobby-level audio projects, instruments, and radios!

- Kit Type: SMT and minimal throughhole soldering
- Assembly instructions: In datasheet
- Function: Low voltage audio amplifier
- Audio gain from 20 to 200 (26dB to 46dB)

## KIT CONTENTS



## Contents of the Amplify Me Kit:

- SMT Amplify Me printed circuit board (25.17 x 16.15 x 1.60mm)
- 9V Battery and Battery Clip
- Electrical Components

## Electrical Components:

Reference	Quantity	Type	Value
10k Pot	1	Potentiometer	10k ohm
---	1	IC Chip, SOIC-8	LM386
C1	1	Ceramic Capacitor, 16V	10uF
C2	1	Capacitor, 50V	0.1uF
C3	1	Electrolytic Capacitor, 16V	220uF
R2	1	Resistor, 1/8 W	10 ohm

## Absolute Maximum Ratings

Parameter	Ratings	Unit
Supply Voltage	15	V
Input Voltage	-0.4V - +0.4V	V
Power Dissipation (SOP-8)	600	mW
Operating Temperature	0 - +70	°C
Junction Temperature	+125	°C
Storage Temperature	-40 - +150	°C

Note: Absolute maximum ratings are stress ratings only and functional device operation is not implied. The device could be damaged beyond Absolute maximum ratings.

## Electrical Characteristics

Parameter	Test Conditions	MIN	TYP	MAX	UNIT
Operating Supply Voltage		4		12	V
Quiescent Current	$V_{ss} = 6V, V_{in} = 0$		4	8	mA
Output Power	$V_{ss} = 6V, R_L = 8\Omega, THD = 10\%$ $V_{ss} = 9V, R_L = 8\Omega, THD = 10\%$	250 500	325 700		mW mW
Voltage Gain	$V_{ss} = 6V, f = 1kHz$ 10uF from pin 1 to pin 8		26 46		dB dB
Bandwidth	$V_{ss} = 6V, \text{pin 1 and 8 open}$		300		kHz
Total Harmonic Distortion	$P_{out} = 125mW, V_s = 6V, f = 1kHz, R_L = 8\Omega$ pin 1 and pin 8 open		0.2		%
Rejection Ratio	$V_{ss} = 6V, f = 1kHz, C_{bypass} = 10uF, \text{pin 1}$ and pin 8 open, Referred to output		50		dB
Input Resistance			50		k $\Omega$
Input Bias Current	$V_{ss} = 6V, \text{Pin 2 and Pin 3 open}$		250		nA

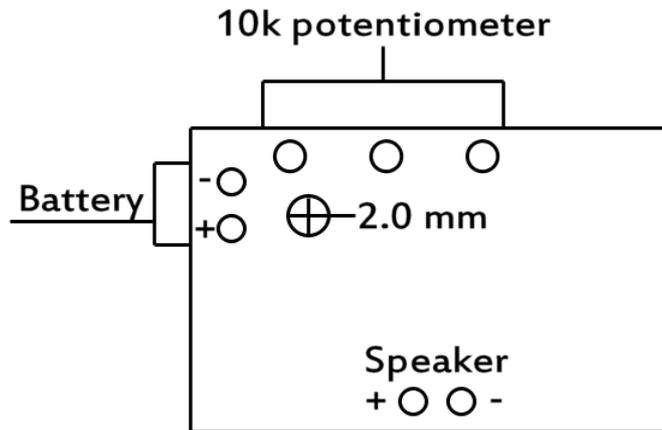
**Tools and material required for assembly (not included with the kit):**

- Soldering iron
- Solder

**User provided items required for audio:**

- Speaker: 8 ohm is ideal but 4-16 ohm speakers can be driven.

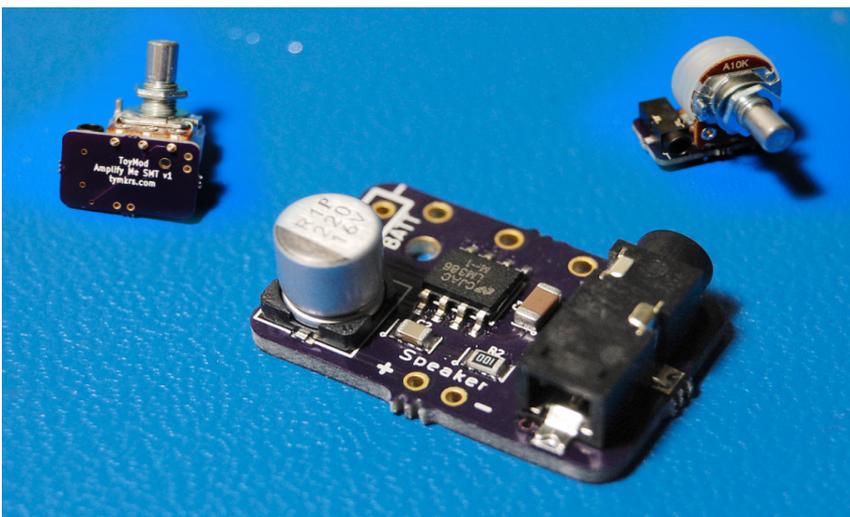
**Mounting/Component Holes:**



**Additional physical/electrical specifications:**

- Printed Circuit Board size: 0.99 x 0.64 x 0.063" (25.17 x 16.15 x 1.60mm)
- PCB thickness: 0.063" (1.60mm), not including any components
- PCB thickness: 1.024" (26mm), max height with potentiometer
- PCB thickness: 0.866" (22mm), max height with audio jack but no potentiometer
- Mounting holes: 1 hole provided. See drawing for location and size.

**Additional Picture:**



Assembled PCB

## Assembly Instructions

### Build Notes:

- 1/8" jack is soldered as a mono jack. Ring and shield are connected. This is where the signal you want amplified goes in.
- The 10k potentiometer is the volume control and can be soldered to wires, and the wires can be soldered to the potentiometer holes. Remember to solder this facing away from the board so that as you turn it clockwise, the volume increases properly. Speaker holes are provided on the board.
- For the battery clip, the red wire goes to Battery + and the black wire goes to Battery -

### Use Instructions

- Audio signals can come from instrumental or line level sources (computers, synthesizers, etc).
- Multiple SMT Amplify Mes can be used for a household amplifier:  
<https://www.youtube.com/watch?v=vWWHLcbNO0k>