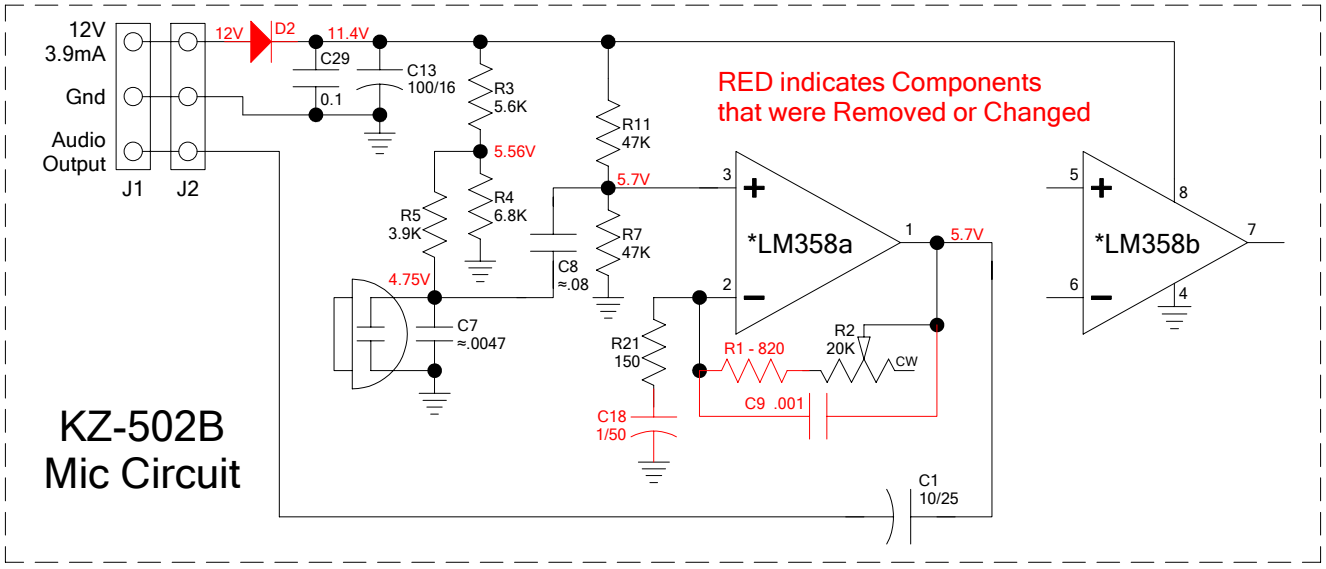
KZ-502B Electret Mic with Level Control

Advertised as Kanazawa Model KZ-502B for $2.95 ea. + s&h from AliExpress Store: Ali NO.1 deals. Dec 18 / 2015

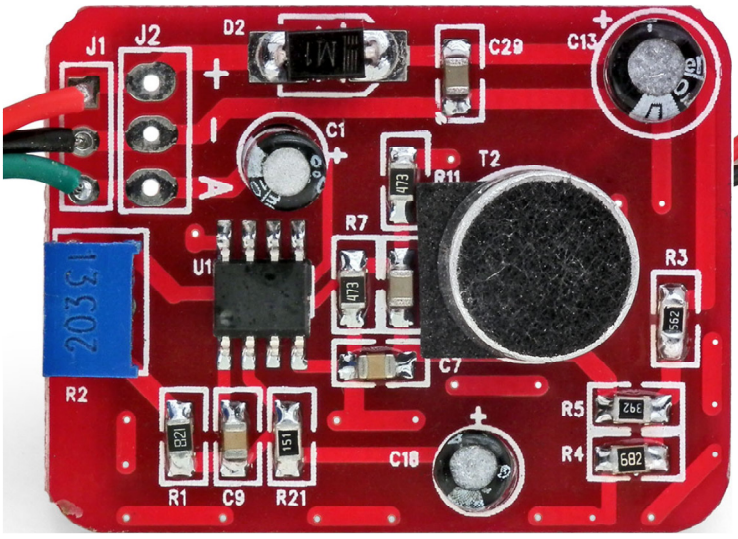
(Cost works out to $5.42 for 1 or $4.47 ea. for 2)



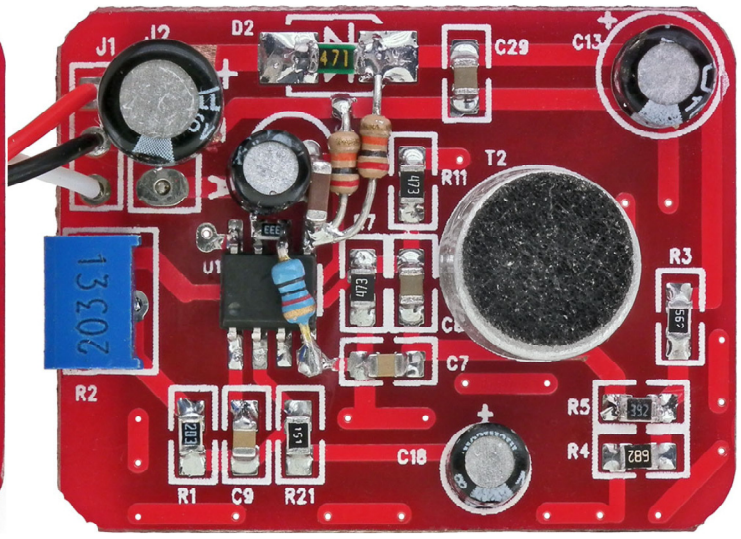
Measurements were made with a 5 mVp-p signal substituted for the mic. element and:

- with R2 set for Minimum Gain:
  Maximum Output was ≈ 30mVp-p at ≈ 11 KHz, Gain was ≈ 6,
  3dB Frequency Response was from 1 KHz – 91 KHz &
  6dB Frequency Response was from 560 Hz – 141 KHz.

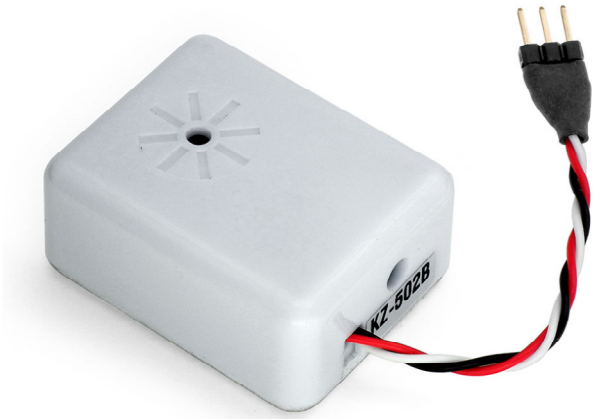
- with R2 set for Maximum Gain:
  Maximum Output was ≈ 600mVp-p at ≈ 2.7 KHz, Gain was ≈ 120,
  3dB Frequency Response was from ≈ 815 Hz – 8.5 KHz &
  6dB Frequency Response was from ≈ 500 Hz – 13.5 KHz.



Un-Modified Circuit



Modified Circuit



Modified Mic #1

Modified Mic #2

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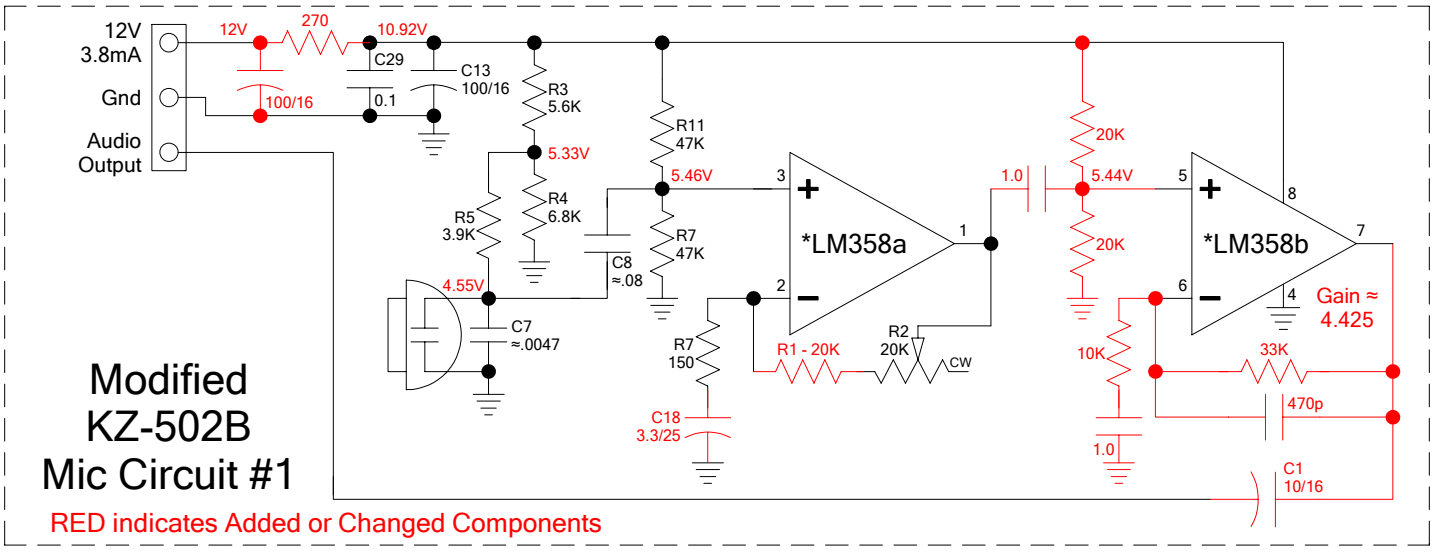


With R1 = 20K, C18 = 3.3µ, an additional op-amp stage w/ a gain of ≈ 4.425 and:

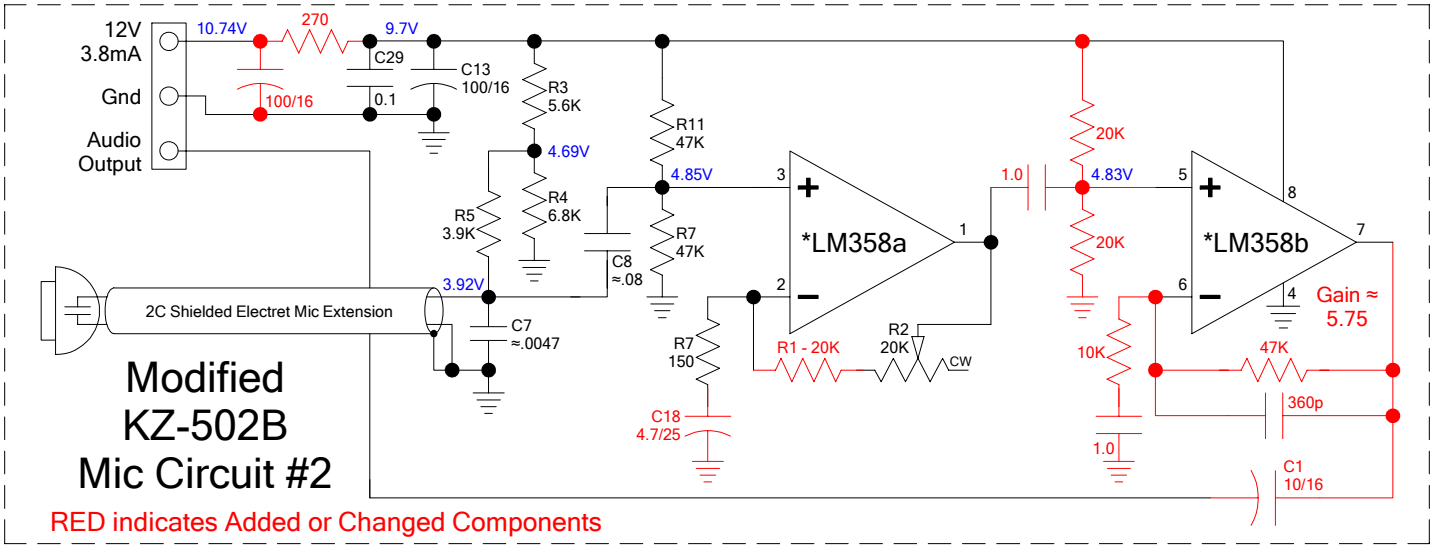
- with R2 set for Minimum Gain:
  Maximum Output was ≈ 2.57 Vp-p at ≈ 1.8 KHz, Gain was ≈ 514,
  3dB Frequency Response was from 360 Hz – 7.7 KHz &
  6dB Frequency Response was from 215 Hz – 12.8 KHz.

- with R2 set for Maximum Gain:
  Maximum Output was ≈ 4.92 Vp-p at ≈ 1.3 KHz, Gain was ≈ 984,
  3dB Frequency Response was from ≈ 330 Hz – 4.1 KHz &
  6dB Frequency Response was from ≈ 200 Hz – 6.8 KHz.

With no C9, a 470p added to LM358b and:

- with R2 set for Minimum Gain:
  Maximum Output was at ≈ 2.4 KHz,
  3dB Frequency Response was from 380 Hz – 11 KHz &
  6dB Frequency Response was from 220 Hz – 19 KHz.

- with R2 set for Maximum Gain:
  Maximum Output was at ≈ 2.4 KHz,
  3dB Frequency Response was from ≈ 380 Hz – 10.25 KHz &
  6dB Frequency Response was from ≈ 220 Hz – 16 KHz.



With R1 = 20K, C18 = 4.7µ, an additional op-amp stage w/ a gain of ≈ 5.75 and:

- with R2 set for Minimum Gain:
  Maximum Output was ≈ 3.34 Vp-p at ≈ 1.3 KHz, Gain was ≈ 668,
  3dB Frequency Response was from 200 Hz – 7.5 KHz &
  6dB Frequency Response was from 130 Hz – 12.7 KHz.

- without C9 and R2 set for Minimum Gain:
  Maximum Output was ≈ 3.48 Vp-p at ≈ 3 KHz, Gain was ≈ 696),
  3dB Frequency Response was from 230 Hz – 47 KHz &
  6dB Frequency Response was from 135 Hz – 74 KHz.

- with C9 = 560p and R2 set for Minimum Gain:
  Maximum Output was ≈ 3.4 Vp-p at ≈ 1.8 KHz, Gain was ≈ 680),
  3dB Frequency Response was from 220 Hz – 11.7 KHz &
  6dB Frequency Response was from 135 Hz – 19.7 KHz.

- with no C9, a 360p added to LM358b & R2 set for Minimum Gain:
  Maximum Output was at ≈ 2 KHz,
  3dB Frequency Response was from 300 Hz – 11.8 KHz &
  6dB Frequency Response was from 180 Hz – 19.5 KHz.

- with R2 set for Maximum Gain:
  Maximum Output was ≈ 6.5 Vp-p at ≈ 900 Hz, Gain was ≈ 1300),
  3dB Frequency Response was from ≈ 200 Hz – 4 KHz &
  6dB Frequency Response was from ≈ 130 Hz – 6.6 KHz.

- without C9 and R2 set for Maximum Gain:
  Maximum Output was ≈ 6.9 Vp-p at ≈ 3 KHz, Gain was ≈ 1380),
  3dB Frequency Response was from ≈ 225 Hz – 26 KHz &
  6dB Frequency Response was from ≈ 140 Hz – 43 KHz.

- with C9 = 560p and R2 set for Maximum Gain:
  Maximum Output was ≈ 6.7 Vp-p at ≈ 1.1 KHz, Gain was ≈ 1340),
  3dB Frequency Response was from ≈ 210 Hz – 6.1 KHz &
  6dB Frequency Response was from ≈ 130 Hz – 10 KHz.

- with no C9, a 360p added to LM358b & R2 set for Maximum Gain:
  Maximum Output was at ≈ 2 KHz,
  3dB Frequency Response was from ≈ 320 Hz – 10.5 KHz &
  6dB Frequency Response was from ≈ 180 Hz – 16.5 KHz.