

A stylized background featuring a large, semi-circular shape in shades of yellow and orange, resembling a rising sun or a gear. This shape is set against a light blue background. Below the semi-circle, there are several sharp, triangular rays pointing upwards, also in shades of blue and yellow.

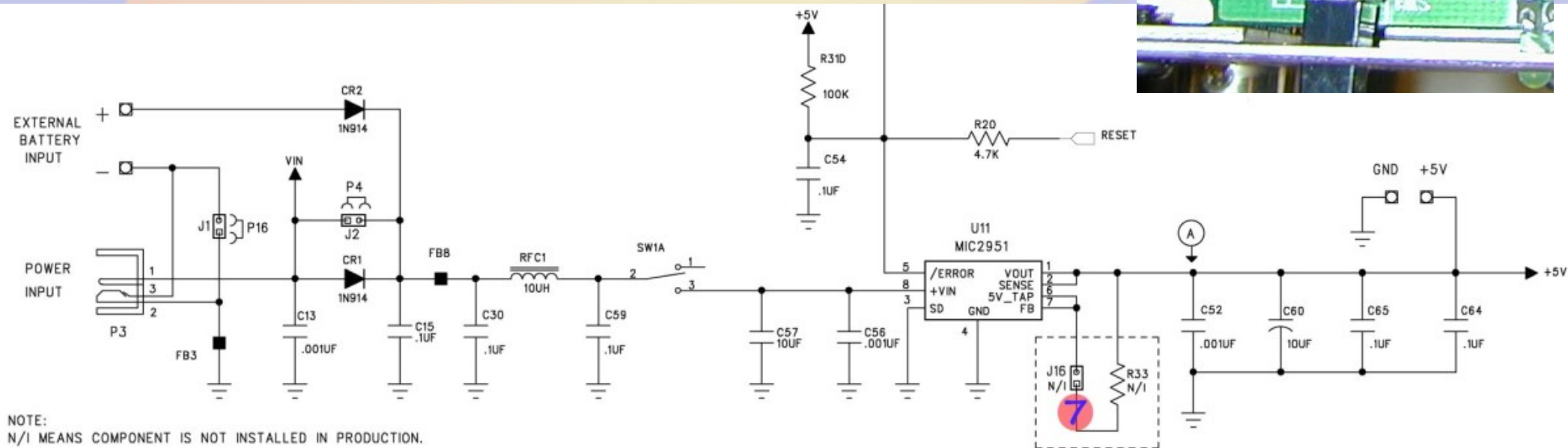
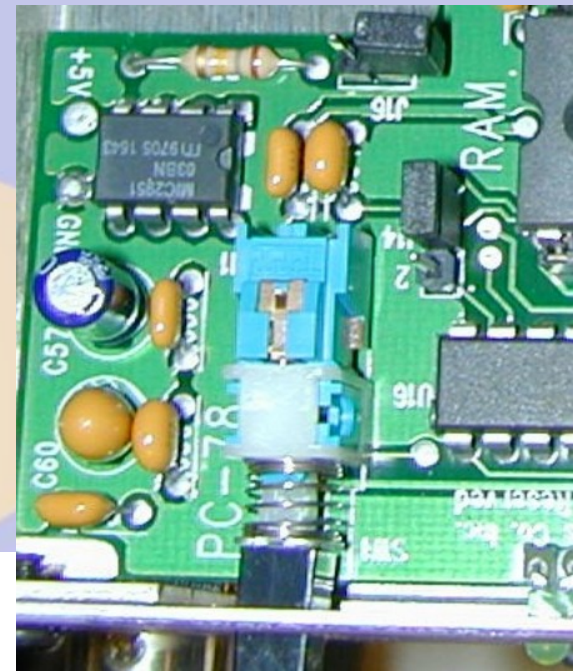
# **KPC3+ TNC Regulator Replacement**

Willem AC0KQ  
NerdFest 2022

# Diagnostics

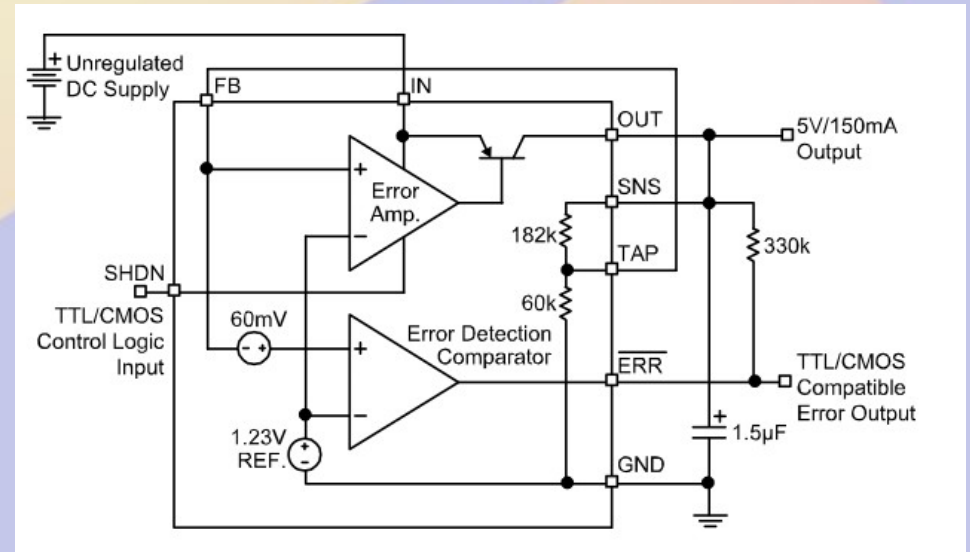
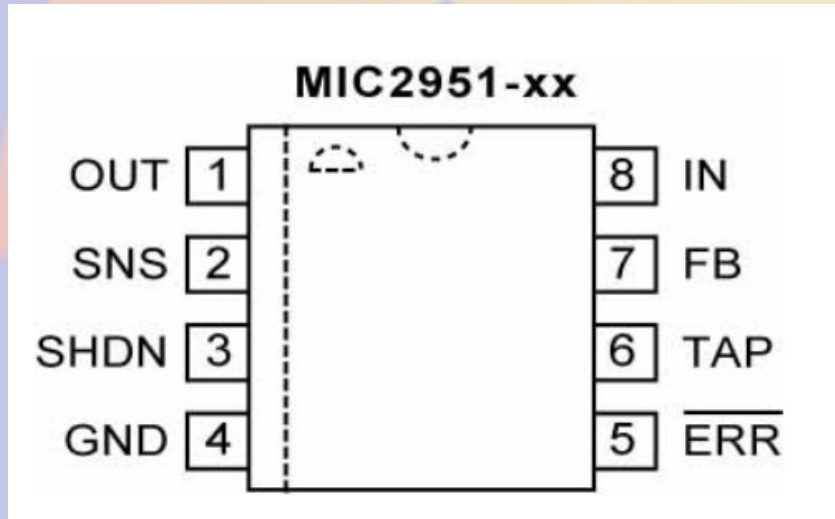
- *It was kinda flakey and needed to be power cycled to work, and then stopped working*
- Symptoms
  - All LEDs off
  - 12V at power switch
  - $\ll 1V$  at 5V test point

- MIC 2951 5V regulator chip
  - *12V on pin 8, <<1V on pin 1*



# MIC 2951 Voltage Regulator

- Mouser \$1.17
  - Mine was surface mount
  - Wired to act like 7805



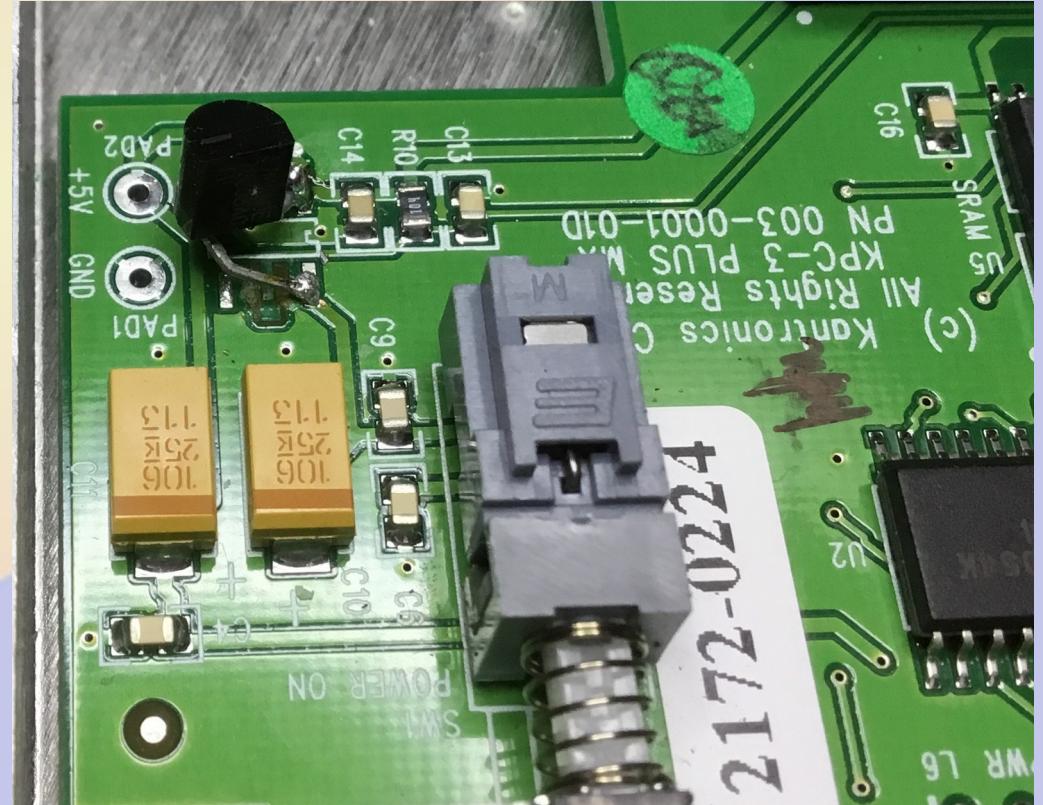
- Try 1: RECOM 78E5.0-1.0
- DC-DC converter
  - 7-30V input
  - 5V 1A output
  - 90% or better efficiency
  - Mouser \$3.92
- Uses 40kHz oscillator
  - Could this noise be an issue?
    - Worked OK for me...





- Try 2: 78L05 linear regulator

- Classic linear IC
  - 7-20V input
  - 5V 100mA
  - Mouser \$0.46
- Generates heat
  - uses ~10mA



# Conclusions

- A 50c part makes a \$200 device usable again
- A little trouble shooting with a voltmeter goes a long way
- Manufacturers publishing circuit diagrams for ham equipment is the original “open” system