

A Minor Heat Sink Modification

Introduction

The Raduino board, consisting of an Arduino Nano clone, 2 x16 character display, and Si5351 chip and support electronics, is powered at +5 Volts through a 7805 regulator with a TO220 case. While the load is unknown at this time, and there is no knowledge of how near the 7805 is to being overloaded, it gets hot to the touch and at the very least, this will decrease the life of the device.

This modification attaches a heat sink to the regulator. The thermal characteristic of the heat sink is unknown; it came from my junk box. Also, without knowledge of the load of the regulator calculations cannot be done anyway. Regardless, the heat sink will decrease the junction temperature of the regulator.

Parts

Small heat sink, tapped for 4/40 screw
4/40 screw and washer
Thermal compound

Installation

The heat sink, if mounted along the long dimension of the regulator, would touch the toroid located directly underneath and would block plans for future hardware modifications. Rotating the toroid 90 degrees so that it 'faces' up also touches the toroid but minimizes space needed for future expansion.

Steps:

1. Using a hacksaw, remove the bottom two millimeters from the heatsink, where bottom is the end closest to the screw hole. File and sand to ensure a smooth surface.
2. Using a very small amount of thermal compound, attach the heatsink to the regulator. Ensure it does not touch the toroid underneath.
3. Remove any excess thermal compound.

Note that this blocks access to the adjustment for the display brightness, but since this is a one-time adjustment, it should not be an issue.

