ODA V1.1 changes from V1.0

5_15_2013

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- Updated the BOM and did a re-numbering of the parts on the PCB.
- Relay suppression upgraded from just a diode across the coil to diode + 14Vdc zener. Faster closure and longer relay life. See Tyco application note.
- Relay mosfets now correctly marked as *any* 2N7000 since gates are voltage divider limited to 17.5Vdc. Cuts the cost by $0.40 each over special 30V gate units and higher availability of the part.
- Relay timing capacitor value increased to 4.7uF from 2.2uF to get (longer) 4 seconds of turn-on delay. I forgot the previous values were from an O2 mod that attached *after* the power management circuit and its added delay.
- Relay control circuit layout improved a bit and modified to add the zener and bigger timing capacitor.
- R70 in relay control changed to SMD to improve layout.
- Pre-regulator protection diodes D3 and D4 reversed on schematic and layout – they were bypassing the pre-regulators.
- Build instructions note added about how to orient tombstoned diodes.
- Voltage regulator resistors upgraded to 0.1% SMD from 1% through-hole for more voltage accuracy. 0.1% standard values allow for exact +/-17.0V high rail instead of +/-16.9Vdc. Several resistors changed from through-hole to SMD in the power regulator section.
- JP4, JP7, JP8, the ground V+ and V- test and tap-off holes, changed from 2 hole to 4 hole to allow more power supply tap-offs for an accessory PCB.
- Added more PCB trace metal around JP4, JP7, and JP8 to handle full power rail load current even if nothing is soldered into the PCB holes to bridge the traces.
- Various layout changes to improve the layout in the power supply section.
- R21 in gain stage now SMD to better clear the IC.
- Gain stage feedback resistor R22, R23 and R24 changed to SMD to increase accuracy to 0.1%. All the gain switch resistors are now 0.1% SMD. Will help with accurate channel to channel gain matching.
- Output buffer power supply bypassing changed from 0.01uF MLCC 0805 SMD caps rail-to-rail on each chip to 0.22uF film caps wired as rail-to-ground and rail-to-rail on each bank. 0.001uF axial MLCC COG / NPO capacitors added to the BOM as optional HF bypass that can be soldered right

across the film cap leads on the bottom of the PCB. Chip manufacturers often recommend a parallel bypass combo of an electrolytic (the 390uF caps in this case), a film cap (the 0.22uF), and a small value ceramic like these 1000pF units to bypass all oscillation frequencies.

- Output parallel balance resistors changed from 1R to 3.32R to maintain the O2 amps' total 0.5R output impedance. Allows the chips to idle cooler by passing less balancing current.
- Both 3.5mm input jack series 274R resistors are now 0.1% surface mount to match. Previously one was SMD and the other was 1% through hole.
- A few layout improvements I the DC servo section.
- Mouser had 10uF C41 in the clipping circuit listed as 5mm lead spacing when it is actually 2mm. Fixed this on the layout.
- Angled Q1 and R39 on the layout to allow more spacing between RCA jack signal lines, preventing crosstalk problems.
- Changed the clipping LED series current limit resistor to 15K from 3.6K
- Added the X2Y EMI suppression capacitor back to the 3.5mm input that was removed for space reasons when the input selector switch was added.