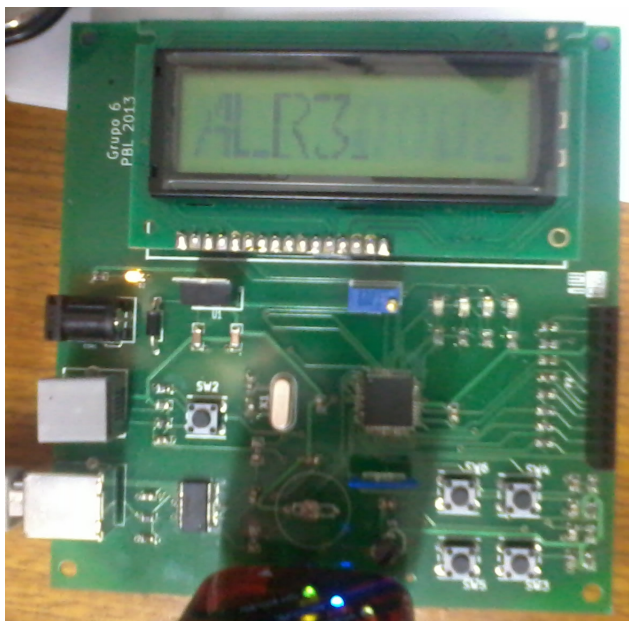


ALR3000z

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Luís Paulo Manfré Ribeiro
Rafael Dias

Itajubá
Dezembro de 2013

Visão Geral



- Placa de desenvolvimento baseada no PIC18F4550
- 3 LED's, sendo 2 com intensidade controlável (PWM)
- Acesso físico a 8 portas digitais/analógicas
- LCD 16x2 com controle de brilho
- Sensor de temperatura LM35
- Sensor de luminosidade LDR
- Gravação: ICSP e ICD2
- Botão de RESET
- Alimentação: 5 a 13V
- Interface Serial
- Teclado

Desenvolvimento de Hardware e Protótipo do Software

- Projeto: Kicad 2.8.12
- Simulação: Proteus 8.0
- Interface de Programação: MPLABX IDE 1.95
- Compilador: SDCC 2.5

The image shows a detailed PCB layout for a multi-channel signal processing board. The board is populated with numerous integrated circuits, including a central microcontroller (PIC16C63), several ADCs (PIC16C63), and various support chips like op-amps, comparators, and logic devices. The layout includes a detailed component list on the right side, listing part numbers, quantities, and descriptions. The board is labeled 'PCB 1' and 'PCB 2'.

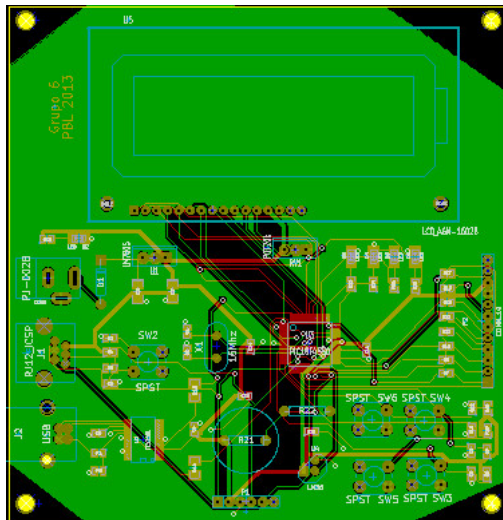
Component List:

| Ref | Part | Qty | Description |
|-----|----------|-----|-----------------|
| 1 | PIC16C63 | 1 | Microcontroller |
| 2 | PIC16C63 | 1 | Microcontroller |
| 3 | PIC16C63 | 1 | Microcontroller |
| 4 | PIC16C63 | 1 | Microcontroller |
| 5 | PIC16C63 | 1 | Microcontroller |
| 6 | PIC16C63 | 1 | Microcontroller |
| 7 | PIC16C63 | 1 | Microcontroller |
| 8 | PIC16C63 | 1 | Microcontroller |
| 9 | PIC16C63 | 1 | Microcontroller |
| 10 | PIC16C63 | 1 | Microcontroller |
| 11 | PIC16C63 | 1 | Microcontroller |
| 12 | PIC16C63 | 1 | Microcontroller |
| 13 | PIC16C63 | 1 | Microcontroller |
| 14 | PIC16C63 | 1 | Microcontroller |
| 15 | PIC16C63 | 1 | Microcontroller |
| 16 | PIC16C63 | 1 | Microcontroller |
| 17 | PIC16C63 | 1 | Microcontroller |
| 18 | PIC16C63 | 1 | Microcontroller |
| 19 | PIC16C63 | 1 | Microcontroller |
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| 90 | PIC16C63 | 1 | Microcontroller |
| 91 | PIC16C63 | 1 | Microcontroller |
| 92 | | | |

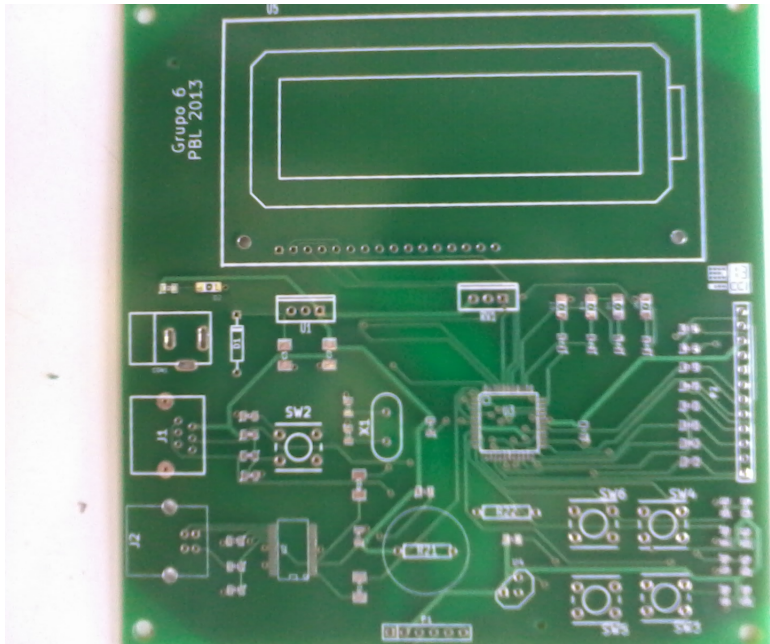
Custos

| Qtde | Componente | Código | Part Number | Fabricante | Preço |
|-------------|-----------------------|--------------------------|--------------------|--------------------------|-----------|
| 4 | Capacitor 22 pF | 9406247 | A0805C220JCT | MULTICOMP | R\$ 0.06 |
| 15 | Capacitor 0.1 uF | 38K9284 | U0805R104KCT | MULTICOMP | R\$ 0.05 |
| 6 | Capacitor 0.01 uF | 490-1755-2-ND | GRM3195C1H113JA01D | Murata Electronics North | 0.11310 |
| 5 | Capacitor 0.33 uF | 10R5978 | 08055C334KAT2A | AVX | R\$ 0.78 |
| 5 | Capacitor 4.7 uF | 06R3978 | MC0805F475Z100CT | MULTICOMP | R\$ 0.08 |
| 7 | Led smd 1206 | 1219737 | HSME-C150 | AVAGO TECHNOLOGIES | R\$ 0.74 |
| 5 | CI lm35 | 41K4849 | LM35DZ/NOPB | NATIONAL SEMICONDUCTOR | R\$ 3.91 |
| 5 | Conn Jack Barrel | CP-002A-ND | PJ-002A | CUI Inc | 0.92000 |
| 4 | Conn Usb | 62K6482 | 61729-0010BLF | PCI | R\$ 3.55 |
| 4 | Conn Pin header man | | | | |
| 4 | Conn Pin header male | | | | |
| 2 | Ldr | NORPS-12 | 327700 | Siliconix | R\$ 9.41 |
| 4 | Resistor smd 100 ohms | MC 0.1W 0805 5% 100R | 9333703 | multicomp | R\$ 0.01 |
| 15 | Resistor smd 10k ohms | MC 0.1W 0805 1% 10K | 9332391 | multicomp | R\$ 0.01 |
| 10 | Resistor 1k ohms | MC 0.125W 1206 1% 1K | 9335757 | multicomp | R\$ 0.03 |
| 5 | Resistor 20k ohms | MC 0.1W 0805 1% 20K | 9332774 | multicomp | R\$ 0.01 |
| 5 | button | EG4906TR-ND | TL3300DF160Q | E-switch | 0.33820 |
| 1 | Lcd agm 1602b | AGM1602B-509 | AGT0003 | FTDI | R\$ 24.17 |
| 5 | Lm7805 | LM7805CT | 1102157 | fairchild semiconductor | R\$ 1.30 |
| 1 | Pic 18f4550 | PIC18F4550-I/PT | 08J9633 | microchip | R\$ 26.30 |
| 1 | Ft232rl | FT232RL | 91K9918 | FTDI | R\$ 12.39 |
| 4 | Cristal 16 Mhz | HC495-16-30-50-70-30-ATF | 1667003 | multicomp | R\$ 1.16 |
| 2 | Cabo usb | 1019951 | USB2-020 | PRO SIGNAL | R\$ 15.36 |
| Custo Total | | | | | R\$ 99.29 |

Circuito Impresso



Circuito Impreso



- Interface de Programação: MPLABX IDE 1.95
- Compilador: SDCC 2.5

Interface com o Usuário

- Teclado
- Shell Script

Interface com o Usuário

ALR3000z

Interface Computador e Placa de Desenvolvimento

Periféricos

- 1. LED1: OFF
- 2. LED2: 0
- 3. LED3: 0
- 4. LCD
- A. Alarmes: ON
- S. Sensores: ON
- R. Tela Principal

Alarmes

- 5. Tempo: 10 ms
- 6. Temp. Baixa: 20,0 °C
- 7. Temp. Alta: 35,0 °C
- 8. Lumi. Baixa: 050%
- 9. Lumi. Alta: 100%

- CRC
- Watchdog Timer

- Linux driver