

Display driver module

32 SPI-driven displays

Schematic

The concept is to buffer the time-critical clock signal. A wire connected directly to the MCU is loaded by the long distance (resistance in the connectors and wires) and could be susceptible to noise. Using a 541 buffer and shunt resistors controls this impedance. The serial data and data/command (DC) signals are also buffered to avoid time propagation errors.

The second purpose is to use a chain of shift registers to provide chip select (CS) signals. It is functionally equivalent to a DOUT module, but the header is directly compatible with GPIO on the Core.

BOM v1.0

| Type | Part | Value | Device |
|---------|------|----------------|----------------|
| Caps | C1 | 100n | C025-025×050 |
| | C2 | 100n | C025-025×050 |
| | C3 | 100n | C025-025×050 |
| | C4 | 100n | C025-025×050 |
| | C5 | 100n | C025-025×050 |
| | C6 | 100n | C025-025×050 |
| | C7 | 100n | C025-025×050 |
| ICs | IC1 | 74HC541N | 74HC541N |
| | IC2 | 74HC541N | 74HC541N |
| | IC3 | 74HC541N | 74HC541N |
| | IC4 | 74HC595N | 74HC595N |
| | IC5 | 74HC595N | 74HC595N |
| | IC6 | 74HC595N | 74HC595N |
| | IC7 | 74HC595N | 74HC595N |
| Headers | J1 | PINHD-2X54WALL | PAK100/2500-10 |
| | J2 | PINHD-2X54WALL | PAK100/2500-10 |
| | J3 | PINHD-2X54WALL | PAK100/2500-10 |
| | J4 | PINHD-2X54WALL | PAK100/2500-10 |
| | J5 | PINHD-2X54WALL | PAK100/2500-10 |
| | J6 | PINHD-2X54WALL | PAK100/2500-10 |
| | J7 | PINHD-2X54WALL | PAK100/2500-10 |
| | J8 | PINHD-2X54WALL | PAK100/2500-10 |
| | J9 | +5V | 22-23-2031 |
| | J10B | PINHD-2X54WALL | PAK100/2500-10 |

| Type | Part | Value | Device |
|-----------|-------|-----------------|----------------|
| | J10B1 | PINHD-2X54WALL | PAK100/2500-10 |
| | J15A | PINHD-2X8THTTHT | PAK100/2500-16 |
| | J15A1 | PINHD-2X8THTTHT | PAK100/2500-16 |
| Resistors | R1 | ~220R | 0207/10 |
| | R2 | ~220R | 0207/10 |
| | R3 | ~220R | 0207/10 |
| | R4 | ~220R | 0207/10 |
| | R5 | ~220R | 0207/10 |
| | R6 | ~220R | 0207/10 |
| | R7 | ~220R | 0207/10 |
| | R8 | ~220R | 0207/10 |
| | R9 | ~220R | 0207/10 |
| | R10 | ~220R | 0207/10 |
| | R11 | ~220R | 0207/10 |
| | R12 | ~220R | 0207/10 |
| | R13 | ~220R | 0207/10 |
| | R14 | ~220R | 0207/10 |
| | R15 | ~220R | 0207/10 |
| | R16 | ~220R | 0207/10 |
| | R17 | ~220R | 0207/10 |
| | R18 | ~220R | 0207/10 |
| | R19 | ~220R | 0207/10 |
| | R20 | ~220R | 0207/10 |
| | R21 | ~220R | 0207/10 |
| | R22 | ~220R | 0207/10 |
| | R23 | ~220R | 0207/10 |
| | R24 | ~220R | 0207/10 |
| | R25 | ~1k | 0207/10 |
| | R26 | ~1k | 0207/10 |
| | R27 | ~1k | 0207/10 |
| | R28 | ~1k | 0207/10 |
| | R29 | ~1k | 0207/10 |
| | R30 | ~1k | 0207/10 |
| | R31 | ~1k | 0207/10 |
| | R32 | ~1k | 0207/10 |
| | R33 | ~1k | 0207/10 |
| | R34 | ~1k | 0207/10 |
| | R35 | ~1k | 0207/10 |
| | R36 | ~1k | 0207/10 |
| | R37 | ~1k | 0207/10 |
| | R38 | ~1k | 0207/10 |
| | R39 | ~1k | 0207/10 |
| | R40 | ~1k | 0207/10 |
| | R41 | ~1k | 0207/10 |
| | R42 | ~1k | 0207/10 |

Interconnection to Core

J10B connects to J10B. J15A to J15A. Note the mirrored connection on v1.0

J15A1/J10B1 chain another Display Driver. Note that the J15 connection should not be mirrored for subsequent boards.

Dimensions

The PCB is 100*100mm with 3.6mm diameter holes centred 3.5mm from the edges.

License

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