

# Raging Bits VFD 8 Chars v1.0

## Top level specs

Pure Blue luminescence.

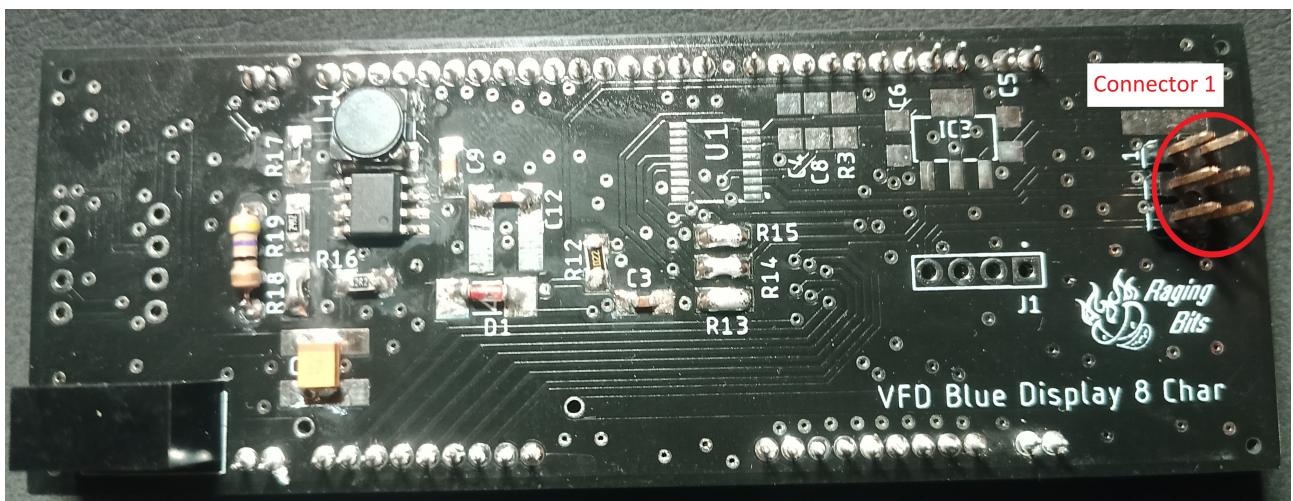
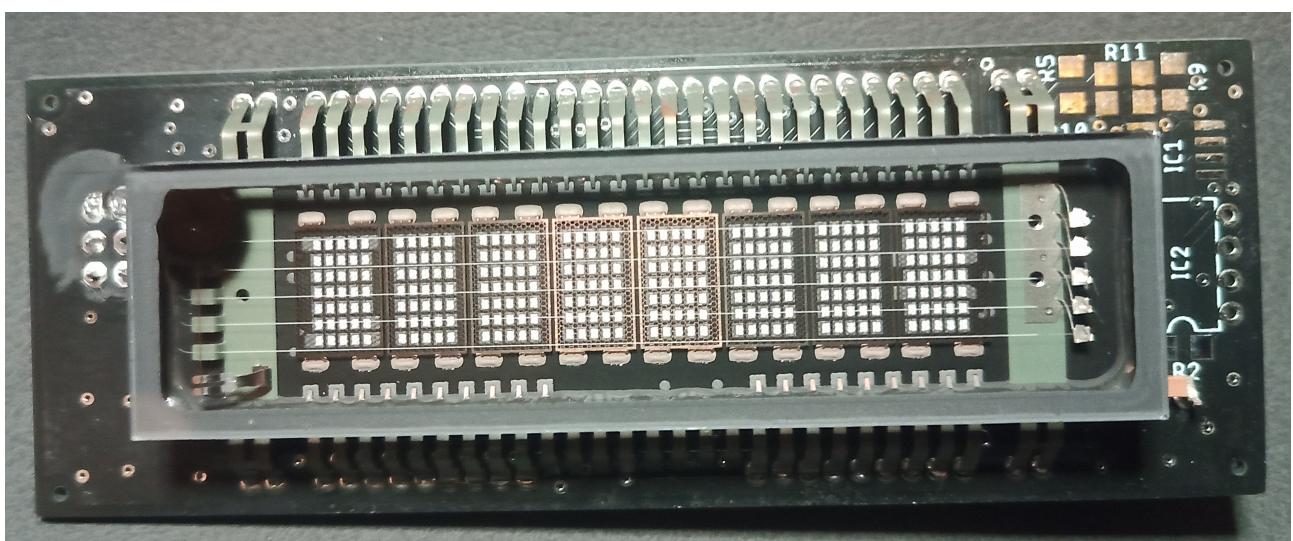
8 Chars 7x5 pixels.

3.5V MIN to 5V MAX

240mA@4V

PT6302LQ-001 driver.

97mm x 37mm x 20mm



## Device interface

PT6302LQ-001 has an SPI interface.

## PIN MAP - Connector 1

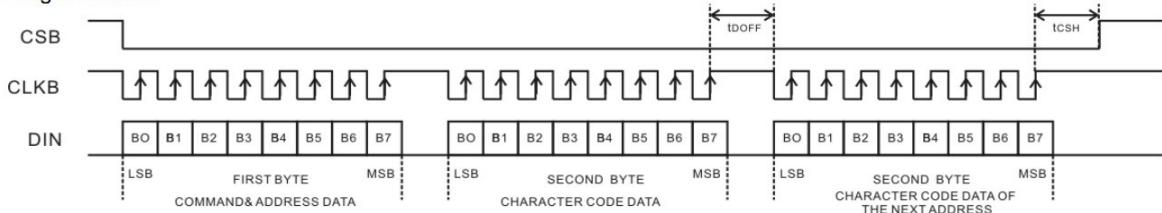
|                       |                                |
|-----------------------|--------------------------------|
| 1 – MOSI (din)        | 2 – VCC                        |
| 3 – Clock (clkb)      | 4 – GND                        |
| 5 – Chip Select (scb) | 6 – nReset (rstb – active low) |

## Interface and Commands

SPI mode 3 in LSB to MSB, CPOL 1 and CPHA 1.

### DATA TRANSFER

The Display Control Command and the data are written by an 8-bit serial data transfer. Please refer to the Write Timing Diagram below.



## COMMANDS

The following are the list of commands issued by PT6302. When data is written into the RAM (DCRAM, CGRAM, or ADRAM) in a continuous manner, the addresses are automatically incremented internally. It is therefore not necessary to specify the first byte.

| NO. | COMMAND                 | LSB |    |    |    |    |    |    |    | FIRST BYTE |    |     |     |     |     |     |    | MSB |    |     |     |     |     |     |    | LSB         |             |             |             |             |    |    |    | SECOND BYTE |  |  |  |  |  |  |  | MSB |  |  |  |  |  |  |  |
|-----|-------------------------|-----|----|----|----|----|----|----|----|------------|----|-----|-----|-----|-----|-----|----|-----|----|-----|-----|-----|-----|-----|----|-------------|-------------|-------------|-------------|-------------|----|----|----|-------------|--|--|--|--|--|--|--|-----|--|--|--|--|--|--|--|
|     |                         | B0  | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B0         | B1 | B2  | B3  | B4  | B5  | B6  | B7 | B0  | B1 | B2  | B3  | B4  | B5  | B6  | B7 | B0          | B1          | B2          | B3          | B4          | B5 | B6 | B7 |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 1   | DCRAM DATA WRITE        | X0  | X1 | X2 | X3 | 1  | 0  | 0  | 0  | C0         | C1 | C2  | C3  | C4  | C5  | C6  | C7 | C0  | C5 | C10 | C15 | C20 | C25 | C30 | *  | 2ND<br>BYTE | 3RD<br>BYTE | 4TH<br>BYTE | 5TH<br>BYTE | 6TH<br>BYTE |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 2   | CGRAM DATA WRITE        | X0  | X1 | X2 | *  | 0  | 1  | 0  | 0  | C1         | C6 | C11 | C16 | C21 | C26 | C31 | *  | C2  | C7 | C12 | C17 | C22 | C27 | C32 | *  |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
|     |                         |     |    |    |    |    |    |    |    | C3         | C8 | C13 | C18 | C23 | C28 | C33 | *  | C4  | C9 | C14 | C19 | C24 | C29 | C34 | *  |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
|     |                         |     |    |    |    |    |    |    |    | C0         | C1 | *   | *   | *   | *   | *   | *  | C0  | C1 | *   | *   | *   | *   | *   | *  |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
|     |                         |     |    |    |    |    |    |    |    |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
|     |                         |     |    |    |    |    |    |    |    |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
|     |                         |     |    |    |    |    |    |    |    |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 3   | ADRAM DATA WRITE        | X0  | X1 | X2 | X3 | 1  | 1  | 0  | 0  |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 4   | GENERAL OUTPUT PORT SET | P1  | P2 | *  | *  | 0  | 0  | 1  | 0  |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 5   | DISPLAY DUTY SET        | D0  | D1 | D2 | *  | 1  | 0  | 1  | 0  |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 6   | NO. OF DIGITS SET       | K0  | K1 | K2 | *  | 0  | 1  | 1  | 0  |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
| 7   | ALL LIGHTS ON/OFF       | L   | H  | *  | *  | 1  | 1  | 1  | 0  |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |
|     | TEST MODE               | 0   | 0  | 0  | *  | 0  | 0  | 0  | 1  |            |    |     |     |     |     |     |    |     |    |     |     |     |     |     |    |             |             |             |             |             |    |    |    |             |  |  |  |  |  |  |  |     |  |  |  |  |  |  |  |

Notes:

1. The Test Mode is not a user function, but an IC internal function
2. \*Not relevant
3. Xn=RAM address bit, n = 0 to 3
4. Cn=RAM character code bit, n=0 to 34
5. Pn=General output port status bit, n=1 to 2
6. Dn=Display duty bit, n=0 to 2
7. Kn=Number of digits bit, n=0 to 2
8. H>All lights on
9. L>All lights off

See PT6302LQ-001 datasheet.

## Notes

**!!!ATTENTION!!!**

**Never power more than 5V!!!**

The LCD filament works based on a resistive path set to the LCD maximum filament current when powered by 5V.

