Q5-Dot32-S

Features

- Programmable LCD-Key
- FSTN Display with 64 * 32 pixels
- RGB Backlight 1 – 200 cd/m²
- SPI bidirectional data transfer

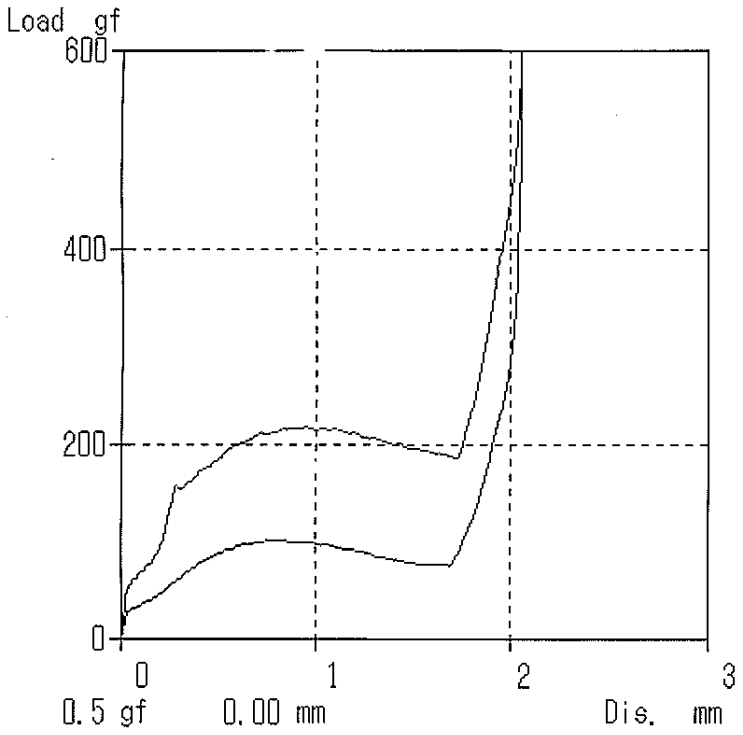
→ Viewing Area 17.26 * 12.78 mm²
→ 65k Backlight colors
→ Display update < 1 ms
→ lifetime > 3 million operations

→ Window Area 20.6 * 18.2 mm²
→ Backlight colo.s long time stable
→ Display read back function
→ MTBF > 800.000h

Switch

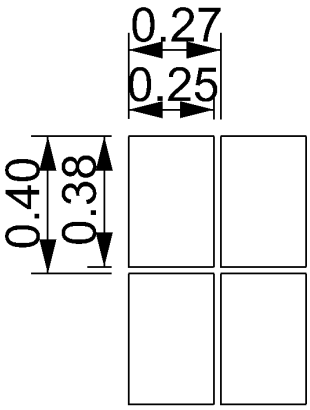
see document AN001 for switch scanning circuit examples

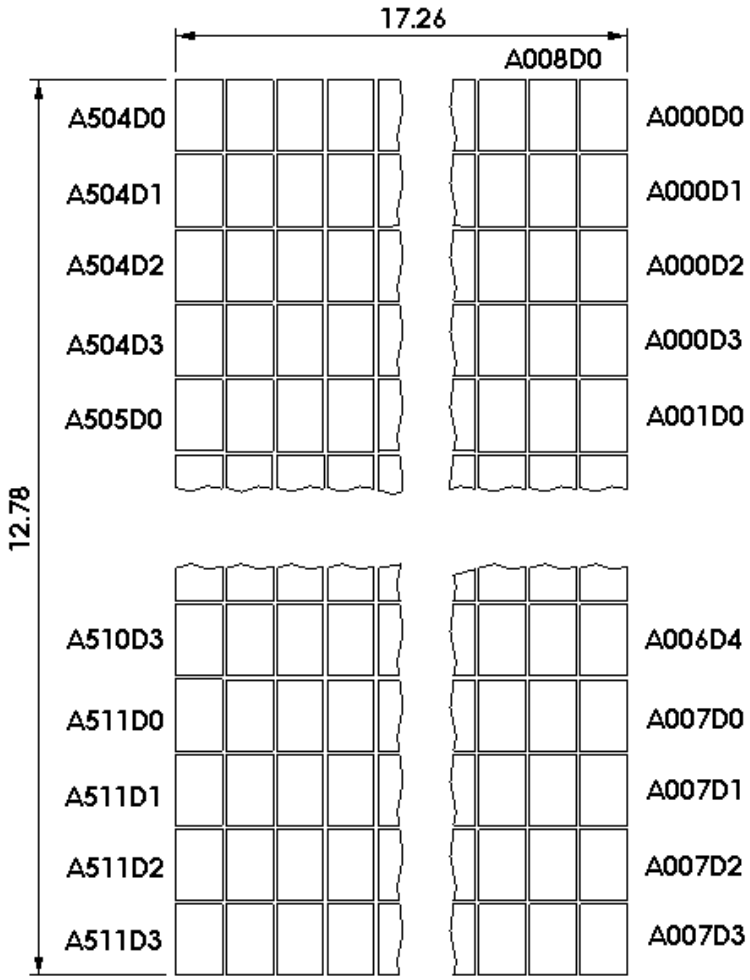
→ circuit SPST
→ resistive load 5 V @ 20 mA
→ insulation resistance 100 megaohms minimum @100 V DC
→ contact resistance 100 Ohm maximum @ 5 V 20 mA
→ dielectric strength 125V AV for 1 minute minimum
→ mechanical endurance > 3.000.000 operations
→ electrical endurance > 3.000.000 operations
→ operating force 2.3 +/- 0.4 Newton
→ total travel 2.0 mm
→ tactile load/travel see diagramm :



Display

- → display operation mode FSTN positive, MUX 1:32, BIAS 1/6
- → transflective with RGB-LED backlight
- → viewing angle direction 6 o´clock
- → viewing area 17.26 mm * 12.78 mm
- → pixel format 64 * 32 pixels
- → pixel size 0.25 * 0.38 mm²
- → pixel pitch 0.27 * 0.40 mm²
- → operating temperature range –10° to +70° Celsius
- → storage temperature range –20° to +80° Celsius
- → Vlcd 4.9 V to 5.1 V
- → All Dots selectable, addressing see diagramm

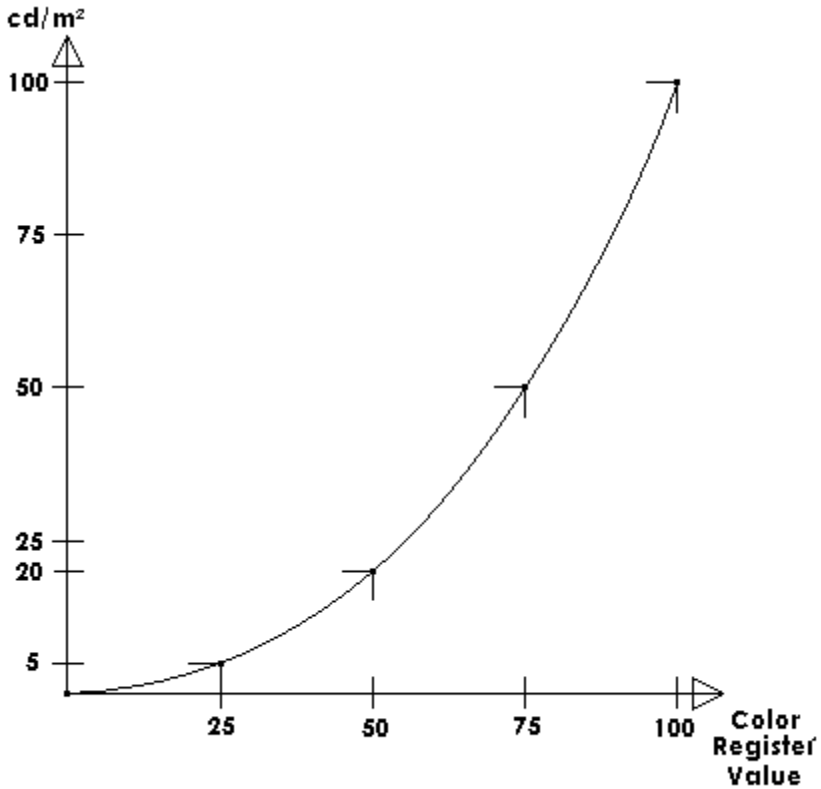




Backlight

see document AN002 for backlight control of Q5 series

- → Dominant Wavelength red 635 nm, green 525 nm and blue 470 nm typ.
- → Peak Wavelength red 650 nm, green 515 nm and blue 468 nm typ.
- → red backlight brightness 0.5 to 25 cd/m²
- → green backlight brightness 0.5 to 150 cd/m²
- → blue backlight brightness 0.5 to 40 cd/m²
- → white backlight brightness 1.0 to 200 cd/m²
- → white backlight color x = 0.333 +/- 0.020, y = 0.333 +/- 0.020
- → Backlight brightness adapted to eye sensitivity and color response



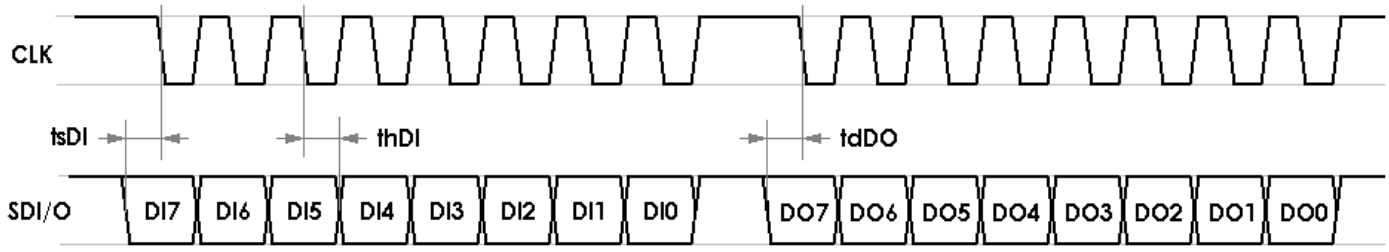
see document AN003 for SPI connected to Q5 series

The Serial Peripheral Interface (SPI) of Q5 allows simplex, synchronous, serial communication with external devices. An SPI system may consist of a master and one or more LCD-Key Q5 slaves.

To use a single data line (pin SDA of Q5), the MISO and MOSI pins must be connected at each node (in this case only simplex communication is possible).

The communication is always initiated by the master. When the master device transmits data to a slave Q5 via MOSI pin, the slave device is able to respond by sending data to the master device via the MISO pin. This implies simplex communication with both data out and data in synchronized with the same clock signal which is provided by the master device via the SCK pin.

→ tsDI set up time 10 ns min
→ thDI hold time 10 ns min
→ tdDO delay time 10 ns min
→ tcyc cycle time 250 ns min (4 MHz max)



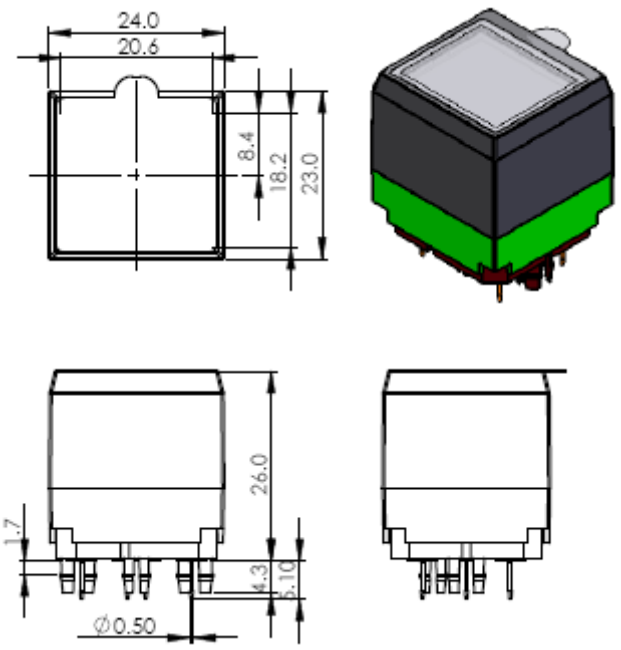
Commands

Commands overview

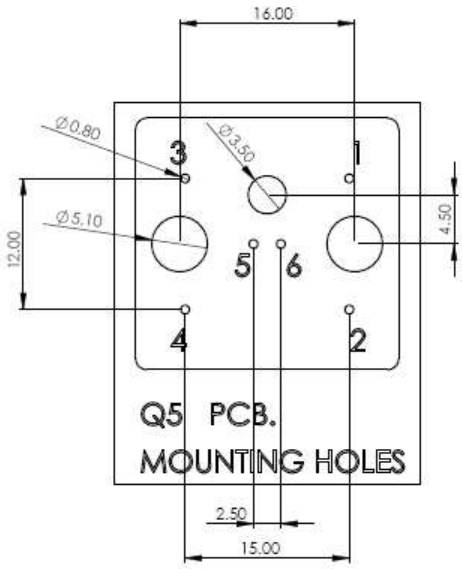
Name	Cmd	Data	Description
Write Display Data	0x40	The command expects min. 4 data bytes to follow: 0000000**A_8** 0000**$A_7A_6A_5A_4$** 0000**$A_3A_2A_1A_0$** 0000**$D_3D_2D_1D_0$** Max 253 Data Bytes may follow	A8-A0 points into display, see diagramm D3-D0 defines Dot Pattern
Set RGB Color	0x42	The command expects 3 data bytes to follow: **$0D_6D_5D_4D_3D_2D_1D_0$** **$0D_6D_5D_4D_3D_2D_1D_0$** **$0D_6D_5D_4D_3D_2D_1D_0$**	**D_6-D_0**,**D_6-D_0** and **D_6-D_0** define brightness of red, green and blue backlight
Read Display Data	0x4A	The command expects 6 data bytes to follow: 0000000**A_8** 0000**$A_7A_6A_5A_4$** 0000**$A_3A_2A_1A_0$** 0000000**L_8** 0000**$L_7L_6L_5L_4$** 0000**$L_3L_2L_1L_0$** The command expects L8-L0 data bytes transmitted from Q5 to the host.	A8-A0 points into display, see diagramm L8-L0 defines length of read back bytes

Dimensions

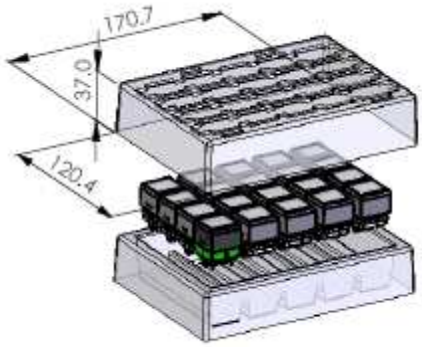
Outline Dimensions



Footprint



Packaging



20PCS/Tray

Address

MMI Technologies Ltd.
Broaway House
4-6 The Broadway,
Bedford
MK40 2TE
United Kingdom
Tel: +44 (0) 1234 21 36 00
Fax: +44 (0) 1234 21 08 20
Email: Q5@mmi-systems.com
www.mmi-systems.com

History

Revision	Date	Comment
0.1	2008-09-09	first draw