

OCTAL OPEN-DRAIN OUTPUTS

Low-side switches for the I2C Bus

Datasheet Rev.: 1.2
Date: 09.10.2009

Features

- Eight N-channel digital FETs as low-side switches
- Switching capability: 25V/0.6A
- Individual control LEDs for each output
- MCP23008 I2C port expander
- 400kHz I2C bus speed
- Three jumpers for I2C address selection, to allow 8 modules on the bus
- External Reset input

Ordering Information

Art.-No. 01.0016

Octal OC Outputs

Contact:

Elektronik-Atelier Kallen

Giacomettistrasse 33A

CH-3006 Bern / Switzerland

Web: www.avrcard.com

Email: info@avrcard.com

Tel: +41-31-832 1441

Fax: +41-31-560 4110

Specifications

Application Interface

Number of Switches	8
Switching current	Max. 680mA continuous; 2A peak
Switching Voltage	Max. 25V
ESD Protection	Gate-Source Zener for >6kV Human Body Model
Connector	Industry standard 10-way screw terminal 2.54mm pitch

MCU Interface

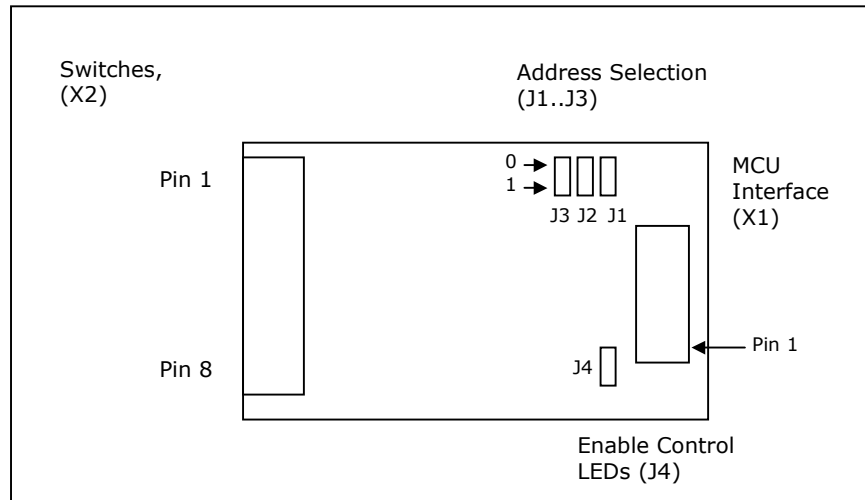
Bus Type	I2C (SCL, SDA)
Bus Speed	Up to 400kHz
Signal levels	TTL
Node address	0x20 (default), 8 field programmable addresses
Connector	Standard 0.1" 10-way header

Mechanical

Size (L x W)	47 x 32 mm
Weight	25 g

Connector Specifications

Figure 1 – Connectors



MCU Interface

X1: MCU Interface	
No.	Function
1	+5V
2	
3	
4	
5	
6	GND
7	Reset (active low)
8	
9	SCL
10	SDA

Application Interface

X2: Power Supply and Motor		
No.	Function	Alt. Function
1	OUT1	Output bit 0
2	OUT2	Output bit 1
3	OUT3	Output bit 2
4	OUT4	Output bit 3
5	OUT5	Output bit 4
6	OUT6	Output bit 5
7	OUT7	Output bit 6
8	OUT8	Output bit 7
9	GND	Power GND
10	GND	Power GND

Jumper Settings

I2C Address Selection			
J1	J2	J3	I2C Address
0	0	0	0x20
1	0	0	0x21
0	1	0	0x22
1	1	0	0x23
0	0	1	0x24
1	0	1	0x25
0	1	1	0x26
1	1	1	0x27

Application Information

For details on how to access the MCP23008 registers, please refer to the MCP23008 datasheet, available at

<http://ww1.microchip.com/downloads/en/DeviceDoc/21919d.pdf>

Below is a summary of the relevant registers.

```
Const
  OLAT: Byte = $0A;
  GPPU: Byte = $06;
  IODIR: Byte = $00;
  IOCON: Byte = $05;
```

The following code shows how the module has to be initialised upon power-on, before any output can be activated:

Initialization

```
I2cOut (MCP23008, OLAT, %00000000); // Set all outputs to 0
I2cOut (MCP23008, GPPU, %00000000); // Activate no pull-ups
I2cOut (MCP23008, IODIR, $00);      // Set all pins to outputs
I2cOut (MCP23008, IOCON, %00110100); // Set SEQOP, DISSLW, ODR
```

This command sets the outputs according to the bit pattern in the variable `value` (Byte).

Set All Outputs

```
I2cOut (MCP23008, OLAT, value); // Set all outputs
```

In order to set or reset an individual output, the output latch register has to be read first, then modified, then written back:

Set Individual Output

```
I2cOut (MCP23008, OLAT);
I2cInp (MCP23008, OLAT, b);
incl (b, bitNo); // or excl
I2cOut (MCP23008, OLAT, b);
```

Notice to Users

The intended use of the Stepper modules is described in this document. Other than the described uses are not permitted or only after consultation with the manufacturer.

Stepper modules are not authorized for use as critical components in life-support devices or systems.

Life-support devices or systems are devices or systems intended for surgical implantation into the body or to sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling and user's manual, can be reasonably expected to result in significant injury.

No complex software or hardware system is perfect. Bugs are always present in a system of any size. In order to prevent danger to life or property, it is the responsibility of the system designer to incorporate redundant protective mechanisms appropriate to the risk involved.

All Stepper modules are 100 percent functionally tested. Additional testing may include visual quality control inspections. Specifications are based on characterization of tested sample units rather than testing over temperature and voltage of each unit. Stepper modules may qualify components to operate within a range of parameters that is different from the manufacturer's recommended range.