

# 16-bit I/O expander(MCP23017)

20140501

Reference;

MCP23017\_0.1.f

i2c\_utility\_0.2.2.f

MCP23017 must be given Hi-pulse to reset-pin.

Prop0 Cog6 ok

reset i2c\_detect

0 1 2 3 4 5 6 7 8 9 A B C D E F

00: - - - - -

10: - - - - -

20: 20 - - - - - <--- MCP23017

30: - - - - -

40: - - - - -

50: 50 - - - - - <--- eeprom on QuickStart board

60: - - - - -

70: - - - - -

i2c\_device:2

Prop0 Cog6 ok

MCP23017\_0.1.f use IOCON.BANK=0(default).

If using IOBANK.BANK=1, it display meaningless values.

Print all registers(default)

Prop0 Cog6 ok

disp\_reg

Register name	data[hex]
---------------	-----------

IODIRA	FF
--------	----

IODIRB	FF
--------	----

IPOLA	0
-------	---

IPOLB	0
-------	---

GPINTENA	0
----------	---

GPINTENB	0
----------	---

DEFVALA	0
---------	---

DEFVALB	0
---------	---

INTCONA	0
---------	---

INTCONB	0
---------	---

IOCON	0
-------	---

IOCON	0
-------	---

GPPUA	0
-------	---

GPPUB	0
-------	---

INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

## Writing to IODIRA/IODIRB register and print all registers

IODIR 0 wr\_MCP23017 disp\_reg

Register name	data[hex]
---------------	-----------

IODIRA	0
IODIRB	0
IPOLA	0
IPOLB	0
GPINTENA	0
GPINTENB	0
DEFVALA	0
DEFVALB	0
INTCONA	0
INTCONB	0
IOCON	0
IOCON	0
GPPUA	0
GPPUB	0
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

## Writing to IPOLA/IPOLB register and print all registers

IPOL h1234 wr\_MCP23017 disp\_reg

Register name	data[hex]
---------------	-----------

IODIRA	0
IODIRB	0
IPOLA	34
IPOLB	12
GPINTENA	0
GPINTENB	0
DEFVALA	0
DEFVALB	0
INTCONA	0
INTCONB	0

IOCON	0
IOCON	0
GPPUA	0
GPPUB	0
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

### Writing to GPINTENA/GPINTENB register and print all registers

GPINTEN h5678 wr\_MCP23017 disp\_reg

Register name	data[hex]
---------------	-----------

IODIRA	0
IODIRB	0
IPOLA	34
IPOLB	12
GPINTENA	78
GPINTENB	56
DEFVALA	0
DEFVALB	0
INTCONA	0
INTCONB	0
IOCON	0
IOCON	0
GPPUA	0
GPPUB	0
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

### Writing to DEFVALA/DEFVALB register and print all registers

DEFVAL h9ABC wr\_MCP23017 disp\_reg

Register name	data[hex]
---------------	-----------

IODIRA	0
IODIRB	0
IPOLA	34
IPOLB	12
GPINTENA	78
GPINTENB	56

DEFVALA	BC
DEFVALB	9A
INTCONA	0
INTCONB	0
IOCON	0
IOCON	0
GPPUA	0
GPPUB	0
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

## Writing to INTCONA/INTCONB register and print all registers

INTCON hDEF0 wr\_MCP23017 disp\_reg

Register name data[hex]

IODIRA	0
IODIRB	0
IPOLA	34
IPOLB	12
GPINTENA	78
GPINTENB	56
DEFVALA	BC
DEFVALB	9A
INTCONA	F0
INTCONB	DE
IOCON	0
IOCON	0
GPPUA	0
GPPUB	0
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

## Writing to IOCONA/IOCONB register and print all registers /IOCONB(upper8bits) must be same as IOCONA (lower8bits)

IOCON h606 wr\_MCP23017 disp\_reg

Register name data[hex]

IODIRA	0
IODIRB	0
IPOLA	34
IPOLB	12
GPINTENA	78
GPINTENB	56
DEFVALA	BC
DEFVALB	9A
INTCONA	F0
INTCONB	DE
IOCON	6
IOCON	6
GPPUA	0
GPPUB	0
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0
OLATA	0
OLATB	0

Prop0 Cog6 ok

## Writing to GPPUA/GPPUB register and print all registers

GPPU h1234 wr\_MCP23017 disp\_reg

Register name data[hex]

IODIRA	0
IODIRB	0
IPOLA	34
IPOLB	12
GPINTENA	78
GPINTENB	56
DEFVALA	BC
DEFVALB	9A
INTCONA	F0
INTCONB	DE
IOCON	6
IOCON	6
GPPUA	34
GPPUB	12
INTFA	0
INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	0
GPIOB	0

```
OLATA      0
OLATB      0
```

Prop0 Cog6 ok

## Writing to GPIOA/GPIOB register and print all registers

### Writing to GPIOA/GPIOB modifies OLATA/OLATB

```
GPIO h5678 wr_MCP23017 disp_reg
```

```
Register name  data[hex]
```

```
IODIRA      0
IODIRB      0
IPOLA       34
IPOLB       12
GPINTENA    78
GPINTENB    56
DEFVALA     BC
DEFVALB     9A
INTCONA     F0
INTCONB     DE
IOCON        6
IOCON        6
GPPUA       34
GPPUB       12
INTFA       0
INTFB       0
INTCAPA     0
INTCAPB     0
GPIOA       78
GPIOB       56
OLATA       78
OLATB       56
```

Prop0 Cog6 ok

## Writing to OLATA/OLATB register and print all registers

```
OLAT hABCD wr_MCP23017 disp_reg
```

```
Register name  data[hex]
```

```
IODIRA      0
IODIRB      0
IPOLA       34
IPOLB       12
GPINTENA    78
GPINTENB    56
DEFVALA     BC
DEFVALB     9A
INTCONA     F0
INTCONB     DE
IOCON        6
IOCON        6
GPPUA       34
GPPUB       12
INTFA       0
```

INTFB	0
INTCAPA	0
INTCAPB	0
GPIOA	CD
GPIOB	AB
OLATA	CD
OLATB	AB

Prop0 Cog6 ok

## Reading value of each register

Prop0 Cog6 ok  
 IODIR rd\_MCP23017  
 IODIRA:h0  
 IODIRB:h0  
 Prop0 Cog6 ok  
 IPOL rd\_MCP23017  
 IPOLA:h34  
 IPOLB:h12  
 Prop0 Cog6 ok  
 GPINTEN rd\_MCP23017  
 GPINTENA:h78  
 GPINTENB:h56  
 Prop0 Cog6 ok  
 DEFVAL rd\_MCP23017  
 DEFVALA:hBC  
 DEFVALB:h9A  
 Prop0 Cog6 ok  
 INTCON rd\_MCP23017  
 INTCONA:hF0  
 INTCONB:hDE  
 Prop0 Cog6 ok  
 IOCON rd\_MCP23017  
 IOCON:h6  
 IOCON:h6  
 Prop0 Cog6 ok  
 GPPU rd\_MCP23017  
 GPPUA:h34  
 GPPUB:h12  
 Prop0 Cog6 ok  
 INTF rd\_MCP23017  
 INTFA:h0  
 INTFB:h0  
 Prop0 Cog6 ok  
 INTF rd\_MCP23017  
 INTFA:h0  
 INTFB:h0  
 Prop0 Cog6 ok  
 INTCAP rd\_MCP23017  
 INTCAPA:h0

```
INTCAPB:h0  
Prop0 Cog6 ok  
GPIO rd_MCP23017  
GPIOA:hCD  
GPIOB:hAB  
Prop0 Cog6 ok  
OLAT rd_MCP23017  
OLATA:hCD  
OLATB:hAB  
Prop0 Cog6 ok
```