

In-Circuit Serial Programming (ICSP)

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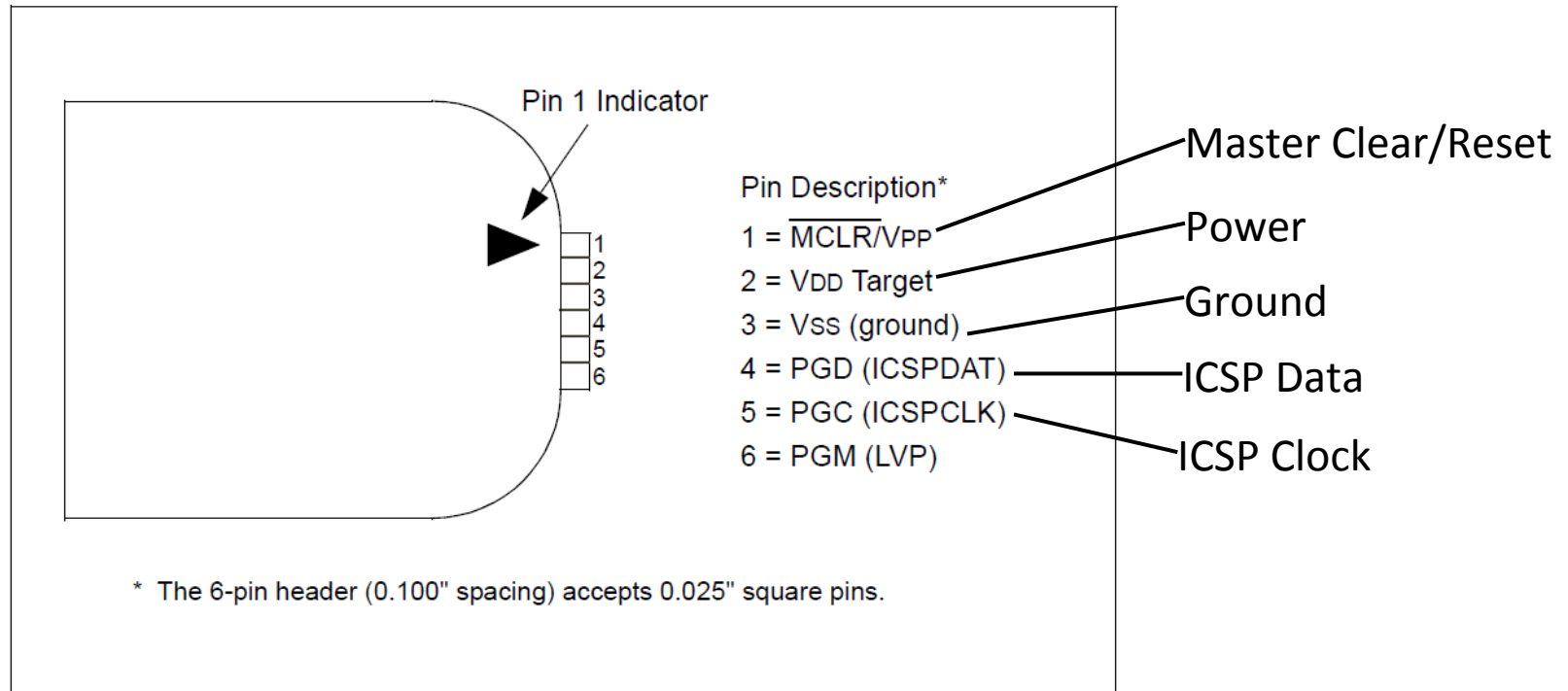
Brigham Young University

ICSP

- Allows us to program the chip directly, while it resides in a circuit
- Enough said

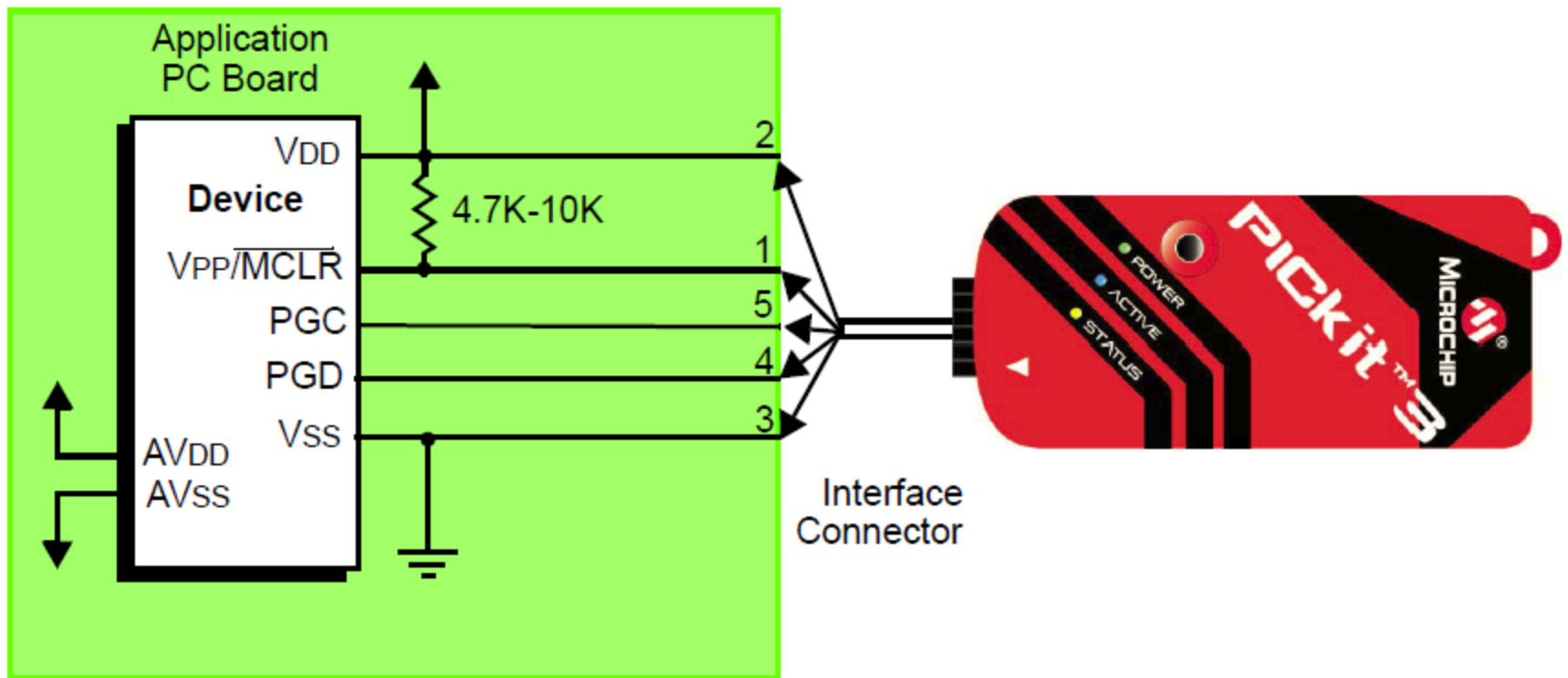
PICkit 3

FIGURE 1-2: PICKIT™ 3 PROGRAMMER CONNECTOR PINOUT



Connections

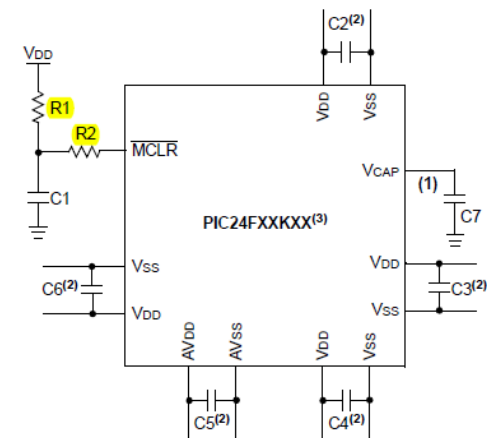
FIGURE 2-4: STANDARD CONNECTION TARGET CIRCUITRY



Notes

- Choose from three different data/clock pairs : PGEC1/PGED1, PGEC2/PGED2, and PGEC3/PGED3
- We already use a suitable resistor
- Use external power while programming
 - Don't need to have PICkit 3 supply power

Pin	Pin Features	
	PIC24FVXXKA301	PIC24FXXKA301
1	MCLR/VPP/RA5	MCLR/VPP/RA5
2	PGEC2/VREF+/CVREF+/AN0/C3INC/SCK2/CN2/RA0	PGEC2/VREF+/CVREF+/AN0/C3INC/SCK2/CN2/RA0
3	PGED2/CVREF-/VREF-/AN1/SDO2/CN3/RA1	PGED2/CVREF-/VREF-/AN1/SDO2/CN3/RA1
4	PGED1/AN2/ULPWU/CTCMP/C1IND/C2INB/C3IND/U2TX/SDI2/OC2/CN4/RB0	PGED1/AN2/ULPWU/CTCMP/C1IND/C2INB/C3IND/U2TX/SDI2/OC2/CN4/RB0
5	PGEC1/AN3/C1INC/C2INA/U2RX/OC3/CTED12/CN5/RB1	PGEC1/AN3/C1INC/C2INA/U2RX/OC3/CTED12/CN5/RB1
6	AN4/SDA2/T5CK/T4CK/U1RX/CTED13/CN6/RB2	AN4/SDA2/T5CK/T4CK/U1RX/CTED13/CN6/RB2
7	OSCI/AN13/C1INB/C2IND/CLKI/CN30/RA2	OSCI/AN13/C1INB/C2IND/CLKI/CN30/RA2
8	OSCO/AN14/C1INA/C2INC/CLKO/CN29/RA3	OSCO/AN14/C1INA/C2INC/CLKO/CN29/RA3
9	PGED3/SOSCI/AN15/U2RTS/CN1/RB4	PGED3/SOSCI/AN15/U2RTS/CN1/RB4
10	PGEC3/SOSCO/SCLKI/U2CTS/CN0/RA4	PGEC3/SOSCO/SCLKI/U2CTS/CN0/RA4
11	U1TX/C2OUT/OC1/C1/CTED1/INT0/CN23/RB7	U1TX/INT0/CN23/RB7
12	SCL1/U1CTS/C3OUT/CTED10/CN22/RB8	SCL1/U1CTS/C3OUT/CTED10/CN22/RB8
13	SDA1/T1CK/U1RTS/IC2/CTED4/CN21/RB9	SDA1/T1CK/U1RTS/IC2/CTED4/CN21/RB9
14	VCAP	C2OUT/OC1/C1/CTED1/INT2/CN8/RA6
15	AN12/HLVDIN/SCK1/SS2/IC3/CTED2/INT2/CN14/RB12	AN12/HLVDIN/SCK1/SS2/IC3/CTED2/CN14/RB12
16	AN11/SDO1/OCFB/CTPLS/CN13/RB13	AN11/SDO1/OCFB/CTPLS/CN13/RB13
17	CVREF/AN10/C3INB/RTCC/SDI1/C1OUT/OCFA/CTED5/INT1/CN12/RB14	CVREF/AN10/C3INB/RTCC/SDI1/C1OUT/OCFA/CTED5/INT1/CN12/RB14
18	AN9/C3INA/SCL2/T3CK/T2CK/REFO/SS1/CTED6/CN11/RB15	AN9/C3INA/SCL2/T3CK/T2CK/REFO/SS1/CTED6/CN11/RB15
19	Vss/AVss	Vss/AVss
20	Vdd/AVdd	Vdd/AVdd



Key (all values are recommendations):

C1 through C6: 0.1 μ F, 20V ceramic

C7: 10 μ F, 16V tantalum or ceramic

R1: 10 k Ω

R2: 100 Ω to 470 Ω

