



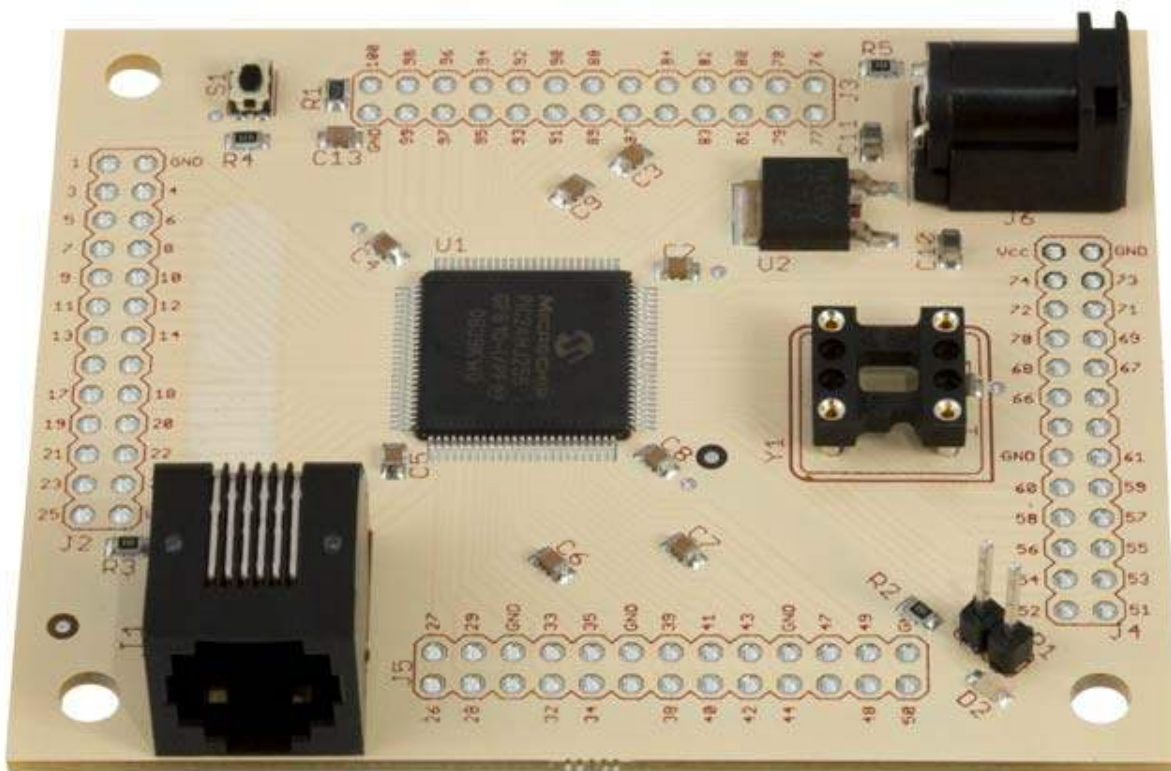
DKSB1011A

PIC24 Breakout Board

02 July 2009

Features

- Microchip PIC24HJ256GP610-I/PF-ND
- Small footprint: 3.1" x 2.5"
- Half-size DIP oscillator socket
- All I/O pins available
- Extra power pins available
- Large input voltage range: 5V-15V
- Indicator LED for programming checks
- RJ-11 jack for ICD2 programming and debugging
- MCLR on external switch or pin



Quick Start

The board can be programmed with the “blink” program. This program implements a delay routine that toggles Port F, pin 3. The frequency of the loop is approximately 1Hz for the LED signal. The program is designed to test the programmability of the chip and minimally test its operation. This program can be re-installed at any time and is available on Digi-Key’s website. The “blink” program is also included in Appendix A.

Functional Description

The DKSB1011A is a break out board for Microchip’s PIC24 in a 100 pin TQFP. This board offers developers access to a high pin count, small package part, while maintaining maximum flexibility. Each microcontroller pin has its own external output pin on the board. Every I/O is accessible via the unpopulated 0.1” headers.

Power

The 5V regulator has large input range of 5-15VDC. It can supply a maximum of 1.0A.

LEDs

The board has two LEDs. D1 is a power indicator. D2 is a general purpose LED available to the developer. Removing JP1 disconnects D2 from the microcontroller’s I/O pin.

Reset

The on-board master reset S1 allows for easy restart of applications. A reset pin is also available on header J2.

Oscillator

Since it has an internal oscillator, the microcontroller can operate without an external oscillator. However, an external half-size DIP oscillator socket is provided for applications that require precision clocking. Oscillator frequencies up to 50 MHz are available from Digi-Key.

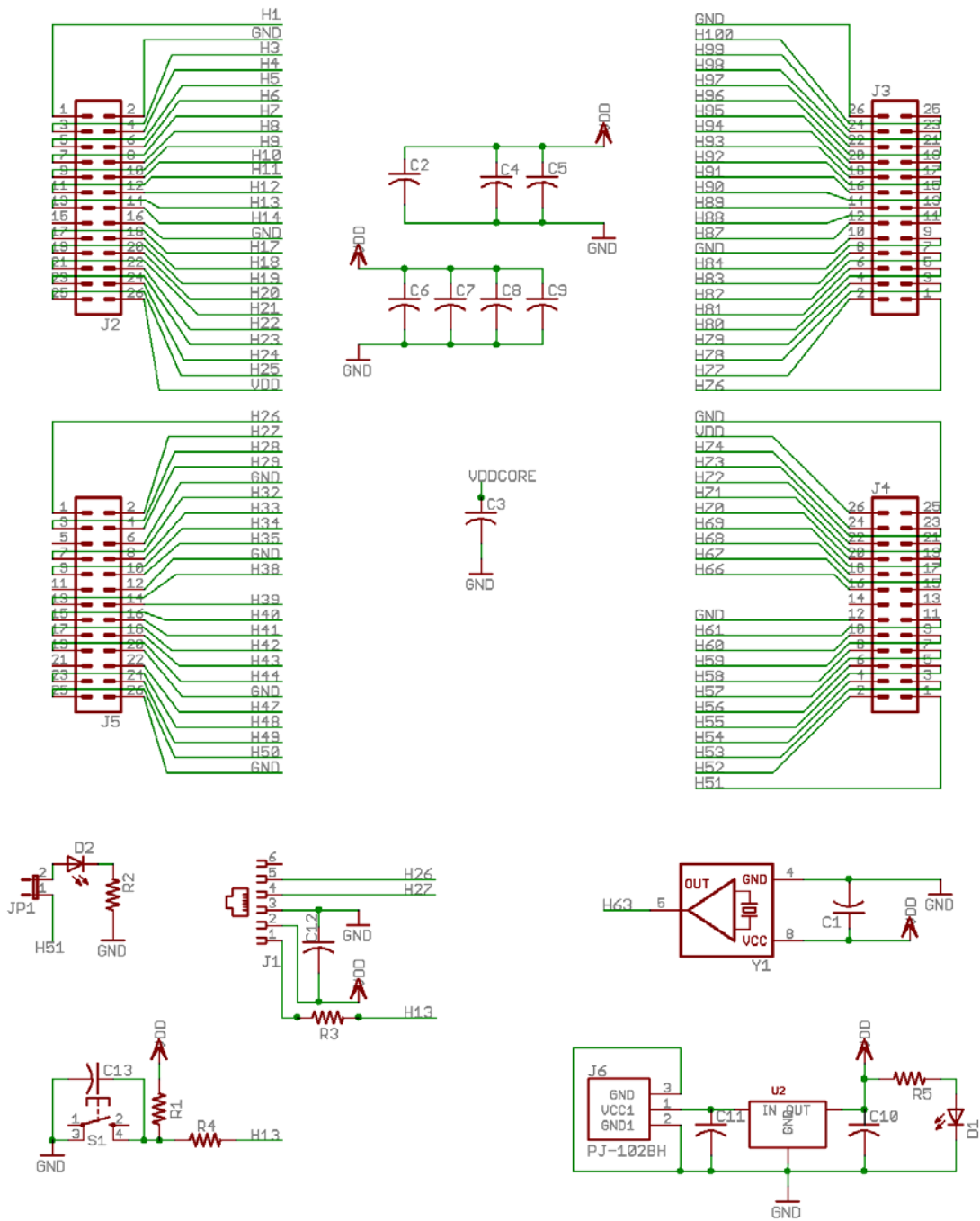
Programming and Debugging

The board employs an RJ-11 socket for programming and debugging with Microchip’s standard development tools.

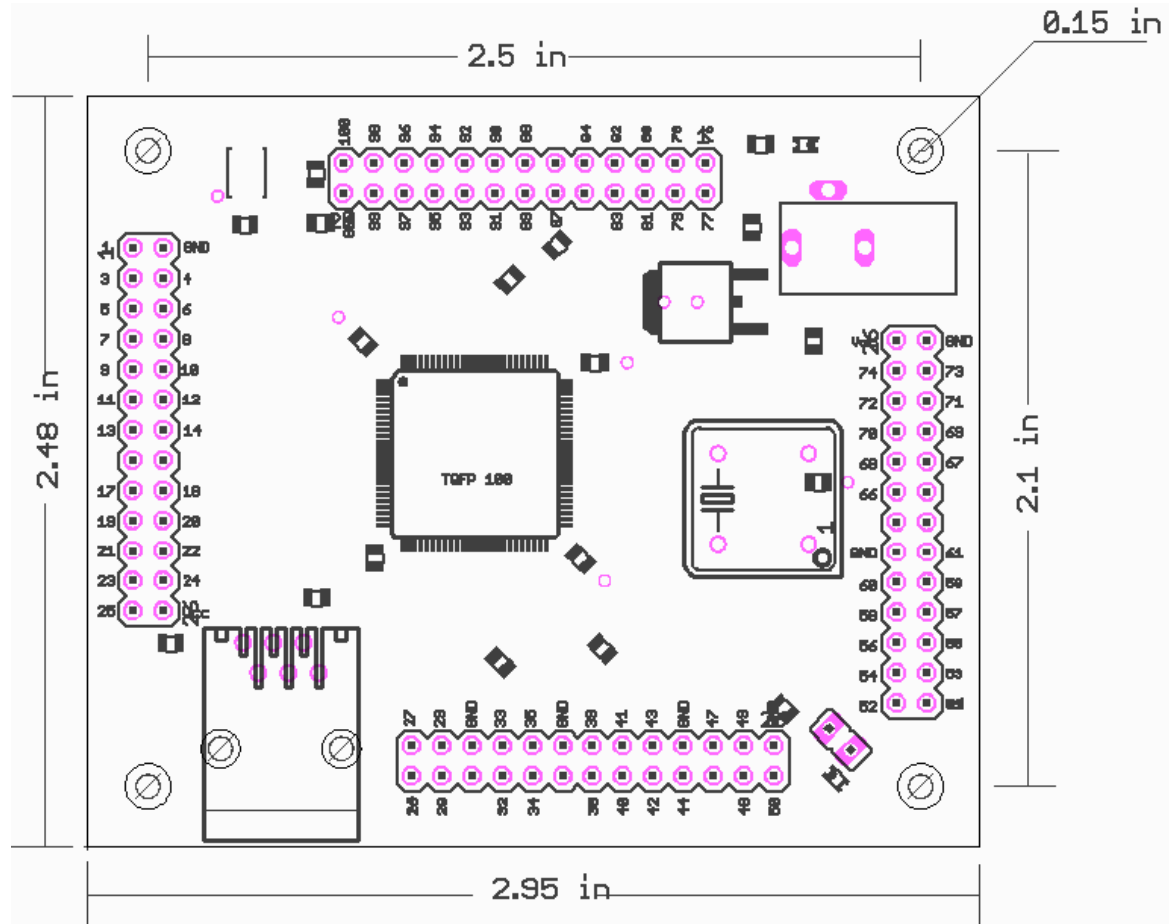
Schematics

U1					
H1	1	RG15	AN28/RE4	100	H100
VDD	2	VDD	AN27/RE3	99	H99
H3	3	AN29/RE5	AN26/RE2	98	H98
H4	4	AN30/RE6	R613	97	H97
H5	5	AN31/RE7	R612	96	H96
H6	6	AN16/T2CK/T7CK/RC1	R614	95	H95
H7	7	AN17/T3CK/T6CK/RC2	AN25/RE1	94	H94
H8	8	AN18/T4CK/T9CK/RC3	AN24/RE0	93	H93
H9	9	AN19/T5CK/T8CK/RC4	AN23/CN23/RA7	92	H92
H10	10	SCK2/CN8/R66	AN22/CN22/RA6	91	H91
H11	11	SDI2/CN9/R67	C2RX/R60	90	H90
H12	12	SDD2/CN10/R68	C2TX/R61	89	H89
H13	13	MCLR	C1TX/RF1	88	H88
H14	14	SS2/CN11/R69	C1RX/RF0	87	H87
GND	15	VSS	VDD	86	VDD
VDD	16	VDD	VDDCORE	85	VDDCORE
H17	17	TMS/RA0	OC8/CN16/RD7	84	H84
H18	18	AN20/INT1/RA12	OC7/CN15/RD6	83	H83
H19	19	AN21/INT2/RA13	OC6/CN14/RD5	82	H82
H20	20	AN5/CN7/RB5	OC5/CN13/RD4	81	H81
H21	21	AN4/CN6/RB4	IC6/CN19/RD13	80	H80
H22	22	AN3/CN5/RB3	IC5/RD12	79	H79
H23	23	AN2/SS1/CN4/RB2	OC4/RD3	78	H78
H24	24	PGEC3/AN1/CN3/RB1	OC3/RD2	77	H77
H25	25	PGED3/AN0/CN2/RB0	OC2/RD1	76	H76
H26	26	PGC1/AN6/OCFA/RB6	VSS	75	GND
H27	27	PGD1/AN7/RB7	PGEC2/SOSCO/T1CK/CN0/RC14	74	H74
H28	28	UREF-/RA9	PGED2/SOSCI/CN1/RC13	73	H73
H29	29	UREF+/RA10	OC1/RD0	72	H72
VDD	30	AVDD	IC4/RD11	71	H71
GND	31	AUSS	IC3/RD10	70	H70
H32	32	AN8/RB8	IC2/RD9	69	H69
H33	33	AN9/RB9	IC1/RD8	68	H68
H34	34	AN10/RB10	INT4/RA15	67	H67
H35	35	AN11/RB11	INT3/RA14	66	H66
GND	36	VSS	VSS	65	GND
VDD	37	VDD	OCS2/CLK0/RC15	64	
H38	38	TCK/RA1	OSC1/CLKIN/RC12	63	H63
H39	39	U2RTS/RF13	VDD	62	VDD
H40	40	U2CTS/RF12	TDO/RA5	61	H61
H41	41	AN12/RB12	TDI/RA4	60	H60
H42	42	AN13/RB13	SDA2/RA3	59	H59
H43	43	AN14/RB14	SCL2/RA2	58	H58
H44	44	AN15/OCFB/CN12/RB15	SCL1/R62	57	H57
GND	45	VSS	SDA1/R63	56	H56
VDD	46	VDD	SCK1/INT0/RF6	55	H55
H47	47	IC7/U1CTS/CN20/RD14	SDI1/RF7	54	H54
H48	48	ICB/U1RTS/CN21/RD15	SDD1/RF8	53	H53
H49	49	U2RX/CN17/RF4	U1RX/RF2	52	H52
H50	50	U2TX/CN18/RF5	U1TX/RF3	51	H51

PIC24



Layout



Bill of Materials

Ref Des	Part No.	Description	Manufacturers #
U1	PIC24HJ256GP610-I/PF-ND	Microchip dsPIC or PIC24 in 100pin 14X14mm	PIC24HJ256GP610-I/PF
J6	CP-102BH-ND	CONN PWR JACK 2.5X5.5MM HIGH CUR	PJ-102BH
U2	AP1117D33LDICT-ND	IC REG LDO 1.0A 3.3V TO-252	AP1117D33L-13
Y1	A463-ND	OSCILLATOR SOCKET HALF SIZE 4PIN	1108800
S1	401-1426-1-ND	SWITCH TACT SPST-NO 120GF GW	KMR211GLFS
D1,D2	L71514CT-ND	LED 637NM RED DIFF SMD 0805	CMDA5AR7D1S
J1	A31422-ND	CONN MOD JACK 6-6 RT/A PCB 50AU	5555165-1
JP1	WM8072-ND	CONN HEADER 2POS .100" STR TIN	90120-0122
C1,C2,C3,C4,C5 ,C6,C7,C8,C9	399-1284-1-ND	CAP 1.0UF 16V CERAMIC X7R 0805	C0805C105K4RACTU
C10,C11	587-1295-1-ND	CAP CER 10UF 16V X5R 0805	EMK212BJ106KG-T
C12,C13	PCC1812CT-ND	CAP .1UF 16V CERAMIC X7R 0805	ECJ-2VB1C104K
R1	311-5.1KARCT-ND	RES 5.1K OHM 1/8W 5% 0805 SMD	RC0805JR-075K1L
R2,R3,R5	P150ACT-ND	RES 150 OHM 1/8W 5% 0805 SMD	ERJ-6GEYJ151V
R4	311-470ARCT-ND	RES 470 OHM 1/8W 5% 0805 SMD	RC0805JR-07470RL
JS1	S9001-ND	CONN JUMPER SHORTING GOLD FLASH	SPC02SYAN

Appendix A: Sample Blinking Code

```

/*****
* FileName:      DKSB1011A.c
* Dependencies:  p24HJ256GP610.h
* Processor:     PIC24H
* Compiler:      MPLAB® C30 v2.01 or higher
*
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*
* REVISION HISTORY:
* ~~~~~
* Author      Date      Comments on this revision
* ~~~~~
* JP          5/15/09    basic code for the blinker
*****/
#include "p24HJ256GP610.h"
#include "libpic30.h"

_FGS(GWRP_OFF & GCP_OFF);
_FOSSEL(FNOSC_FRC);
_FOSC(FCKSM_CSDCMD & OSCIOFNC_OFF & POSCMD_XT);
_FWDT(FWDTEN_OFF);

//void Wait_ms(unsigned int);
int main ( void )
{
    /* set LED pins (RF3) as outputs */
    TRISF = 0xFFF7;

    /* Infinite Loop */
    while ( 1 )
    {
        PORTFbits.RF3 = !PORTFbits.RF3;
        __delay32(2000000);
    };
}

```

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