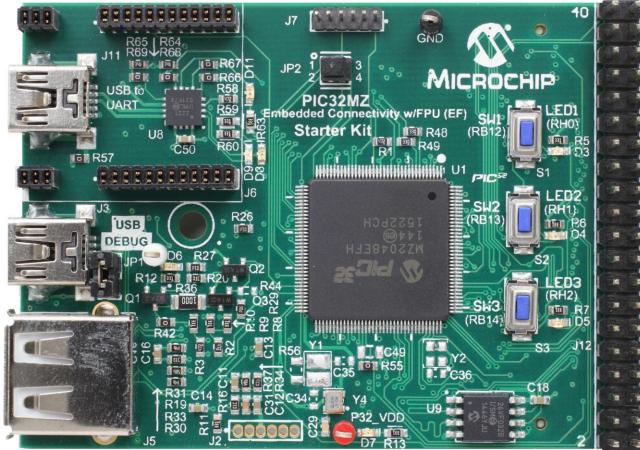
IoT Development Tools for PIC32



Curiosity PIC32MZ EF

January 31, 2018 FRED EADY

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AGENDA

- Curiosity PIC32MZ EF Hardware
 Blinking in Harmony
 Singing Out of Tune
 microSD click Project
 Double click DHT22-2 click Project
- Buenas Tardes

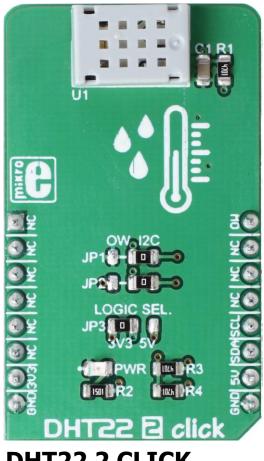


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IoT Development Tools for PIC32 Curiosity PIC32MZ EF Hardware – click Part Numbers



DHT22 2 CLICK MIKROE-2818 1471-1886-ND

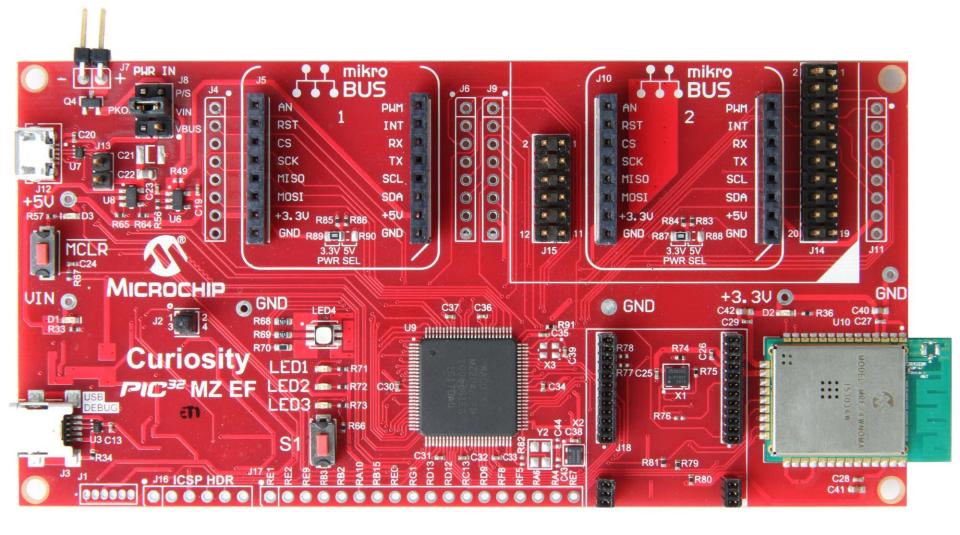


MICROSD CLICK STORAGE MIKROE-924 1471-1303-ND





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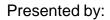
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IoT Development Tools for PIC32 Blinking in Harmony

🔀 New Project			×
Steps	Name and Location		
 Choose Project Name and Location 	Harmony Path:	C:\microchip\harmony\v2_05	
	Project Location:	C:\microchip\harmony\v2_05\apps	1
	Project Name:	day3Harmony	
	Project Path:	C: \microchip \harmony \v2_05 \apps \day3Harmony \firmware \day3Harmony.X	
	Configuration Name:	PIC32MZ_Curiosity	
	Device Family:	All V Target Device: PIC32MZ2048EFM100 V	
	Target Board:	PIC32MZ (EF) Curiosity Development Board 🗸 🗸	Help
	Note: Press "Help" butto	on for additional information.	
		< Back Next > Finish Cancel	Help



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IoT Development Tools for PIC32 Blinking in Harmony

Projects × Files Services	141 VO	
	142 {	
	143	
🖨 🕼 Header Files		
er app	145	
🔛 🔤 blinker.h	147	
🖻 🕞 system_config	148	
PIC32MZ_Curiosity	149	
i⊕ 📻 bsp	150	
framework	151	
system_config.h	153	
system_definitions.h	154	
□ c framework	155	
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B Cosal	157	
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🗄 🛅 system	160	
🕀 🖙 Important Files	161	
Linker Files	162	
🖨 🕼 Source Files	163	
📮 🛱 app	165	
📴 blinker.c	166	
main.c	167	
system_config	168	
PIC32MZ_Curiosity	170	
⊕ free bsp	171	
framework	172	
	173	
system_exceptions.c	174	
system_init.c	176	
system_interrupt.c	177	
system_tasks.c	178	
in framework	179	
🗈 🛅 driver	180	
🗄 🛅 system	182	
🕂 🕞 Libraries	183	
	184	
Loadables	185	
	186	

void BLINKER_Tasks (void)
/* Check the application's current state. */
switch (blinkerData.state)
{ /* Application's initial state. */
case BLINKER STATE INIT:
{
<pre>bool appInitialized = true;</pre>
if (appInitialized)
<pre>{ blinkerData.hDelayTimer = SYS TMR DelayMS(BLINKER DELAY);</pre>
if (blinkerData.hDelayTimer != SYS TMR HANDLE INVALID)
{ // Valid handle returned
BSP LEDON (BLINKER LED) ;
blinkerData.state = BLINKER STATE SERVICE TASKS;
}
<pre>blinkerData.state = BLINKER_STATE_SERVICE_TASKS;</pre>
}
break;
}
<pre>case BLINKER_STATE_SERVICE_TASKS: </pre>
(
<pre>if (SYS_TMR_DelayStatusGet(blinkerData.hDelayTimer)) { // Single shot timer has now timed out.</pre>
BSP LEDToggle (BLINKER LED);
blinkerData.state = BLINKER RESTART TIMER;
}
break;
}
<pre>/* TODO: implement your application state machine.*/ case BLINKER_RESTART_TIMER:</pre>
{ // Create a new timer
<pre>blinkerData.hDelayTimer = SYS_TMR_DelayMS(BLINKER_DELAY);</pre>
<pre>if (blinkerData.hDelayTimer != SYS_TMR_HANDLE_INVALID)</pre>
{ // Valid handle returned
<pre>blinkerData.state = BLINKER_STATE_SERVICE_TASKS;</pre>
}
break;
}
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IoT Development Tools for PIC32 Singing Out of Tune

Projects × Files Services	130	//Initialize TIMER2	
🖃 🖷 pic32MZ_blinker	131	T2CONCLR = 0xFFFF;	//Turn timer off - select PBCLK 1:1
Header Files	132	T2CONSET = 0x0070;	//01110000 1:256 prescale
Important Files	133	TMR2 = 0;	//Clear timer register
Linker Files	134	PR2 = 0x0138;	//lomS @ 8MHz
	135	//priority 4 sub priority () - bits <12:10> sub bits <9:8>
Source Files	136	IPC2SET = 0x00001000; // 00	000 0000 0000 0000 0001 0000 0000 0000
mainMZ.c	137	IFSOCLR = 0x00000200;	
Libraries	138	IECOSET = 0x00000200;	
Loadables	139	T2CONSET = 0x8000;	
1			

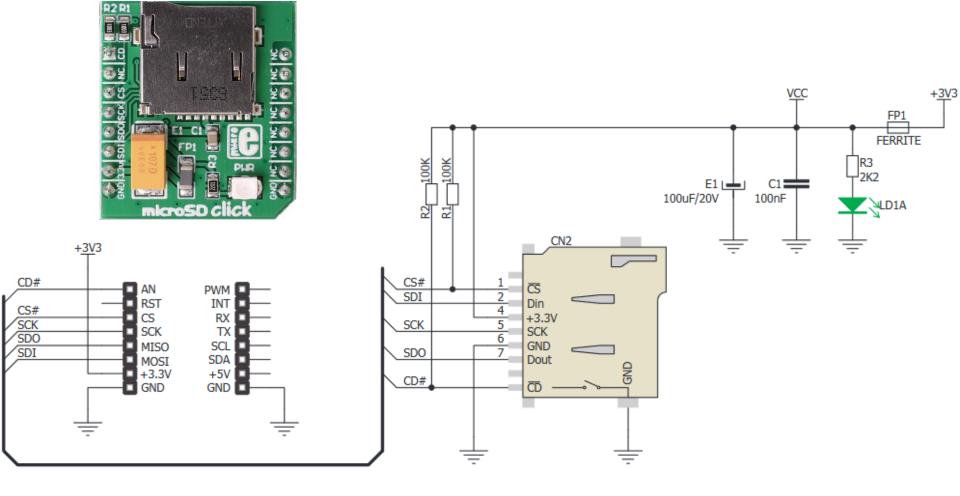
```
**************
86
       SRAM VARIABLES
87
                                                    ********
88
   BYTE tmrTicks;
89
      *************
 90
     * TIMER2 Interrupt Handler
91
       it is set at priority level 4 with shadow register support
92
       subpriority level 0
93
94
   void ISR_AT_VECTOR (_TIMER_2_VECTOR, IPL4SRS) msl0Handler(void)
95
96
   ł
                                                       MICROCHIP
       if (++tmrTicks == 100)
97
98
           LATBINV = 0x0001;
99
           tmrTicks = 0;
100
101
       IFSOCLR = 0x00000200;
102
103 }
```





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IoT Development Tools for PIC32 microSD click Project

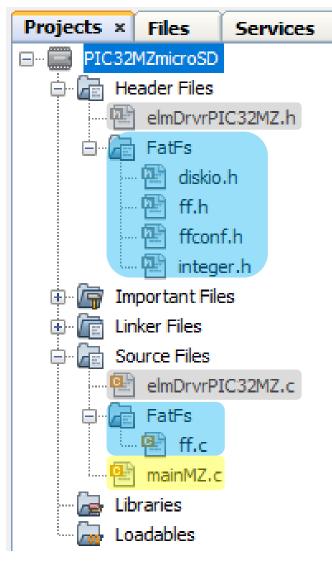


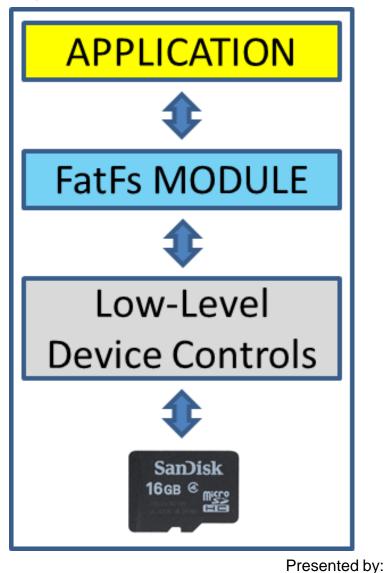
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IoT Development Tools for PIC32 microSD click Project



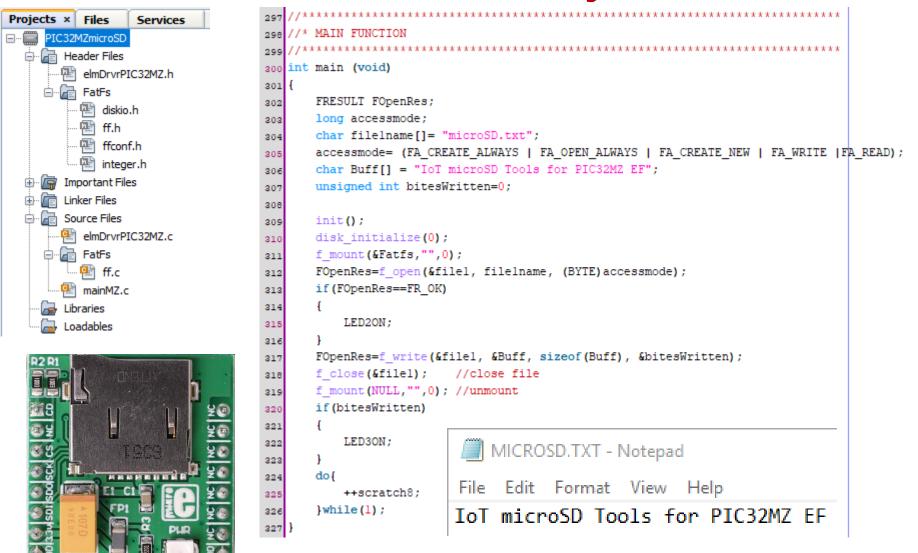


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IoT Development Tools for PIC32 microSD click Project



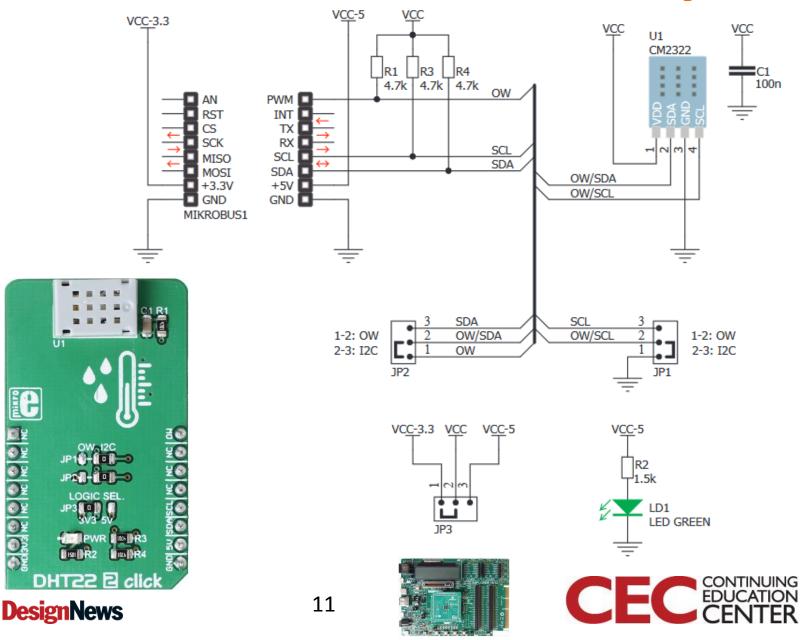


microSD clic



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Projects	× Fi	les	Services
⊡… 🧱 pic3	2MX_	DHT22-2	2
6	Heade	er Files	
÷- 🕞	Impor	tant File	s
÷- 💼	Linker	Files	
÷- 🔁	Sourc	e Files	
	📳 i2	c.c	
	🖭 m	ainMX.c	
÷- 🚖	Librar	ies	
÷ 📷	Loada	bles	

114	//**********	
115	//* MAIN FUNCTION	
116	//*********	
117	void main(void)	
118	{	
119	<pre>initMX();</pre>	
120	txBuf[0] = 0x03;	
121	txBuf[1] = 0x00;	
122	txBuf[2] = 0x04;	
123	clickOFF;	
124	i2cInit();	
125	ctDelayms (500) ;	
126	clickON;	
127	do {	
128	ctDelayms (1000) ;	
129	i2cStart();	
130	<pre>i2cSendByte(i2cAddrW);</pre>	
131	ctDelayms(1);	
132	i2cStop();	
133	ctDelayms(100);	
134	i2cWriteDHTRegs(i2cAddrW,txBuf,3);	
135	ctDelayms(100);	
136	i2cReadDHTRegs(i2cAddrR,rxBuf,8);	
137	ctDelayms(1000);	4
138	}while(1);	
139	}	



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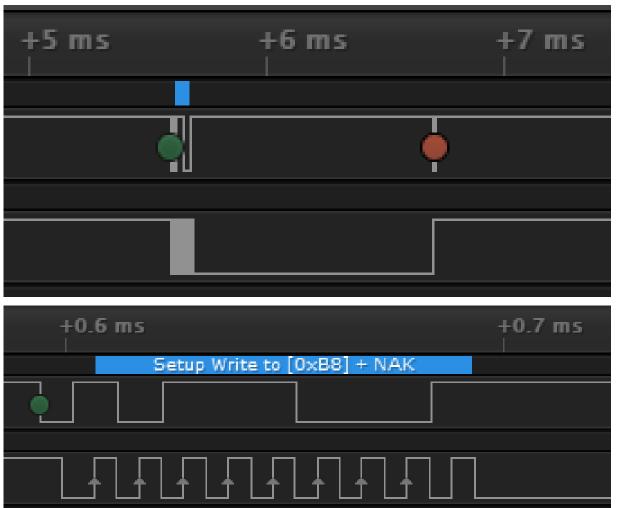




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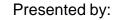


```
********
114
       MAIN FUNCTION
115
                                    *******
116
   void main (void)
117
118
       initMX();
119
       txBuf[0] = 0x03;
120
       txBuf[1] = 0x00;
121
       txBuf[2] = 0x04;
122
       clickOFF;
123
       i2cInit();
124
       ctDelayms(500);
125
       clickON;
126
       do {
127
       ctDelayms(1000);
128
       i2cStart();
129
       i2cSendByte(i2cAddrW);
130
       ctDelayms(1);
131
       i2cStop();
132
       ctDelayms(100);
133
       i2cWriteDHTRegs(i2cAddrW,txBuf,3);
134
       ctDelayms(100);
135
       i2cReadDHTRegs(i2cAddrR,rxBuf,8);
136
       ctDelayms(1000);
137
       }while(1);
138
139 }
```



F





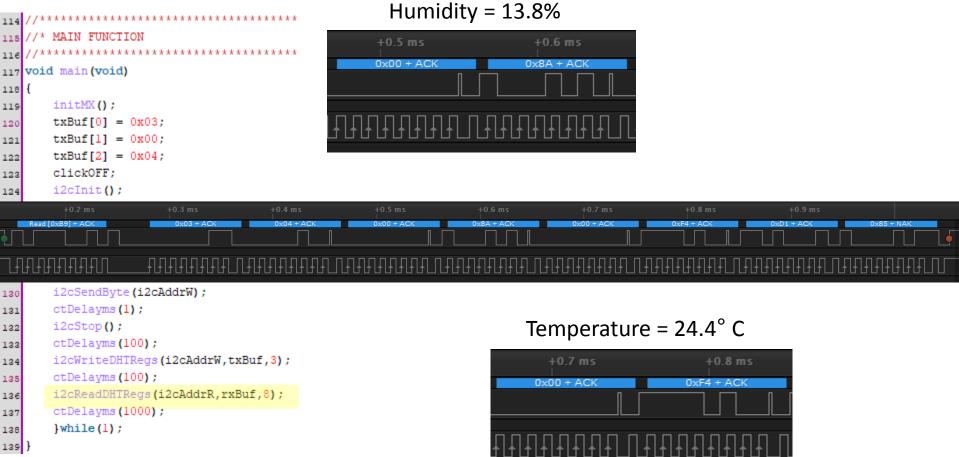


114	//*************************************
115	//* MAIN FUNCTION
116	//*********************************
117	void main (void)
118	{
119	initMX();
120	txBuf[0] = 0x03;
121	txBuf[1] = 0x00;
122	txBuf[2] = 0x04;
123	clickOFF; +0.7 ms +0.8 ms +0.9 ms +0.1 ms
124	i2cInit();
125	ctDelayms (500) ; Write [0xB8] + ACK 0x03 + ACK 0x00 + ACK 0x04 + ACK
126	clickON; 🖕 🖕
127	do{
128	ctDelayms (1000) ; —————————————————————————————————
129	i2cStart ();
130	i2cSendByte(i2cAddrW)
131	ctDelayms(1);
132	i2cStop();
133	ctDelayms (100) ;
134	<pre>i2cWriteDHTRegs(i2cAddrW,txBuf,3);</pre>
135	ctDelayms (100) ;
136	i2cReadDHTRegs(i2cAddrR,rxBuf,8);
137	ctDelayms (1000);
138	}while(1);
139	}





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139 }

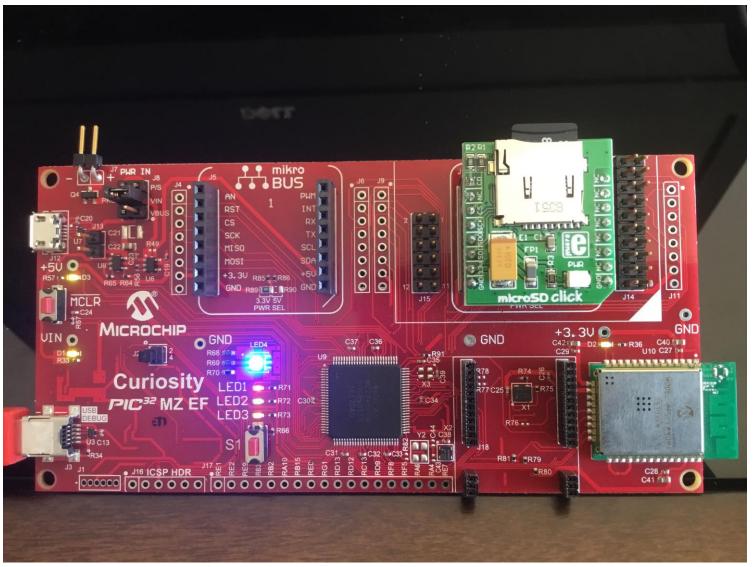
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