



Revision Change Notice #1505051

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PCN Date: 5/5/2015		Effective Date: 8/10/2015
Title: C8051F36x Revision C		
Originator: Tom Pannell	Phone: (512) 464-9269	Dept: Marketing
Customer Contact: Kathy Haggar	Phone: 512-532-5261	Dept: Sales
PCN Type: <input checked="" type="checkbox"/> Datasheet <input checked="" type="checkbox"/> Product Revision		
PCN Details		

Description of Change:

Silicon Labs is pleased to announce hardware revision C of the C8051F36x devices and revision 1.1 of the corresponding datasheet for these products.

For customers using Revision B the change to Revision C eliminates an issue where the CPU causes an execution failure for the "CPL C" (Complement Carry bit) instruction under a narrow set of conditions involving an instruction order dependency.

The failure mode is as follows: if the Carry bit contains a 1 prior to the execution phase of the "CPL C" opcode, the Carry bit will remain a 1 after the execution phase of the opcode has completed. If the Carry bit contained a '0' prior to the execution of the "CPL C" opcode, it will properly transition to a 1 when the execution phase of the opcode has completed.

In the failure case, the CPL C opcode must be immediately preceded by a JB, JNB, or JBC opcode. JB, JNB, and JBC are all conditional branch instructions (JB is "Jump if bit is set", JNB is "Jump if bit is not set", and JBC is "Jump if bit is set and clear bit"). Because the branches are conditional, they have both a "branch taken" condition as well as a "branch not taken" condition. Both "branch taken" and "branch not taken" conditions may exhibit the error, as long as the CPL C opcode executes immediately after the branch instruction has executed.

The opcode failure only exists in devices with a maximum clock frequency of 100 MHz. These include the following part numbers:

C8051F360-GQ
C8051F361-GQ
C8051F362-GM
C8051F363-GQ
C8051F364-GQ
C8051F365-GM

The opcode dependency issue does not exist in devices that have a maximum clock rate of 50 MHz; however, since these devices share the same die a revision to the die and subsequent part number is required. These devices include the following part numbers:

C8051F366-GQ
C8051F367-GM
C8051F368-GQ
C8051F369-GM

Datasheet revision 1.1 updates the orderable part number to revision C along with other minor edits.

After the effective date of this PCN, Silicon Labs reserves the right to deliver Revision C for customers ordering revision B. Please refer to the product identification section.

Reason for Change:

C8051F36x Revision C release
C8051F36x Datasheet revision 1.1 release

Impact on Form, Fit, Function, Quality, Reliability:

There is no impact to form, fit, quality or reliability.

The following functions are impacted:

- The "CPL C" (Complement Carry bit) instruction operates as expected at specified operating conditions

Product Identification:

The following orderable part numbers are affected:

After the effective date of this PCN, Silicon Labs reserves the right to deliver Revision C for customers ordering revision B.

Existing Part Number	Replacement Part Number	Drop in Compatible Indicator
C8051F360-GQ	C8051F360-C-GQ	Yes
C8051F361-GQ	C8051F361-C-GQ	Yes
C8051F362-GM	C8051F362-C-GM	Yes
C8051F363-GQ	C8051F363-C-GQ	Yes
C8051F364-GQ	C8051F364-C-GQ	Yes
C8051F365-GM	C8051F365-C-GM	Yes
C8051F366-GQ	C8051F366-C-GQ	Yes
C8051F367-GM	C8051F367-C-GM	Yes
C8051F368-GQ	C8051F368-C-GQ	Yes
C8051F369-GM	C8051F369-C-GM	Yes
C8051F360-GQR	C8051F360-C-GQR	Yes
C8051F361-GQR	C8051F361-C-GQR	Yes
C8051F362-GMR	C8051F362-C-GMR	Yes
C8051F363-GQR	C8051F363-C-GQR	Yes
C8051F364-GQR	C8051F364-C-GQR	Yes
C8051F365-GMR	C8051F365-C-GMR	Yes
C8051F366-GQR	C8051F366-C-GQR	Yes
C8051F367-GMR	C8051F367-C-GMR	Yes
C8051F368-GQR	C8051F368-C-GQR	Yes
C8051F369-GMR	C8051F369-C-GMR	Yes
CF360-SM0543GQ	To be determined (TBD)	Yes
CF360-SM0845GQ	To be determined (TBD)	Yes
CF360-XM0756GQ	To be determined (TBD)	Yes
CF360-SM0543GQR	To be determined (TBD)	Yes
CF360-SM0845GQR	To be determined (TBD)	Yes
CF360-XM0756GQR	To be determined (TBD)	Yes

Note: The part numbers above include tape and reel variants which are denoted with an "R" at the end of the orderable part number.

Last Date of Unchanged Product: 8/10/2015

Qualification Samples:

Samples are available now. Please contact your Silicon Labs sales representative to order samples. A list of Silicon Labs sales representatives is available at www.silabs.com.



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Specific conditions of acceptance of this change will be considered on a case by case basis if written notice is submitted within 30 days of this notice. To request further data or inquire about this notification, please contact your local Silicon Labs sales representative. A list of Silicon Labs sales representatives is available at www.silabs.com.

In some cases rejection of a change notice may impact Silicon Labs product pricing, delivery, quality, or reliability.

Customer Early Acceptance Sign Off:

Customers may approve early PCN acceptance by completing the information below:

Early Acceptance: Date: _____

 Name: _____

 Company: _____

Email your early Acceptance approval to: katherine.hagggar@silabs.com

Qualification Data:

See Appendix.

Appendix

C8051F36x Qualification Report


W7101F1 - Product Qualification Plan and Report Record
Rev. G

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Part Rev C, TSMC Fabrication							
Test Name	Test Condition	Qualification	Lot ID or Start	Fail/Pass or End	Notes	Summary	Status
Test Group A - Accelerated Environment Stress Tests - ASECL 48 TQFP							
HAST	JA110 130°C, 85%RH Vcc=3.6V, 96 hours	3 lots, N=>25	Q24780	0/80	1		
			Q24781	0/80	1	3 lots	Pass
			Q24756	0/80	1	0/240	
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q24948	0/80	1		
			Q24757	0/80	1	4 lots	Pass
			Q24779	0/80	1		
			Q24778	0/80	1	0/320	
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q24800	0/86			
			Q24801	0/86		3 lots	Pass
			Q24802	0/86		0/258	
Test Group A - Accelerated Environment Stress Tests - ASECL 32 LQFP							
HAST	JA110 130°C, 85%RH Vcc=3.6V, 96 hours	3 lots, N=>25	Q22766	0/78	2		
			Q24781	0/80	2	3 lots	Pass
			Q24756	0/80	2	0/238	
Temp Cycle	JA104 Cond C: -65°C to 150°C 500 cycles	3 lots, N=>25	Q22767	0/78	2		
			Q22672	0/80	2	3 lots	Pass
			Q22771	0/80	2	0/238	
HTSL	JA103 150°C, 1000hr	3 lots, N=>25	Q24800	0/86			
			Q24801	0/86		3 lots	Pass
			Q24802	0/86		0/258	
Test Group B - Accelerated Lifetime Simulation Tests							
HTOL	JA108 125°C, Dynamic Vcc=3.6V, 1000 hours	3 lots, N=>77	Q24659	0/80			
			Q24837	0/80		3 lots	Pass
			Q24847	0/80		0/240	
LTOL	JA108 -10°C, Dynamic Vcc=3.6V, 1000 hours	1 lot, N=>32	Q24891	0/80			
			Q24838	0/35		2 lots	Pass
ELFR	JA108 125°C, Dynamic Vcc=3.6V, 48 hours	3 lots, N=>500	Q24824	0/500			
			Q24825	0/500			
			Q24834	0/500		4 lots	Pass
			Q37218	0/504	3	0/2004	
Flash Retention - TSMC	20k Cycles, 150°C, 1000hr		W91687	0/77	4		
			W91692	0/77	4	3 lots	Pass
			W91695	0/77	4	0/231	
Flash Retention - Ambient Endurance	JA108, 20k Cycles at 25C 500hr Burn-In		Q25345	0/40			
			Q25341	0/40		3 lots	Pass
			Q25342	0/40		0/120	
Flash Retention - High Temp Endurance	JA117, 20k Cycles at 70C 10hr Bake at 150C		Q25344	0/40			
			Q25340	0/40		3 lots	Pass
			Q25343	0/40		0/120	

Approved by: Ramon Ponsones

1 of 2

Prepared on: 28-Apr-15

C8051F36x Qualification Report


W7101F1 - Product Qualification Plan and Report Record
Rev. G

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Part Rev C, TSMC Fabrication							
Test Group E - Electrical Verification							
ESD-HBM	JA114	1 lot, N=>3	Q24408	0/3		1 lot 0/3	3KV Pass
ESD-MM	JA115	1 lot, N=>3	Q24407	0/3		1 lot 0/3	200V Pass
ESD-CDM	JC101	1 lot, N=>3	Q37220 Q37266 Q37265	0/3 0/3 0/3	3 3 3	3 lots 0/9	2KV Pass
Latch Up	JESD78 ±150mA, 125C ±200mA, 25C	1 lot, N=>3	Q24406 Q25143	0/6 0/6		2 lots 0/12	Pass

Notes:

1. Parts are Pre-conditioned at MSL2/260°C
2. Parts are Pre-conditioned at MSL3/250°C
3. Qualified using revision C silicon
4. TSMC Flash Qualifications

This report applies to the following part numbers:				
C8051F360-C-GQ	C8051F362-C-GM	C8051F364-C-GQ	C8051F366-C-GQ	C8051F368-C-GQ
C8051F361-C-GQ	C8051F363-C-GQ	C8051F365-C-GM	C8051F367-C-GM	C8051F369-C-GM