



PRODUCT/PROCESS CHANGE NOTIFICATION

PCN MPA-LOG/06/1939
Notification Date 07/20/2006

**NEW CRYSTAL SUPPLIER QUALIFIED FOR ST S EMBEDDED
CRYSTAL PACKAGED SERIAL REAL-TIME CLOCKS**

LOG - ADV ANALOG/LOGIC

Table 1. Change Identification

Product Identification (Product Family/Commercial Product)	Serial RTCs - see attached for salestypes
Type of change	Package assembly material change
Reason for change	To ensure supply of crystals
Description of the change	STMicroelectronics has qualified a new supplier for crystals used in serial RTC s packaged in the SOX28 Embedded Crystal SOIC. In addition to KDS, ST will now be using Micro-Crystal for these devices as well. Besides the crystal, there are no other changes. The specifications remain the same with a maximum solder reflow temperature of 240 C and moisture sensitivity level 3.
Product Line(s) and/or Part Number(s)	See attached
Description of the Qualification Plan	See attached
Change Product Identification	Serial RTCs - see attached for salestypes
Manufacturing Location(s)	

Table 2. Change Implementation Schedule

Forecasted implementation date for change	20-Oct-2006
Forecasted availability date of samples for customer	14-Jul-2006
Forecasted date for STMicroelectronics change Qualification Plan results availability	14-Jul-2006
Estimated date of changed product first shipment	20-Oct-2006

Table 3. Change Responsibility

	Name	Signature	Date
Division Product Manager	Ruben Sonnino		Jul. 14 ,06
Division Q.A. Manager	Robert Winn		Jul. 14 ,06
Division Marketing Manager	Gary McDonagh		Jul. 14 ,06

Table 4. List of Attachments

Customer Part numbers list	
Qualification Plan results	



Customer Acknowledgement of Receipt		PCN MPA-LOG/06/1939
Please sign and return to STMicroelectronics Sales Office		Notification Date 07/20/2006
<input type="checkbox"/> Qualification Plan Denied <input type="checkbox"/> Qualification Plan Approved <input type="checkbox"/> Change Denied <input type="checkbox"/> Change Approved	Name:	
	Title:	
	Company:	
	Date:	
	Signature:	
Remark		




PROCESS CHANGE NOTIFICATION

PCN MPA-LOG/06/1939

NEW CRYSTAL SUPPLIER QUALIFIED FOR ST'S EMBEDDED CRYSTAL PACKAGED SERIAL REAL-TIME CLOCKS

STMicroelectronics has qualified a new supplier for crystals used in serial RTC's packaged in the SOX28 Embedded Crystal SOIC. In addition to KDS, ST will now be using Micro-Crystal for these devices as well. Besides the crystal, there are no other changes. The specifications remain the same with a maximum solder reflow temperature of 240°C and moisture sensitivity level 3.

The following embedded crystal serial RTC salestypes are affected:

M41ST85WMX6	M41ST87WMX6	M41ST95WMX6	 SOX28
M41ST85WMX6TR	M41ST87WMX6TR	M41ST95WMX6TR	
	M41ST87YMX6		
	M41ST87YMX6TR		

The new crystal is a Micro-Crystal MS3V-T1R and is RoHS compliant. Likewise, the SOX28 package containing it is RoHS compliant.

WHY?

To ensure production capacity in the face of increasing demand.

WHEN?

Production parts containing the Micro-Crystals could begin shipping as soon as October 20, 2006. Samples are available now. A qualification report is available now and is attached.

HOW WAS CHANGE QUALIFIED?

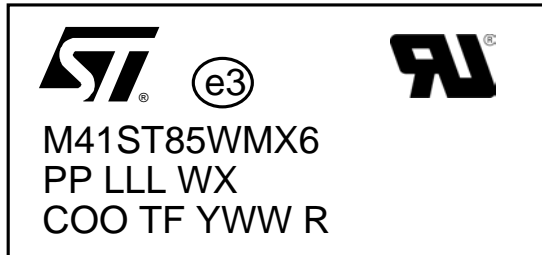
Qualification was conducted in accordance with STMicroelectronics Corporate procedure. The report is available now and is attached.

IMPACT ESTIMATION AT USER'S SIDE

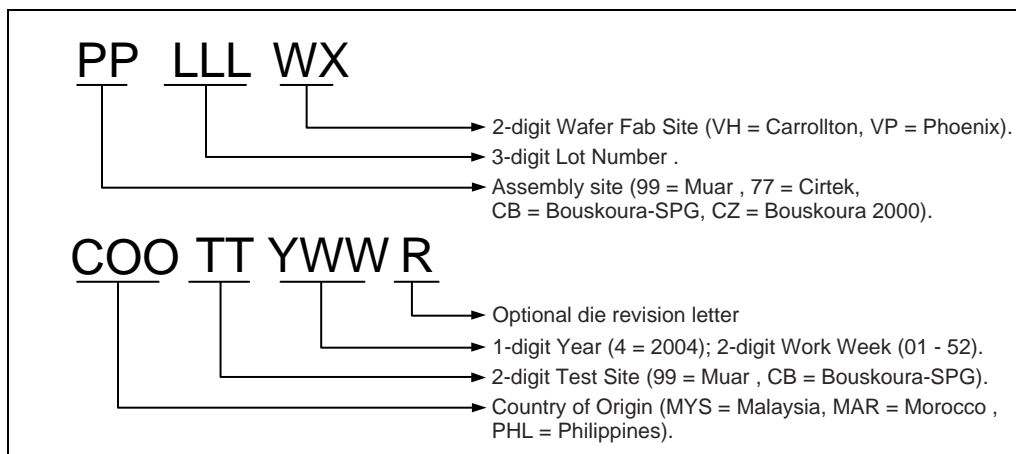
The new crystal conforms to the same specifications for frequency, temperature and hermeticity. Hence users should see no differences in performance, manufacturability or operational life.

ABOUT TRACEABILITY

The devices are marked with a trace code which provides for tracking the exact revision. Top side marking of the devices is formatted as described below. The trace code can be used to determine the time and place of manufacture, and hence the material content including the crystal vendor.

Figure 1. Embedded Crystal SOX28 package

- First row is the ST logo followed by the e3 symbol and then the Underwriters Laboratories symbol. RoHS compliant parts can be identified by the e3 symbol.
- Second row of text is the part number.
- Third and fourth rows of text comprise the enhanced trace code, and are formatted as shown in Figure 2.

Figure 2. Enhanced trace code format



QRNV0602

Qualification report

Cirtek 18-Ld / 28 Ld lead free SOIC Embedded crystal package qualification

Introduction

This report summarizes the results from the 18-Ld SOIC and 28-Ld SOIC embedded crystal package qualification tests. The data taken for the 28-Ld SOIC 300 mil package used the KDS DT-14 crystal and the M41ST95W device. The data taken for the 18-Ld SOIC 300 mil package used the Micro Crystal MS3V-T1R crystal and the M41T56C64 device. Both crystals are RoHS compliant and can be used in either package.

ST recognizes that the quality of a product must be built-in during design, material procurement, manufacturing, and testing. Reliability must be demonstrated before the product is released for full mass production. The qualification of new products and the certification of new processes is a rigorous task undertaken by quality and reliability professionals to ensure stable products and processes capable of fully meeting customer requirements.

A key step in this activity is the Design Review where ST assures that:

- adequate and realistic product specifications have been developed;
- design and layout rules, as documented in the Design Rules Manual, have been followed;
- critical performance parameters and process variables have been identified;
- previously untested design techniques or manufacturing processes are recognized;
- manufacturability concerns are identified;
- comprehensive and efficient qualification programs are defined.

Product Qualifications are preformed for all new products. Qualifications are also done on existing products when there are major changes to the design or manufacturing. The tests performed are tailored to the parameters affected by the major change or the combinations of new die or new package to be evaluated. Ongoing testing will be conducted as part of our Product Monitoring Program in order to further monitor the production process.

Robert E. Winn,
Quality Assurance Manager,
Advanced Analog, RTC and NVRAM

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1 Reliability stress qualification results

Table 1. Temperature cycle

Temperature Cycle: -40°C to 125°C		
Package: 18-Ld SOIC Embedded crystal (MY)		
Device: M41T56C64		
Read point ⁽¹⁾	Sample size (3 lots)	Number of failures
1000 Cycles	180	0

1. Pre-condition level 3 at 240°C reflow performed prior to stress.

Table 2. Temperature and humidity biased

85°C/85% RH biased, 5.5V		
Package: 18-Ld SOIC embedded crystal (MY)		
Device: M41T56C64		
Read point ⁽¹⁾	Sample size (3 lots)	Number of failures
959 Hours	49	0

1. Pre-condition level 3 at 240°C reflow performed prior to stress.

Table 3. Temperature and humidity soak (H.A.S.T.)

130°C/85% RH soak		
Package: 18-Ld SOIC embedded crystal (MY)		
Device: M41T56C64		
Read point ⁽¹⁾	Sample size (3 lots)	Number of failures
192 Hours	45	0

1. Pre-condition Level 3 at 240°C reflow performed prior to stress.

Table 4. Supplemental package tests

Package: 18-Ld SOIC embedded crystal (MY)		
Device: M41T56C64		
Tests	Sample size (3 lots)	Number of failures
Dye penetrant	6	0
X-Ray	90	0
Physical Dimension	6	0

Table 5. Temperature cycle

Temperature cycle: -65°C to 150°C		
Package: 28-Ld SOIC embedded crystal (MX)		
Device: M41ST95W		
Read point ⁽¹⁾	Sample size (3 lots)	Number of failures
1000 Cycles	164	0

1. Pre-condition level 3 at 240°C reflow performed prior to stress.

Table 6. Temperature and humidity soak

85°C/85% RH biased, 3.6V		
Package: 28-Ld SOIC embedded crystal (MX)		
Device: M41ST95W		
Read point ⁽¹⁾	Sample size (3 lots)	Number of failures
959 Hours	80	0

1. Pre-condition level 3 at 240°C reflow performed prior to stress.

Table 7. Temperature and humidity soak (H.A.S.T.)

130°C/85% RH soak		
Package: 28-Ld SOIC embedded crystal (MX)		
Device: M41ST95W		
Read point ⁽¹⁾	Sample size (3 lots)	Number of failures
192 Hours	36	0

1. Pre-condition level 3 at 240°C reflow performed prior to stress.

Table 8. Supplemental package tests

Package: 28-Ld SOIC embedded crystal (MX)		
Device: M41ST95W		
Tests	Sample size (3 lots)	Number of failures
Dye penetrant	3	0
X-ray	6	0
Physical dimension	3	0
Crystal weld pulls	28	0
Storage, 50°C, 2 months	27	0
Adhesion of lead finish	30 leads	0
Resistance to solvents	12	0
Solderability Sn/Pb 220°C 16hrs 150°C bake Sn/Ag/Cu 245°C 16hrs 150°C bake Sn/Pb 220°C 8hrs steam age Sn/Ag/Cu 245°C 8hrs steam age	43 ⁽¹⁾	0

1. Samples split equally

2 Appendix A: product, assembly, and test information

Table 9. Product and assembly information

Package information	18-Ld SOIC (M41T56C64)	28-Ld SOIC (M41ST95W)
Lead frame pad size	94 mils x 135 mils	140 mils x 205 mils
Assembly site	Cirtek, Philippines	Cirtek, Philippines
Die attach adhesive	QMI168 Conductive QMI536 Non-conductive	Ablebond 84-1LMIS R4
Lead frame	Copper	Copper
Wire bonding	1.3 mils Gold Thermosonic	1.3 mils Gold Thermosonic
Molding compound	Sumitomo 6650RL	Sumitomo 6650RL
Cure conditions	No cure	No cure
Crystal	Micro crystal RoHS compliant	KDS DT-14 RoHS compliant
Lead finish	100% Sn	100% Sn
Moisture sensitivity level	Level 3, 240°C	Level 3, 240°C

Table 10. Test information

Testing	Test temperature	Test location
EWS M41T56 M41ST95W M24C64B	85°C 85°C 90°C / Bake / 25°C	Carrollton, Texas USA Carrollton, Texas USA Rousset, France
Final Test M41T56C64 M41ST95W	85°C and 25°C 25°C	Muar, Malaysia Muar, Malaysia
QA Test M41T56C64 M41ST95W	25°C 25°C	Muar, Malaysia

3 Revision history

Table 11. Revision history

Date	Revision	Description
11-Jul-2006	1	First edition

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