Product Change Notification

PCN No: MSS-23-1201-CCB-1101

Update to Si531x/2x/6x Jitter Attenuating Clock Recommended Crystals List

Notification Date: 12/15/2023

Qualification Data Availability Date: 12/15/2023

Notification Period: 90 days

Sample Availability Date: Not Applicable

Proposed First Ship Date for Change: 03/14/2024

Last Date of Manufacture of Unchanged Product: 12/31/2023

Dear Valued Skyworks Customer:

Please be advised that Skyworks Solutions Inc. is introducing the following product change(s):

Description and Scope of Change

Changes outlined in revision block of the respective Reference Manual.

Products Affected

SI5315A-C-GM; SI5315A-C-GMR; SI5315B-C-GM; SI5315B-C-GMR; SI5316-C-GM; SI5317A-C-GM; SI5317A-C-GMR; SI5317B-C-GM; SI5317B-C-GMR; SI5317C-C-GM; SI5317C-C-GMR; SI5317D-C-GM; SI5317D-C-GMR; SI5319B-C-GM; SI5319B-C-GMR; SI5319C-C-GM; SI5319C-C-GMR; SI5322-C-GMR; SI5323-C-GM; SI5323-C-GMR; SI5324A-C-GM; SI5324A-C-GMR; SI5324B-C-GM; SI5324B-C-GMR; SI5324C-C-GM; SI5324C-C-GMR; SI5324D-C-GM; SI5324D-C-GMR; SI5324E-C-GM; SI5324E-C-GMR; SI5325C-C-GM; SI5326A-C-GM; SI5326A-C-GMR; SI5326B-C-GM; SI5326B-C-GMR; SI5326C-C-GM; SI5326C-C-GMR; SI5327B-C-GM; SI5327B-C-GMR; SI5327C-C-GM; SI5327C-C-GMR; SI5327D-C-GM; SI5327D-C-GMR; SI5328B-C-GM; SI5328B-C-GMR; SI5328C-C-GM; SI5328C-C-GMR; SI5366-C-GQ; SI5368B-C-GQ; SI5368B-C-GQR; SI5368C-C-GQ; SI5368C-C-GQR; SI5369A-C-GQ; SI5369D-C-GQ; SI5369D-C-GQR

Method for Identifying Changed Product

Full product change traceability is maintained by: date code

Reason for Change

Added 114.285 MHz 3OT crystal R1, C0 Requirement plot, clarified covered devices and customer guidance.

Anticipated Impact on Form, Fit Function, Reliability, Durability, Quality or Safety

No customer impact is anticipated with this change; there is no change to form, fit, function, reliability, durability, quality or safety.

Qualification Plan Summary

Qualification not required; no change made to part

Launch Plan

Changes will be effective at the effectivity date of PCN. The attached document has been updated in advance of the PCN to allow for customer review of the changes.

Please contact your Skyworks customer service representative with any questions or comments regarding this change. If you are unsure whom to contact, please email Skyworks Change Management at Skyworks.CCB@Skyworksinc.com .

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REFERENCE MANUAL

Si531x/2x/6x Jitter Attenuating Clock Recommended Crystals List

The purpose of this document is to provide a list of crystals that are recommended for use with Skyworks high-performance jitter attenuators and clock multipliers utilizing third-generation DSPLL™ technology. In this document, the Si5315/16/17/19 will be referred to as the Si531x product family; the Si5322/23/24/25/26/27/28 will be referred to as the Si532x product family, and the Si5365/66/67/68/69 will be referred to as the Si536x product family. Changes to this document will be accompanied by a Process Change Notice (PCN).

Customers should qualify any reference device using their own internal standards and monitor specification compliance and quality of these devices over time. In circuit evaluation, it is recommended to verify that the reference meets all application requirements. For general information regarding crystal selection, see the "Si53xx Any-Frequency Precision Clocks Family Reference Manual".

Related Documentation

- Si53xx Reference Manual

Related Skyworks Devices

- Si5315/16/17/19
- Si5322/23/24/25/26/27/28
- Si5365/66/67/68/69

1. 40 MHz Crystals

The following is a list of 37 to 41 MHz fundamental mode crystals for the Si531x/2x/6x jitter attenuating clock product family, including the Si5315 and Si5327. All crystals are fundamental mode crystals in a small form factor 3.2 x 2.5 mm SMD package.

Table 1. 37 to 41 MHz Crystals[1]

Manufacturer	Frequency (MHz)	Part Number	Website	Stability (± ppm)	Accuracy (± ppm)
Abracon	40.00	ABM8-40.000MHZ-D2X-T	www.abracon.com	20	20
AVX	40.00	CX101F-040.000-H0445	www.avx.com	18	50
Connor-Winfield	40.00	CS-034-040.0M	www.conwin.com	50	50
CTS	40.00	403I35A40M00000	www.ctscorp.com	30	50
ECS	40.00	ECX-400-20-33-A-S-L-TR	www.ecsxtal.com	50	50
Epson	38.40	TSX-3225 38.4000MF10Z-AS3	www5.epsondevice.com/en/	10	10
Epson	40.00	TSX-3225 40.0000MF10Z-AC3	www5.epsondevice.com/en/	10	10
Hosonic	38.40	E3SB38.4000F10M33SI	www.hosonic.com	30	30
Hosonic	40.00	E3SB40.0000F10M33SI	www.hosonic.com	30	30
Mtron	40.00	M1253-6-J-M-08-40.0000MHz	www.mtronpti.com	30	50
NDK	40.00	NX3225SA-40.000000MHZ	www.ndk.com	50	50
Pletronics	40.00	SM10T-10-40.0M-20G1LK	www.pletronics.com	150	50
Taitien	40.00	XXBGGLNANF-40.000000	www.taitien.com	50	50
TXC	38.40	7M-38.400MAAJ-T	www.txccorp.com	30	30
TXC	40.00	7M-40.000MAAJ-T	www.txccorp.com	30	30

1. Skyworks has confirmed that the listed crystals meet internal specifications for the XA/XB interface. These crystals have been tested for functional and performance compatibility with the Si53xx family. For crystal technical support questions, please contact the crystal supplier.

2. 114.285 MHz Crystals

The following is a list of 114.285 MHz third-overtone crystals for the Si531x/2x/6x jitter-attenuating clock product family, excluding the Si5315 and Si5327 devices.

Table 2. 114.285 MHz Third-Overtone Crystals

Manufacturer	Part Number[1]	Website	Stability (± ppm)	Accuracy (± ppm)
Abracon	ABM8-116-114.285MHZ-T	www.abracon.com	20	20
AVX[2]	CX2016DB114M2P0HPLC1	http://www.kyocera-crystal.jp/eng/	20	20
Connor- Winfield	CS-023E[3]	www.conwin.com	20	20
Hosonic	E3SB114.285T00M33	www.hosonic.com	30	30
ILSI	ILCX13-114.285000M-2795	www.ilsamerica.com	20	20
NDK	EXS00A-CS00871	www.ndk.com	100	100
NDK	EXS00A-CS00997	www.ndk.com	20	20
NDK	EXS00A-CS06528	www.ndk.com	20	20
Pericom	FLB420004[4]	www.pericom.com	20	20
Rakon	514324	www.rakon.com	20	20
Rakon	513553	www.rakon.com	100	100
Taitien	S0242-X-003-3	www.taitien.com	20	20
TXC	7MA1470002	www.txc.com.tw	20	20
TXC	7MA1472001[5]	www.txc.com.tw	100	100
Vectron	VXM7-1074-114M285000	www.vectron.com	100	100
Vectron	VXM7-1191-114M285000	www.vectron.com	20	100

1. Skyworks has confirmed that the listed crystals meet internal specifications for the XA/XB interface. These crystals have been tested for functional and performance compatibility with the Si53xx family. For crystal technical support questions, please contact the crystal supplier.
2. The AVX crystal is a fundamental mode design as opposed to 3rd OT and is in a 2.0 x 1.6 mm package. All others are a third OT crystal in a 3.2 x 2.5 mm package.
3. Use CS-023E in place of CS-018 and CS-023.
4. Replaces FLB420001.
5. 7MA1472001 replaces 7MA1400014.

At the time each recommended 114.285 MHz third OT crystal was selected they met the specification for crystal motional resistance R1 versus shunt capacitance C0 plotted below. (Note that R1 may be referred to as ESR by some vendors on their data sheets.)

Crystal manufacturers reserve the right to change their crystal specifications at any time independently of this document. It is ultimately the responsibility of the crystal user to verify any crystal selected from this list still meets the specifications and requirements indicated in both the Skyworks device data sheet, as well as this Recommended Crystal document, before committing to use the selected crystal.

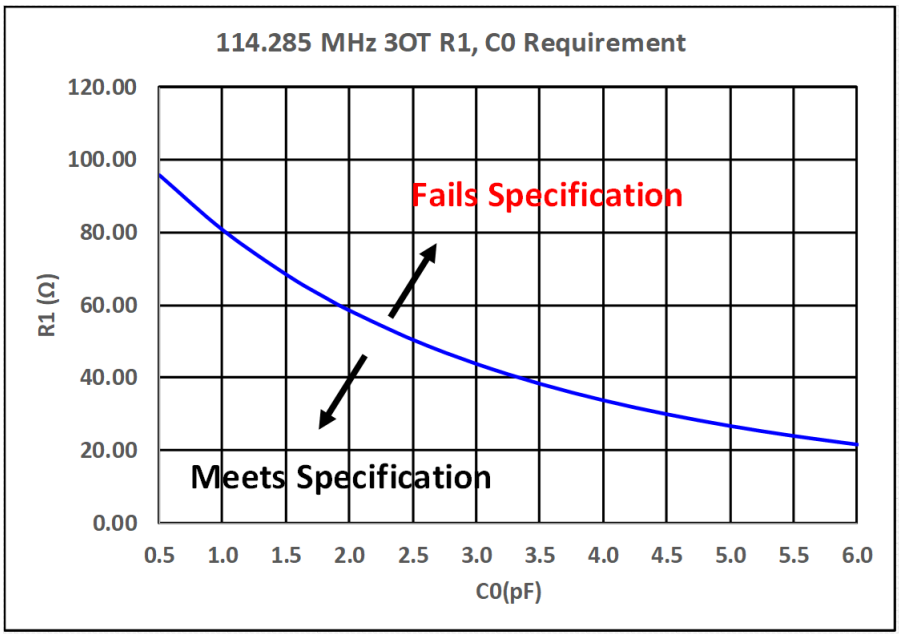

Figure 1. 114.285 MHz 3OT R1, C0 Requirement

3. Revision History

Revision	Date	Description
A	December, 2023	• Updated document revision number from decimal-based to alphanumeric code. • Added 114.285 MHz 3OT R1, C0 Requirement plot. • Clarified covered devices and customer guidance. • Corrected typos.
0.1	October, 2016	• Supersedes qualified crystal lists found in prior revisions of AN591 and Si53xx Family Reference Manual. • Changes versus AN591 (Revision 0.8) and Si53xx Family Reference Manual (Revision 1.2): - Added ILSI ILCX13-114.285T00M33 to the list of recommended 114.285 MHz crystals. - Removed Pericom FLB420001. - Removed Siward XTL573200NLG-114.285 MHz-OR - Removed Mtron M1253S071. - TXC 7MA1472001 replaces 7MA1400014 per supplier recommendation.

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