Freescale Semiconductor
Engineering Bulletin

i.MX 6 Series Crystal Drive (24 MHz)

1 Update to reported crystal drive level

This bulletin discusses drive level of 24-MHz crystals selected for use with the i.MX 6 series. A crystal is selected based on several parameters provided by the crystal supplier such that the crystal maximum drive level is not violated.

As indicated in the Rev. 0 releases of the i.MX 6 series datasheets, as well as in Chapter 1, "Oscillator and clock recommendations," of the *Hardware Development Guide for i.MX 6Quad, 6Dual, 6DualLite, 6Solo Families of Applications Processors* (IMX6DQ6SDLHDG), there is a change in the guidance on drive level presented to the 24-MHz crystal on the i.MX 6 series. The previous recommended crystal maximum drive level rating was stated as 100 µW with no associated parameters; the new drive level is 200 or 250 µW. With careful crystal selection per this bulletin's calculator, a 100-µW crystal may still be used.

If the crystal is overdriven, the potential failure effect is not immediately obvious. The crystal can either fail over time or its operating frequency can be affected.

The crystal shown in Table 1 has been used on Freescale development boards at 25°C.

Table 1. Crystal to Consider[1]

Manufacturer	Part Number	Package	Maximum Drive
Epson Toyocom	TSX-3225 24.0000MF 15X-AC3	3.2 x 2.5 mm	200 µW

[1] Freescale cannot recommend one supplier over another and does not suggest that this is the only crystal supplier.

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2 Power Calculator

The attached Power Calculator can be used as an aid for proper crystal selection. If you do not see this file listed in a side or bottom pane, click on the paper-clip icon in your PDF viewer to navigate to this attachment.

To minimize crystal drive level, the balance of load capacitance (CL1, CL2), motional resistance (Rs), and case capacitance (C0) must be kept low. 5 pF is used for examples of C0 in the calculator. Users should contact their supplier to verify C0 per their preferred package.

3 Revision History

This table provides a revision history for this document.

Table 3. Document Revision History

Rev. Number	Date	Substantive Change(s)
0	11/2012	Initial release.

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