
AMD Geode™ SP4SC40 System Platform 27 MHz Crystal Solutions



1.0 Scope

In silicon revision A3 (and earlier) of the AMD Geode™ SC1100 processor, a known issue (issue #6.7) exists regarding the 27 MHz on-chip amplifier. This document discusses rework options for the AMD Geode™ SP4SC40 system platform boards shipped with silicon revision A3 (or earlier) of the SC1100 processor. This issue does not exist in silicon revision B1 of the SC1100 processor.

2.0 Discussion

The 27 MHz on-chip amplifier is too sensitive to the clock waveform generated by the external crystal oscillator circuit. Jitter of the 27 MHz clock signal can result in system instability.

AMD strongly recommends using an external 27 MHz clock oscillator component instead of a crystal. The oscillator should be powered by V_{IO} and connected to the X27I ball (ball AF10). Leave the X27O ball (ball AE10) unconnected.

2.1 Rework Options

The 27 MHz crystal issue is process-related and may not appear on all devices, therefore you may wish to continue development without the rework described below.

Rework Option #1: (SMD oscillator)

Remove the 27 MHz crystal and associated components, and add a 4-pin 5x7 mm ceramic SMD oscillator.

Wire pin 3 of the oscillator to pin 1 (farthest from processor) of Y1 (crystal footprint).

Wire pins 1 and 4 of the oscillator to pin 3 of D4 (FET) for V_{IO} power connection.

Wire pin 2 of the oscillator to pin 2 of C122 for ground connection.

No load R87, R91, C106, and C117.

Add a 0.1 μ F capacitor between pins 2 and 4 of the oscillator.

Rework Option #2: (TH oscillator):

Remove the 27 MHz crystal and associated components, and add a half-size (8-pin DIP) square can oscillator.

Wire pin 5 of the oscillator to pin 1 (farthest from processor) of Y1 (crystal footprint).

Wire pins 1 and 8 of the oscillator to pin 3 of D4 (FET) for V_{IO} power connection.

Wire pin 4 of the oscillator to pin 2 of C122 for ground connection.

No load R87, R91, C106, and C117.

Add a 0.1 μ F capacitor between pins 1 and 2 of the oscillator.

Rework Option #3: (Board return)

If you do not wish to perform an above mentioned rework procedure, contact your local AMD sales office or Field Applications Engineer.

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