Dr. William J. Schmidt

From:	AmateurRadioBuilders@groups.io on behalf of Rod Gatehouse <indigostatus@gmail.com>
Sent:	Saturday, October 21, 2023 9:54 AM
To:	AmateurRadioBuilders@groups.io
Subject:	[AmateurRadioBuilders] Digital RF Attenuator - PE4302 and PE4312

Bill,

I use the PE4312 to control the TX Drive in my 2022 SDR Transceiver. The implementation was per the PE4312 Datasheet, including the 10K resistors in the C16 and Data lines: "A 10 kΩ resistor on the inputs to pin 1 and 3 (see Figure 26) will eliminate package resonance between the RF input pin and the two digital inputs." I operate the PE4312 in direct parallel programming mode similar to your 64-dB RF Attenuator Board. The performance was erratic and I couldn't always achieve maximum attenuation.

In the course of researching this problem, I came across pSemi Application Note an60. The application note is titled "**Replacing PE4302 with PE4312**" and includes the following statements:

- The Peregrine PE4312 is a pin-compatible upgraded version of the PE4302 with higher linearity, improved attenuation accuracy and faster switching speed. *Although it was designed to be pin-for-pin compatible with PE4302 there are some subtle differences that should be considered when using PE4312 as a direct replacement.*

- The PE4302 application circuit contained two resistors in the C16 and DATA lines....*The PE4312 does not need resistors on the C16 or the DATA line and it is preferable to remove them or reduce the values so the logic threshold levels are met.*

The second point above from the Application Note is in direct contradiction with the PE4312 Datasheet. Replacing the 10K Ohm resistors with 100 Ohm resistors solved my problem.

The need for the 10K Ohm resistors with the PE4312 was touched on briefly in an older thread, however, it appears leaving them in with the PE4312 may lead to erratic behavior. Anyone substituting PE4312 for PE4302 in your 64-dB RF Attenuator Board should be aware of this.

73,

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