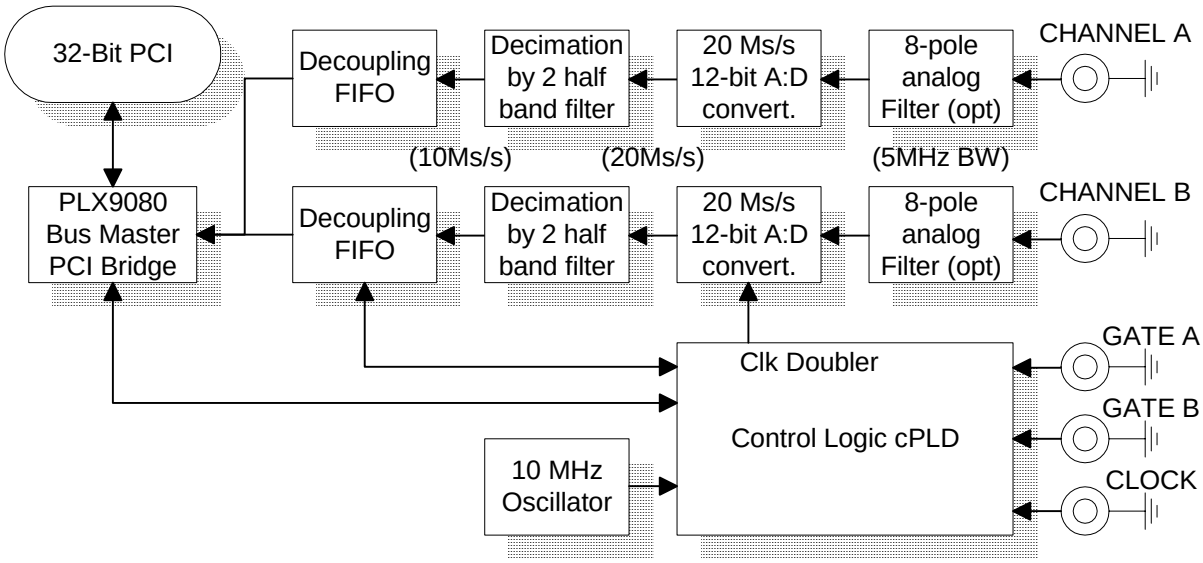
2-Channel, 12-bit, 10 Ms/s A:D converter w/antialiasing filter



The 2-channel, 12-bit, 10Ms/s A:D converter provides a high performance data acquisition system on a single-wide PCI Mezzanine Card form-factor.

Two bi-polar single-ended analog inputs are passed through analog filters to provide initial band limiting. Signals are then 12-bit sampled at 20 Ms/s ("Fs"). Accordingly, the Nyquist frequency is 10 Mhz (Fs/2), so the analog filter is designed for a 5 Mhz (Fs/4) bandwidth, resulting in substantial attenuation at 10 Mhz adequate to reduce and/or remove aliasing artifacts in the digital data.

The 20 Ms/s digital output of each 12-bitA:D converter is passed through a decimation by 2 function which effectively reduces the sample rate to 10 Ms/s. The combination of the decimation function and the analog filter at the front end ("decimation filter") results in the ideal maximal utilizable bandwidth (in this case 5 Mhz) for the objective sample rate (10 Ms/s) with minimal aliasing.

Output of the decimation filters are presented to small FIFOs which decouple continuous 10 Ms/s data from each channel from transient loads on the PCI bus.

The digital data is in a 16-bit signed-integer format. When both channels are operating simultaneously, the load on the PCI bus is 40 Mb/s, which is easily accommodated by typical host processor designs. The PLX 9080 provides independent bus-mastering DMA channels for each analog channel.

A variety of analog filters are available: Butterworth, Chebyshev, and Elliptical. An 8-pole Butterworth offers uniform bass-band but only 48dB attenuation at Fs/2. Alternately, an 8-pole Chebyshev provides 70 dB attenuation at Fs/2 — removing all aliasing possibilities — but has a small pass-band ripple which needs to be tolerated/compensated by the application. Phase and delay characteristics may also need consideration when selecting a filter.

Analog input range is set by resistors on the board in combination with the analog filter. Full scale input swings can range anywhere from +/-0.2V to +/-12V. Resistive input impedance is also controlled by a resistor on the board for each input. These parameters are specified by the customer upon order placement.

The analog inputs are presented to the board via two SMB-style connectors. Three other SMB connectors accept TTL-level inputs for a trigger (each channel) and an external clock (one for both channels). For applications not providing an external clock, an on-board 10Mhz crystal may be software selected.

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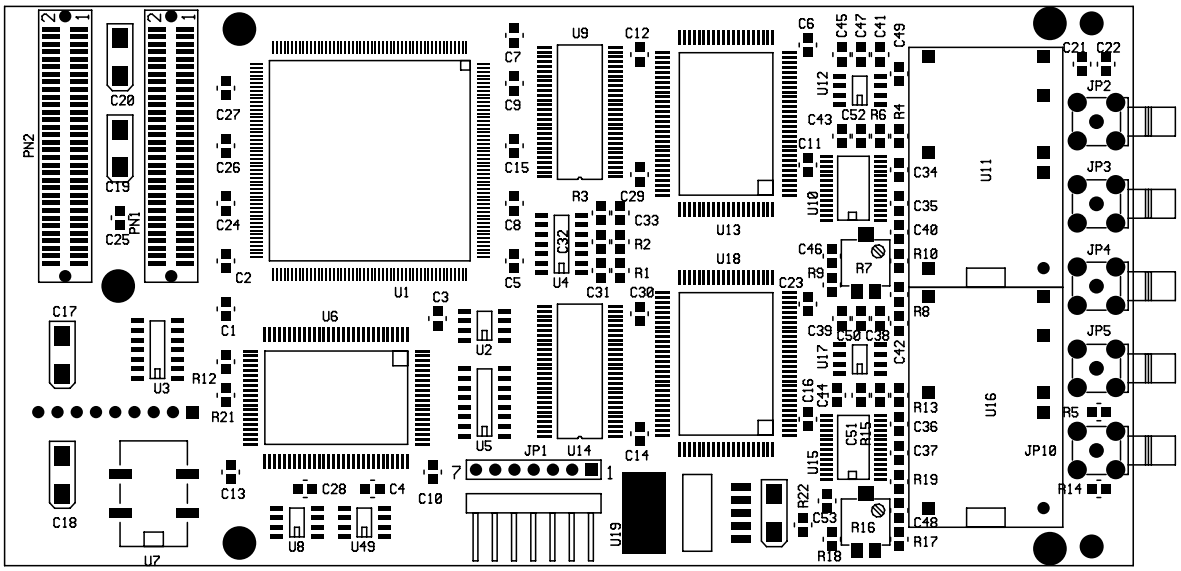

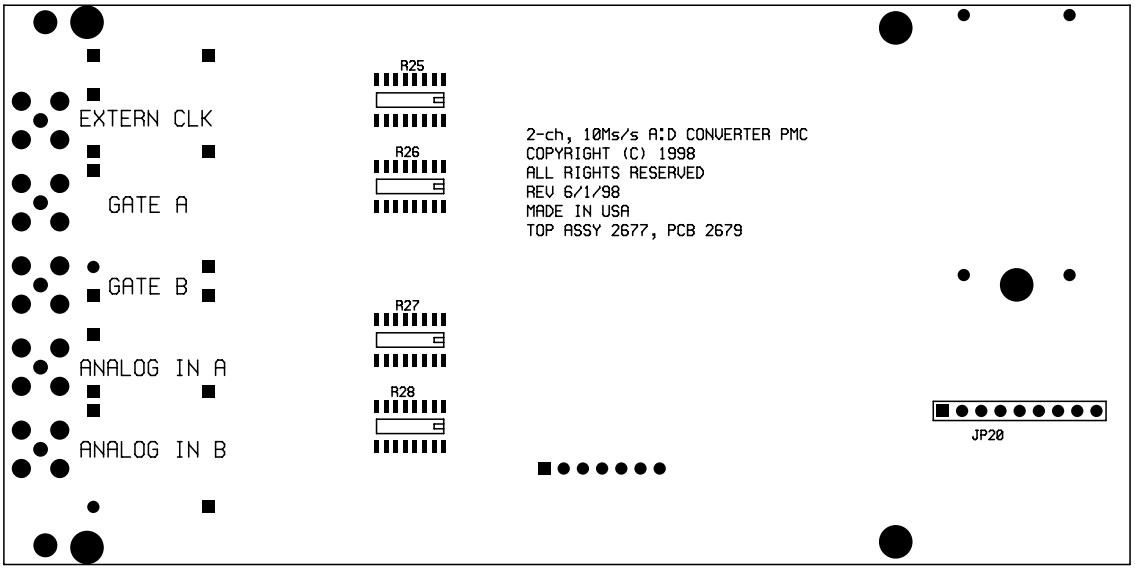

Product Summary

Technobox Part Number:	2677
Typical Power Dissipation:	TBD watts
Power Supplies Required:	+5, +12, -12
PCI Signaling Environment:	5 Volt