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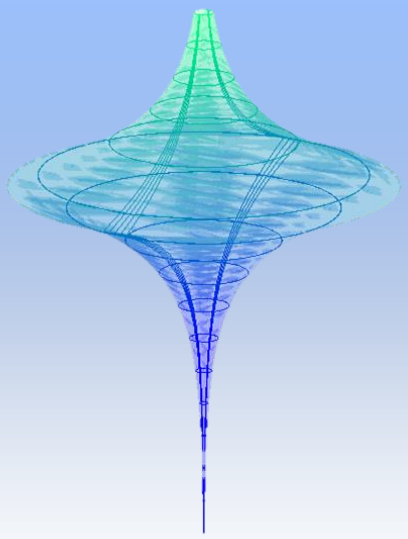
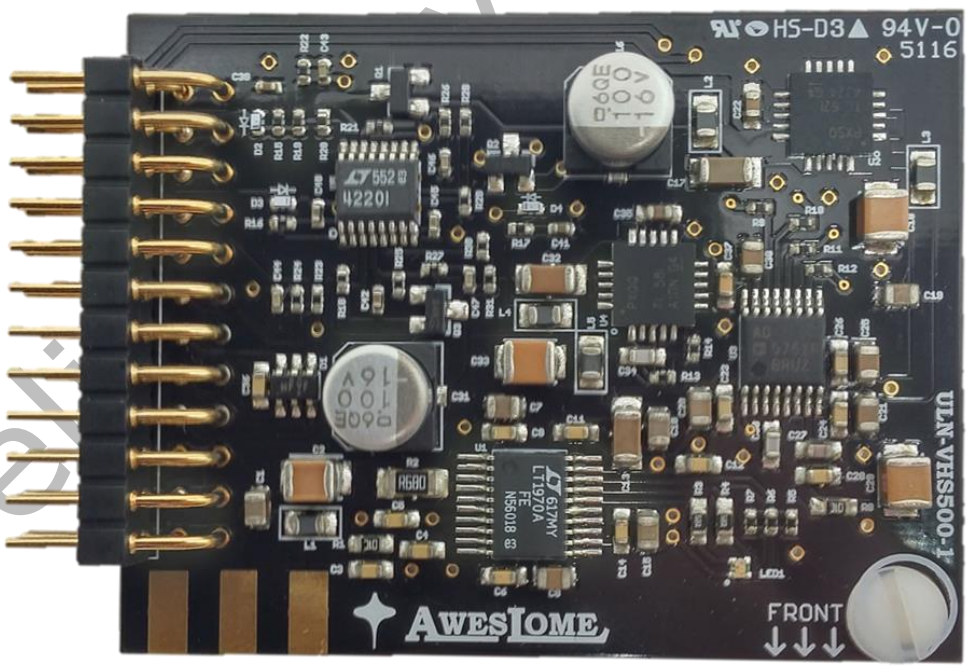


ULN-VHS500-1

Ultra Low Noise Voltage Reference Generator

Preliminary Datasheet



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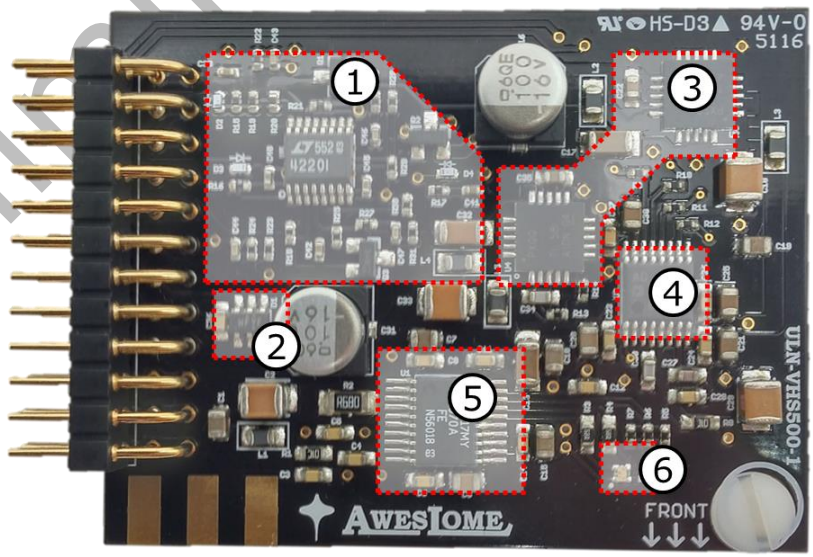
■ Description

The ULN-VHS500-1 is a daughter board that provides a single software programmable ultra low noise voltage reference for the AL-PHSXXX series motherboards. The board includes:

1. Hot-swap connector for supply ESD protection and power-on soft starting*
2. ESD protection circuit for digital signals
3. Low noise ± LDOs
4. Low-noise DAC
5. Output buffer
6. Status & Error LED

Figure 1



* Hot-swap circuitry is not intended or rated for attaching/detaching the child card with the motherboard while power is supplied to the motherboard. It is only included as a failsafe in such occurrences as well as provide ESD protection from the supply and prevent power-on transients at the output from effecting sensitive loads.

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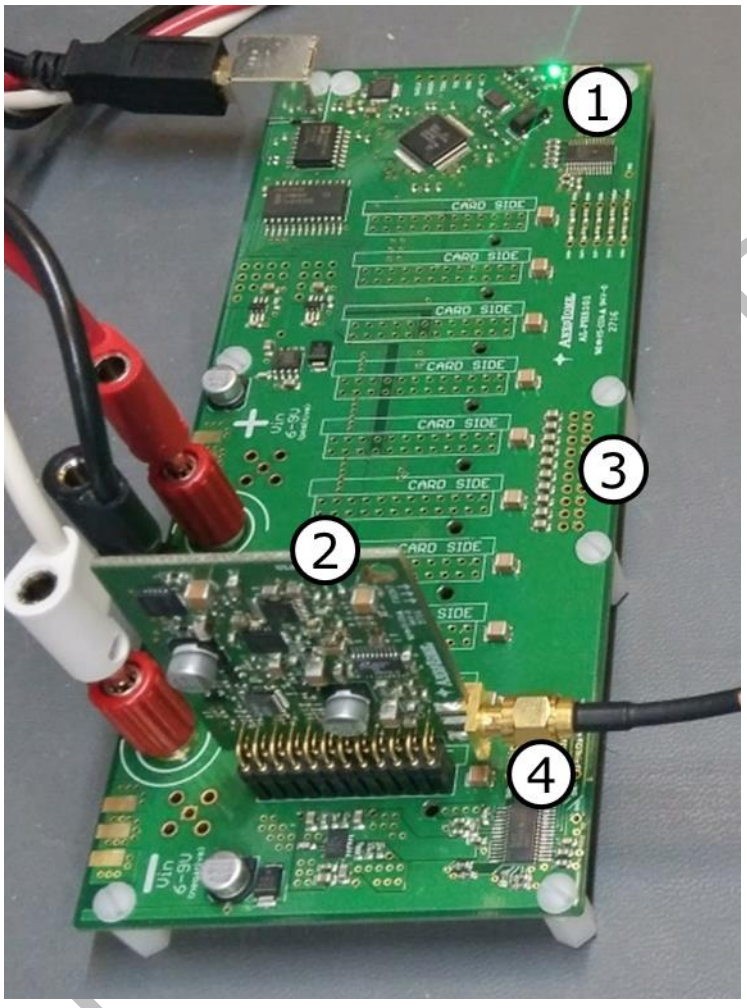
■ Compatible Motherboards

The ULN-VHS500-1 is designed to connect to a AL-PHSXXX motherboard's standard 24-pin connector as shown in figure 2. The voltage reference supplied by the ULN-VHS500-1 will be available at both the edge-launch SMA connection on the ULN-VHS500-1 and the corresponding output channel of the AL-PHSXXX. The output voltage is also connected to the respective ADC channel's V+ input and ground is connected to the respective channel's V- input allowing a AL-PHSXXX motherboard to measure the output voltage. A typical connection with a LA-PHS101 motherboard is shown in figure 2.

Figure 2



1. AL-PHS101 motherboard
2. ULN-VHS500-1 daughterboard
3. Parent header (not populated)
4. Child board SMA (populated)

Datasheet

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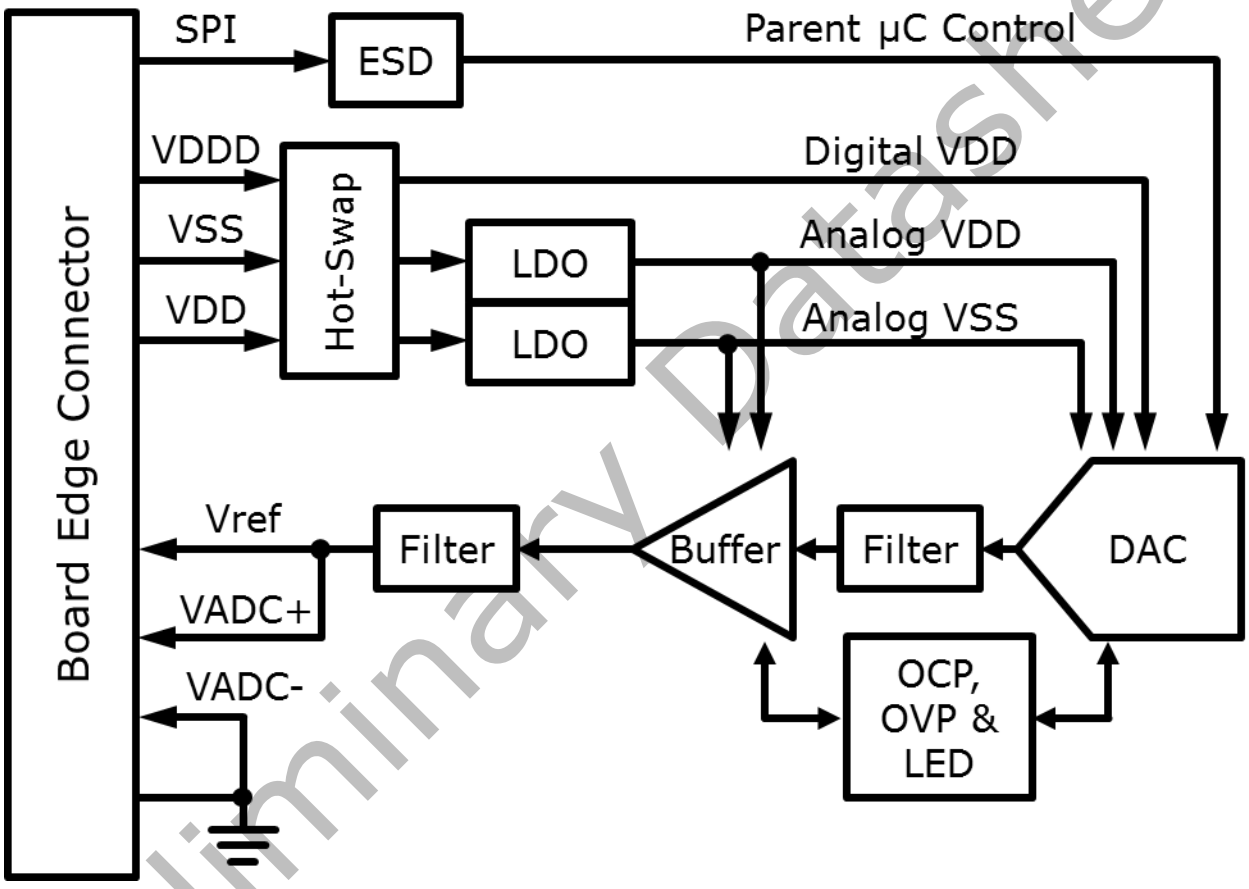
■ Functional Block Diagram

The functional diagram in figure 3 shows the fundamental circuit blocks and filters used in the ULN-VHS500-1. Each supply is heavily decoupled at every node in the power regulation sub-circuits, both to ground and between differential supplies where applicable. This helps ensure the ultra-low noise performance by significantly reducing noise coupling from the supplies in addition to the already high PSRR of the active components.

Figure 3



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