Figure 84: LPCOMP block diagram

8.12.1 Operation

The LPCOMP peripheral compares an input voltage (VIN+) from an analog input pin selected via the PSEL register, against a reference voltage (VIN-) selected via registers REFSEL on page 358 and EXTREFSEL.

The PSEL, REFSEL, and EXTREFSEL registers must be configured before LPCOMP is enabled through the ENABLE register.

The HYST register allows enabling an optional hysteresis in the comparator core. This hysteresis prevents noise on the signal, which would create unwanted events. The following figure illustrates the effect of an active hysteresis on a noisy input signal. It is disabled by default, and must be configured before enabling LPCOMP.
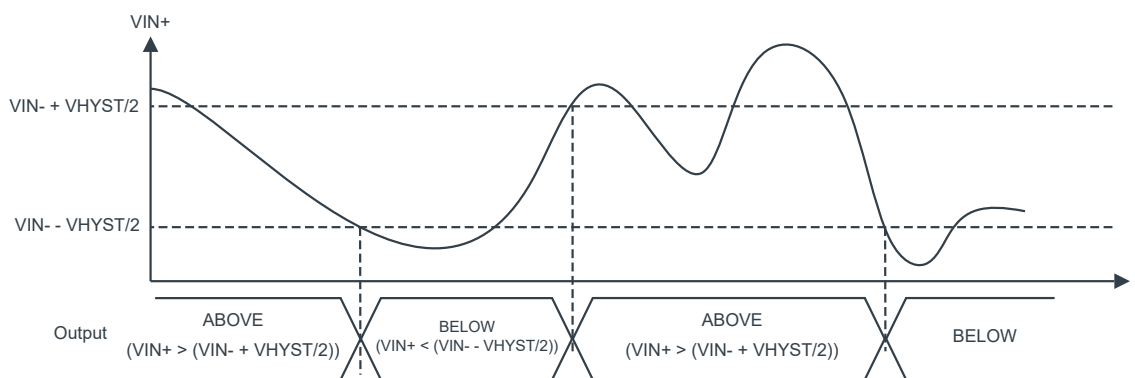

Figure 85: Effect of hysteresis on a noisy input signal

LPCOMP is started by triggering the START task. After a startup time of $t_{LPCOMP,STARTUP}$, LPCOMP generates a READY event to indicate that the comparator is ready to use and the output of LPCOMP is correct. LPCOMP generates events every time VIN+ crosses VIN-. More specifically, every time VIN+ rises above VIN- (upward crossing), an UP event and CROSS event are generated. Every time VIN+ falls below VIN- (downward crossing), a DOWN event and CROSS event are generated. When hysteresis is enabled, the upward crossing level becomes $VIN\text{-} + VHYST/2$, and the downward crossing level becomes $VIN\text{-} - VHYST/2$.

LPCOMP is stopped by triggering the STOP task.

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SEMICONDUCTOR