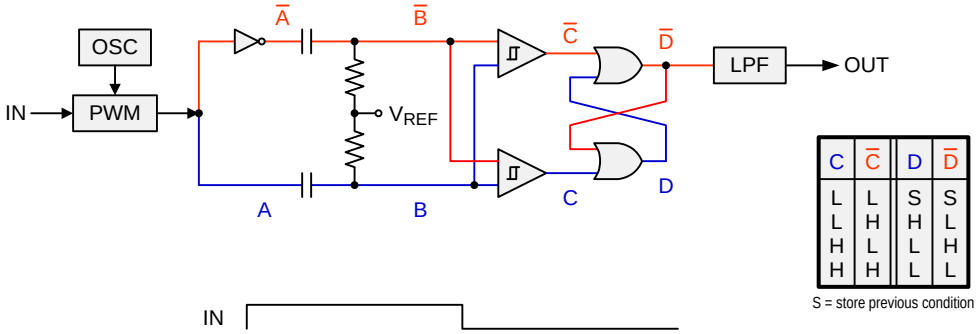
**The ISO5500 internal Isolation Channel**

The figure below shows the internal isolation channel of the ISO5500 and its waveforms at specific points of the signal path. The single-ended input signal is pulse-width modulated with a high-frequency carrier such, that a High-level yields a 90:10 duty cycle and a Low level at 10:90 duty cycle and then split into the differential signal components A and /A. Each signal component is then differentiated into the transients B and /B. The following comparators compare the differential transients to another. As long as the positive input of a comparator is on higher potential than its negative input, the comparator output will present a logical High, thus converting an input transient into a short output pulse.

The output pulses set and reset a NOR-gate flip-flop. From the truth table we see that the NOR-gate configuration presents an inverting flip-flop, meaning that a High at input C sets output /D to High, and a High at /C sets D to High. Because the comparator output pulses are of short duration, there will be times where both outputs are low. During this time, the flip-flop stores its previous output condition. Since the signal at /D is in phase with the input signal, /D is the input for the following R-C low-pass filter, which removes the high-frequency PWM carrier in order to provide the correct output signal.




| C | $\overline{C}$ | D | $\overline{D}$ |
|---|---|---|---|
| L | L | S | S |
| L | H | H | L |
| H | L | L | H |
| H | H | L | L |

S = store previous condition