



Voltage Level Translator

Description

Basic voltage level translator utilizes a voltage comparator to translate an input voltage range into an output voltage range. First step is to determine the input voltage range, which involves an input low voltage level $V_{IN(low)}$ and an input high voltage level, $V_{IN(high)}$. Next step is to figure out the proper reference voltage level, at V_{REF} . In many cases V_{REF} can be simply midpoint between $V_{IN(low)}$ and $V_{IN(high)}$. In other cases, one may want to skew the V_{REF} voltage level towards either $V_{IN(low)}$ or $V_{IN(high)}$. In this example, the output voltage range is simple ground and $V+$, which also represent output voltage that range from rail to rail. For logic circuit type of voltage level translator, V_{REF} could be set to 1.4V for TTL logic voltages, and $V+/2$ for CMOS logic voltages. Note that this circuit utilizes an open drain voltage comparator, which requires a pull-up resistor to $V+$. This pull-up resistor can be readily replaced by diode(s), zener diode, or a combination of resistors and diodes or zener diode to change the $V_{OUT(high)}$ voltage level. Similarly, these components can also be employed to set $V_{OUT(low)}$ voltage levels. Hence by using an open drain voltage comparator it is simpler and easier to modify both $V_{OUT(low)}$ and $V_{OUT(high)}$ voltage levels.

For full schematic diagram and notes, please register and login at aldinc.com