

### 3.2 Boolean Algebra

Boolean algebra is an algebra for the manipulation of objects that take on only two values.

Boolean Value	Significance
0	False
1	True

#### High and Low Voltage Values for Digital Signals

Ideally, only two voltage values would be present in digital circuits, a low value representing a zero (0) – false, and a high level representing a one (1) true.

For Transistor-Transistor-Logic (TTL) high and low states are shown in the diagrams below.

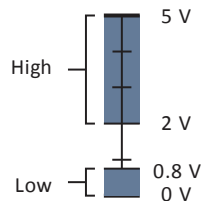


Figure 3.3-1  
Acceptable TTL gate input signal levels

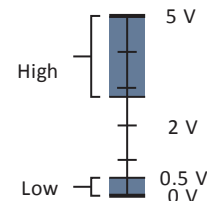


Figure 3.3-2  
Acceptable TTL gate output signal levels

For Complementary Metal-Oxide-Semiconductor (CMOS) high and low states are shown below.

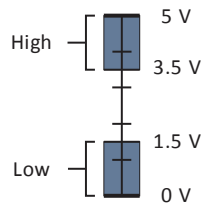


Figure 3.3-3  
Acceptable CMOS gate input signal levels

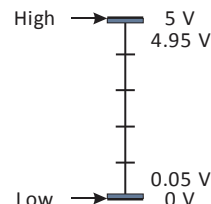


Figure 3.3-4  
Acceptable CMOS gate output signal levels