

The IO's has an internal structure as shown below. There are protection diodes as shown in the figure 1

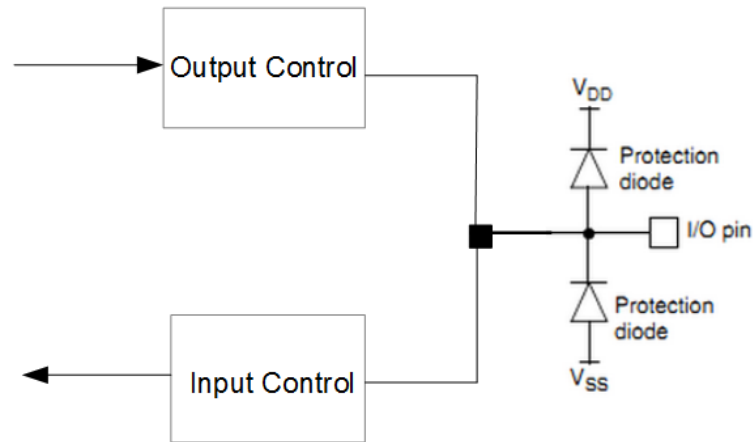


Figure 1

In a situation in which the  $V_{DD}$  and  $V_{SS}$  is not connected and we apply an input in the IO, the paths as shown in Figure 2 will be present for current flow and it will draw current.

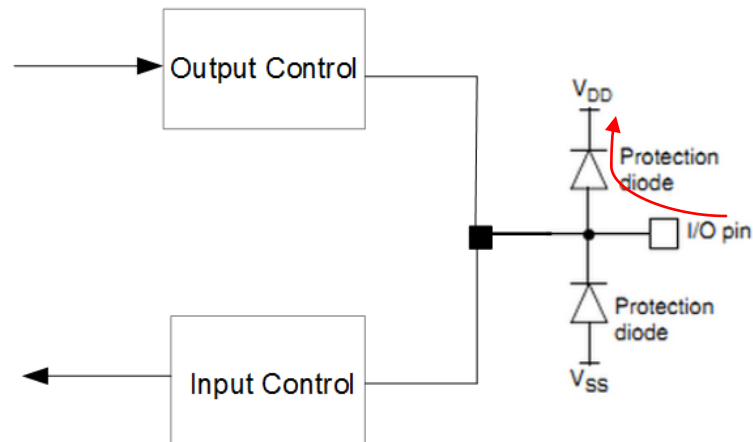


Figure 2

This situation will render the device damaged. Its recommended to avoid the situation in the design. This condition is mentioned in the maximum ratings table in the datasheet (pasted below for convenience)

## Maximum Ratings

Exceeding maximum ratings may shorten the useful life of the device. These user guidelines are not tested.

Storage temperature ..... -55 °C to +125 °C

Maximum junction temperature ..... 95 °C

Supply voltage on  $V_{DD}$  relative to  $V_{SS}$  ..... -1.0 V to +4.5 V

Voltage applied to outputs

in High Z state ..... -0.5 V to  $V_{DD} + 0.5$  V

Input voltage ..... -1.0 V to +4.5 V and  $V_{IN} < V_{DD} + 1.0$  V

Transient voltage (< 20 ns) on

any pin to ground potential ..... -2.0 V to  $V_{CC} + 2.0$  V

Package power dissipation

capability ( $T_A = 25$  °C) ..... 1.0 W

Surface mount Pb soldering

temperature (3 seconds) ..... +260 °C

DC output current (1 output at a time, 1s duration) .... 15 mA

Static discharge voltage

Human Body Model (AEC-Q100-002 Rev. E) ..... 2 kV

Charged Device Model (AEC-Q100-011 Rev. B) .. 1.25 kV

Machine Model (AEC-Q100-003 Rev. E) ..... 200 V

Latch-up current ..... > 140 mA

## Operating Range

Range	Ambient Temperature ( $T_A$ )	$V_{DD}$
Industrial	-40 °C to +85 °C	2.0 V to 3.6 V

Figure 3

So in the current situation the  $V_{DD}=0$  and  $V_{IN} > 1V$ . Hence the condition that  $V_{IN} < V_{DD} + 1.0V$  is violated.

Please always drive the IO lines after powering up the device for reliable operation.