

1.2V – 3.3V GPIO, 3.3V OPEN-DRAIN IO IN TSMC 110nm TECHNOLOGY

A TSMC 110nm Wirebond IO library with 1.2 - 3.3V Fail-Safe GPIO, 3.3V I2C open-drain, SPI, and associated ESD.

SUMMARY

This library is particularly tailored to address gaps in the native foundry IO offerings for this node. It features a 1.2V-3.3V GPIO with selectable drive strengths and optional internal 100K ohm pull-up or pull-down resistor and a selectable Schmitt trigger. The ODIO mode targets the official I2C standard at 3.3V. Cells for IO & core power and ground with built-in ESD are included. The library is enriched with feed-through, filler, corner, and domain-break cells to allow for flexible padding constructions. ESD design levels are 2kV HBM and 500V CDM.

OPERATING CONDITIONS

Parameter Value

<i>VDDIO</i>	1.2V, 1.8V, or 3.3V dynamic
<i>Core VDD</i>	1.2V
<i>Tj</i>	-40°C to 125°C
<i>Max_Load</i>	75pF, 300pF ODIO

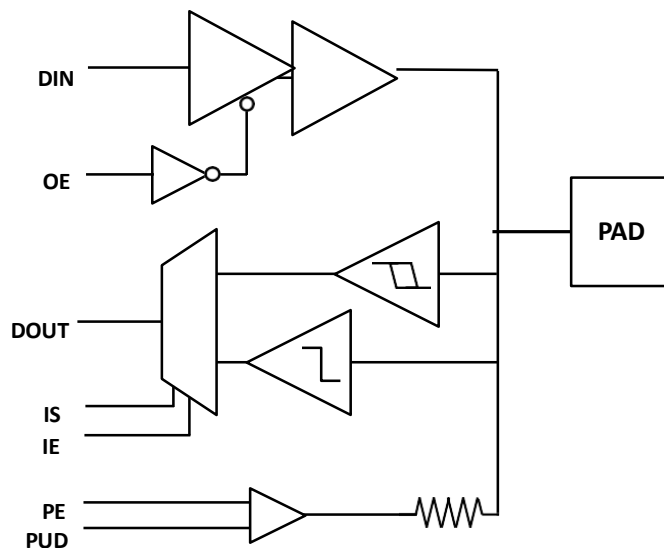
CELL SIZE & METAL STACK

<i>Cell size</i>	<i>Metal Stack</i>	<i>WireBond Pitch</i>
100x220um	7M_6x1z	140um single

LIBRARY CELL SUMMARY

<i>Cell Type</i>	<i>Feature</i>
<i>Supply / ESD</i>	3.3V; 1.2V; GND
<i>GPIO</i>	100MHz (@75pF)
<i>I2C Open-drain</i>	3.3V
<i>OTP</i>	3.3V programming gate cell
<i>Break cells</i>	VDDIO, VDD
<i>Filler cells</i>	1um, 5um digital & analog

GPIO BLOCK DIAGRAM



GPIO FEATURES

- Extended operational temperature range (-40°C to 125°C)
- Sleep retention mode (not shown)
- Built-in regulation PMOS device
- Independent output and input enable / disable¹
- Selectable Schmitt trigger receiver
- Selectable 100KΩ pull-up or pull-down resistor
- ESD: 2KV HBM, 500V CDM¹

Certus also supports IO libraries in the following TSMC nodes: 180nm, 130nm, 65nm, 55nm, 45/40nm, 28nm, 22nm, 16/12nm. Additional Certus libraries are available across technologies supported by Global Foundries & Samsung. Certus is particularly suited at providing custom variants in a cost-efficient framework. Feel free to inquire for supplementary physical or electrical features to suit your needs.

1. CDM rating is a function of package size. Rating shown is for nominal packages. Certus IOs typically handle 10-20A Peak CDM currents, depending on IO type.