

CSM110: 3.3V GPIO



Libraries

| Name | Process | Form Factor | Silicon proven |
|------------------------|---------|-------------|----------------|
| RGO_CSM110_33V_NOM_30C | NOM | staggered | yes |
| RGO_CSM110_33V_NOM_50C | NOM | Inline | yes |

Summary

A full range of power pads is provided to enable the system designer different options for separate core power (VDD and VSS) and separate I/O padding power and ground (DVDD and DVSS). The ability to isolate separate power domains is also provided. In addition, the I/O library has a full complement of cells that provide the user with the ability to isolate analog I/O's and power within the same padding as the digital I/O's.

Includes:

- Programmable GPIO
- Programmable 5V-tolerant GPIO
- Input buffer
- Power supplies
- Isolated analog power supplies
- Full complement of support pads

ESD Protection

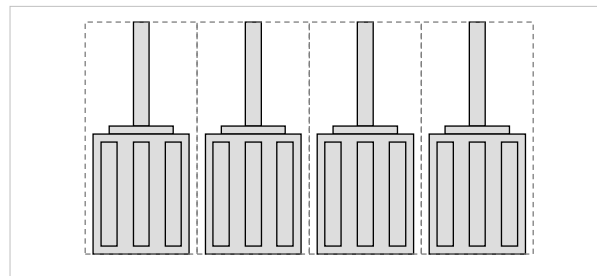
I/O pads are designed with robust ESD protection for all market segments. Passed:

- 2KV ESD Human Body Model (HBM)
- 200 V ESD Machine Model (MM)
- 500 V ESD Charge Device Model (CDM)

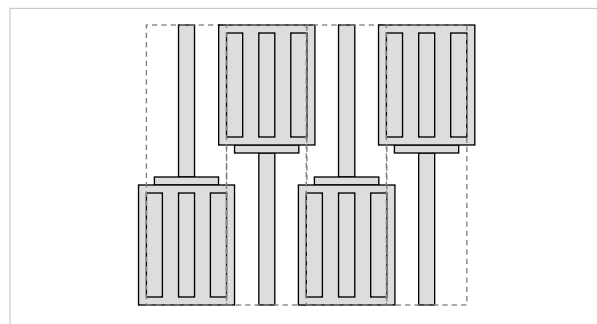
Form factor

Libraries are offered in both inline (core-limited) and staggered (pad limited) configurations.

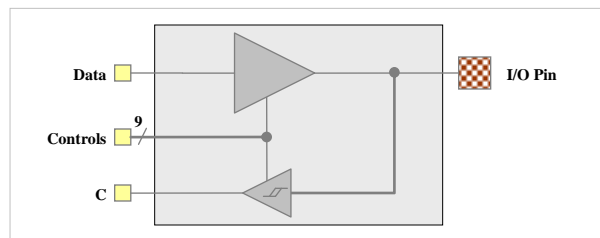
Inline (core-limited) – 50µm x 125µm



Staggered (pad-limited) – 30µm x 182µm



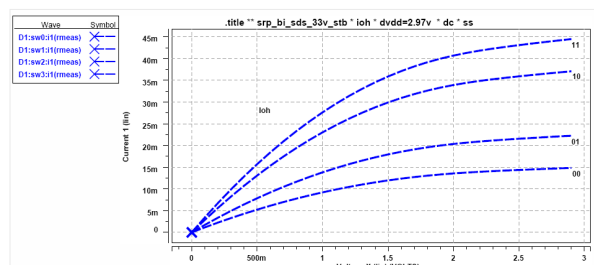
SRx_BI_SDS_33V_STB



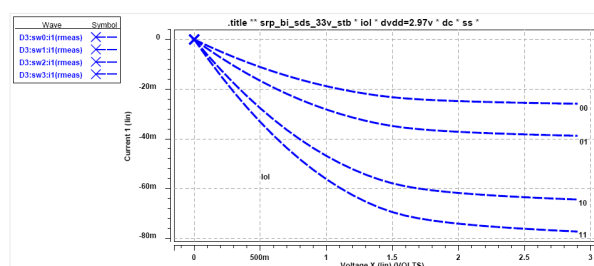
Description

SRx_BI_SDS_33V_STB is programmable, multi-voltage (1.8V, 2.5V, 3.3V) general purpose, bi-directional I/O buffer with a selectable LVCMOS input or LVCMOS Schmitt trigger input and programmable pull-up / pull-down. In the full-drive mode, this buffer can operate in excess of 100MHz frequency with 15pF external load and 125 MHz with 10pF load, but actual frequency is load and system dependent. A maximum of 200 MHz can be achieved under small capacitive loads.

I_{OH} (DVDD = 2.97V, SS)



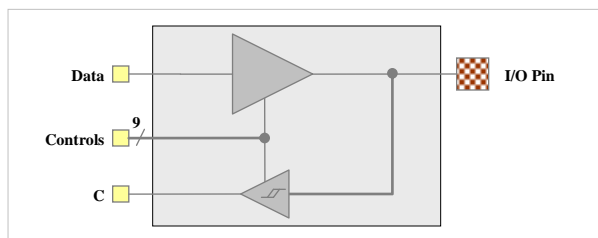
I_{OL} (DVDD = 2.97V, SS)



CSM110: 3.3V GPIO



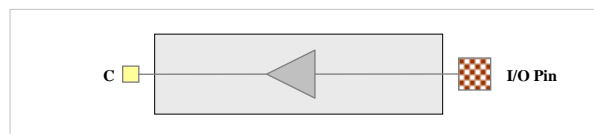
SRx_BI_SDS_5T_STB



Description

SRx_BI_SDS_5T_STB is programmable, multi-voltage (1.8V, 2.5V, 3.3V), 5V-tolerant, general purpose, bi-directional I/O buffer with a selectable LVCMOS input or LVCMOS Schmitt trigger input and programmable pull-up / pull-down. In the full-drive mode, this buffer can operate in excess of 100MHz frequency with 15pF external load and 125 MHz with 10pF load, but actual frequency is load and system dependent. A maximum of 200 MHz can be achieved under small capacitive loads.

STx_IN_001_33V_NC / STx_IN_001_5T_NC



Description

STx_IN_001_33V_NC is an input pad; STx_IN_001_5T_NC is a 5V-tolerant input pad.

Other pads

| Type | Total cells |
|------------------------------|-------------|
| Power pads | 8 |
| Analog (isolated) power pads | 4 |
| Spacers / corners | 6 |

Recommended operating conditions

| Description | Min | Nom | Max | Units |
|--|-------------------------|-----|-------------------------|-------|
| V _{DVDD} I/O supply voltage | 2.97 | 3.3 | 3.63 | V |
| | 2.25 | 2.5 | 2.50 | V |
| | 1.62 | 1.8 | 1.98 | V |
| T _A Ambient operating temperature | 0 | 25 | 100 | °C |
| V _{VDD} Core supply voltage | 1.08 | 1.2 | 1.32 | V |
| T _J Junction temperature | -40 | 25 | 125 | °C |
| V _{PAD} Voltage at PAD | 0 | - | V _{DVDD} | V |
| V _{IH} Input logic high | 0.7 * V _{DVDD} | | V _{DVDD} + 0.3 | V |
| V _{IL} Input logic low | V _{DVSS} - 0.3 | | 0.3 * V _{DVDD} | V |

Characterization Corners

| Nominal VDD | Model | VDD | DVDD ^[1] | Temperature |
|-------------|-------|---------|---------------------|-------------|
| 1.2 | FF | +10% | +10% | -40°C |
| | FF | +10% | +10% | 125°C |
| | TT | nominal | nominal | 25°C |
| | SS | -10% | -10% | -40°C |
| | SS | -10% | -10% | 125°C |

^[1] DVDD = 1.8, 2.5, and 3.3V

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Aragio Solutions
 2201 K Avenue
 Section B Suite 200
 Plano, TX 75074-5918
 Phone: (972) 516-0999
 Fax: (972) 516-0998
 Web: <http://www.aragio.com/>

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