

## Libraries

Name	Process	Form Factor
RGO_TSMC07_18V18_7FF_20C	7FF	Staggered
RGO_TSMC07_18V18_7FF_45C	7FF	Inline

## Summary

The 1.8V GPIO library provides general purpose bidirectional I/O cells. These programmable, multi-voltage I/O's give the system designer the flexibility to design to a wide range of performance targets.

These 7nm libraries are available in inline and staggered flip chip implementations.

To design a functional I/O power domain with these cells, an additional library is required – 1.8V Support: Power. That library contains an input-only buffer, isolated analog I/O, and a full complement of power cells along with corner and spacer cells to assemble a complete pad ring by abutment. An included rail splitter allows multiple power domains to be isolated in the same pad ring while maintaining continuous VDD/VSS for robust ESD protection.

### ESD Protection:

- JEDEC compliant
  - 2KV ESD Human Body Model (HBM)
  - 500 V ESD Charge Device Model (CDM)

### Latch-up Immunity:

- JEDEC compliant
  - Tested to I-Test criteria of  $\pm 100\text{mA}$  @ 125°C

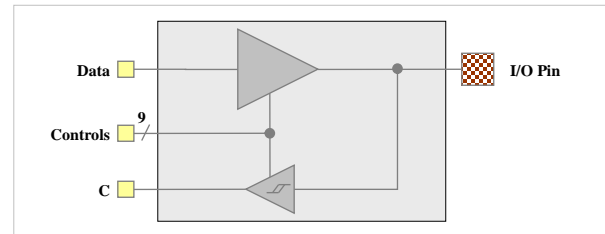
## Cell Size & Form Factor

- Staggered (pad-limited) – 17.04 $\mu\text{m}$  x 191.28 $\mu\text{m}$
- Inline (core-limited) – TBD $\mu\text{m}$  x TBD $\mu\text{m}$

## Recommended operating conditions

Description	Min	Nom	Max	Units
V <sub>VDD</sub> Core supply voltage	0.675	0.75	0.825	V
	0.765	0.85	0.935	V
	1.62	1.8	1.98	V
V <sub>DVDD</sub> I/O supply voltage	1.35	1.5	1.65	V
	1.08	1.2	1.32	V
T <sub>J</sub> Junction temperature	-40	25	125	°C
V <sub>PAD</sub> Voltage at PAD	V <sub>DVSS</sub> -0.3	-	V <sub>DVDD</sub> +0.3	V

## SRx\_BI\_SDS\_18V\_STB



## Bidirectional GPIO Driver Features

- Multi-Voltage (1.2V, 1.5V, 1.8V)
- LVCMOS / LVTTTL input with selectable hysteresis
- Programmable drive strength (rated 2mA to 12mA)
- Selectable output slew rate
- Optimized for EMC with SSO factor of 8
- Open-drain output mode
- Programmable input options (pull-up/pull-down/repeater)
- Power-On Start (POS) capable
- Power sequencing independent design with Power-On Control

In full-drive mode, this driver can operate to frequencies in excess of 100MHz with 15pF external load and 125 MHz with 10pF load. Actual frequency limits are load and system dependent. A maximum of 200 MHz can be achieved under small capacitive loads.

Vertical-only (\_V) and horizontal-only (\_H) variants provided.

## Characterization Corners \*

Model	LPE Type	VDD [1]	DVDD [2]	Temp
FF	Cbest_CCbest	+10%	+10%	-40°C
FF	Cbest_CCbest	+10%	+10%	125°C
TT	Ctypical	nominal	nominal	25°C
TT	Ctypical	nominal	nominal	85°C
SS	Cworst_CCworst	-10%	-10%	-40°C
SS	Cworst_CCworst	-10%	-10%	125°C

[1] VDD = 0.75V & 0.85V

[2] DVDD = 1.2V, 1.5V & 1.8V

\* PRELIMINARY

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