GF28: 2.5V GPIO

Libraries

Name	Process	Form Factor
RGO_GF28_18V25_SLP_20C	SLP	staggered
RGO_GF28_18V25_SLP_40C	SLP	Inline
RGO_GF28_18V25_HPP_20C	HPP	staggered
RGO_GF28_18V25_HPP_40C	HPP	Inline
RGO_GF28_18V25_SLP_20C_FT	SLP	staggered
RGO_GF28_18V25_SLP_40C_FT	SLP	Inline
RGO_GF28_18V25_HPP_20C_FT	HPP	staggered
RGO_GF28_18V25_HPP_40C_FT	HPP	Inline

Summary

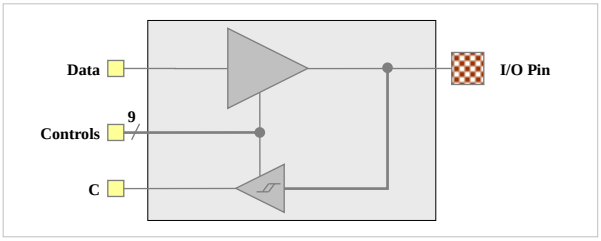
The 2.5V General Purpose I/O library provides bidirectional I/O, isolated analog I/O, and a full complement of power cells along with corner and spacer cells to assemble a complete pad ring by abutment. An included rail splitter allows multiple power domains to be isolated in the same pad ring while maintaining continuous VDD/VSS for robust ESD protection.

- Programmable bidirectional GPIO
- Fault-tolerant programmable bidirectional GPIO
- Input-only buffer
- Isolated analog I/O
- Full complement of power, corner, and spacer cells
- Oscillators

ESD Protection:

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

SRx_BI_SDS_25V_STB / FRx_BI_SDS_25V_STB



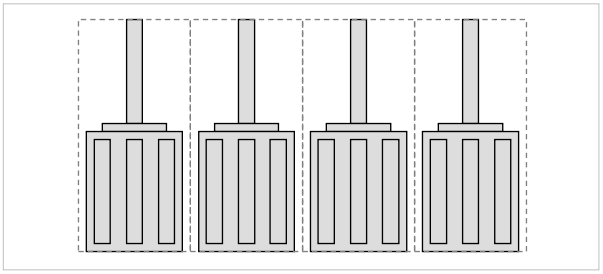
Bidirectional GPIO Driver Features

- Multi-Voltage (1.5V, 1.8V, 2.5V)
- LVCMOS / LVTTL 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

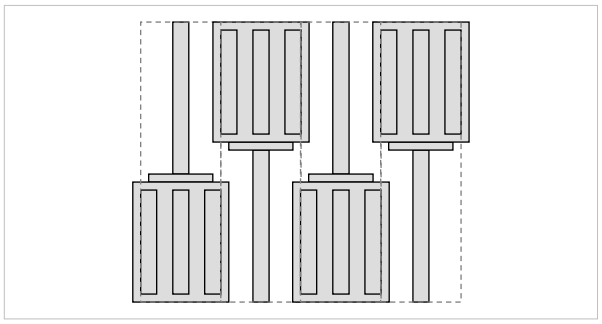
In full-drive mode, this driver can operate to frequencies in excess of 100MHz with 15pF external load and 125 MHz with 10pF load. Actual frequency limits are load and system dependent. A maximum of 200 MHz can be achieved under small capacitive loads.

Cell Sizes & Form Factor

Inline (core-limited) – 40µm x 58µm [*]



Staggered (pad-limited) – 20µm x 117µm [*]



Recommended operating conditions

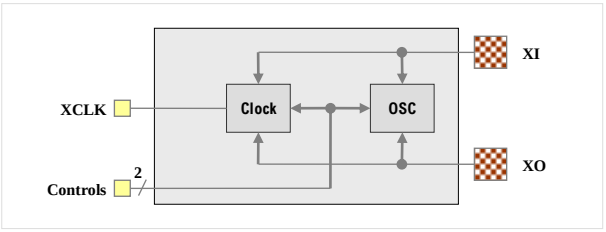
	Description		Min	Nom	Max	Units
V_{VDD}	Core supply voltage	SLP	0.90	1.0	1.10	V
			0.99	1.1	1.155	V
		HPP	0.765	0.85	0.935	V
			0.81	0.9	0.945	V
V_{DVDD}	I/O supply voltage		2.25	2.5	2.75	V
			1.62	1.8	1.98	V
			1.35	1.5	1.65	V
T_J	Junction temperature		-40	25	125	°C
V_{PAD}	Voltage at PAD		0	-	V_{DVDD}	V

[*]Pad Sizes

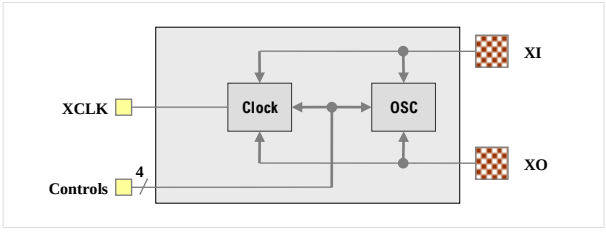
Pad	Width	Height
SRP_BI_SDS_25V_STB	25	128
FRP_BI_SDS_25V_STB	25	140
SRC_BI_SDS_25V_STB	40	82
FRC_BI_SDS_25V_STB	40	92

GF28: 2.5V GPIO

OSx_BI_032_25V



OSx_BI_100_25V



32 KHz RTC Oscillator Features

- Designed to use a 32.768 kHz external crystal for Real Time Clock applications.
- Optimized for low power, stability and minimum jitter
- Characterized with crystal loading capacitors ranging from 4 pF to 25 pF.
- Power-down and bypass modes
- Speed-up circuitry for fast startup
- Low power (2.6 µW maximum)
- Operates on core power only (VDD/VSS cells embedded)

100 MHz Programmable Oscillator Features

- Programmable drive strength for wider frequency range – 1 MHz to > 100 MHz using industry standard external crystals.
- Optimized for stability and minimum jitter
- Power-down and bypass modes
- Operates on core power only (VDD/VSS cells embedded)

Oscillator libraries are shipped separately.

Characterization Corners

Nominal VDD	Model	VDD	DVDD[1]	Temperature
1.1 (SLP)	FF	+5%	+10%	-40°C
	FF	+5%	+10%	125°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
1.0 (SLP)	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
0.9 (HPP)	FF	+5%	+10%	-40°C
	FF	+5%	+10%	125°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
0.85 (HPP)	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 = 1.5, 1.8 and 2.5V

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