

GF28: 1.8V GPIO



Libraries

Name	Process	Form Factor	Silicon proven
RGO_GF28_18V18_SLP_20C	SLP	Staggered	yes
RGO_GF28_18V18_SLP_40C	SLP	Inline	yes
RGO_GF28_18V18_HPP_20C	HPP	Staggered	yes
RGO_GF28_18V18_HPP_40C	HPP	Inline	yes
RGO_GF28_18V18_SLP_20C_FT	SLP	Staggered	yes
RGO_GF28_18V18_SLP_40C_FT	SLP	Inline	yes
RGO_GF28_18V18_HPP_20C_FT	HPP	Staggered	yes
RGO_GF28_18V18_HPP_40C_FT	HPP	Inline	yes

Summary

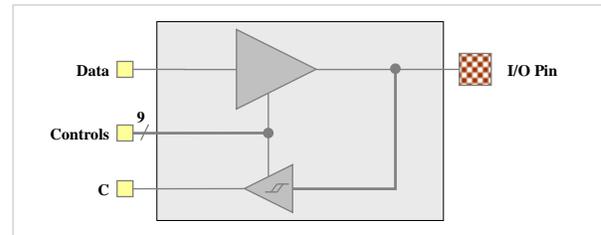
The 1.8V General Purpose I/O library provides bidirectional I/O, isolated analog I/O, and a full complement of power cells along with corner and spacer cells to assemble a complete pad ring by abutment. An included rail splitter allows multiple power domains to be isolated in the same pad ring while 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_18V_STB / FRx_BI_SDS_18V_STB



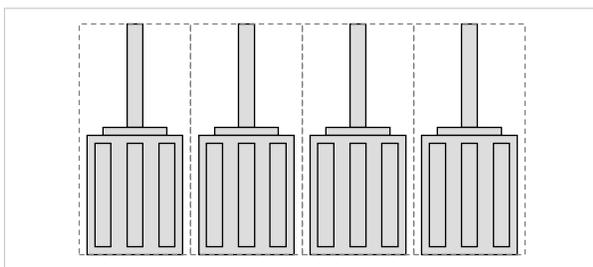
Bidirectional GPIO Driver Features

- Multi-Voltage (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

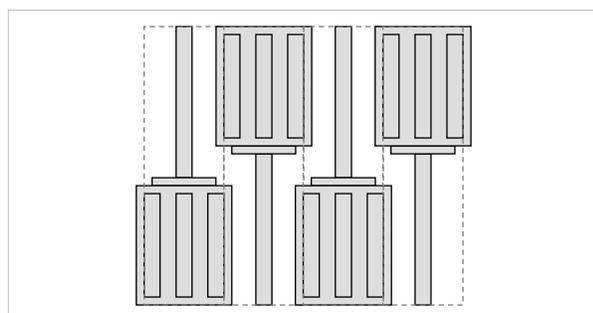
In full-drive mode, this driver can operate to frequencies in excess of 100MHz with 15pF external load and 125 MHz with 10pF load. Actual frequency limits are load and system dependent. A maximum of 200 MHz can be achieved under small capacitive loads.

Cell Sizes & Form Factor

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



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



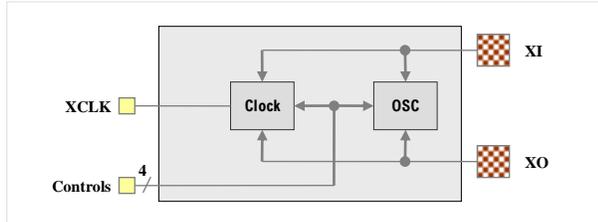
Recommended operating conditions

Description	Min	Nom	Max	Units	
V_{DD} 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_{DDDD} I/O supply voltage	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_{DDDD}	V	

[*]Pad Sizes

Pad	Width	Height
SRP_BI_SDS_18V_STB	20	117
FRP_BI_SDS_18V_STB	20	120
SRC_BI_SDS_18V_STB	40	58
FRC_BI_SDS_18V_STB	40	60

OSx_BI_100_18V



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 I/O and core power (DVDD/DVSS 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
1.0 (SLP)	SS	-10%	-10%	125°C
	FF	+10%	+10%	-40°C
	FF	+10%	+10%	125°C
	TT	nominal	nominal	25°C
0.9 (HPP)	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
	FF	+5%	+10%	-40°C
	FF	+5%	+10%	125°C
0.85 (HPP)	TT	nominal	nominal	25°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
	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 and 1.8V

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