GF40: 3.3V GPIO (5VT)

Libraries

Name	Process	Form Factor
RGO_GF40_25V33_LP_20C_5VT	LP	Staggered CUP
RGO_GF40_25V33_LP_40C_5VT	LP	Inline CUP

Summary

The 3.3V General Purpose I/O (5VT) library provides programmable bidirectional I/O's that are both 5V tolerant and fault tolerant.

The I/O's are provided in a standard width variant and in a wider variant that includes an ESD event triggered SCR for those clients that require 200V Machine Model ESD protection.

ESD Protection:

- JEDEC compliant (JESD47)
  - 2KV ESD Human Body Model (HBM)
  - 500V ESD Charge Device Model (CDM)

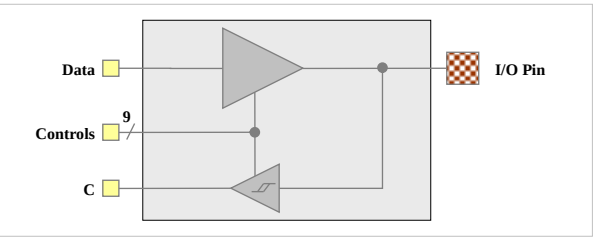
Machine Model ESD Protection:

Machine Model (MM) is not a requirement for ESD qualification of IC's per JESD47. For customers that still request it, Aragio provides the ESD SCR variant of the 5VT GPIO that passes the 200V qualification test as defined in JESD22-A115C. The non-SCR variant passes 100V.

Latch-up Immunity:

- JEDEC compliant (JESD78D)
  - Tested to I-Test criteria of ± 100mA @ 125°C

FRx_BI_SDS_5T_STB /_SCR



Bidirectional GPIO Driver Features

- Fault tolerant operation – no current flow @ DVDD = 0V
- 5V tolerant @ 3.3V operation
- Multi-Voltage (1.8V, 2.5V, 3.3V)
- 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.

Recommended operating conditions

	Description	Min	Nom	Max	Units
V_{VDD}	Core supply voltage	0.90	1.0	1.10	V
		0.99	1.1	1.21	V
		1.08	1.2	1.26	V
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_J	Junction temperature	-40	25	125	°C
V_{PAD}	Voltage at PAD	0	-	V_{DVDD}	V

Physical sizes

Pad name	Width	Height[*]	Units
FRP_BI_SDS_5T_STB	46	180	µm
FRP_BI_SDS_5T_STB_SCR	52	180	µm
FRC_BI_SDS_5T_STB	60	110	µm
FRC_BI_SDS_5T_STB_SCR	79	110	µm

Characterization Corners

Nominal VDD	Model	VDD	DVDD[1]	Temperature
1.2	FF	+5%	+10%	-40°C
	FFF	+5%	+10%	125°C
	FFF	+5%	+10%	150°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
	SS	-10%	-10%	150°C
1.1	FF	+10%	+10%	-40°C
	FFF	+10%	+10%	125°C
	FFF	+10%	+10%	150°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
	SS	-10%	-10%	150°C
1.0	FF	+10%	+10%	-40°C
	FFF	+10%	+10%	125°C
	FFF	+10%	+10%	150°C
	TT	nominal	nominal	25°C
	SS	-10%	-10%	-40°C
	SS	-10%	-10%	125°C
	SS	-10%	-10%	150°C

[1] DVDD = 3.3, 3.0, 2.8, 2.5 and 1.8V

Published by:

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/

Printed in the United States of America