TSMC05: 1.2V GPIO

Libraries

Name	Process	Form Factor
RGO_TSMC05_15V12_N5_45F_PTI	N5	Inline

Summary

This 1.2V GPIO library provides bidirectional I/O cells for Parallel Trace Interface applications. It is compliant with version 2.0 of the the MIPI Specification for Parallel Trace Interface.

The library is available in an inline flip chip implementation.

To design an operational I/O power domain with these cells, an additional library is required – 1.8V Support: Power. That library contains isolated analog I/O, and a full complement of power cells along with spacer cells to assemble a functional 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 ± 100mA @ 125°C

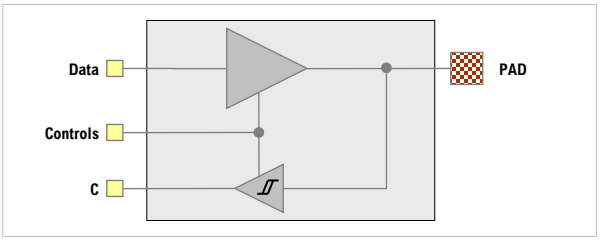
Cell Size & Form Factor

- Inline (core-limited) – 77.7µm x 100.1µm
- Flip chip implementation with CUP structure built in

Recommended Operating Conditions

	Description	Min	Nom	Max	Units
V_{VDD}	Core supply voltage	0.675	0.75	0.825	V
		0.765	0.85	0.935	V
V_{DVDD}	I/O supply voltage	1.08	1.2	1.32	V
T_J	Junction temperature	-40	25	125	°C
V_{PAD}	Voltage at PAD	V_{DVSS} -0.3	-	V_{DVDD} +0.3	V

PTC_BI_SDS_12V_STB



Bi-directional GPIO Driver Features

- 1.2V operation
- Single drive strength – R_{ON} = 8Ω
- Supported data rates
  - Driver – 400 MHz – up to 800 Mbit/s DDR
  - Receiver – 100 MHz – up to 200 Mbit/s DDR
- Optimized for EMC with SSO factor of 8
- LVCMOS / LVTTL input with hysteresis
- Programmable input options (hi-Z / pull-up / pull-down)
- Power sequencing independent design with Power-On Control

This buffer can operate at a frequency up to 400MHz driving a 10 inch 50Ω T-line with a 25pF load at the far end.

Characterization Corners

Model	LPE Type	VDD [1]	DVDD [2]	Temp
FFGNP	Cbest_CCbest	+10%	+10%	-40°C
FFGNP	Cbest_CCbest	+10%	+10%	0°C
FFGNP	Cbest_CCbest	+10%	+10%	125°C
TT	Ctypical	nominal	nominal	25°C
TT	Ctypical	nominal	nominal	85°C
SSGNP	Cworst_CCworst	-10%	-10%	-40°C
SSGNP	Cworst_CCworst	-10%	-10%	0°C
SSGNP	Cworst_CCworst	-10%	-10%	125°C

[1] VDD = 0.75V & 0.85V
[2] DVDD = 1.2V

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