

## Libraries

Name	Process	Form Factor
RGO_TSMC28_18V33_HPM_20C_RGMII	HPM	Staggered CUP
RGO_TSMC28_18V33_HPC_20C_RGMII	HPC	Staggered CUP
RGO_TSMC28_18V33_HPCP_20C_RGMII	HPC+	Staggered CUP

## Summary

The (R)GMII library provides the combo driver / receiver cell for both Gigabit Media Independent Interface signaling and Reduced Gigabit Media Independent Interface signaling. It is designed to interface Ethernet PHY to network switch ASICs. This library is provided as a supplement to the 28nm GPIO libraries provided by Aragio Solutions.

### GMII Specification Compliant:

IEEE 802.3-2005

### RGMII Specification Compliant

HP RGMII, version 1.3, 12/10/2000

### ESD Protection:

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

### Latch-up Immunity:

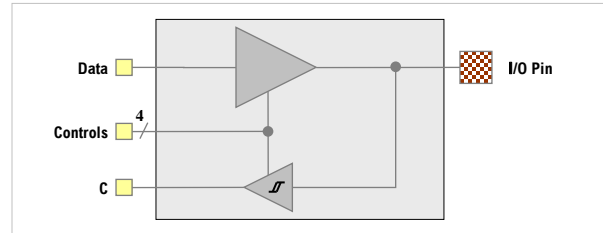
- JEDEC compliant
  - Tested to I-Test criteria of  $\pm 100\text{mA}$  @  $125^\circ\text{C}$

## Recommended operating conditions

Description	Min	Nom	Max	Units
V <sub>VDD</sub> Core supply voltage	0.81	0.9	0.99	V
T <sub>J</sub> Junction temperature	-40	25	+125	°C
V <sub>PAD</sub> Voltage at IO	0		V <sub>DVDD</sub>	V
V <sub>DVDD</sub> I/O supply voltage	2.97	3.3	3.63	V
V <sub>IH</sub> Input logic high	1.7	-	-	V
V <sub>IL</sub> Input logic low	-	-	0.9	V
V <sub>IL_AC</sub> Input high voltage, AC	GMII	1.9	-	V
V <sub>IH_AC</sub> Input low voltage, AC		-	-	0.7
V <sub>OH</sub> Output logic high voltage	2.1	-	3.6	V
V <sub>OL</sub> Output logic low voltage	0	-	0.5	V
V <sub>DVDD</sub> I/O supply voltage	2.25	2.5	2.75	V
V <sub>IH</sub> Input logic high	1.7	-	-	V
V <sub>IL</sub> Input logic low	-	-	0.7	V
V <sub>OH</sub> Output logic high voltage	RGMII	2.0	-	V <sub>DVDD</sub> +0.3
V <sub>OL</sub> Output logic low voltage		V <sub>DVSS</sub> - 0.3	-	0.4
F Clock frequency / accuracy	2.5 <sup>[1]</sup> - 100ppm		125 + 100ppm	MHz

[1] The lowest supported frequency is 10BASE-T over RGMII

## MIP\_BI\_SDS\_33V\_NC



## (R)GMII Combo Driver Features:

- Selectable output slew rate
- GMII mode powered by 3.3V I/O & 0.9V core supplies
- RGMII mode powered by 2.5V I/O & 0.9V core supplies

## Pad Size

Pad	Width	Height	Units
MIP_BI_SDS_33V_NC	25	165	μm

Vertical-only and horizontal-only orientations.

## Characterization Corners (HPM)

Nom VDD	Model	LPE	VDD	DVDD [1]	Temp
0.9V	FF	Cbest	+10%	+10%	-40°C
	FF	Cbest	+10%	+10%	0°C
	FF	Cbest	+10%	+10%	125°C
	FFG	Cworst	+10%	+10%	125°C
	TT	Ctypical	nominal	nominal	25°C
	TT	Ctypical	nominal	nominal	85°C
	SSG	Cworst	-10%	-10%	-40°C
	SSG	Cworst	-10%	-10%	0°C
	SSG	Cworst	-10%	-10%	125°C

[1] DVDD = 2.5V, 3.3V

## Characterization Corners (HPC)

Nom VDD	Model	LPE	VDD	DVDD [1]	Temp
0.9V	FF	Cbest	+10%	+10%	-40°C
	FF	Cbest	+10%	+10%	0°C
	FF	Cbest	+10%	+10%	125°C
	FFG	Cworst	+10%	+10%	125°C
	TT	Ctypical	nominal	nominal	25°C
	TT	Ctypical	nominal	nominal	85°C
	SS	Cworst	-10%	-10%	-40°C
	SS	Cworst	-10%	-10%	0°C
	SS	Cworst	-10%	-10%	125°C

[1] DVDD = 2.5V, 3.3V

## Characterization Corners (HPC+)

Nom VDD	Model	LPE	VDD	DVDD [1]	Temp
0.9V	FFG	Cbest	+10%	+10%	-40°C
	FFG	Cbest	+10%	+10%	0°C
	FFG	Cbest	+10%	+10%	125°C
	TT	Ctypical	nominal	nominal	25°C
	TT	Ctypical	nominal	nominal	85°C
	SSG	Cworst	-10%	-10%	-40°C
	SSG	Cworst	-10%	-10%	0°C
	SSG	Cworst	-10%	-10%	125°C

[1] DVDD = 2.5V, 3.3V

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