TSMC 07: LVDS

Libraries

Name	Process	Form Factor
RGO_TSMC07_18V25_7FF_UC_LVDS	7FF	Staggered

Summary

The LVDS library provides an LVDS driver, receiver, and temperature stable voltage reference capable of supporting 16 drivers operating at data rates up to 4.0 Gbps. The pad set includes a full complement of power, spacer, and adapter cells to assemble a complete pad ring by abutment. An included rail splitter allows isolated LVDS domains to be placed in the same pad ring with other power domains while maintaining continuous VDD/VSS in the pad ring for robust ESD protection.

- 2.0 GHz LVDS Driver
- 2.0 GHz LVDS Receiver
- LVDS Voltage Reference

This 7nm library is available in a staggered flip chip implementation.

LVDS Specification Compliant:

- TIA/EIA-644-A - Electrical Characteristics of Low Voltage Differential Signaling (LVDS) Interface Circuits
- IEEE Std 1596.3-1996

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

- Staggered (pad-limited) – TBDµm x TBDµm

Recommended operating conditions

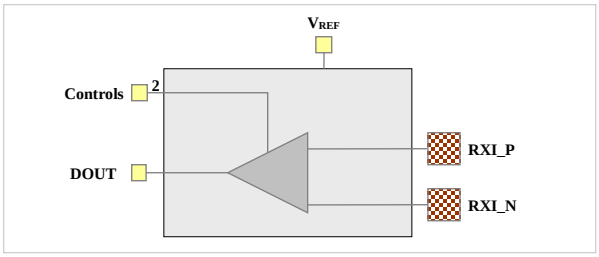
Symbol	Description	Min	Nom	Max	Units
V_{VDD}	Core supply voltage	0.675	0.75	0.825	V
		0.765	0.85	0.935	V
V_{DVDD}	I/O supply voltage	1.62	1.8	1.98	V
T_J	Junction temperature	-40	25	125	°C
V_{PAD}	Voltage at PAD	-0.3V		V_{DVDD}+0.3V	V

Characterization Corners *

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

[1] VDD = 0.75V
[1] DVDD = 1.8V
* PRELIMINARY

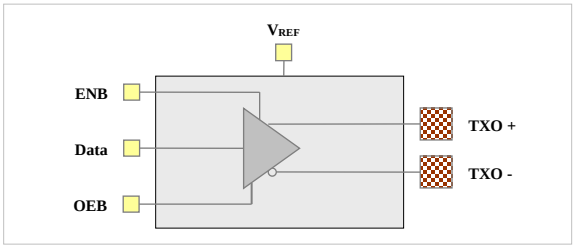
LDP_IN_800_25V_DN: 2.0 GHz LVDS Receiver



LVDS Receiver Features:

- Operates up to 2.0 GHz (4.0 Gbps)
- Input receive sensitivity of 75mV peak differential (without hysteresis)
- Common mode range from 0V to 2.4V (limited by power supply)
- Powered by 1.8V I/O and 0.75V core supplies
- Low power consumption

LDP_OU_800_18V_T: 2.0 GHz LVDS Driver



LVDS Driver Features:

- Operates up to 2.0 GHz (4.0 Gbps) with external 1pF load
- Common mode output range 1.1V ±100mV
- Supports 100Ω differential terminations – single ended
- Powered by 1.8V I/O and 0.75V core supplies
- Low power consumption

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Cell Summary

Name	Description
LDP_IN_800_25V_DN *	LVDS receiver cell
LDP_OU_800_18V_T *	LVDS driver cell
LDP_RE_000_18V *	LVDS Voltage Reference cell
PVP_VD_RCD_10V *	Core power (VDD)
PVP_VS_RCD_10V *	Core ground (VSS)
PVP_VD_PDO_18V *	I/O power (DVDD) with POC control
PVP_VD_RDO_18V *	I/O power (DVDD)
PVP_VS_RDO_18V *	I/O ground (VSS)
SVP_SP_000_18V	0.1 µm spacer
SVP_SP_001_18V	1 µm spacer
SVP_SP_005_18V	5 µm spacer
SVP_SP_010_18V	10 µm spacer
SPP_RS_005_18V	Rail splitter

*Supplied in vertical-only and horizontal-only orientations

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