

## Libraries

Name	Process	Form Factor
RGO_GF28_18V18_SLP_UC_SUBLVDS	SLP	Staggered
RGO_GF28_18V18_HPP_UC_SUBLVDS	HPP	Staggered

## Summary

The subLVDS library provides a subLVDS driver, receiver, and temperature stable voltage reference capable of supporting 16 drivers operating at data rates up to 1 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 subLVDS 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.

- 250 MHz LVDS Driver
- 450 MHz LVDS Receiver
- subLVDS Voltage Reference

### subLVDS Specification Compliant:

- SMIA 1.0 PART 2: CCP2 Specification

### ESD Protection:

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

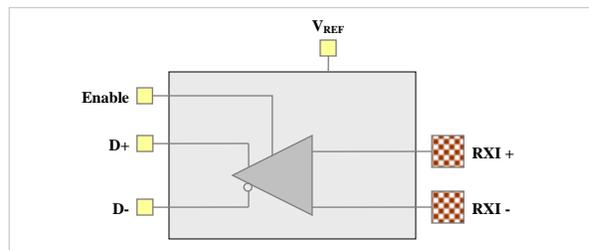
## Absolute maximum ratings

Symbol	Description	Value	Units
V <sub>VDD</sub>	Core supply voltage range	-0.5 to 1.2	V
V <sub>DVDD</sub>	I/O supply voltage range	-0.5 to 2.95	V
V <sub>PAD</sub>	Voltage range at PAD	-0.5 to (V <sub>DVDD</sub> + 0.5)	V
T <sub>J</sub>	Junction operating temperature range	-55 to 150	°C

## Recommended operating conditions

Symbol	Description	Min	Nom	Max	Units
V <sub>VDD</sub>	Core supply voltage	SLP	0.90	1.0	1.10
			0.99	1.1	1.155
		HPP	0.765	0.85	0.935
			0.81	0.9	0.945
V <sub>DVDD</sub>	I/O supply voltage	1.62	1.80	1.98	V
V <sub>VREF</sub>	Reference voltage		0.9		V
T <sub>J</sub>	Junction temperature	-40	25	125	°C
V <sub>PAD</sub>	Voltage at PAD	-0.3V		V <sub>DVDD</sub> +0.3V	V

## LDP\_IN\_800\_18V\_DN: 1GHz subLVDS Input



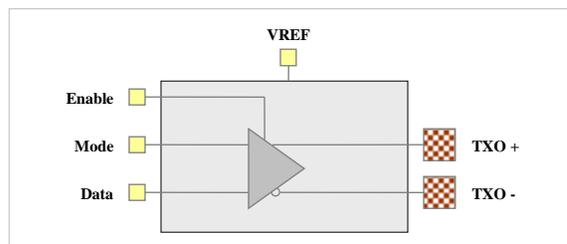
### subLVDS Receiver Features:

- Input receive sensitivity of 50mV peak differential (without hysteresis)
- Common mode range from 0.4V to 1.4V (limited by Power Supply)
- Duty Cycle Distortion (DCD) less than 50ps
- Power consumption: 1.7 mW typical / 4.7 mW maximum

## AC Characteristics

Parameter	Typ	Max	Units	Conditions
Propagation Delay	0.5	0.8	ns	The slew rate for propagation delays, duty cycle distortion and maximum operating frequency is 1V/ns
Maximum Operating Frequency	1.0		GHz	All noise, jitter, and t <sub>dcd</sub> measured at 1GHz
Maximum Data Rate	2.0		Gb/s	

## LSP\_OU\_800\_18V\_T: 1GHz subLVDS Output



### subLVDS Driver Features:

- Operates up to 1.0GHz (2.0 Gbps) with external 1pF load
- Common mode output range: 0.90V +/-50mV
- Differential Skew between TXO\_P and TXO\_N: 50ps
- High and low current drive modes to support 50Ω and 100Ω differential terminations
- Power consumption at 1GHz: 8.5 mW typical / 15.2 mW maximum

## AC Characteristics

Symbol	Description	Condition	Min	Typ	Max	Units
t <sub>PHL</sub>	Differential high to low propagation delay	R <sub>L</sub> = 100 Ω C <sub>L</sub> = 1 pF		480	710	ps
t <sub>PLH</sub>	Differential low to high propagation delay	R <sub>L</sub> = 100 Ω C <sub>L</sub> = 1 pF		480	710	ps
t <sub>rise</sub>	V <sub>OD</sub> differential rise time	20% to 80%	120		250	ps
t <sub>fall</sub>	V <sub>OD</sub> differential fall time	20% to 80%	120		250	ps

# GF28: subLVDS Pad Set



## Cell summary

Name	Description
LDP_IN_800_18V_DN	1GHz SubLVDS input cell
LSP_OU_800_18V_T	1GHz SubLVDS output cell
LDP_RE_009_18V	V <sub>REF</sub> pad
PVP_VD_RCD_10V	Core power pad with VREF
PVP_VS_RCD_10V	Power pad for VSS with VREF bus
PVP_VD_PDO_18V	Driver power pad with POC control
PVP_VD_RDO_18V	Driver power pad
PVP_VS_RDO_18V	I/O ground supply with VREF bus
SVP_SP_001_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	DVDD, DVSS, POC, BIAS and VREF rail splitter
SPC_SPC_AD_UN	Core limited library adapter pad

## Physical sizes

Pad name	Width	Height <sup>[*]</sup>	Units
LDP_RE_009_18V	40	139	μm
LDP_IN_800_18V_DN	40	117	μm
LSP_OU_800_18V_T	50	129	μm
PVP_VD_RCD_12V	20	117	μm
PVP_VS_RCD_12V	20	117	μm
PVP_VD_PDO_18V	20	117	μm
PVP_VD_RDO_18V	20	117	μm
PVP_VS_RDO_18V	20	117	μm
SVP_SP_000_18V	0.1	117	μm
SVP_SP_001_18V	1	117	μm
SVP_SP_005_18V	5	117	μm
SVP_SP_010_18V	10	117	μm
SPP_RS_005_18V	5	117	μm
SPP_SPC_AD_UN	20	117	μm

[\*] Includes CUP bond opening.

## Characterization Corners

Nom VDD	Model	VDD	DVDD=1.8V	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

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