GPR-8524L-S5CD

1.25Gbps SFP Optical Receiver, 550m Reach

Features

- Uni-direction SFP receiver

- Up to 1.25Gbps receiver data links

- Compliant with SFP MSA and SFF-8472 with LC
- receptacle Digital Diagnostic Monitoring:
  Internal Calibration or External Calibration 550m
- transmission with 50/125μm MMF Compatible with
- RoHS
- +3.3V single power supply Operating case temperature:
- Standard :   0 to +70℃

Applications

- Uni-directional data diode

Description

The SFP receiver are high performance, cost effective modules supporting data-rate of 1.25Gbps.

The receiver consists of three sections: a PIN photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit.

The Receiver are compatible with SFP Multi-Source Agreement (MSA) and SFF-8472. For further information, please refer to SFP MSA.
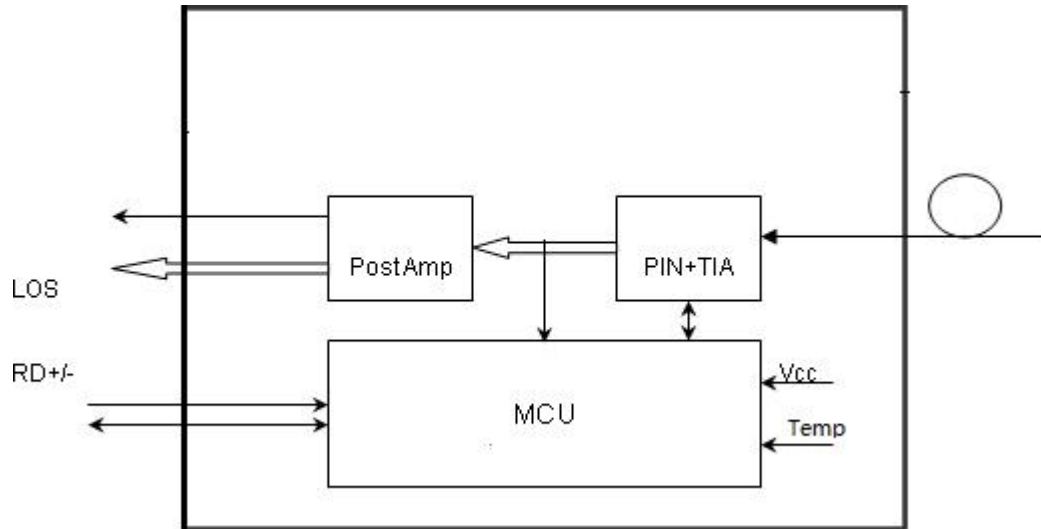
Absolute Maximum Ratings

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	-0.5	4.5	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

Recommended Operating Conditions

Table 2 - Recommended Operating Conditions

Parameter		Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Standard	Tc	0		+70	°C
Power Supply Voltage		Vcc	3.13	3.3	3.47	V
Power Supply Current		Icc			300	mA
Data Rate				1.25		Gbps

Optical and Electrical Characteristics

GPR-8524L-S5CD**: (PIN-TIA, 850nm, 550m Reach)**

Table 3 - Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Receiver						
Centre Wavelength	λc	770		860	nm	
Receiver Sensitivity				-18	dBm	1
Receiver Overload		-3			dBm	1
LOS De-Assert	LOSD			-20	dBm	
LOS Assert	LOSA	-35			dBm	

LOS Hysteresis		1		4	dB	
Data Output Swing Differential	Vout	370		1800	mV	2
LOS	High	2.0		Vcc	V	
	Low			0.8	V	

Notes:

1. Measured with a PRBS $2^{23}-1$ test pattern @1250Mbps, BER $\leq 1 \times 10^{-12}$.

2. Internally AC-coupled.

Timing and Electrical

Table 4 - Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
LOS Assert Time	t_loss_on			100	μs
LOS De-assert Time	t_loss_off			100	μs
Serial ID Clock Rate	f_serial_clock			400	KHz
MOD_DEF (0:2)-High	VH	2		Vcc	V
MOD_DEF (0:2)-Low	VL			0.8	V

Diagnostics

Table 5 – Diagnostics Specification

Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to +70	°C	±3°C	Internal / External

Voltage	3.0 to 3.6	V	±3%	Internal / External
Bias Current	0 to 100	mA	±10%	Internal / External
RX Power	-22 to -3	dBm	±3dB	Internal / External

Digital Diagnostic Memory Map

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).

The diagnostic information with internal calibration or external calibration all are implemented, including received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring.

The digital diagnostic memory map specific data field defines as following.

```
2 wire address 1010000X (A0h)          2 wire address 1010001X (A2h)
0  ┌──────────────────────┐         0  ┌──────────────────────┐
   │                      │            │ Alarm and Warning    │
   │  Serial ID Defined by │            │ Thresholds (56 bytes)│
   │  SFP MSA (96 bytes)  │        55  ├──────────────────────┤
   │                      │            │   Cal Constants      │
95 ├──────────────────────┤            │    (40 bytes)        │
   │                      │        95  ├──────────────────────┤
   │  Vendor Specific     │            │ Real Time Diagnostic │
   │  (32 bytes)          │            │ Interface (24 bytes) │
127├──────────────────────┤       119  ├──────────────────────┤
   │                      │            │ Vendor Specific (8 bytes)│
   │                      │       127  ├──────────────────────┤
   │                      │            │                      │
   │  Reserved in SFP     │            │  User Writable       │
   │  MSA (128 bytes)     │            │  EEPROM (120 bytes)  │
   │                      │            │                      │
   │                      │       247  ├──────────────────────┤
255└──────────────────────┘       255  │ Vendor Specific (8 bytes)│
                                        └──────────────────────┘
```
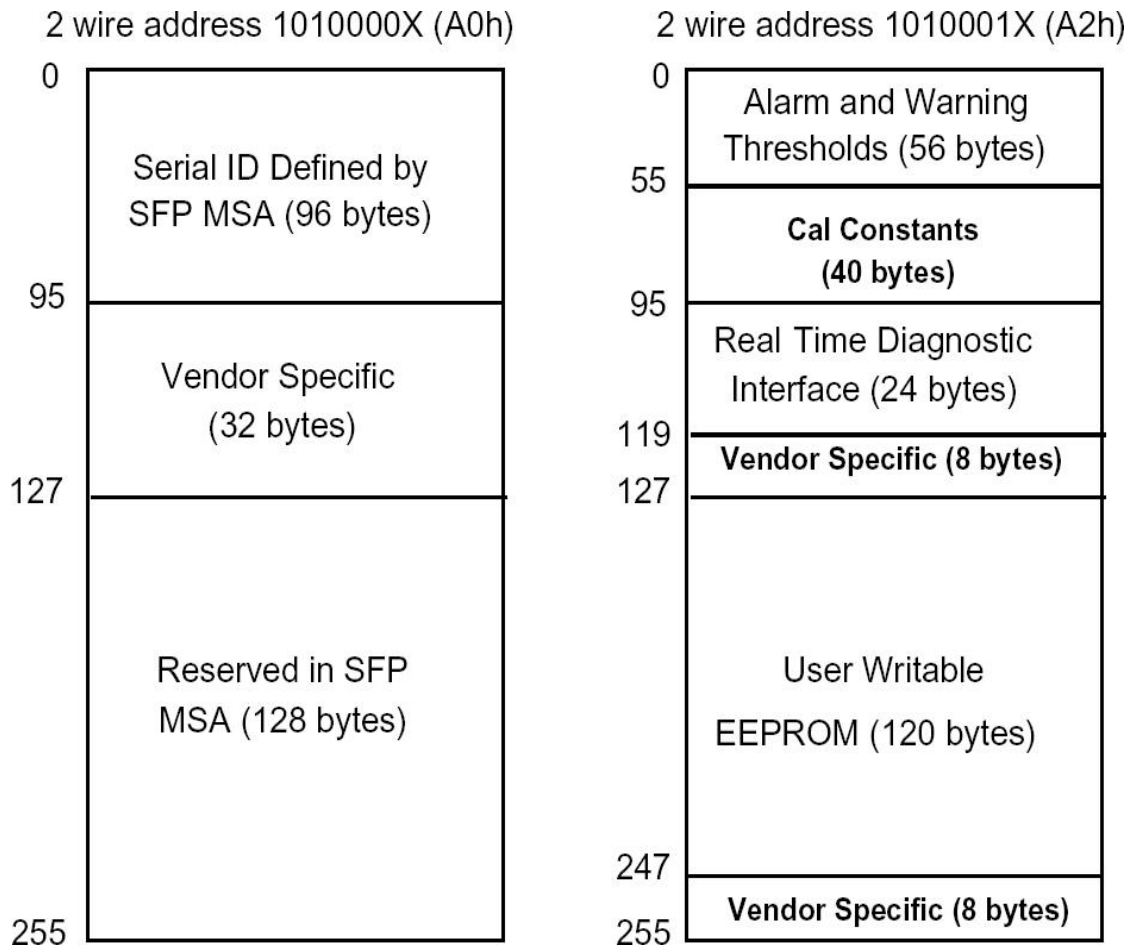
Pin Definition

Pin Descriptions

Pin	Signal Name	Description	Plug Seq.	Notes

| 1 | VEET | Not Connected | 1 | |
2	TX FAULT	Not Connected	3	
3	TX DISABLE	Not Connected	3	
4	MOD_DEF(2)	SDA Serial Data Signal	3	Note 1
5	MOD_DEF(1)	SCL Serial Clock Signal	3	Note 1
6	MOD_DEF(0)	TTL Low	3	Note 1
7	Rate Select	Not Connected	3	
8	LOS	Loss of Signal	3	Note 2
9	VEER	Receiver ground	1	
10	VEER	Receiver ground	1	
11	VEER	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 3
13	RD+	Received Data Out	3	Note 3
14	VEER	Receiver ground	1	
15	VCCR	Receiver Power Supply	2	
16	VCCT	Not Connected	2	
17	VEET	Not Connected	1	
18	TD+	Not Connected	3	
19	TD-	Not Connected	3	
20	VEET	Not Connected	1	

Notes:

 Plug Seq.: Pin engagement sequence during hot plugging.

1) Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7k~10kΩ resistor on the host board. The pull-up voltage shall be VccR.

Mod-Def 0 is grounded by the module to indicate that the module is present Mod-Def 1 is the clock line of two wire serial interface for serial ID Mod-Def 2 is the data line of two wire serial interface for serial ID

2) LOS is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor. Pull up voltage between 2.0V and Vcc+0.3V. Logic 1 indicates loss of signal; Logic 0 indicates normal operation. In the low state, the output will be pulled to less than 0.8V.

3) RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.

Mechanical Dimensions

unit:mm
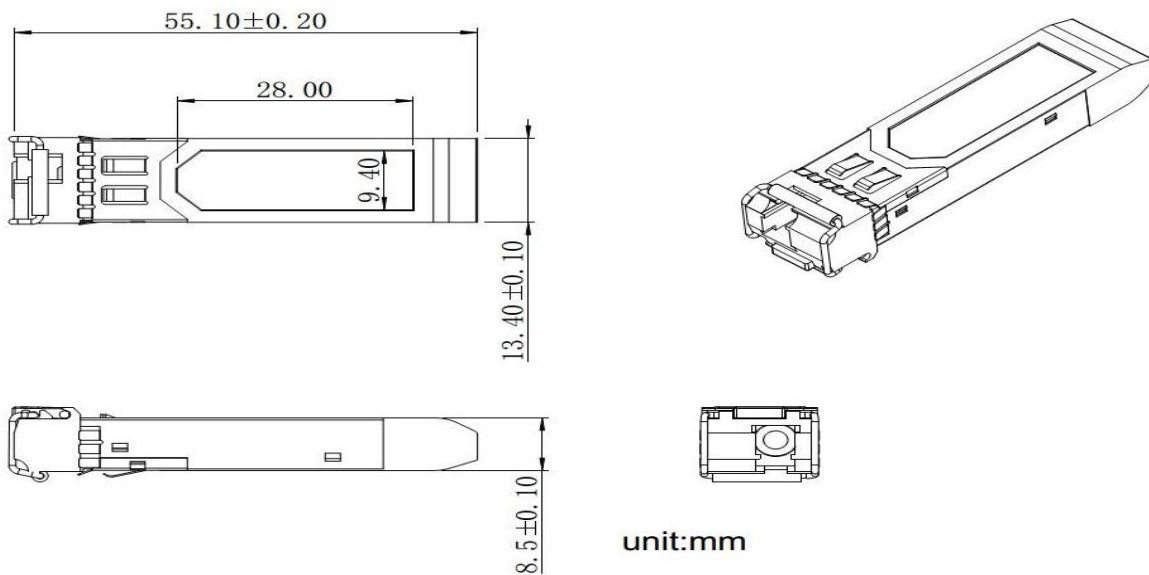
Ordering information

Part Number	Product Description
GPR-8524L-S5CD	850nm, 1.25Gbps, 550m, 0ºC ~ +70ºC

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