



## **Optical Transceiver NS-SFP28 25G MWDM**

25.78125Gbps SFP28 MWDM Transceiver, Single Mode, 10km  
Reach

### **Product Features**

- Supports up to 25.78125Gbps bit rates
- Hot-pluggable SFP28 footprint
- MWDM DFB laser and PIN/APD photodiode, Up to 10km for SMF transmission
- Compliant with SFP28 MSA and SFF-8472 with duplex LC receptacle
- Compatible with RoHS
- Single +3.3V power supply
- Real Time Digital Diagnostic Monitoring
- Operating case temperature:  
Standard: 0 to +70°C

### **Applications**

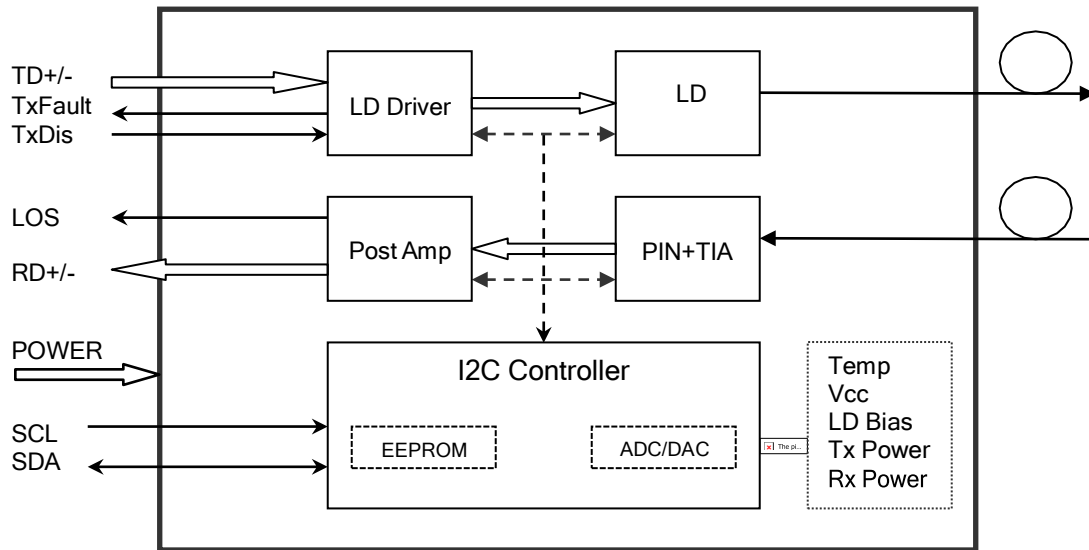
- 25G Ethernet

### **Description**

The SFP28 transceivers are high performance, cost effective modules supporting data rate of 25.78125Gbps and 10km transmission distance with SMF.

The transceiver consists of three sections: DFB laser transmitter with Thermal Electronic Cooler (TEC), a PIN/APD photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements.

The transceivers are compatible with SFP Multi-Source Agreement and SFF-8472 digital diagnostics functions.



Transceiver functional diagram

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	Vcc	3,14	3,47	V
Storage Temperature	Ts	-40	+85	°C
Operating Humidity	-	5	85	%

### Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Tc	0		+70	°C
Power Supply Voltage	Vcc	3,14	3.30	3,47	V
Power Supply Current	Icc			350	mA
Data Rate			25.7812		Gbps



## Optical and Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_c$	$\lambda_c-3.5$	$\lambda_c$	$\lambda_c+3.5$	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30	-		dB	
Average Output Power	$P_{out}$	-1		+6	dBm	1
Extinction Ratio	ER	3.5			dB	
Data Input Swing Differential	$V_{IN}$	180		850	mV	2
Input Differential Impedance	$Z_{IN}$	90	100	110	$\Omega$	
Disable		2.0		$V_{cc}$	V	
TX Disable						
Enable		0		0.8	V	
Fault		2.0		$V_{cc}$	V	
TX Fault						
Normal		0		0.8	V	
<b>Receiver</b>						
Centre Wavelength	$\lambda_c$	1260		1380	nm	
Receiver Sensitivity				-12	dBm	3
Receiver Overload		0.5			dBm	3
LOS De-Assert	$LOS_D$			-13	dBm	
LOS Assert	$LOS_A$	-30			dBm	
LOS Hysteresis		0.5			dB	
Data Output Swing Differential	$V_{out}$	300		900	mV	4
	High	2.0		$V_{cc}$	V	
LOS						
	Low			0.8	V	

### Notes:

1. The optical power is launched into SMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a PRBS 2<sup>31</sup>-1 test pattern @25,78125Mbps, BER  $\leq 1 \times 10^{-12}$ .
4. Internally AC-coupled.



## Timing and Electrical

Parameter	Symbol	Min	Typical	Max	Unit
Tx Disable Negate Time	t_on			1	ms
Tx Disable Assert Time	t_off			10	μs
Time To Initialize, including Reset of Tx Fault	t_init			300	ms
Tx Fault Assert Time	t_fault			100	μs
Tx Disable To Reset	t_reset	10			μs
LOS Assert Time	t_loss_on			100	μs
LOS De-assert Time	t_loss_off			100	μs
Serial ID Clock Rate	f_serial_clock		100	400	KHz
MOD_DEF (0:2)-High	V <sub>H</sub>	2		V <sub>cc</sub>	V
MOD_DEF (0:2)-Low	V <sub>L</sub>			0.8	V

## Diagnostics

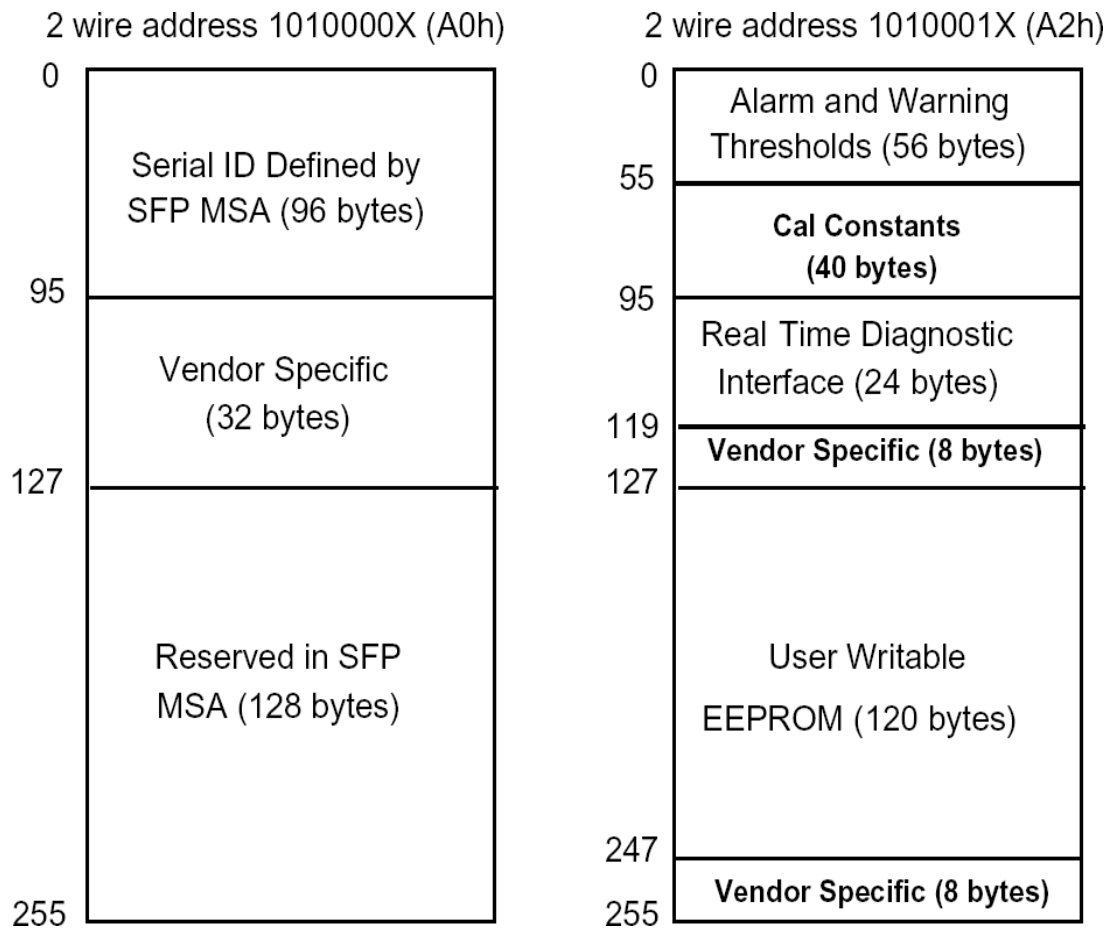
Parameter	Range	Unit	Accuracy	Calibration
Temperature	0 to +70	°C	±3°C	Internal
Voltage	3.0 to 3.6	V	±3%	Internal
Bias Current	0 to 100	mA	±10%	Internal
TX Power	-1 to +6	dBm	±3dB	Internal
RX Power	-16 to -1	dBm	±3dB	Internal

## Digital Diagnostic Memory Map

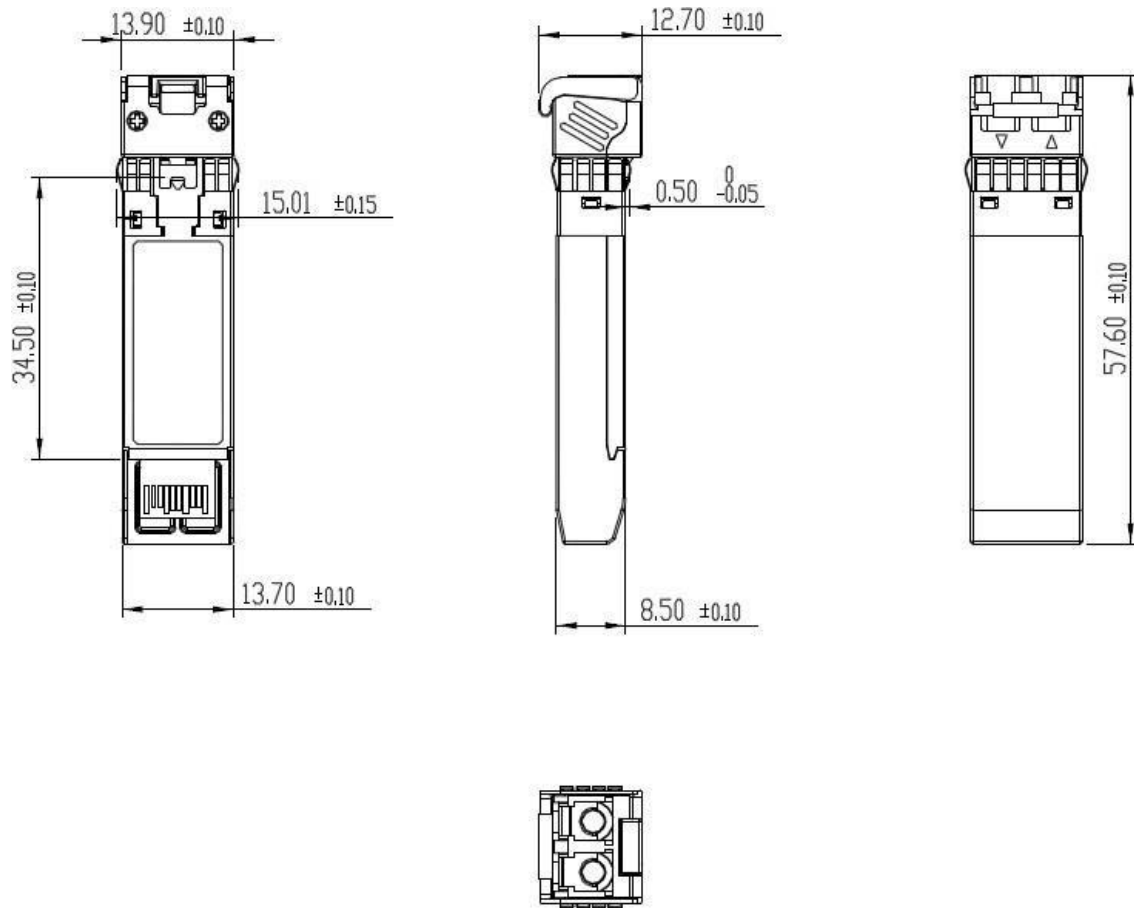
The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).

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.



### Mechanical Dimensions



### Ordering information

Part Number	Product Description
NS-SFP28-25G+MXXL10D	1267,5~1374,5nm MWDM,25.78125 Gbps, LC, 10km, 0°C~+70°C, with DDM