DATA SHEET

UNIVISO: UMSGETM2

1000BASE-T SFP (Small Form Pluggable) Copper Transceiver
1.25 Gigabit Ethernet

UMSGETM2 Overview

UNIVISO's UMSGETM2 is a small, hot-swappable RJ45 electrical port module, compliant with Gigabit Ethernet standards and SFP Multi-Source Agreement (MSA) standards, supporting 10M/100M/1000M transmission rate. CAT5 class network cable transmission distance of up to 100 meters, low power consumption (less than 1W), good electromagnetic compatibility, compatible with various brands of hosts, widely used in data centers and enterprise networks. Access to the PHY chip registers is via the I2C interface. Meet the certification requirements such as RoHS.
There are 3 modes to choose from, AUTO mode supports 1000BASE-X auto-negotiation, FULL mode supports the LINK status via the RX_LOS pin, SGMII mode supports hosts with SGMII functionality.

Product Features

- Up to 1.25Gb/s bi-directional data links
- Compliant with IEEE 802.3z, IEEE 802.3u, IEEE 802.3ab
- Compliant with SFP MSA
- Hot-pluggable SFP footprint
- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- RJ-45 connector
- Auto-sense MDI/MDIX
- Single power supply 3.3V
- RoHS Compliant
- Operating temperature range: 0°C to 70°C

Applications

- 1.25 Gigabit Ethernet

Ordering Information

Part Number	Description	Operating Temperature Range
UMSGETM2-A	1000BASE-T SFP Copper RJ-45 Connector 100m Auto Negotiation default mode, commercial temperature	0°C to 70°C
UMSGETM2-F	1000BASE-T SFP Copper RJ-45 Connector 100m not support Auto Negotiation default mode, commercial temperature	0°C to 70°C
UMSGETM2-S	1000BASE-T SFP Copper RJ-45 Connector 100m SGMII default mode, commercial temperature	0°C to 70°C
Notes: 1. With MCU, write protection can be implemented 2. Module based on Marvell 88E1112 development		

Host Compatible Selection

Part Number	Link Indicator on RX_LOS Pin	Compatible with 1000BASE-X auto-negotiation
UMSGETM2-A	NO	YES
UMSGETM2-F	YES	NO
UMSGETM2-S	NO	NO

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR	10		1000	Mb/sec	1
Cable Length	CL			100	m	2
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T_C	0		70	°C	3
Storage Temperature	T_{STO}	-40		85	°C	4
Supply Current	I_{CC}		320	375	mA	
Input Voltage	V_{CC}	3.14	3.3	3.46	V	
Maximum Voltage	V_{MAX}			4	V	

Notes:
1. IEEE 802.3 compatible
2. Category 5 UTP
3. Case temperature
4. Ambient temperature

High Speed Electrical Interface Host-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended Input swing	$V_{IN\ PP}$	250		1200	mV	
Single ended output swing	$V_{OUT\ PP}$	275		800	mV	
Rise Time /Fall Time(20%-80%)	t_r/t_f		175		ps	
Tx Input impedance	Z_{IN}		50		ohm	1
Rx Output impedance	Z_{OUT}		50		ohm	1

Notes:
1. Single ended

High Speed Electrical Interface Transmission Line-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Line Frequency	F_L		125		MHz	1
Tx Output Impedance Differential	$Z_{OUT\ TX}$		100		Ohm	2
Rx Input Impedance Differential	$Z_{IN\ RX}$		100		Ohm	2

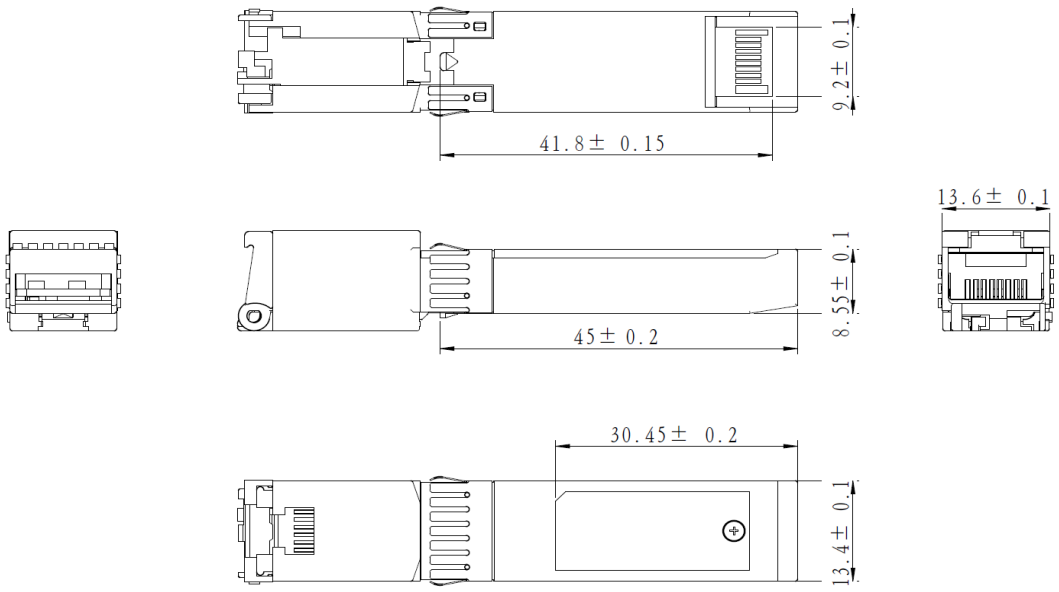
Notes:
1. 5-level encoding
2. For all frequencies between 1MHz and 125MHz

Low Speed Electrical Signal

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
SFP Output Low	V_{OL}	0		0.5	V	1
SFP Output High	V_{OH}	Host_V_{CC}-0.5		Host_V_{CC}+0.3	V	1
SFP Input Low	V_{IL}	0		0.8	V	1
SFP Input High	V_{IH}	2		V_{CC}+0.3	V	1

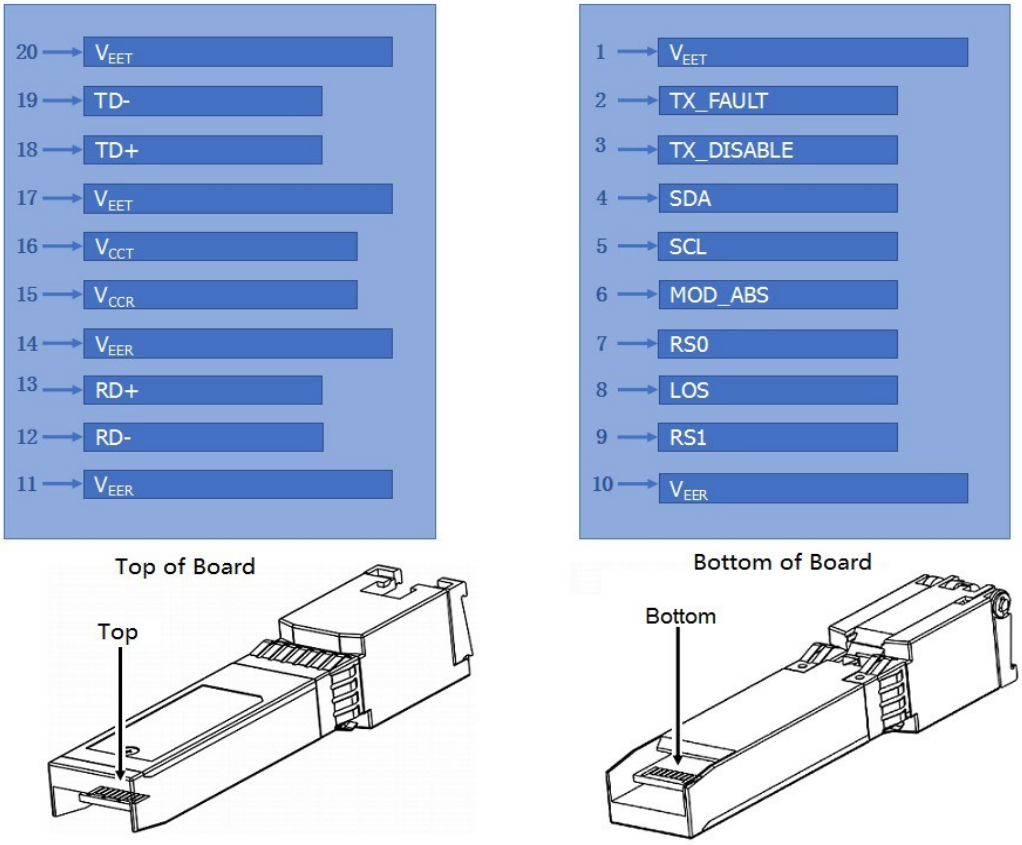
Notes:
1. External 4.7-10k ohm pull-up resistor required

Dimensions



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

Electrical Pad Layout



Pin Assignment

PIN #	Symbol	Description	Remarks
1	V_{EET}	Transmitter ground (common with receiver ground)	1
2	TX_FAULT	Transmitter Fault. Not supported	
3	TX_DISABLE	Transmitter Disable. PHY disabled on high or open	2
4	MOD_DEF(2)	Module Definition 2. Data line for serial ID	3
5	MOD_DEF(1)	2Module Definition 1. Clock line for serial ID	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal	
9	V_{EER}	Receiver ground (common with transmitter ground)	1
10	V_{EER}	Receiver ground (common with transmitter ground)	1
11	V_{EER}	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V_{EER}	Receiver ground (common with transmitter ground)	1
15	V_{CCR}	Receiver power supply	
16	V_{CCT}	Transmitter power supply	
17	V_{EET}	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	V_{EET}	Transmitter ground (common with receiver ground)	1

Notes:
1. Circuit ground is connected to chassis ground
2. Disabled: T_{DIS}>2Vor open,Enabled:T_{DIS}<0.8V
3. Should Be pulled up with 4.7k –10k ohm on host board to a voltage between 2V and 3.6V

References

1. IEEE standard 802.3. IEEE Standard Department,2005.
2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA),INF-8074i.