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# MPTED3-DZC-XXXT

## Features

- ◆ Hot-pluggable SFP+ cable ends
- ◆ Supports 10.3125Gb/s bit rate
- ◆ Pre-terminated twin axial cable / fiber cable
- ◆ Operating environment temperature 0 ~ 70°C
- ◆ Low power consumption
- ◆ SFP+ housing with enhanced EMI shielding
- ◆ Single 3.3V power supply
- ◆ Available in lengths up to 300m

## Application

- ◆ 10G Ethernet
- ◆ 10G Fiber Channel over Ethernet
- ◆ Applicable to 1X QDR / 1X DDR / 1x SDR Infiniband
- ◆ High capacity IO with SFP+ interface
- ◆ Data center and in-rack connection

## Standard

- ◆ SFF-8431 SFP+ Electrical MSA
- ◆ SFF-8432 SFP+ Mechanical MSA
- ◆ RoHS complaint

## 1. General Description

MNC SFP+ Active Optical Cables are direct-attach fiber assemblies with SFP+ connectors. They are suitable for very short distances and offer a cost-effective way to connect within racks and across adjacent racks. The Cables's length is up to 300 meters on OM3 MMF.

## 2. Absolute Maximum Ratings

It has to be noted that the operation in excess of any individual absolute maximum ratings might cause permanent damage to this module

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Ts	-40	+85	°C
Operating Case Temperature	Tc	0	+70	°C
Supply Voltage	Vcc	0	3.6	V
Operating Humidity	RH	0	85	%

## 3. Recommended Operating Conditions

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	Tc	0	25	+70	°C
Supply Voltage	Vcc	3.14	3.3	3.46	V
Supply Current	Icc			250	mA
Bit Rate	BR		10.3125	11.3	Gb/s

## 4. Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter Characteristics</b>						
Input differential impedance	Rin		100		Ω	1
Differential data input swing	Vin,pp	180		700	mV	
Transmit Disable Voltage	VD	2		Vcc	V	
Transmit Enable Voltage	VEN	Vee		Vee+0.8	V	
<b>Receiver Characteristics</b>						
Differential data output swing	Vout,pp	300		850	mV	2,5
Data output rise time, fall time	tr	28			ps	3
LOS Fault	V <sub>LOSfault</sub>	2		V <sub>CCHOST</sub>		4
LOS Normal	V <sub>LOS norm</sub>	Vee		Vee+0.8		4

**Note1.** Connected directly to TX data input pins. AC coupling from pins into laser driver IC

**Note2.** Into 100Ω differential termination.

**Note3.** 20 – 80%. Measured with Module Compliance Test Board and OMA test pattern.

**Note4.** LOS is an open collector output. It should be pulled up with 4.7kΩ – 10kΩ on the host board.

Normal operation is logic 0; loss of signal is logic 1.

**Note5.** The MPTED3-DZC-XXXT is MNC Limiting. Host board designers using an EDC PHY IC should follow the IC manufacturer's recommended settings for interoperating the host-board EDC PHY with a limiting receiver.

## 5. Pin definition

The SFP+ modules are hot-pluggable. Hot pluggable refers to plugging in or unplugging a module while the host board is powered. The SFP+ host connector is a 0.8 mm pitch 20 position right angle improved connector specified by SFF-8431, or stacked connector with equivalent electrical performance. SFP+ module contacts mates with the host in the order of ground, power, followed by signal as illustrated by Figure 1 and the contact sequence order listed in Table 1.

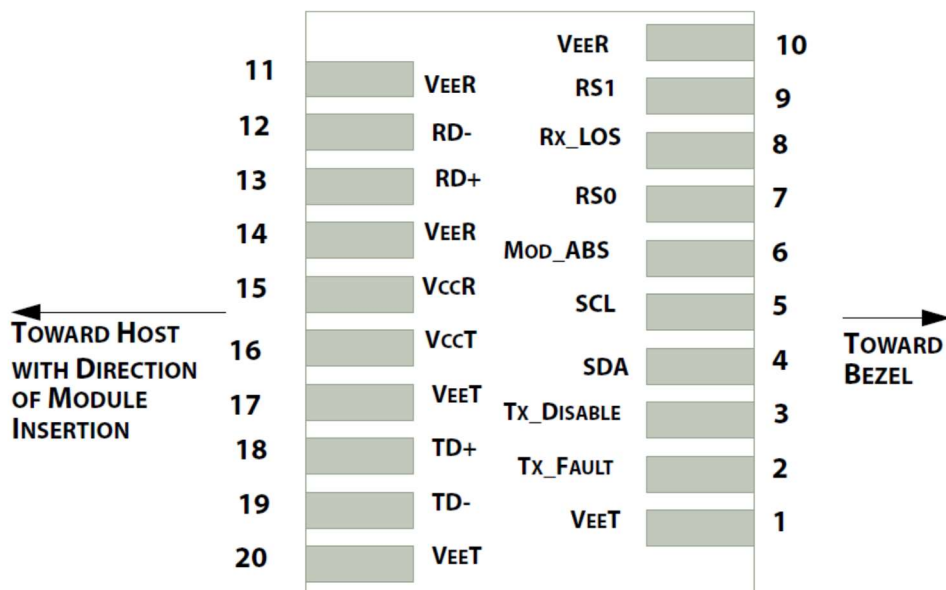


Figure1 SFP+ Pad assignment Top View

Table 1

Pin	Symbol	Name/Description	Power Seq.	Ref.
1	VeeT	Transmitter Ground	1st	1
2	TX_Fault	Transmitter Fault	3rd	2
3	TX_Disable	Transmitter Disable	3rd	3
4	SDA	2-Wire Serial Interface Data Line	3rd	4
5	SCL	2-Wire Serial Interface Data Line	3rd	4
6	Mod_ABS	Module Absent, Connect to VeeT or VeeR in Module	3rd	5
7	RS0	No connection required	3rd	6
8	RX_LOS	Receiver Loss of Signal indication	3rd	7
9	RS1	No connection required	3rd	8
10	VeeR	Receiver Ground	1st	1
11	VeeR	Receiver Ground	1st	1
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O	3rd	9
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O	3rd	9
14	VeeR	Receiver Ground	1st	1
15	VccR	Receiver Power Supply	2nd	10
16	VccT	Transmitter Power Supply	2nd	10

17	VeeT	Transmitter Ground	1st	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I	3rd	11
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-I	3rd	11
20	VeeT	Transmitter Ground	1st	1

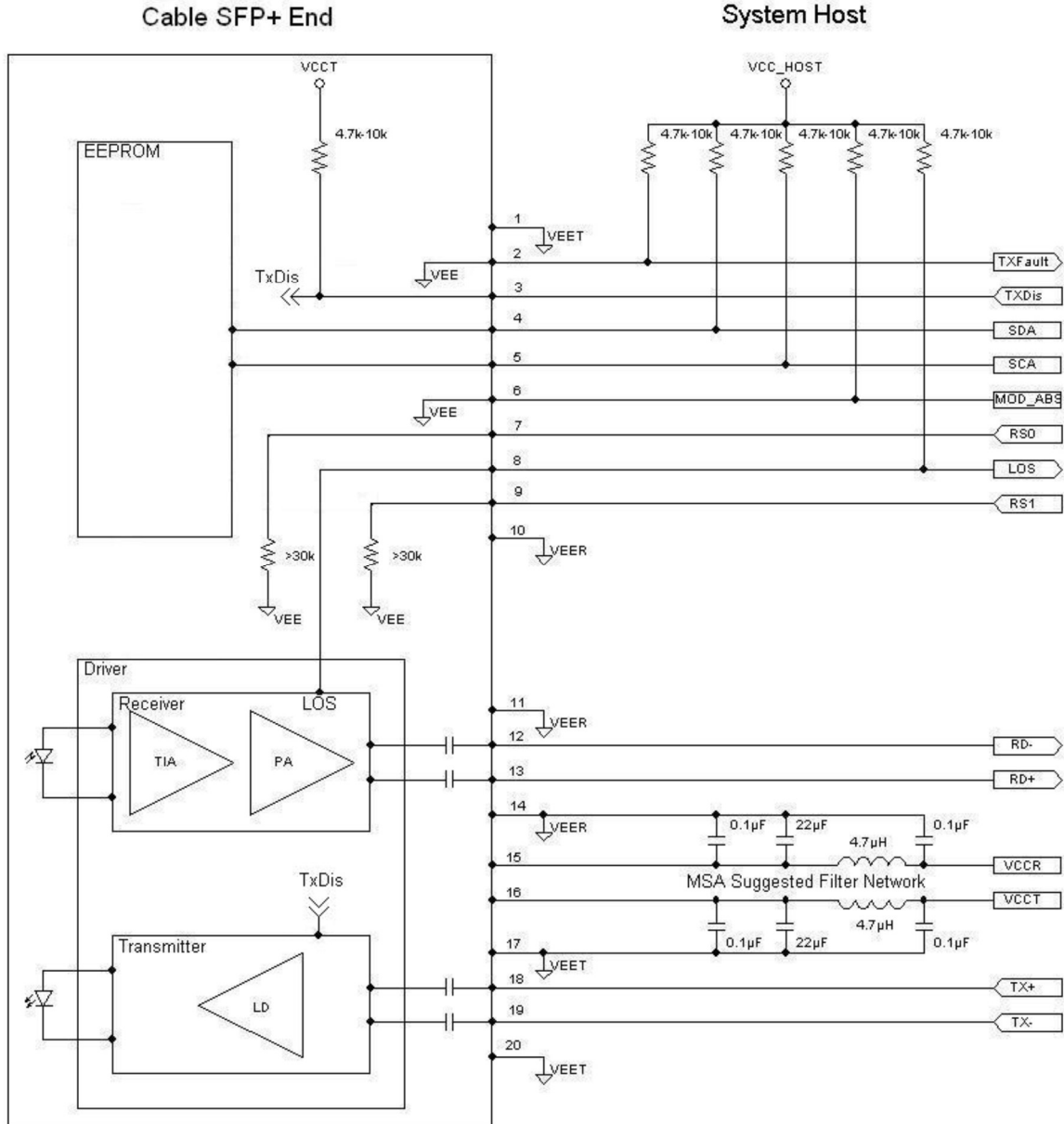
### SFP+ Module PIN Definition

**Power Seq.:** Pin engagement sequence during hot plugging.

**Notes:**

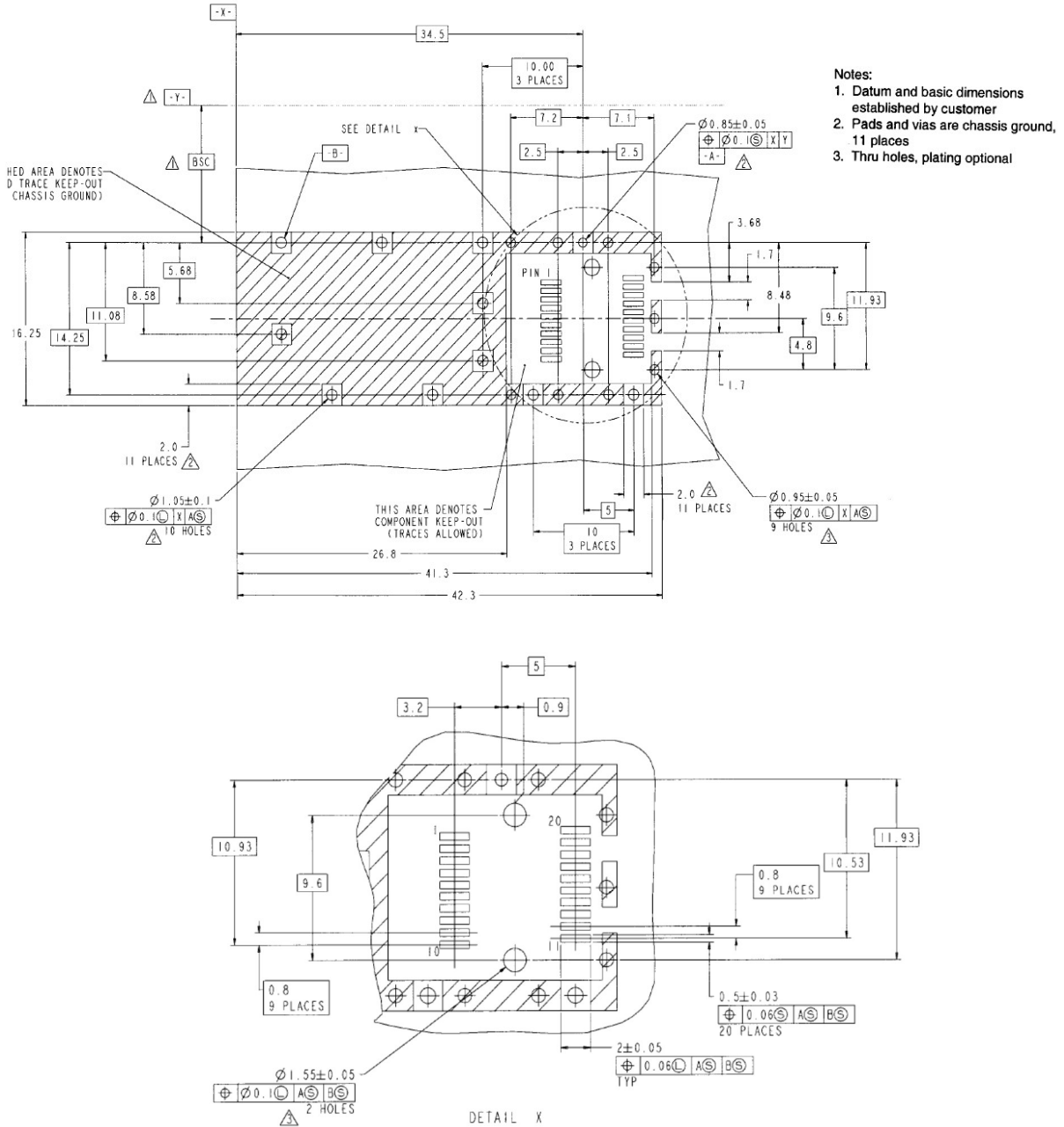
1. The module signal ground contacts.
2. This pin is an open drain/collector and should be pulled up to Vcc-host in the host with a 4.7k~10k Ohm resistor.
3. This pin should be pulled up to Vcct with a 4.7k~10k Ohm resistor in modules.
4. SDA&SCL (IIC) are needed pull up 4.7k~10k Ohm resistors on host board.
5. Mod\_ABS is connected to VeeT or VeeR in the SFP+ module.
6. Rate Select 0,no connection required.
7. Module RX\_Los of signal indication need pull up 4.7k~10k Ohm resistor on host board.
8. Rate Select 1,no connection required.
9. RD -/+ : These are the differential receiver outputs. They are CML AC-coupled with 100 Ohm terminal resistor matching internal.
10. VccR and VccT are the receiver and transmitter power supplies.
11. TD -/+ : These are the differential transmitter inputs. They are CML AC-coupled with 100 Ohm terminal resistor matching internal.

## 6. Host-Active optical cable end Interface Block Diagram



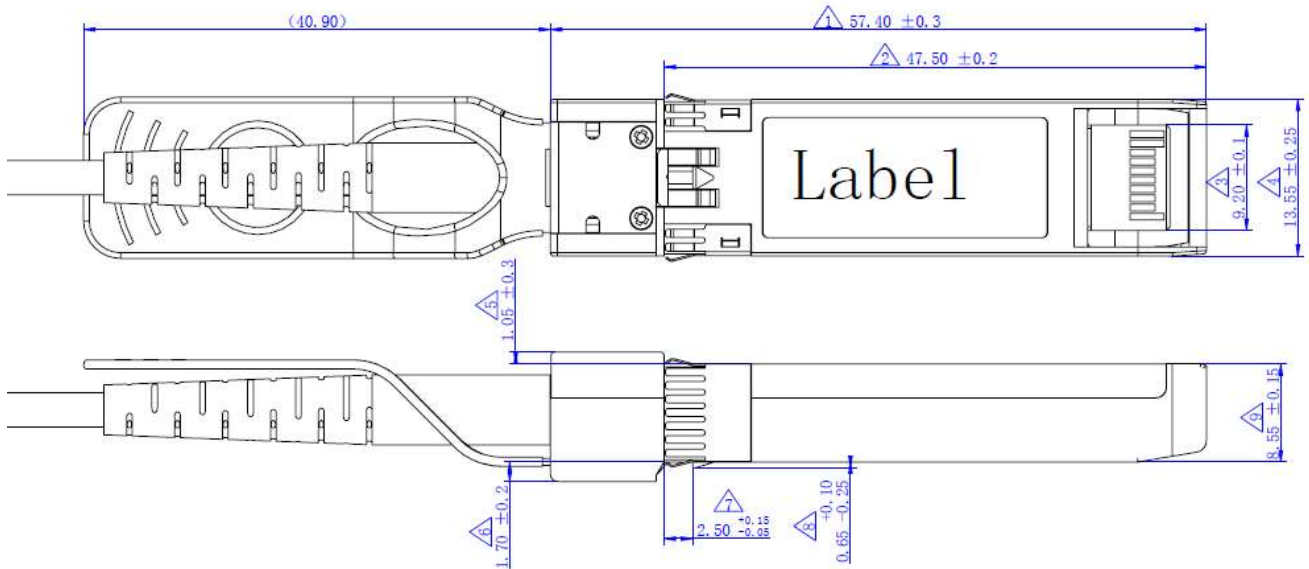
## 7. Host PCB Layout

Dimensions are in millimeters. (Unit: mm)



## 8. Mechanical Drawing

Dimensions are in millimeters. All dimensions are  $\pm 0.1$ mm unless otherwise specified. (Unit: mm)





## 9. Ordering information

Part. No	Specifications						
	Pack	Rate (Gbps)	Tx (nm)	Rx	Temp (°C)	Reach (m)	Others
MPTED3-DZC-001T	SFP+	10.3125	850 VCSEL	PIN	0~+70	1	RoHS
MPTED3-DZC-003T	SFP+	10.3125	850 VCSEL	PIN	0~+70	3	RoHS
MPTED3-DZC-005T	SFP+	10.3125	850 VCSEL	PIN	0~+70	5	RoHS
MPTED3-DZC-007T	SFP+	10.3125	850 VCSEL	PIN	0~+70	7	RoHS
MPTED3-DZC-010T	SFP+	10.3125	850 VCSEL	PIN	0~+70	10	RoHS
MPTED3-DZC-015T	SFP+	10.3125	850 VCSEL	PIN	0~+70	15	RoHS
MPTED3-DZC-020T	SFP+	10.3125	850 VCSEL	PIN	0~+70	20	RoHS
MPTED3-DZC-025T	SFP+	10.3125	850 VCSEL	PIN	0~+70	25	RoHS
MPTED3-DZC-030T	SFP+	10.3125	850 VCSEL	PIN	0~+70	30	RoHS
MPTED3-DZC-040T	SFP+	10.3125	850 VCSEL	PIN	0~+70	40	RoHS
MPTED3-DZC-050T	SFP+	10.3125	850 VCSEL	PIN	0~+70	50	RoHS
MPTED3-DZC-100T	SFP+	10.3125	850 VCSEL	PIN	0~+70	100	RoHS
MPTED3-DZC-200T	SFP+	10.3125	850 VCSEL	PIN	0~+70	200	RoHS
MPTED3-DZC-300T	SFP+	10.3125	850 VCSEL	PIN	0~+70	300	RoHS

\*Note:

1. OM3 Cable length =<300m

2. More detail product selection and cable lengths, please contact MNC.