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## F-tone Networks 80km 1550nm SFP+ Optical Transceiver FTCS-151X-80DXX

### Features

- ◆ Compliant with SFF-8431, SFF-8432 and IEEE802.3ae
  - ◆ Supports rate up to 10.3 Gb/s bit rates
  - ◆ 1G/2G/4G/ 8G/10G Fiber Channel applications.
  - ◆ Cooled EML transmitter and APD receiver
  - ◆ link length up to
-

supply voltage.



Figure1. Module Block Diagram

### Absolute Maximum Ratings

| Parameter           | Symbol | Min  | Max | Unit |
|---------------------|--------|------|-----|------|
| Supply Voltage      | Vcc    | -0.5 | 3.8 | V    |
| Storage Temperature | Tst    | -40  | 85  | °C   |
| Relative Humidity   | Rh     | 0    | 85  | %    |

### Operating Conditions

| Parameter      | Symbol | Min  | Typical | Max  | Unit |
|----------------|--------|------|---------|------|------|
| Supply Voltage | Vcc    | 3.13 | 3.3     | 3.47 | V    |
| Supply current | Icc    | -    | 420     | 610  | mA   |





|                           |          |     |      |           |      |
|---------------------------|----------|-----|------|-----------|------|
| Data Rate                 | Mra      | -   | 10.3 | 11.3      | Gbps |
| Differential Output Swing | Vout P-P | 350 | -    | 850       | mV   |
| Rise/Fall Time            | Tr / Tf  | 24  | -    | -         | ps   |
| Loss of Signal –Asserted  | VOH      | 2   | -    | Vcc3+0.3- | V    |
| Loss of Signal –Negated   | VOL      | 0   | -    | +0.4      | V    |

## Digital Diagnostic Functions

| Parameter                     | Symbol    | Min.  | Max   | Unit | Notes                 |
|-------------------------------|-----------|-------|-------|------|-----------------------|
| <b>Accuracy</b>               |           |       |       |      |                       |
| Transceiver Temperature       | DMI_Temp  | -3    | +3    | degC | Over operating temp   |
| TX Output optical power       | DMI_TX    | -3    | +3    | dB   |                       |
| RX Input optical power        | DMI_RX    | -3    | +3    | dB   | -3dBm to -12dBm range |
| Transceiver Supply voltage    | DMI_VCC   | -0.08 | +0.08 | V    | Full operating range  |
| Bias current monitor          | DMI_Ibias | -10%  | 10%   | mA   |                       |
| <b>Dynamic Range Accuracy</b> |           |       |       |      |                       |
| Transceiver Temperature       | DMI_Temp  | -5    | 70    | degC |                       |
| TX Output optical power       | DMI_TX    | -1    | +2    | dBm  |                       |
| RX Input optical power        | DMI_RX    | -26   | -7    | dBm  |                       |
| Transceiver Supply voltage    | DMI_VCC   | 3.0   | 3.6   | V    |                       |
| Bias current monitor          | DMI_Ibias | 0     | 100   | mA   |                       |





Figure2.Electrical Pin-out Details

## Pin Descriptions



**Notes:**

- [1] Module circuit ground is isolated from module chassis ground within the module.
- [2].should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
- [3]Tx\_Disable is an input contact with a 4.7 k to 10 k pullup to VccT inside the module.
- [4]Mod\_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to Vcc\_Host with a resistor in the range 4.7 k to 10 k .Mod\_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
- [5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 k resistors in the module.



**Figure3. Host Board Power Supply Filters Circuit**



**Figure4. Host-Module Interface**



**Figure5. Mechanical Specifications**

## Regulatory Compliance

F-tone Networks SFP+ transceiver is designed to be Class I Laser safety compliant and is certified per the following standards:

| Feature                  | Agency | Standard  |
|--------------------------|--------|---|
| Laser Safety             | FDA    | CDRH 21 CFR 1040 and Laser Notice No. 50          |
| Product Safety           | UL     | UL and CUL EN60950-2:2007                         |
| Environmental protection | SGS    | RoHS Directive 2002/95/EC                         |
| EMC                      | WALTEK | EN 55022:2006+A1:2007<br>EN 55024:1998+A1+A2:2003 |

## Ordering information

| Part Number    | Product Description                                  |
|----------------|--|
| FTCS-151X-80D  | 10Gbps, 1550nm SFP+, from 70km to 80km, 0 to +70°C   |
| FTCS-151X-80DI | 10Gbps, 1550nm SFP+, from 70km to 80km, -40 to +85°C |

## References

1. “Specifications for Enhanced Small Form Factor Pluggable Module SFP+”, SFF-8431, Rev 4.1, July 6, 2009.
2. “Improved Pluggable Formfactor”,SFF-8432, Rev 4.2, Apr 18, 2007
3. IEEE802.3ae – 2002
4. “Diagnostic Monitoring Interface for Optical Transceivers” SFF-8472, Rev 10.3, Dec 1, 2007

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