WAVE2WAVE.io
Cabling, Power, Connectivity - Simplified

SFP+ Loopback

Overview

The w-Ignite™ SFP+ Passive Electrical Loopback Module is designed for testing and validating SFP/SFP+ transceiver ports in network equipment, switches, and system boards. It provides a low-loss, cost-effective electrical return path, enabling port functionality, power consumption, and signal integrity testing without the need for optical transceivers.

Fully MSA-compliant, this loopback substitutes for a standard SFP+ module to facilitate R&D validation, production testing, and field diagnostics. With its durable construction and precise electrical performance, the w-Ignite™ SFP+ Loopback is ideal for data center, telecom, and manufacturing environments requiring consistent and reliable test results.

Applications

- SFP/SFP+ port testing and validation
- System-level and board-level diagnostics
- Test and measurement environments
- Power-on and signal integrity verification

Features

- Operates up to 14 Gbps (FDR) per lane
- Power consumption <1 W at 3.3 VDC
- Hot-pluggable, MSA-compatible design
- Fully compliant with SFF-8431, SFF-8461, and MSA standards
- Custom memory map with programmable serial ID
- EEPROM coding via I^2C (256-byte) for advanced diagnostics
- Wide operating temperature range (-40 °C to +85 °C)
- Compatible with SONET/SDH, Ethernet, Fiber Channel, and InfiniBand

Benefits

- Cost-effective solution for SFP/SFP+ port testing
- Enables board-level and system validation
- Simplifies power-on and memory map testing
- Ensures excellent signal integrity and repeatable results
- Reliable plug-and-play design reduces complexity

Specifications

- PCB Paddle: 20 positions (20POS)
- Contact Plating: 30 µin. gold for high conductivity
- Pull Tab: Nylon with stainless steel cover
- EMI Girdle: Stainless steel for improved shielding
- Durability: 500 cycles (EIA-364-23C)
- Mating Force: ≤50 N (EIA-364-13D)
- Unmating Force: ≤40 N (EIA-364-13D)
- Latch Strength: ≥90 N (EIA-364-13D)
- Supply Voltage: 3.13–3.47 VDC (typ. 3.3 VDC)
- Withstanding Voltage: 300 VDC
- Power Rating: 0.5 A max per contact
- Insulation Resistance: ≥1000 MΩ (EIA-364-21C)
- Differential Impedance: 100 Ω ±10 @70 ps rise time (20–80%) (EIA-364-108)
- Within-Pair Skew: <10 ps (EIA-364-103)
- Insertion Loss (SDD21): 0 dB typical, simulates fixed-length SFP+ DAC IL performance

Recommended Operating Conditions					
Parameter	**Symbol**	**Min**	**Typical**	**Max**	**Unit**
Operating Case Temperature	Tc	-40		+85	ºC
Power Supply Voltage	V_{cc3}	3.14	3.3	3.47	V
Power Dissipation	PD			1	W

Systems	
Performance	10.5 Gbps line speed, full duplex – Bit Error Rate: better than 10E-12
Media	Hot-pluggable, industry-standard – Small form-factor pluggable (SFP+)
Operating Parameters	Supply voltage: 3.3V Power consumption (per end): max 1W

Standards Compliance

- Electrical: SFF-8431, SFF-8083
- Mechanical: SFF-8432
- EEPROM: SFF-8472

RoHS