

# Cisco Smart SFP

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## Cisco Smart SFPs (Small Form-Factor Pluggables) family

### Product overview

Cisco Smart SFPs enable applications such as TDM over Packet, migration and integration of Transport Networks into Packet Switching Networks, interoperability with any standard SAToP equipment, and aggregation of SONET/SDH links. These Smart SFPs can operate with Cisco's HD CEM solution on the NCS4200/NCS540/ASR900 product family today.

#### **Cisco TPoP (Transparent PDH over Packet) Smart SFP**

The TPoP Smart SFPs convert T1, E1 or T3 incoming signals into Gigabit Ethernet traffic, enabling the integration of Synchronous Interfaces onto Ethernet Networks.

This conversion is based on SAToP (RFC4553) protocol.



**Figure 1.**

Cisco TPoP Smart SFP for T1 and E1



**Figure 2.**

Cisco TPoP Smart SFP for T3

#### **Cisco CSoP (Channelized SONET/SDH over Packet) OC-3/STM-1 Smart SFP**

The CSoP Smart SFP converts OC-3 or STM-1 incoming signals into Gigabit Ethernet traffic enabling the integration of Synchronous Interfaces onto Ethernet Networks.

Additionally, it channelizes a STM-1 signal into 63 (E1) or an OC-3 signal into 84 (DS1) independent Circuit Emulated Services (CES), and vice versa, it converts 63 (E1)/84 (DS1) independent CES streams into a fully channelized signal.

#### **Cisco TSoP (Transparent SONET/SDH over Packet) OC-3/STM-1 Smart SFP**

The TSoP Smart SFP provides a fully transparent method for transporting SONET/SDH traffic across the Ethernet network, a method for encapsulating SONET-SDH bit-streams as pseudo wires over a packet-switching network. It transmits and receives OC-3/STM-1 optical signal on the fiber interface, and transmits and receives packets via electrical Gigabit Ethernet interface towards and from the hosting system.

### Cisco TSoP (Transparent SONET/SDH over Packet) OC-12/STM-4 Smart SFP

The TSoP Smart SFP provides a fully transparent method for transporting SONET/SDH traffic across the Ethernet network, a method for encapsulating SONET-SDH bit-streams as pseudo wires over a packet-switching network. It transmits and receives OC-12/STM-4 optical signal on the fiber interface, and transmits and receives packets via electrical Gigabit Ethernet interface towards and from the hosting system.



**Figure 3.**  
Cisco CSoP and TSoP Smart SFP

### Product specifications

Tables 1 and 2 list the Cisco Smart SFP parameters and characteristics.

#### Cabling characteristics

**Table 1.** Cabling characteristics

Product description	Connector type	Media	Cable type	Fiber grade	Core size (microns)	Maximum distance (m)
T1F SAToP Smart SFP	RJ-45	Copper	Cat5e/6A	N/A	N/A	200
E1F SAToP Smart SFP	RJ-45	Copper	Cat5e/6A	N/A	N/A	100
T3F SAToP Smart SFP	Mini Coax	Copper	Mini Coaxial	N/A	N/A	137
Channelized OC-3/STM-1 Smart SFP	LC	SMF	Duplex Fiber	G.652	9	15,000
Transparent OC-3/STM-1 Smart SFP	LC	SMF	Duplex Fiber	G.652	9	40,000
Transparent OC-12/STM-4 Smart SFP	LC	SMF	Duplex Fiber	G.652	9	40,000

## Environmental and operational characteristics

**Table 2.** Environmental and operational characteristics

Product Description	Operating temp range	Storage temp range	DOM capable	Typical power consumption (W)	Bail-latch color
<b>T1F SAtOP Smart SFP</b>	-40 to 85° C	-40 to 85° C	Not applicable	1.2W	Golden
<b>E1F SAtOP Smart SFP</b>	-40 to 85° C	-40 to 85° C	Not applicable	1.05W	Golden
<b>T3F SAtOP Smart SFP</b>	-40 to 85° C	-40 to 85° C	Not applicable	1.25W	Yellow
<b>Channelized OC-3/STM-1 Smart SFP</b>	-40 to 85° C	-40 to 85° C	Yes	1.28W	Yellow
<b>Transparent OC-3/STM-1 Smart SFP</b>	-40 to 85° C	-40 to 85° C	Yes	1.3W	Red
<b>Transparent OC-12/STM-4 Smart SFP</b>	-40 to 85° C	-40 to 85° C	Yes	1.3W	Red

## Dimensions

- For TPoP Smart SFP: Dimensions (H x W x D)—8.5 mm x 13.7 mm x 69.2 mm
- For CSoP and TSoP Optical Smart SFP: Dimensions (H x W x D): 8.5 mm x 13.9 mm x 56.5 mm

## Regulatory and standard compliance

### For TPoP Smart SFP

- Class B Electromagnetic Interference per FCC part 15 and EN55022
- ITU-T G.703 Compliant
- RoHS Compliant

### For CSoP and TSoP Smart SFP

- Class 1 Laser per FDA/CDRH and IEC-60825 standards
- Optical Specification according to GR-253-CORE and ITU-T G.957
- Electrical interface: GbE in acc. IEEE Std 802.3-2008
- RoHS Compliant

## Ordering information

To place an order, visit the [Cisco Ordering Home Page](#). Table 3 lists the ordering information for the Cisco SFP transceivers for POS/SDH and ATM applications.

**Table 3.** Ordering information

Product description	Product number
<b>T1F SAToP Smart SFP</b>	SFP-T1F-SATOP-I
<b>E1F SAToP Smart SFP</b>	SFP-E1F-SATOP-I
<b>T3F SAToP Smart SFP</b>	SFP-T3F-SATOP-I
<b>Channelized OC-3/STM-1 Smart SFP</b>	SFP-CH-OC3STM1-I
<b>Transparent OC-3/STM-1 Smart SFP</b>	SFP-TS-OC3STM1-I
<b>Transparent OC-12/STM-4 Smart SFP</b>	SFP-TS-OC12STM4-I

## Warranty

- Standard warranty: 5 years
- Expedited replacement available via a Cisco SMARTnet Service support contract

## Cisco environmental sustainability

Information about Cisco's environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the "Environment Sustainability" section of Cisco's [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the "Environment Sustainability" section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
<b>Information on product material content laws and regulations</b>	<a href="#">Materials</a>
<b>Information on electronic waste laws and regulations, including products, batteries, and packaging</b>	<a href="#">WEEE compliance</a>

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

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## Document history

New or revised topic	Described in	Date
Adding new PIDs SFP-T3-SATOP-I and SFP-CH-OC3STM1-I	This datasheet	October 10, 2022
Adding new PID SFP-TS-OC3STM1-I	This datasheet	March 22, 2024
Adding new PID SFP-TS-OC12STM4-I	This datasheet	June 18, 2025

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