


# Optical Transceiver



**SFP Duplex**

- > LC duplex connector
- > 155M, GbE, 1/2/4FC and data rate
- > 2km~120km reach
- > DDMI function
- > Hot Pluggable
- > Commercial, industrial temperature range
- > RoHS compliant



**SFF Duplex**

- > LC duplex connector
- > 155M, GbE, 2.5G data rate
- > Commercial, industrial temperature range
- > RoHS compliant



**1x9 Duplex SC/ST**

- > SC/ST duplex
- > 155M, GbE data rate
- > Commercial, industrial temperature range



**SFP BIDI**

- > LC/SC simplex connector
- > 155M, GbE, 2.5G data rate
- > Bi-directional link
- > 10km~80km reach
- > DDMI function
- > Hot Pluggable
- > Commercial, industrial temperature range



**10G SFP+ SR/LR**

- > 10G base-SR/LR 10 Gigabit Ethernet
- > LC duplex connector
- > Digital Diagnostic function available
- > Hot Pluggable
- > SR : LAN and Fiber Channel over Ethernet application
- > RoHS compliant



**QSFP+ SR/ QSFP28 SR**

- > 40GBase-SR 40Gigabit Ethernet
- > 100GBase-SR 100Gigabit Ethernet
- > MPO optical connector
- > Low power consumption
- > Digital Diagnostic function available
- > Hot Pluggable
- > Data Center application
- > RoHS compliant



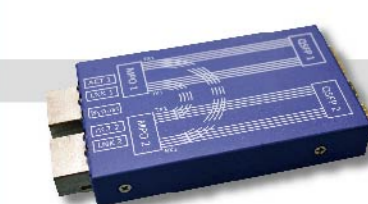
**QSFP+ LR/ QSFP28 LR**

- > 40GBase-LR 40Gigabit Ethernet
- > 100GBase-LR 100Gigabit Ethernet
- > LC duplex connector
- > Low power consumption
- > Digital Diagnostic function available
- > Hot Pluggable
- > RoHS compliant



**QSFP+ AOC**

- > 40GBase-SR4 40Gigabit Ethernet
- > 100GBase-SR4 100Gigabit Ethernet
- > Low power consumption
- > Digital Diagnostic function available
- > Hot Pluggable
- > Data Center application
- > RoHS compliant



**Optical Bypass Module**

- > Reliable Passive Fiber Bypass(Latching)
- > Failproof. Ideal for inline networking device
- > Low Return Loss
- > 1G/10G/40G Ethernet type available
- > 2 ports or 4 ports available
- > Digital Diagnostic function available

**FORMERICA OE**  
Formerica OptoElectronics Inc

OBM	Model Name	Data Rate	Port	Light Source	Distance	Temp(deg C)
	OBM-B3BH4-E01	1G SX	4 port	850nm	550M	0~70C
	OBM-B3BH2-E01	1G SX	2 port	850nm	550M	0~70C
	OBM-A3BA4-C01	1G LX	4 port	1310nm	10km	0~70C
	OBM-A3BA2-C01	1G LX	2 port	1310nm	10km	0~70C
	OBM-B1CH2-P01	10G SR	2 port	850nm	300M	10~70C
	OBM-B1CH4-P01	10G SR	4 port	850nm	300M	10~70C
	OBM-A1CB4-C01	10G LR	4 port	1310nm	10km	10~70C
	OBM-A3CB2-C01	10G LR	2 port	1310nm	10km	0~70C
	OBM-D3QH2-B01	40G SR	2 port	850nm	100M	0~70C

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 Address:5F-11, No.38, Taiyuan St., Zhubei City, Hsinchu County 302, Taiwan (R.O.C.)

SFF SC BIDI	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TBS-F1AA2-G11	155M	1310 FP	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-F2AA2-G11	155M	1310 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-F1AC2-G11	155M	1510 FP	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-F2AC2-G11	155M	1510 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-F1AC2-G21	155M	1510 FP	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-F2AC2-G21	155M	1510 FP	SC	20km	-40~85	3.3V	DC/DC PECL
	TBS-F1CA2-F11	1.25G	1310 FP	SC	10km	0~70	3.3V	AC/AC TTL
	TBS-F2CA2-F11	1.25G	1310 FP	SC	10km	-40~85	3.3V	AC/AC TTL
	TBS-F1CA2-F21	1.25G	1310 FP	SC	10km	0~70	3.3V	DC/DC PECL
	TBS-F2CA2-F21	1.25G	1310 FP	SC	10km	-40~85	3.3V	DC/DC PECL
	TBS-F1CA2-G11	1.25G	1310 FP	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-F2CA2-G11	1.25G	1310 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-F1CA2-G21	1.25G	1310 FP	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-F2CA2-G21	1.25G	1310 FP	SC	20km	-40~85	3.3V	DC/DC PECL
	TBS-F1CK2-F11	1.25G	1550 DFB	SC	10km	0~70	3.3V	AC/AC TTL
	TBS-F2CK2-F11	1.25G	1550 DFB	SC	10km	-40~85	3.3V	AC/AC TTL
	TBS-F1CK2-F21	1.25G	1550 DFB	SC	10km	0~70	3.3V	DC/DC PECL
	TBS-F2CK2-F21	1.25G	1550 DFB	SC	10km	-40~85	3.3V	DC/DC PECL
	TBS-F1CK2-G11	1.25G	1550 DFB	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-F2CK2-G11	1.25G	1550 DFB	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-F1CK2-G21	1.25G	1550 DFB	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-F2CK2-G21	1.25G	1550 DFB	SC	20km	-40~85	3.3V	DC/DC PECL

SFF	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TSP-F1AA1-D11	155M	1310 FP	LC	2km	0~70	3.3V	AC/AC TTL
	TSP-F2AA1-D11	155M	1310 FP	LC	2km	-40~85	3.3V	AC/AC TTL
	TSP-F1AA1-D21	155M	1310 FP	LC	2km	0~70	3.3V	DC/DC PECL
	TSP-F2AA1-D21	155M	1310 FP	LC	2km	-40~85	3.3V	DC/DC PECL
	TSP-F1AA1-H21	155M	1310 FP	LC	30km	0~70	3.3V	AC/AC TTL
	TSP-F2AA1-H21	155M	1310 FP	LC	30km	-40~85	3.3V	AC/AC TTL
	TSP-F1AA1-M11	155M	1310 FP	LC	60km	0~70	3.3V	AC/AC TTL
	TSP-F2AA1-M11	155M	1310 FP	LC	60km	-40~85	3.3V	AC/AC TTL
	TSP-F1AA1-M21	155M	1310 FP	LC	60km	0~70	3.3V	DC/DC PECL
	TSP-F2AA1-M21	155M	1310 FP	LC	60km	-40~85	3.3V	DC/DC PECL
	TSP-F1CH1-C11	1.25G	850 VCSEL	LC	550m	0~70	3.3V	AC/AC TTL
	TSP-F2CH1-C11	1.25G	850 VCSEL	LC	550m	-40~85	3.3V	AC/AC TTL
	TSP-F1CH1-C21	1.25G	850 VCSEL	LC	550m	0~70	3.3V	DC/DC PECL
	TSP-F2CH1-C21	1.25G	850 VCSEL	LC	550m	-40~85	3.3V	DC/DC PECL
	TSP-F1CA1-F11	1.25G	1310 FP	LC	10km	0~70	3.3V	AC/AC TTL
	TSP-F2CA1-F11	1.25G	1310 FP	LC	10km	-40~85	3.3V	AC/AC TTL
	TSP-F1CA1-F21	1.25G	1310 FP	LC	10km	0~70	3.3V	DC/DC PECL
	TSP-F2CA1-F21	1.25G	1310 FP	LC	10km	-40~85	3.3V	DC/DC PECL
	TSP-F1CA1-G11	1.25G	1310 FP	LC	20km	0~70	3.3V	AC/AC TTL
	TSP-F2CA1-G11	1.25G	1310 FP	LC	20km	-40~85	3.3V	AC/AC TTL
	TSP-F1CA1-G21	1.25G	1310 FP	LC	20km	0~70	3.3V	DC/DC PECL
	TSP-F2CA1-G21	1.25G	1310 FP	LC	20km	-40~85	3.3V	DC/DC PECL
	TSP-F1CB1-K21	1.25G	1310 DFB	LC	40km	0~70	3.3V	DC/DC PECL
	TSP-F2CB1-K21	1.25G	1310 DFB	LC	40km	-40~85	3.3V	DC/DC PECL

1x9 ST BIDI	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TBS-D1AA6-G2T	155M	1310 FP	ST	20km	0~70	3.3V	DC/DC PECL
	TBS-D2AA6-G2T	155M	1310 FP	ST	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1AC6-G2T	155M	1550 FP	ST	20km	0~70	3.3V	DC/DC PECL
	TBS-D2AC6-G2T	155M	1550 FP	ST	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1CA6-G2T	1.25G	1310 FP	ST	20km	0~70	3.3V	DC/DC PECL
	TBS-D2CA6-G2T	1.25G	1310 FP	ST	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1CK6-G2T	1.25G	1550 DFB	ST	20km	0~70	3.3V	DC/DC PECL
	TBS-D2CK6-G2T	1.25G	1550 DFB	ST	20km	-40~85	3.3V	DC/DC PECL

1x9 SC BIDI	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TBS-D1AA2-G2T	155M	1310 FP	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-D2AA2-G2T	155M	1310 FP	SC	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1AA2-K2T	155M	1310 FP	SC	40km	0~70	3.3V	DC/DC PECL
	TBS-D2AA2-K2T	155M	1310 FP	SC	40km	-40~85	3.3V	DC/DC PECL
	TBS-D1AA2-M2T	155M	1310 FP	SC	60km	0~70	3.3V	DC/DC PECL
	TBS-D2AA2-M2T	155M	1310 FP	SC	60km	-40~85	3.3V	DC/DC PECL
	TBS-D1AC2-G2T	155M	1550 FP	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-D2AC2-G2T	155M	1550 FP	SC	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1AK2-K2T	155M	1550 DFB	SC	40km	0~70	3.3V	DC/DC PECL
	TBS-D2AK2-K2T	155M	1550 DFB	SC	40km	-40~85	3.3V	DC/DC PECL
	TBS-D1AK2-M2T	155M	1550 DFB	SC	60km	0~70	3.3V	DC/DC PECL
	TBS-D2AK2-M2T	155M	1550 DFB	SC	60km	-40~85	3.3V	DC/DC PECL
	TBS-D1CA2-G2T	1.25G	1310 FP	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-D2CA2-G2T	1.25G	1310 FP	SC	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1CK2-G2T	1.25G	1550 DFB	SC	20km	0~70	3.3V	DC/DC PECL
	TBS-D2CK2-G2T	1.25G	1550 DFB	SC	20km	-40~85	3.3V	DC/DC PECL
	TBS-D1CK2-K2T	1.25G	1550 DFB	SC	40km	0~70	3.3V	DC/DC PECL
	TBS-D2CK2-K2T	1.25G	1550 DFB	SC	40km	-40~85	3.3V	DC/DC PECL
	TBS-D1CB2-K2T	1.25G	1310 DFB	SC	40km	0~70	3.3V	DC/DC PECL
	TBS-D2CB2-K2T	1.25G	1310 DFB	SC	40km	-40~85	3.3V	DC/DC PECL

1x9 SC	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TSP-D1AA2-H2T	155M	1310 FP	SC	30km	0~70	3.3V	DC/DC PECL
	TSP-D2AA2-H2T	155M	1310 FP	SC	30km	-40~85	3.3V	DC/DC PECL
	TSP-D3AA2-H2T	155M	1310 FP	SC	30km	0~70	5V	DC/DC PECL
	TSP-D1AA2-M2T	155M	1310 FP	SC	60km	0~70	3.3V	DC/DC PECL
	TSP-D2AA2-M2T	155M	1310 FP	SC	60km	-40~85	3.3V	DC/DC PECL
	TSP-D2AA2-Q2T	155M	1310 FP	SC	80km	-40~85	3.3V	DC/DC PECL
	TSP-D1AK2-R2T	155M	1550 DFB	SC	100km	0~70	3.3V	DC/DC PECL
	TSP-D1AK2-T2T	155M	1550 DFB	SC	120km	0~70	3.3V	DC/DC PECL
	TSP-DACA2-F1T	1.25G	1310 FP	SC	10km	0~70	3.3/5V	AC/AC TTL
	TSP-DBCA2-F1T	1.25G	1310 FP	SC	10km	-40~85	3.3/5V	AC/AC TTL

1x9 ST	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TSP-D1AN6-D1T	155M	1310 LED	ST	2km	0~70	3.3V	AC/AC TTL
	TSP-D1AN6-D2T	155M	1310 LED	ST	2km	0~70	3.3V	DC/DC PECL
	TSP-D2AN6-D2T	155M	1310 LED	ST	2km	-40~85	3.3V	DC/DC PECL
	TSP-D1AA6-G2T	155M	1310 FP	ST	20km	0~70	3.3V	DC/DC PECL
	TSP-D2AA6-G2T	155M	1310 FP	ST	20km	-40~85	3.3V	DC/DC PECL
	TSP-D1AA6-H2T	155M	1310 FP	ST	30km	0~70	3.3V	DC/DC PECL
	TSP-D2AA6-H2T	155M	1310 FP	ST	30km	-40~85	3.3V	DC/DC PECL
	TSP-D1AA6-K2T	155M	1310 FP	ST	40km	0~70	3.3V	DC/DC PECL
	TSP-D2AA6-K2T	155M	1310 FP	ST	40km	-40~85	3.3V	DC/DC PECL

1x9 ST	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TSP-D1AA6-M2T	155M	1310 FP	ST	60km	0~70	3.3V	DC/DC PECL
	TSP-D2AA6-M2T	155M	1310 FP	ST	60km	-40~85	3.3V	DC/DC PECL
	TSP-D2AK6-T2S	155M	1550 DFB	ST	120km	-40~85	3.3V	DC/DC PECL
	TSP-D1CH6-C1T	1.25G	850 VCSEL	ST	550m	0~70	3.3V	AC/AC TTL
	TSP-D1CH6-C2T	1.25G	850 VCSEL	ST	550m	-40~85	3.3V	AC/AC TTL
	TSP-D2CH6-C2T	1.25G	850 VCSEL	ST	550m	0~70	3.3V	DC/DC PECL
	TSP-D1CA6-F2T	1.25G	1310 FP	ST	10km	0~70	3.3V	DC/DC PECL
	TSP-D2CA6-F2T	1.25G	1310 FP	ST	10km	-40~85	3.3V	DC/DC PECL
	TSP-D1CA6-G2T	1.25G	1310 FP	ST	20km	0~70	3.3V	DC/DC PECL
	TSP-D2CA6-G2T	1.25G	1310 FP	ST	20km	-40~85	3.3V	DC/DC PECL
	TSP-D1CA6-H2T	1.25G	1310 FP	ST	30km	0~70	3.3V	DC/DC PECL
	TSP-D2CA6-H2T	1.25G	1310 FP	ST	30km	-40~85	3.3V	DC/DC PECL
	TSP-D1CK6-L2T	1.25G	1550 DFB	ST	30km	0~70	3.3V	DC/DC PECL
	TSP-D2CK6-L2T	1.25G	1550 DFB	ST	30km	-40~85	3.3V	DC/DC PECL
	TSP-D1CK6-Q2T	1.25G	1550 DFB	ST	80km	0~70	3.3V	DC/DC PECL
	TSP-D2CK6-Q2T	1.25G	1550 DFB	ST	80km	-40~85	3.3V	DC/DC PECL

SFP SC BIDI without DD	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TBS-S2AA2-G11	155M	1310 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-S1AC2-G1T	155M	1550 FP	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-S2AC2-G1T	155M	1550 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-S1CA2-F1T	1.25G	1310 FP	SC	10km	0~70	3.3V	AC/AC TTL
	TBS-S2CA2-F1T	1.25G	1310 FP	SC	10km	-40~85	3.3V	AC/AC TTL
	TBS-S1CA2-G11	1.25G	1310 FP	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-S2CA2-G11	1.25G	1310 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBS-S1CK2-F1T	1.25G	1550 DFB	SC	10km	0~70	3.3V	AC/AC TTL
	TBS-S2CK2-F1T	1.25G	1550 DFB	SC	10km	-40~85	3.3V	AC/AC TTL
	TBS-S1CK2-G11	1.25G	1550 DFB	SC	20km	0~70	3.3V	AC/AC TTL
	TBS-S2CK2-G11	1.25G	1550 DFB	SC	20km	-40~85	3.3V	AC/AC TTL

SFP SC BIDI without DD (1550nm cut)	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TBB-S1CA2-FAS	1.25G	1310 FP	SC	10km	0~70	3.3V	AC/AC TTL
	TBB-S2CA2-FAS	1.25G	1310 FP	SC	10km	-40~85	3.3V	AC/AC TTL
	TBB-S1CA2-G1T	1.25G	1310 FP	SC	20km	0~70	3.3V	AC/AC TTL
	TBB-S2CA2-G1T	1.25G	1310 FP	SC	20km	-40~85	3.3V	AC/AC TTL
	TBB-S1CD2-FAS	1.25G	1490 DFB	SC	10km	0~70	3.3V	AC/AC TTL
	TBB-S2CD2-FAS	1.25G	1490 DFB	SC	10km	-40~85	3.3V	AC/AC TTL
	TBB-S1CD2-G1T	1.25G	1490 DFB	SC	20km	0~70	3.3V	AC/AC TTL
	TBB-S2CD2-G1T	1.25G	1490 DFB	SC	20km	-40~85	3.3V	AC/AC TTL

SFP SC BIDI without DD (1310/1550)	Model Name	Data Rate	Light Source	Connector	Distance	Temp(deg C)	Voltage	SD/LOS
	TBD-S1CA1-F11	1.25G	1310 FP	LC	10km	0~70	3.3V	AC/AC TTL
	TBD-S2CA1-F11	1.25G	1310 FP	LC	10km	-40~85	3.3V	AC/AC TTL
	TBD-S1CA1-G11	1.25G	1310 FP	LC	20km	0~70	3.3V	AC/AC TTL
	TBD-S2CA1-G11	1.25G	1310 FP</					