



## SC Duplex Transceivers

### Fast Ethernet, ATM, FDDI

#### 100/155 Mb/s SC Multimode Transceivers

#### Product Facts

- Data rates of 100 Mb/s (Fast Ethernet), 155 Mb/s (ATM)
- Single +5 volts power supply
- ECL compatible
- Wide 25 to 75% duty cycle operation
- Supports data rates to 125 Mb/s to allow for coding overhead

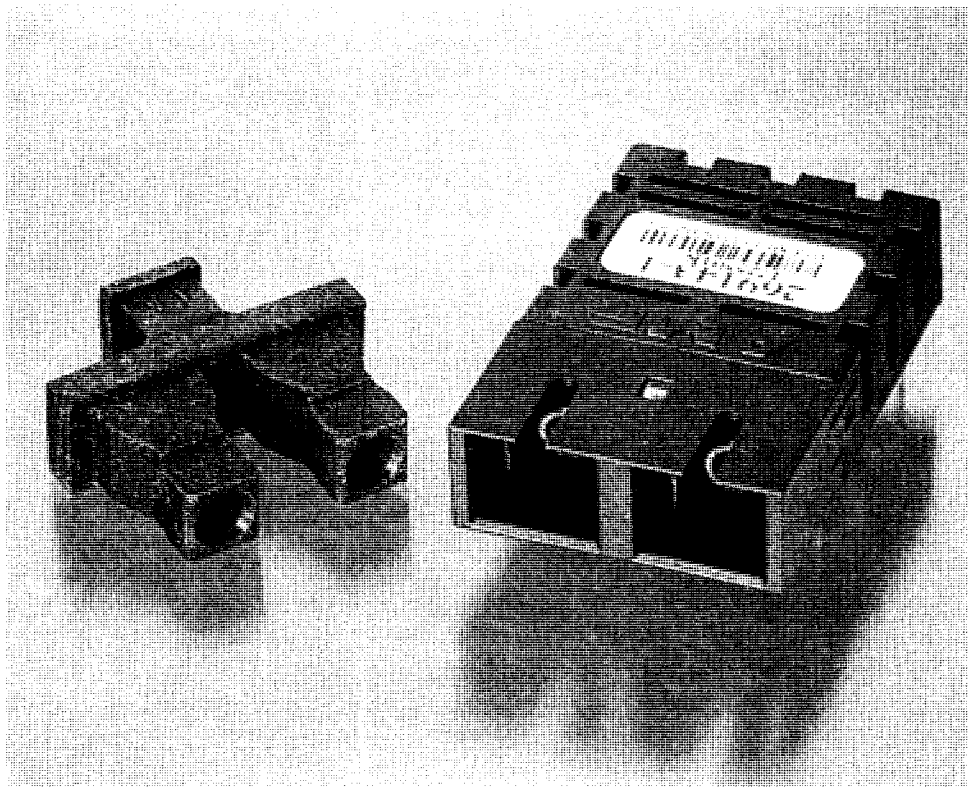
#### Applications

##### Standards

- Fast Ethernet
- FDDI
- ATM

##### Equipment

- Active Star Networks
- FDDI Networks
  - Concentrator
  - Routers
  - Bridges
  - Adapter Cards
- Point-to-Point Links
- Network Interface Cards



Technological advancements in the areas of optical polycarbonate precision molding and resin circuit board manufacturing have enabled AMP to introduce a line of low cost fiber optic transceivers. AMP has incorporated these design breakthroughs into the 9 pin SC Duplex transceiver products. High quality polycarbonate camera lens technology has been configured for 1300 nm fiber optics thus eliminating high cost

optical subassemblies without a performance penalty. Precision chip and wire processes used with advanced resin circuit boards make it possible for mass production of low cost modules. AMP Molded-Optronic 9 pin SC Duplex Transceivers are standard compliant and multisourced high density footprint products that utilize SC connector interfaces capable of delivering the power budget requirements needed for 100 BASE-FX, FDDI PMD,

FDDI LCF PMD, ATM and Fibre Channel applications.

The AMP patented wide duty cycle compensation featured in the receiver section reduces concern of excessive data dependent jitter in Fast Ethernet application where 4B 5B encoding schemes require 40 to 60% duty cycle operability.

Transceivers are supplied with process plugs to protect optical ports during soldering and cleaning processes.

Data Rate	Part Numbers
155 Mb/s	269143-1
100 Mb/s & 125 Mb/s	269142-1



**SC Duplex Transceivers** (Continued)  
**Fast Ethernet, ATM, FDDI**

**100/155 Mb/s SC Multimode Transceivers** (Continued)

**Part Numbers**

269143-1 155 Mb/s  
269142-1 100 Mb/s

**Transmitter Performance Specifications:**  
**(TA = 0 to 70°C, V<sub>CC</sub>-V<sub>EE</sub> = 4.75 to 5.25V DC) 100 Mb/s & 125 MBd/s**

Parameter	Symbol	Min.	Typical	Max.	Units
Data rate (NRZ)	B	0	—	125	Mb/s
Optical output (avg.)(5)	P <sub>OH</sub>	-19	—	-14	dBm
Extinction ratio (P <sub>OL</sub> /P <sub>OH</sub> ) x 100%	—	—	—	10	%
Optical wavelength (2)	λ <sub>out</sub>	1270	1330	1380	nm
Spectral width (2)	Δλ	—	130	—	nm
Duty cycle	—	0	—	100	%
Output risetime (2)	t <sub>TLH</sub>	.6	1.5	3.5	ns
Output falltime (2)	t <sub>THL</sub>	.6	1.5	3.5	ns
Pulse width distortion (1)	—	—	—	0.6	ns
Data dependent jitter (1)	t <sub>DDJ</sub>	—	—	0.6	ns
Random jitter (1)	t <sub>RAN</sub>	—	—	0.6	ns
	V <sub>IL</sub>	V <sub>CC</sub> -1.81	—	V <sub>CC</sub> -1.475	V
Data (3)(4)	V <sub>IH</sub>	V <sub>CC</sub> -1.165	—	V <sub>CC</sub> -0.88	V
Inputs	I <sub>IL</sub>	-2	—	—	μA
	I <sub>IH</sub>	—	—	400	μA
Reference voltage (output)	V <sub>BB</sub>	V <sub>CC</sub> -1.396	—	V <sub>CC</sub> -1.24	V
Power supply voltage	V <sub>CC</sub> -V <sub>EE</sub>	4.75	5.0	5.25	V
Supply current	I <sub>CC</sub> or I <sub>EE</sub>	—	—	140	mA
Operating temperature	T <sub>A</sub>	0	—	70	°C

**Transmitter Performance Specifications:**  
**(TA = 0 to 70°C, V<sub>CC</sub>-V<sub>EE</sub> = 4.75 to 5.25V DC) 155 Mb/s**

Parameter	Symbol	Min.	Typical	Max.	Units
Data rate (NRZ)	B	0	—	156	Mb/s
Optical output (avg.)(5)	P <sub>OH</sub>	-19	—	-14	dBm
Extinction ratio (P <sub>OL</sub> /P <sub>OH</sub> ) x 100%	—	—	—	10	%
Optical wavelength (2)	λ <sub>out</sub>	1270	1330	1380	nm
Spectral width (2)	Δλ	—	130	200	nm
Duty cycle	—	0	—	100	%
Output risetime (2)	t <sub>TLH</sub>	.6	1.2	2.5	ns
Output falltime (2)	t <sub>THL</sub>	.6	1.2	2.5	ns
Pulse width distortion (1)	—	—	—	0.5	ns
Data dependent jitter (1)	t <sub>DDJ</sub>	—	—	0.3	ns
Random jitter (1)	t <sub>RAN</sub>	—	—	0.5	ns
	V <sub>IL</sub>	V <sub>CC</sub> -1.81	—	V <sub>CC</sub> -1.475	V
Data (3)(4)	V <sub>IH</sub>	V <sub>CC</sub> -1.165	—	V <sub>CC</sub> -0.88	V
Inputs	I <sub>IL</sub>	-2	—	—	μA
	I <sub>IH</sub>	—	—	400	μA
Reference voltage (output)	V <sub>BB</sub>	V <sub>CC</sub> -1.396	—	V <sub>CC</sub> -1.24	V
Power supply voltage	V <sub>CC</sub> -V <sub>EE</sub>	4.75	5.0	5.25	V
Supply current	I <sub>CC</sub> or I <sub>EE</sub>	—	—	140	mA
Operating temperature	T <sub>A</sub>	0	—	70	°C

(1) Driven with a differential signal.

(2) Limits on optical wavelength, spectral width, output risetime, and output falltime are controlled by figures below for 125 Mb/s.

(3) When V<sub>BB</sub> is used as the reference voltage.

(4) Voltage levels listed are compatible with 100K Series ECL logic levels. The parts are 100% compatible with 10K and 10KH Series logic when driven with differential signals.

(5) .275 NA 62.5/125 μm Fiber.

(6) LED emitters comply with IEC 825-1 and -2 requirements for eye safety.

**Absolute Maximum Ratings: All Modules**

Parameter	Symbol	Min.	Typical	Max.	Units
Storage temperature	—	-40	—	100	°C
Lead soldering limits	—	—	—	240/10	°C/s
Supply voltage	V <sub>CC</sub> -V <sub>EE</sub>	-2	—	7.00	V



**SC Duplex Transceivers** (Continued)  
**Fast Ethernet, ATM, FDDI**

**100/155 Mb/s SC Multimode Transceivers** (Continued)

**Part Numbers**

269143-1 155 Mb/s  
269142-1 100 Mb/s

**Receiver Performance Specifications:**

(TA = 0 to 70°C, V<sub>CC</sub>-V<sub>EE</sub>= 4.75 to 5.25V DC) 100 Mb/s & 125 MBd/s

Parameter	Symbol	Min.	Typical	Max.	Units
Data rate (NRZ)	B	10	—	125	Mb/s
Optical input (avg.)(3)(5) sensitivity	P <sub>IN</sub>	-33.5	—	-14.0	dBm
Optical wavelength	λ <sub>in</sub>	1270	—	1380	nm
Duty cycle	—	25	50	75	%
Output risetime	t <sub>TLH</sub>	.5	—	2.5	ns
Output falltime	t <sub>THL</sub>	.6	—	2.5	ns
Pulse width distortion (1)	—	—	—	0.4	ns
Data dependent jitter	t <sub>DDJ</sub>	—	—	0.8	ns
Data output (4)	V <sub>OH</sub> V <sub>OL</sub>	V <sub>CC</sub> -1.025 V <sub>CC</sub> -1.81	—	V <sub>CC</sub> -.88 V <sub>CC</sub> -1.62	V V
Signal detect (output)	V <sub>A</sub> V <sub>D</sub>	V <sub>CC</sub> -1.025 V <sub>CC</sub> -1.81	—	V <sub>CC</sub> -.88 V <sub>CC</sub> -1.62	V V
P <sub>IN</sub> power levels (avg.):					
Deassert (2)	P <sub>D</sub>	-41.0 or PB	—	-32.5	dBm
Assert	P <sub>A</sub>	-39.5	—	-31	dBm
Hysteresis	—	1.5	2.0	—	dB
Signal detect delay time:					
Deassert	—	—	—	350	μs
Assert	—	—	—	100	μs
Power supply voltage	V <sub>CC</sub> -V <sub>EE</sub>	4.75	5.0	5.25	V
Supply current	I <sub>CC</sub> or I <sub>EE</sub>	—	—	150	mA
Operating temperature	T <sub>A</sub>	0	—	70	°C

**Receiver Performance Specifications:**

(TA = 0 to 70°C, V<sub>CC</sub>-V<sub>EE</sub>= 4.75 to 5.25V DC) 155 Mb/s

Parameter	Symbol	Min.	Typical	Max.	Units
Data rate (NRZ)	B	10	—	156	Mb/s
Optical input (avg.)(3)(5) sensitivity	P <sub>IN</sub>	-32.5	—	-14.0	dBm
Optical wavelength	λ <sub>in</sub>	1270	—	1380	nm
Duty cycle	—	25	50	75	%
Output risetime	t <sub>TLH</sub>	.5	—	2.5	ns
Output falltime	t <sub>THL</sub>	.5	1.8	2.5	ns
Pulse width distortion (1)	—	—	—	0.4	ns
Data dependent jitter	t <sub>DDJ</sub>	—	—	0.8	ns
Data output (4)	V <sub>OH</sub> V <sub>OL</sub>	V <sub>CC</sub> -1.025 V <sub>CC</sub> -1.81	—	V <sub>CC</sub> -.88 V <sub>CC</sub> -1.62	V V
Signal detect (output)	V <sub>A</sub> V <sub>D</sub>	V <sub>CC</sub> -1.025 V <sub>CC</sub> -1.81	—	V <sub>CC</sub> -.88 V <sub>CC</sub> -1.62	V V
PIN power levels (avg.):					
Deassert (2)	P <sub>D</sub>	-39.0 or PB	—	-32.5	dBm
Assert	P <sub>A</sub>	-38	—	-31.0	dBm
Hysteresis	—	1.5	2.0	—	dB
Signal detect delay time:					
Deassert	—	—	—	50	μs
Assert	—	—	—	50	μs
Power supply voltage	V <sub>CC</sub> -V <sub>EE</sub>	4.75	5.0	5.25	V
Supply current	I <sub>CC</sub> or I <sub>EE</sub>	—	—	150	mA
Operating temperature	T <sub>A</sub>	0	—	70	°C

(1) Measured using FDDI test signaling format, ANSI X3.166-1989.

(2) P<sub>B</sub> = Power at which BER = .01, whichever is greater.

(3) On Eye opening, V<sub>CC</sub> = 5V, 25°C, 2<sup>15</sup>-1 PRBS, 0.275 NA 62.5/125 μm Fiber, BER = 2.5 x 10<sup>-10</sup> for 125 Mb/s.

(4) Voltage levels listed are compatible with 100K Series ECL logic levels. The parts are 100% compatible with 10K and 10KH Series when driven with differential signals.

(5) Onsec Eye opening, V<sub>CC</sub> = 5V, 25°C, 2<sup>23</sup>-1 PRBS, 0.275 NA 62.5/125 μm Fiber, BER = 1.0 x 10<sup>-10</sup> for 156 Mb/s.

(6) Pin plating: 150 microinches minimum Sn93 Pb7 over 50/150 microinches Ni. Case material: Polyethersulfone UL 94 V-O rated.

(7) Mates with optical connectors meeting JIS C 5973.



**SC Duplex Transceivers** (Continued)  
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**100/155 Mb/s SC Multimode Transceivers** (Continued)

**Part Numbers**

269143-1 155 Mb/s  
 269142-1 100 Mb/s

**Related Parts**

269108-1 Process Plug

