

**PLM101-1M****PLM101-1M : PLASTIC FIBER OPTIC LINK  
PLT101 : TRANSMITTER MODULE  
PLR101 : RECEIVER MODULE**

NEPOC Series

**DESCRIPTION**

PLM101-1M includes a transmitter module (PLT101), receiver module (PLR101), and a plastic fiber optic cable (1 meter).

Transmitter module incorporates a 660 nm LED and a LED driver. Receiver module incorporates an integrated photo detector and wide bandwidth dc amplifier. Plastic fiber optic cable (1 mm core) is terminated in snap-in plastic connectors.

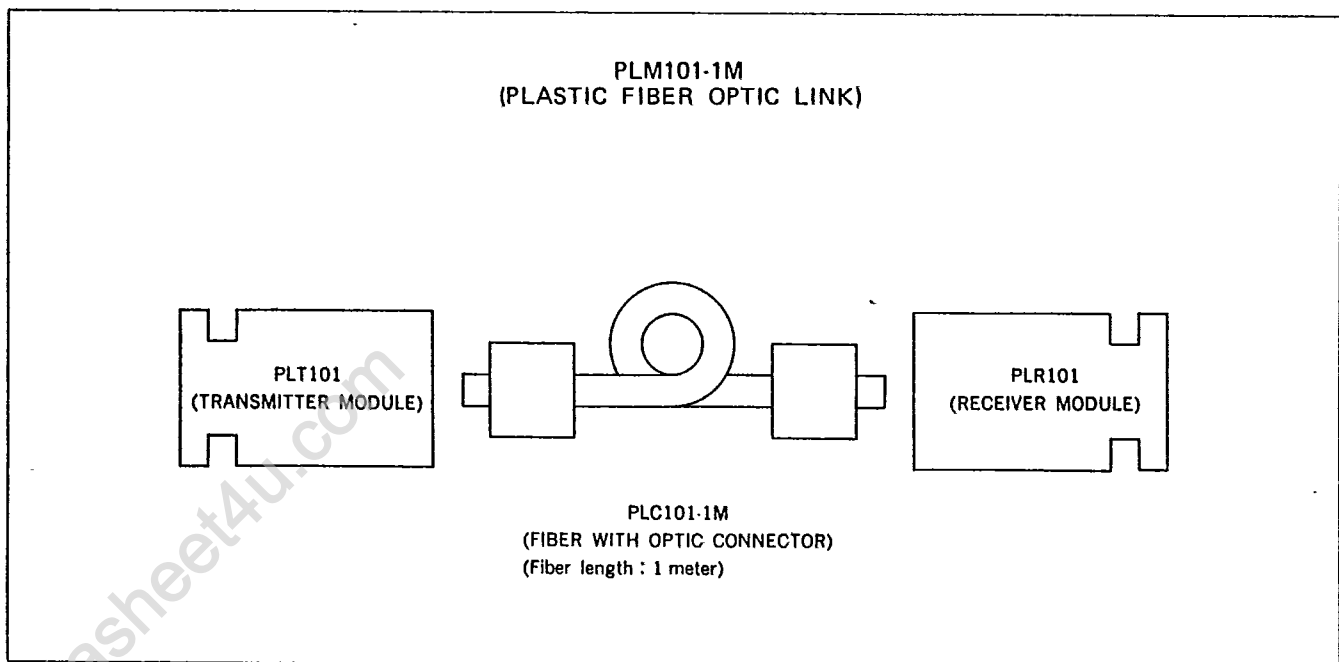
The combination of PLT101 and PLR101 has guaranteed performance over -20 to 70 degrees centigrade from DC to 6 Mb/s (NRZ) up to 5 meters.

**FEATURES**

- Small Package
- Snap-in Connector
- TTL Compatible Output Level
- DC to 6 Mb/s (NRZ) Data Rate
- Single +5 V Power Supply
- Low Power Dissipation

**APPLICATION**

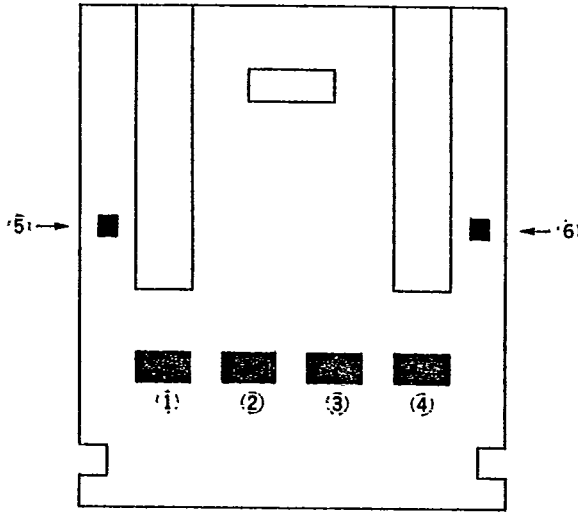
- Local Area Networks
- Computer to Peripheral Links
- Digital Audio Interface
- Factory Data Highways

**CONSTRUCTION OF PLM 101-1M**

NEC cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement.

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PIN CONNECTIONS (Bottom View)

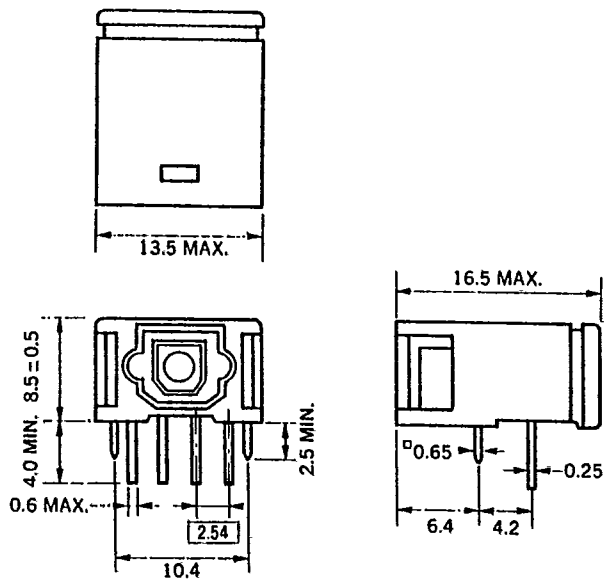


PLT101 (TRANSMITTER MODULE)	
(1)	INPUT
(2)	VCC
(3)	CURRENT CONTROL
(4)	GND
(5)	NC
(6)	NC

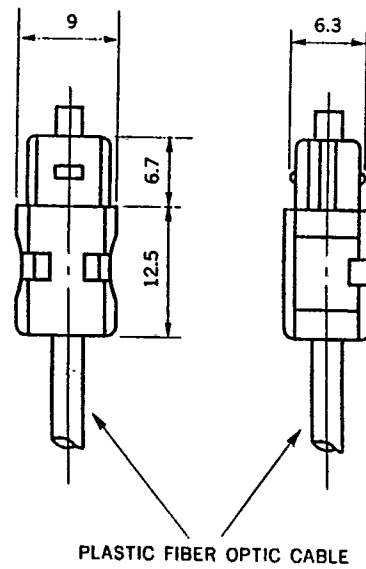
PLR101 (RECEIVER MODULE)	
(1)	Cathode
(2)	VCC
(3)	GND
(4)	OUTPUT
(5)	NC
(6)	NC

PACKAGE DIMENSIONS (Unit: mm)

TRANSMITTER MODULE  
RECEIVER MODULE



OPTIC CONNECTOR



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ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

(1) PLT101 (TRANSMITTER MODULE)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 to +7	V
Input Voltage	V <sub>in</sub>	-0.5 to +5.5	V
Operating Temperature	T <sub>opt</sub>	-20 to +70	°C
Storage Temperature	T <sub>stg</sub>	-40 to +80	°C
Lead Soldering Temp.	T <sub>sol</sub>	260 (Time ≤ 10 s)	°C

(2) PLR101 (RECEIVER MODULE)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>CC</sub>	-0.7 to +7	V
Low Level Output Current	I <sub>OL</sub>	20	mA
High Level Output Current	I <sub>OH</sub>	-1	mA
Operating Temperature	T <sub>opt</sub>	-20 to +70	°C
Storage Temperature	T <sub>stg</sub>	-40 to +80	°C
Lead Soldering Temp.	T <sub>sol</sub>	260 (Time ≤ 10 s)	°C

(3) PLC101-1M (FIBER WITH OPTIC CONNECTOR)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Tensile Force	Cable	T <sub>F</sub>	5 (50)	kgf(N)
	Cable/Connector	T <sub>CF</sub>	2 (20)	kgf(N)
Bend Radius		r	25 (MIN.)	mm
Operating Temperature		T <sub>opt</sub>	-20 to +70	°C
Storage Temperature		T <sub>stg</sub>	-40 to +70	°C

TRUTH TABLE (POSITIVE LOGIC)

Input	TRANSMITTER MODULE	Output (RECEIVER MODULE)
H	LED ON	H
L	LED OFF	L

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## (1) PLM101-1M (LINK: Fiber Length = 1 meter)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Data Rate	—	—	—	6	Mb/s	NRZ, $T_a = 25^\circ C$
Propagation Delay Time (Low to High)	$t_{PLH}$ *1)	—	—	250	ns	APF = 1 m *2), $T_a = 25^\circ C$
Propagation Delay Time (High to Low)	$t_{PHL}$ *1)	—	—	250	ns	APF = 1 m, $T_a = 25^\circ C$
Pulse Width Distortion	$\Delta t_w$	—	—	$\pm 30$	ns	PW = 165 ns, Duty Cycle 50 %, $T_a = 25^\circ C$

\*1) Between Input of PLT101 and Output of PLR101

\*2) APF: Plastic Fiber Optic Cable

## (2) PLT101 (TRANSMITTER MODULE)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Supply Current	$I_{CC}$	—	15	25	mA	$R_L = 8.2 k\Omega$ *3)
High Level Input Current	$I_{IH}$	—	—	100	$\mu A$	$V_{CC} = 5.25 V$ , $V_{IH} = 2.7 V$ , $R_L = 8.2 k\Omega$
Low Level Input Current	$I_{IL}$	—	—	-400	$\mu A$	$V_{CC} = 5.25 V$ , $V_{IL} = 0.4 V$ , $R_L = 8.2 k\Omega$
High Level Input Voltage	$V_{IH}$	2.0	—	—	V	$R_L = 8.2 k\Omega$
Low Level Input Voltage	$V_{IL}$	—	—	0.8	V	$R_L = 8.2 k\Omega$
Peak Emission Wavelength	$\lambda_p$	—	660	—	nm	$I_F = 20 mA$ , $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$
Transmitter Output Power	$P_f$	-21	—	-11	dBm	APF = 1 m, $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$ *4)
Transmission Distance		0.2	—	5	m	With PLR101 and APF, $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$

\*3)  $R_L$  (Resistance for control of LED current) is connected from pin 2 to pin 3.\*4) It is able to change the Transmitter Output Level ( $P_f$ ) by Resistance ( $R_L$ ) Variation.

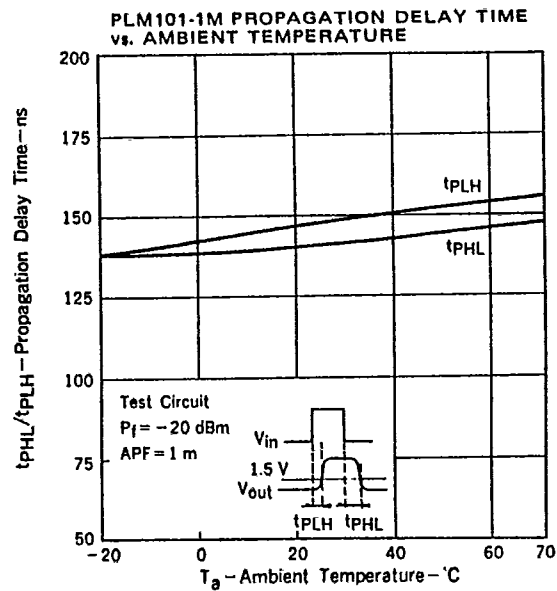
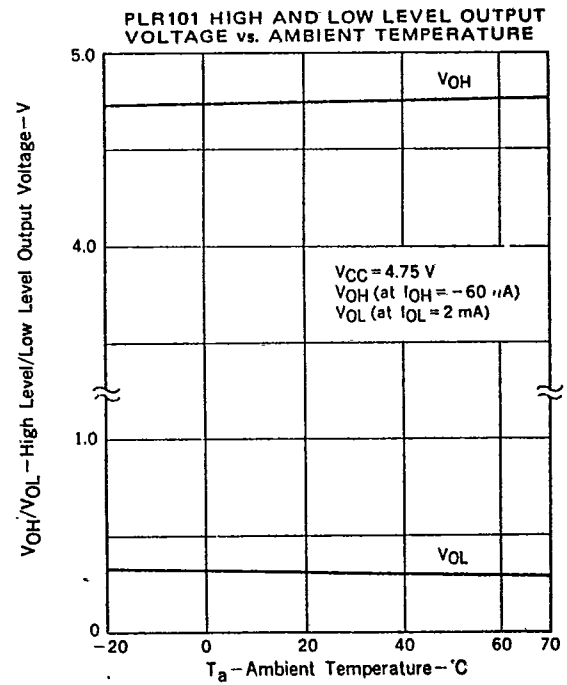
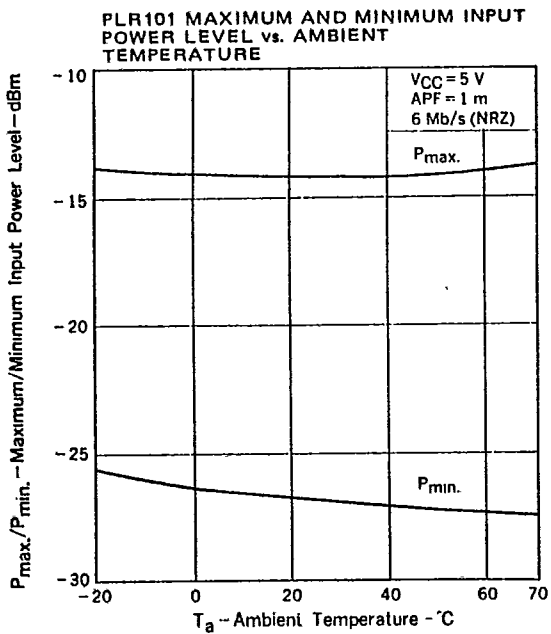
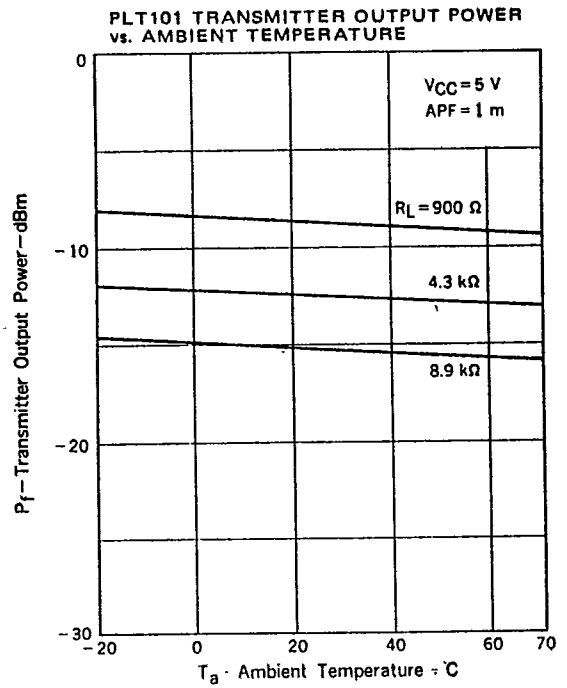
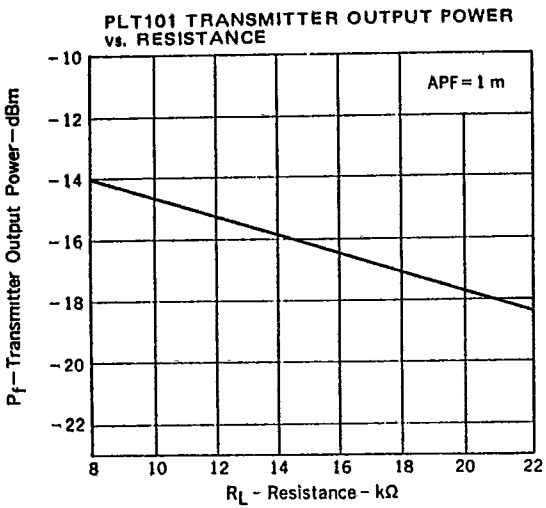
## (3) PLR101 (RECEIVER MODULE)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Supply Current	$I_{CC}$	—	25	40	mA	
High Level Output Voltage	$V_{OH}$	4.4	—	—	V	$V_{CC} = 4.75 V$ , $I_{OH} = 60 \mu A$
Low Level Output Voltage	$V_{OL}$	—	—	0.5	V	$V_{CC} = 4.75 V$ , $I_{OL} = 2 mA$
Maximum Input Power Level	$P_{max.}$	-14.5	—	—	dBm	APF = 1 m, 6 Mb/s (NRZ), $T_a = 25^\circ C$
Minimum Input Power Level	$P_{min.}$	—	—	-24	dBm	APF = 1 m, 6 Mb/s (NRZ), $T_a = 25^\circ C$
Rise Time	$t_r$	—	50	100	ns	$P_f = -20 dBm$ , $T_a = 25^\circ C$
Fall Time	$t_f$	—	20	70	ns	APF = 1 m, $T_a = 25^\circ C$
Transmission Distance		0.2	—	5	m	With PLT101 and APF, $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$

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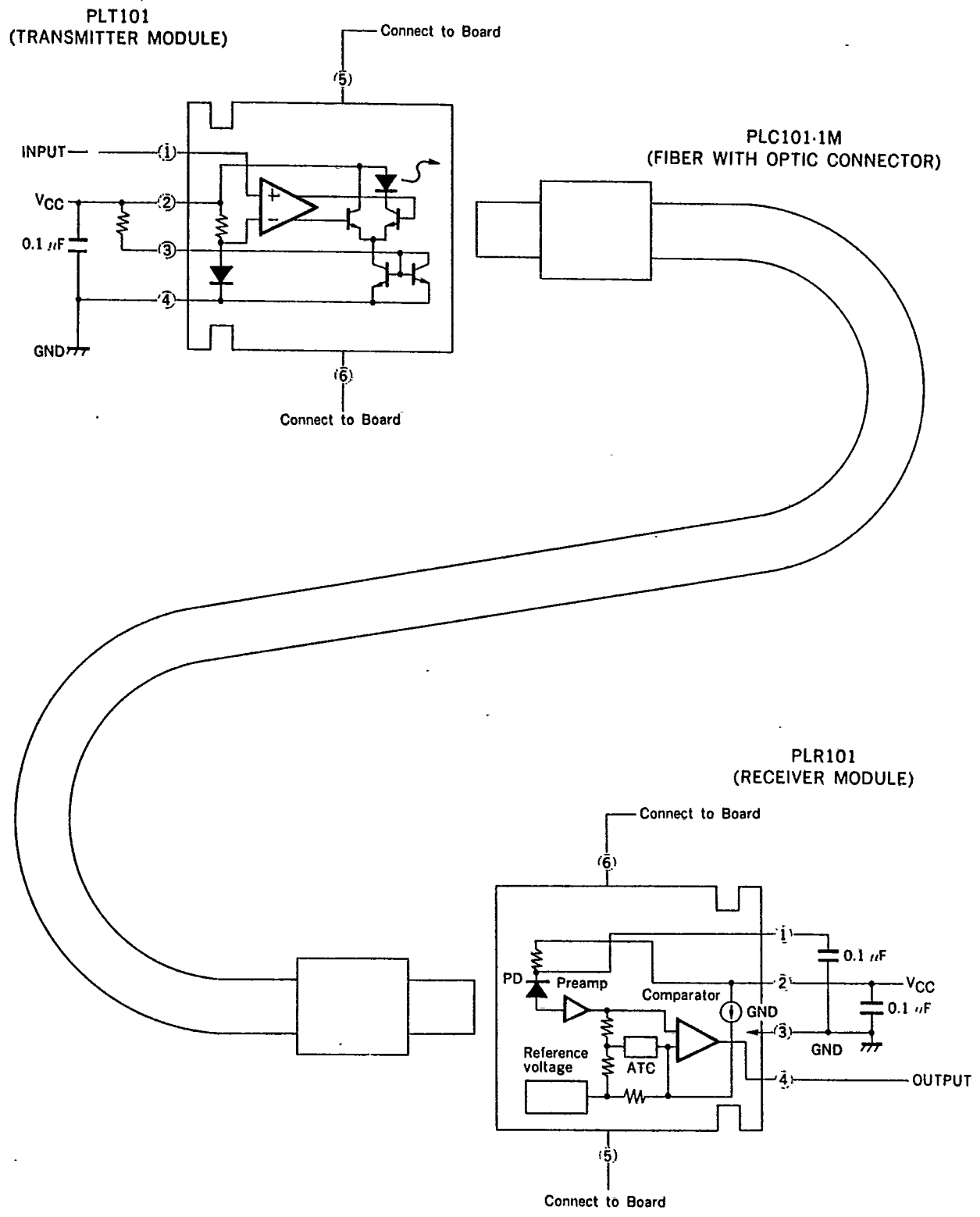
TYPICAL CHARACTERISTIC ( $T_a = 25^\circ\text{C}$ )



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TYPICAL CIRCUIT CONFIGURATION

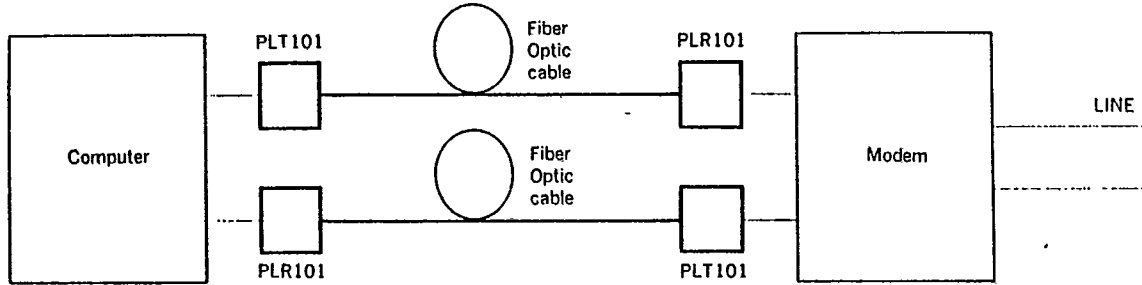


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APPLICATIONS OF PLM101-M

• COMPUTER (SECURE DATA COMMUNICATIONS)



• AUTOMOBILE (SECURE DATA COMMUNICATIONS)

