

GP1F40T1/GP1F40R1/ GP1C251 High Speed Type Plastic Fiber Optics with Built-in Amp.

■ Features

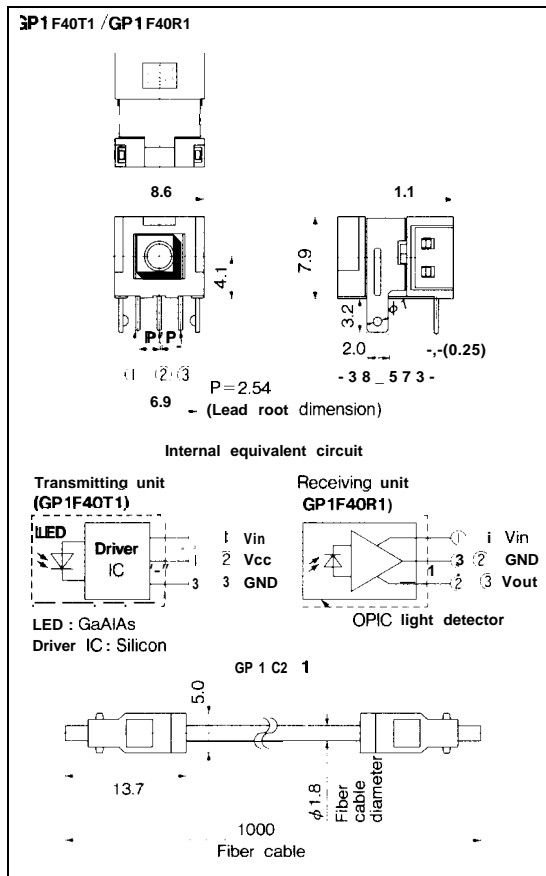
1. High speed optical data transmission
Signal transmission speed : DC to 25M_{bps}
(NRZ signal)
2. Uni-directional fiber optics using APF*
*APF : All plastic Fiber
3. High resistance to noise
4. **GP1 F40T1** : Transmitting unit
GP1 F40R1: Receiving unit
GP1C251 : Plastic fiber cable (1m)

■ Applications

1. Copiers
2. Laser beam printers
3. Equipments with microcomputer

■ Outline Dimensions

(Unit : mm)



■ Absolute Maximum Ratings

(GP1F40T1/GP1F40R1)

| Parameter | Symbol | Rating | Unit |
|-----------------------|------------------|------------------------------|------|
| Supply voltage | V _{cc} | -0.5 to +7.0 | V |
| Output current | I _{ol} | 6(V _{cc} =5V) | mA |
| Input voltage | V _{in} | -0.5 to V _{cc} +0.3 | V |
| Storage temperature | T _s | -30 to +80 | °C |
| Operating temperature | T _{opr} | 0 to +70 | °C |

■ Recommended Operating Conditions (GP1F40T1/GP1F40R1)

| Parameter | Symbol | Remarks | MIN. | MAX. | Unit |
|--------------------------|------------------------------|---------------------------|------|----------|------|
| Supply voltage | V_{CC} | | 4.75 | 5.25 | V |
| High level input voltage | GP1F40T1 V_{INH} | | 2.0 | V_{CC} | v |
| Low level input voltage | GP1F40T1 V_{INL} | | 0 | 0.4 | V |
| Operating transfer rate | T_0 | NRZ signal duty ratio 50% | 0.1 | 25 | Mbps |

■ Electro-optical Characteristics (GP1F40T1/GP1F40R1)

(Ta = 25°C, V_{CC} = 5V)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit | |
|--------------------------|--|--------------------|-----------------|-----------------|-----------------|------|-----|
| Peak emission wavelength | λ_P | | — | 660 | | nm | |
| Supply current | GP1F40T1 | *1 Refer to Fig. 1 | — | — | 25 | mA | |
| | GP1F40R1 | Refer to Fig. 2 | | | 30 | | |
| Low → High delay time | t_{PLH} | Refer to Fig. 3 | — | | 80 | ns | |
| High → Low delay time | t_{PHL} | | — | — | 80 | ns | |
| Transmitter | Optical power output coupling with fiber | P_C | Refer to Fig. 1 | — | — | — | dBm |
| | High level input current | | | I_{IH} | $V_{IN} = 2.0V$ | — | |
| | Low level input current | I_{IL} | $V_{IN} = 0.8V$ | — | — | -1.6 | v |
| | Pulse width distortion | t_w | Refer to Fig. 3 | 30 | | 70 | % |
| Receiver | Minimum receiver input optical power level | P_{CMIN} | Refer to Fig. 2 | — | — | -15 | dBm |
| | Maximum receiver input optical power level | P_{CMAX} | | -5.5 | — | — | dBm |
| | High level output voltage | V_{OH} | | 2.7 | — | — | v |
| | Low level output voltage | V_{OL} | | — | — | 0.4 | v |
| | output rise time | t_r | | — | — | 20 | ns |
| | Output fall time | t_f | | — | — | 10 | ns |
| | Pulse width distortion | t_w | | Refer to Fig. 3 | 30 | | 70 |

*1 When input is low level ($V_{IN} = 0.8V$)

■ Optical Characteristics (GP1C251) (Ta = 25°C)

| Parameter | Symbol | MIN. | TYP. | MAX. | Unit |
|----------------------------|--------|------------|------|------|------|
| Output coupling with fiber | P_f | -17 | — | — | dBm |
| Refraction ratio | — | Stee index | | | |

Note) 1. Standard light transmitter : Light transmitter that provides the fiber end light output of $-15dBm \pm 0.3dBm$ when the standard optical fiber cable is connected.

2. Measuring system block diagram : Shown in Fig. 4.

■ Mechanical Characteristics (GP1C251)

| Parameter | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|-----------------------------------|--------|------------|------|------|------|------|
| Insertion force, withdrawal force | — | *2 | 6 | — | 40 | N |

*2 Initial value when GP1F40T1/GP1F40R1 is used

Fig. 1 Measuring Method (Transmitting Unit)

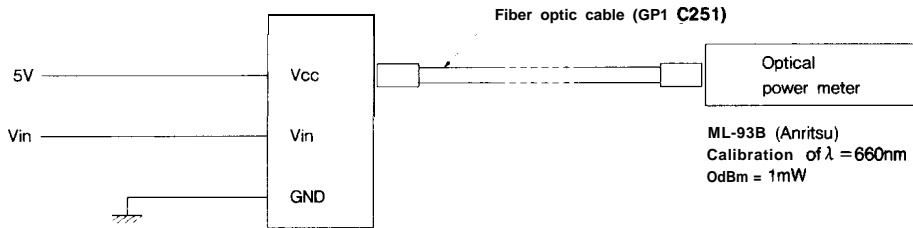
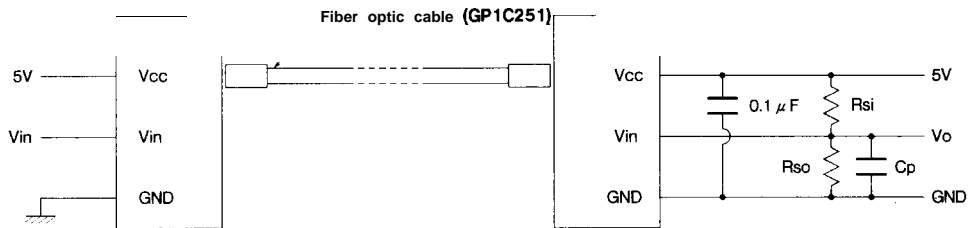


Fig. 2 Measuring Method (Receiver Unit)



Input signal : 0.1Mbps (NRZ, Duty50%)
 $R_{si} = 2k\ \Omega$, $R_{so} = 10k\ \Omega$, $C_p = 2pF$
 (R_{so}, C_p : Including probe load)

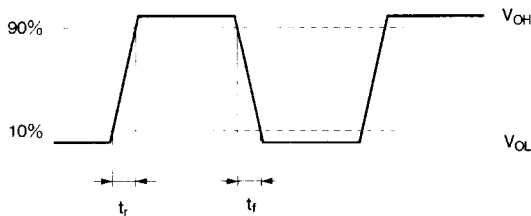


Fig. 3 Transfer Characteristics

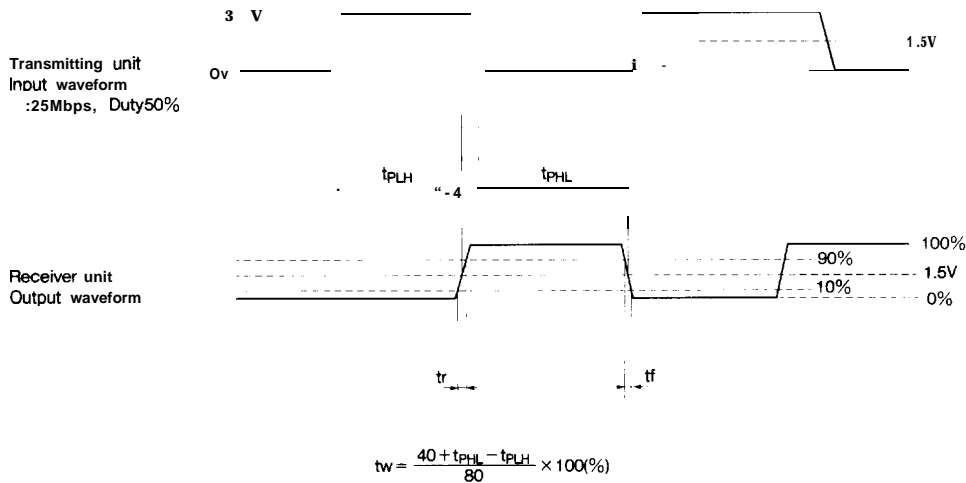
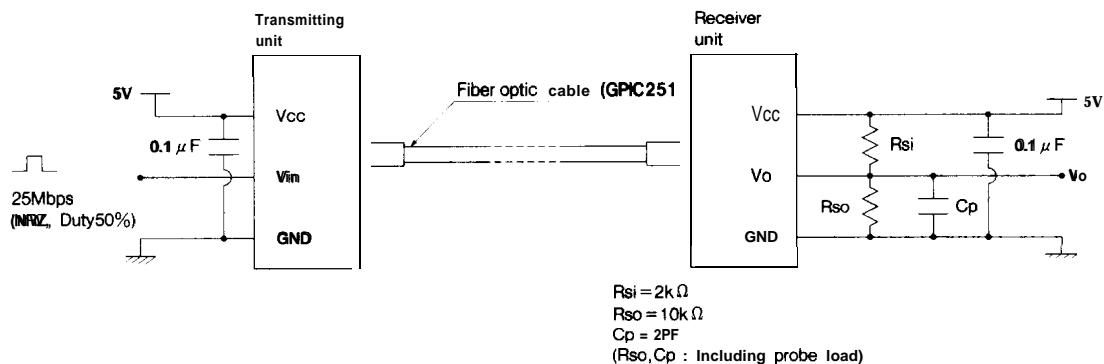
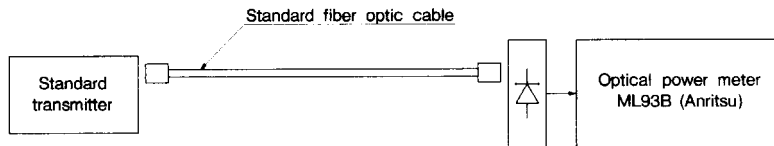


Fig. 4 Measuring Method (Optical Power Output Coupling with Fiber)



● Please refer to the chapter “Precautions for Use” (Page 78 to 93)