

# GP1F40T1/GP1F40R1/ GP1C251

## High Speed Type Plastic Fiber Optics with Built-in Amp.

### ■ Features

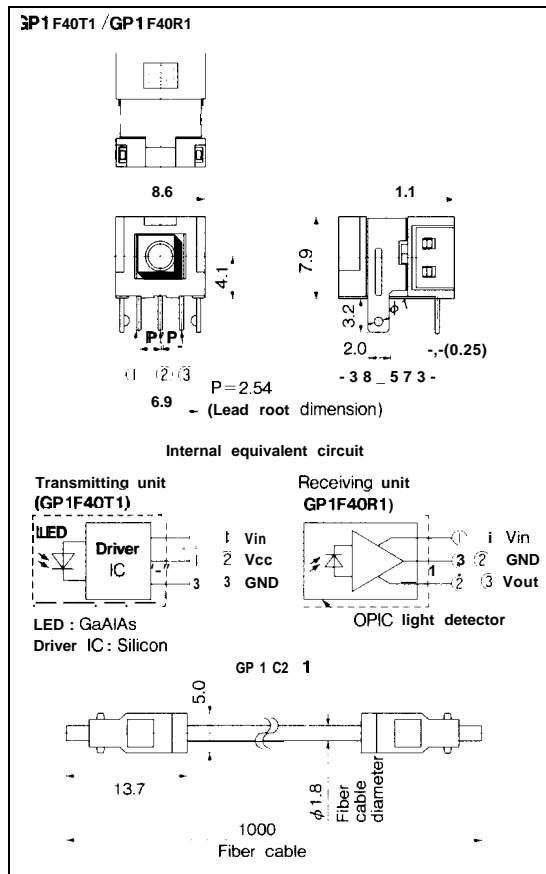
1. High speed optical data transmission  
Signal transmission speed : DC to 25M<sub>bps</sub>  
(NRZ signal)
2. Uni-directional fiber optics using APF\*  
\*APF : All plastic Fiber
3. High resistance to noise
4. **GP1 F40T1** : Transmitting unit  
**GP1 F40R1**: Receiving unit  
GP1C251 : Plastic fiber 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	GP1 F40R1 I <sub>OL</sub>	6( $V_{CC}=5V$ )	mA
Input voltage	$V_{in}$	-0.5 to $V_{CC}+0.3$	V
Storage temperature	$T_{stg}$	-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	<b>GP1F40T1</b> $V_{INH}$		2.0	$V_{CC}$	v
Low level input voltage	<b>GP1F40T1</b> $V_{INL}$		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<sub>CC</sub> = 5V)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit		
Peak emission wavelength	$\lambda_P$		—	660		nm		
Supply current	<b>GP1F40T1</b>	*1 Refer to Fig. 1	—	—	25	mA		
	<b>GP1F40R1</b>	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			$I_{IH}$	$V_{IN} = 2.0V$	—		0.4
	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)

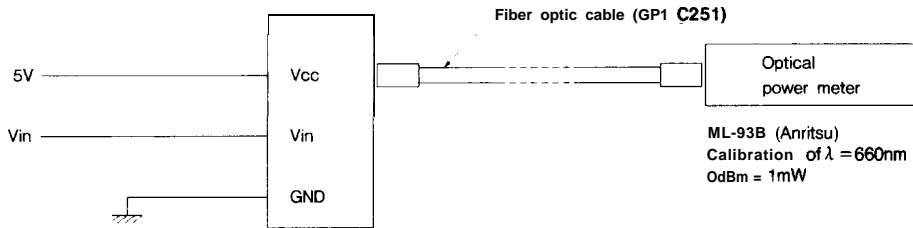
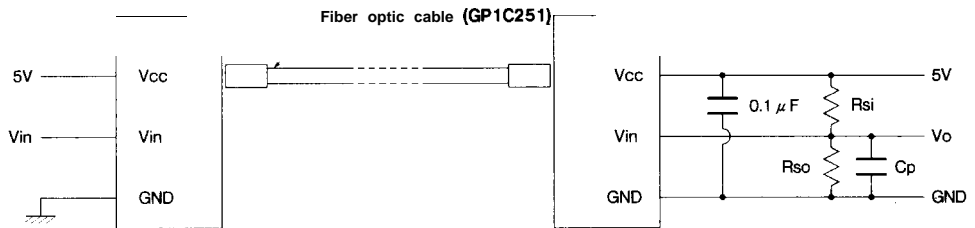


Fig. 2 Measuring Method (Receiver Unit)



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

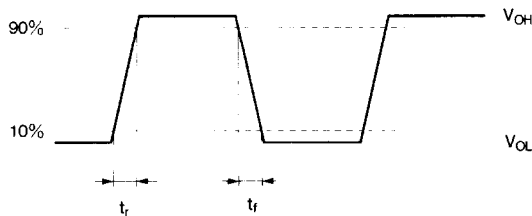


Fig. 3 Transfer Characteristics

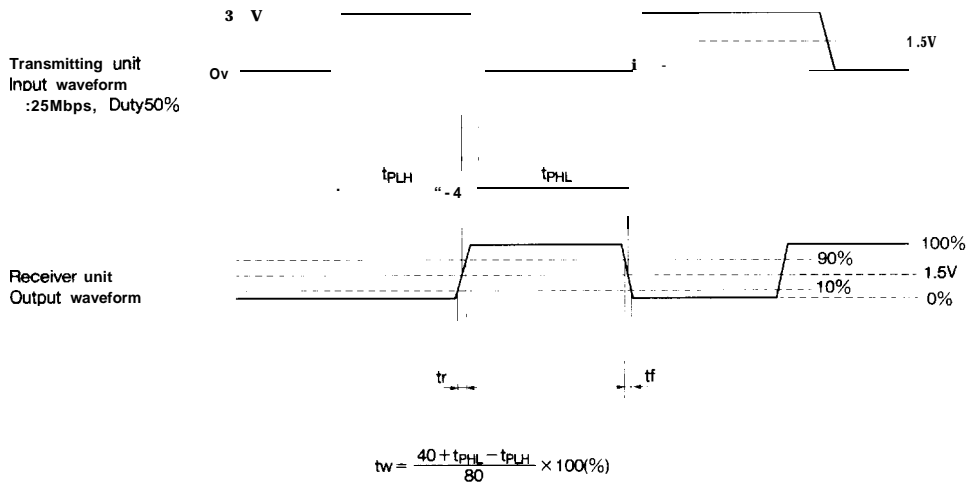
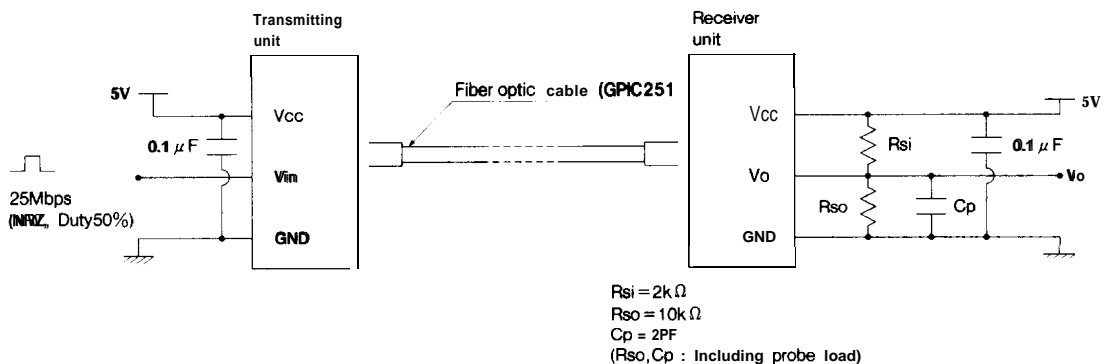
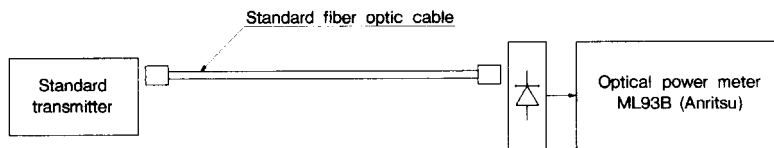


Fig. 4 Measuring Method (Optical Power Output Coupling with Fiber)



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