GP1FD200TK

Low Voltage Operation and Thin Type Optical Mini-jack for Digital Audio Equipment

■ Features

1. Compact (adoption of compact jack for mini plug) JIS C6560
2. Optical digital signal and electric analog signal can be discriminated and transmitted
3. High speed data transmission
   Signal transmission speed:MAX.8Mbps (NRZ signal)
4. Low voltage operation
   Operating Voltage:2.3 to 2.8V

■ Applications

1. MD players
2. Portable CD players

■ Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V_{CC}	−0.5 to +7.0	V
Input voltage	V_{IN}	−0.5 to V_{CC} +0.5	V
Operating temperature	T_{opr}	−10 to +70	°C
Storage temperature	T_{stg}	−30 to +80	°C
*1 Soldering temperature	T_{sol}	260	°C

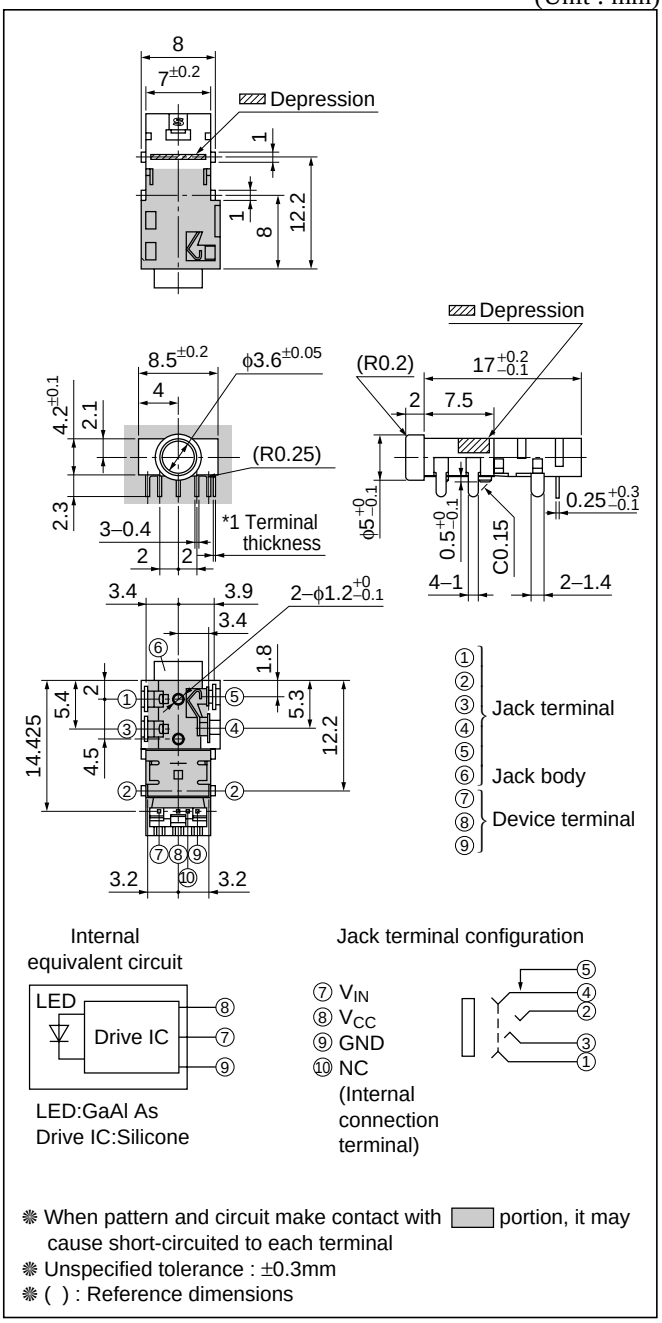
*1 For 5s (2 times or less)

■ Absolute Maximum Ratings (Jack) (Ta=25°C)

Parameter	Symbol	Rating	Unit
Total power dissipation	P_{tot}	D.C. 12V, 1A	−
Operating temperature	T_{opr}	−20 to +70	°C
Storage temperature	T_{stg}	−30 to +80	°C
*1 Soldering temperature	T_{sol}	260	°C
*2 Isolation voltage	$V_{iso\ (rms)}$	A.C. 500V	−

*2 For 1min

■ Outline Dimensions (Unit : mm)



* "OPIC" (Optical IC) is a trademark of the SHARP Corporation.
An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Recommended Operating Conditions

(Ta=25°C)

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating supply voltage	V_{CC}	2.3	2.5	2.8	V
Operating transfer rate	T	–	–	8	Mbps

■ Electro-optical Characteristics

(Ta=25°C, Vcc=2.5V)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Peak emission wavelength	λ_p	–	630	660	690	nm
Optical power output coupling with fiber	P_C	Refer to Fig.1	–21	–17	–15	dBm
High level dissipation current	I_{CCH}	Refer to Fig.2	–	6	10	mA
Low level dissipation current	I_{CCL}	Refer to Fig.2	–	0.6	1	mA
High level input voltage	V_{IH}	Refer to Fig.2	1.9	–	–	V
Low level input voltage	V_{IL}	Refer to Fig.2	–	–	0.7	V
Low→High delay time	t_{pLH}	Refer to Fig.3	–	–	180	ns
High→Low delay time	t_{pHL}	Refer to Fig.3	–	–	180	ns
Pulse width distortion	Δt_w	Refer to Fig.3	–30	–	+30	ns
Jitter	Δt_j	Refer to Fig.3	–	1	30	ns

■ Mechanical Characteristics

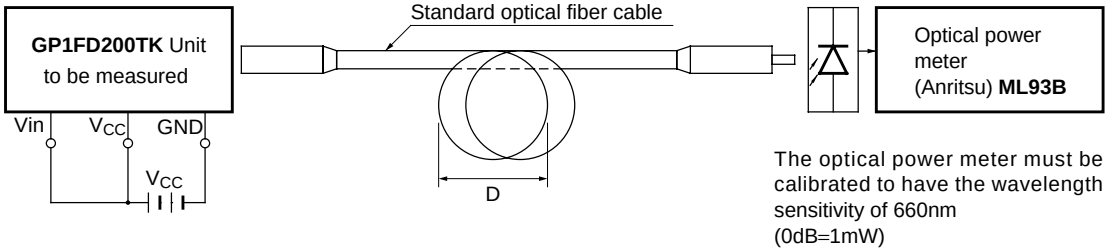
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Insertion force, withdrawal force	F_p	*3	5	–	35	N
Contact resistance	R_{con}	*4	–	–	30	mΩ
Isolation resistance	R_{iso}	D.C.500V, 1min.	100	–	–	MΩ

Note) This jack is designed for applicable to ϕ3.5 compact single head plug (JIS C6560).

*3 Measuring method of insertion force and withdrawal force.
Insertion and withdrawal force shall be measured after inserting and withdrawing 3 times by using JIS C6560 standard plug for test.

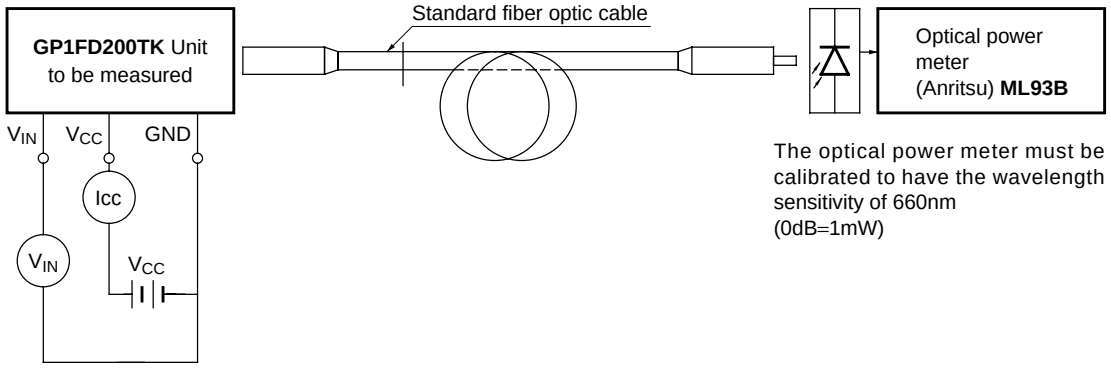
*4 Measuring method of contact resistance.
It measures at 100mA or less and 1 000Hz at the condition of inserting JIS C6560 standard plug for test in which movable contact terminal and contact point are described.

Fig.1 Measuring Method of Optical Output Coupling with Fiber



Note (1) V_{CC}=2.5V (State of operating)
(2) To bundle up the standard fiber optic cable, make it into a loop with the diameter D=10cm or more
(The standard fiber optic cable will be specified elsewhere.)

Fig.2 Measuring Method of Intput Voltage and Supply Current

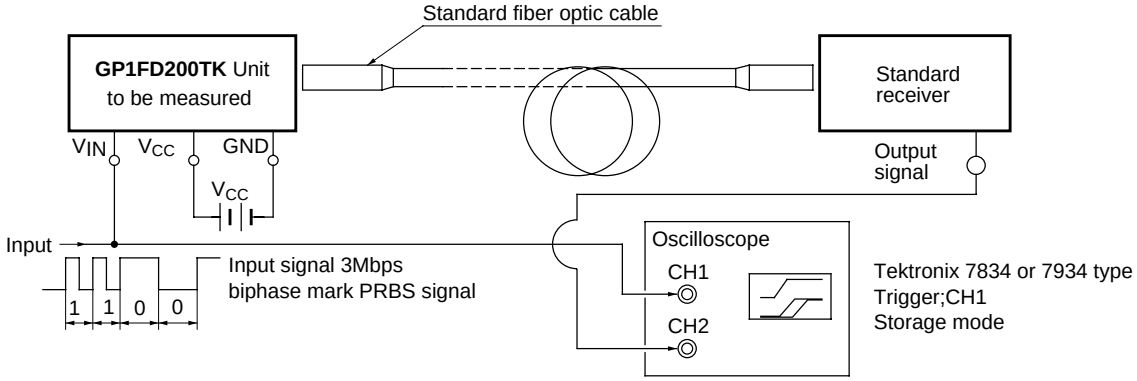


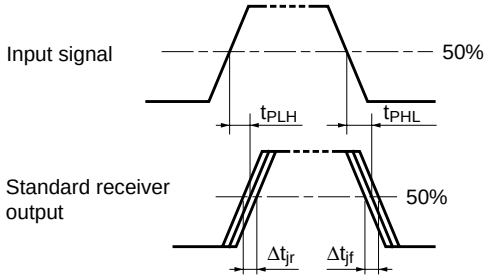
Input conditions and judgement method

Conditions	Judgement method
V_{IN}=1.9V or more	−21≤P_C≤−15dBm, I_{CC}=10mA or less
V_{IN}=0.7V or less	P_C≤−36dBm, I_{CC}=1.0mA or less

Note V_{CC}=2.5V (State of operating)

Fig.3 Measuring Method of Pulse Response and Jitter





Parameter	Symbol	Conditions
Low→High delay time	t_{pLH}	Refer to the above mentioned prescription
High→Low delay time	t_{pHL}	Refer to the above mentioned prescription
Pulse width distortion	Δt_w	$\Delta t_w = t_{pHL} - t_{pHL}$
Low→High jitter	Δt_{jr}	Set the trigger on the rise of input signal to measure the jitter of the rise of output
High→Low jitter	Δt_{jf}	Set the trigger on the fall of input signal to measure the jitter of the fall of output

Notes (1) The waveform write time shall be 4s. But do not allow the waveform to be distorted by increasing the brightness too much
(2) V_{CC}=2.5V (State of operating)
(3) The probe for the oscilloscope must be more than 1MΩ and less than 10pF

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