

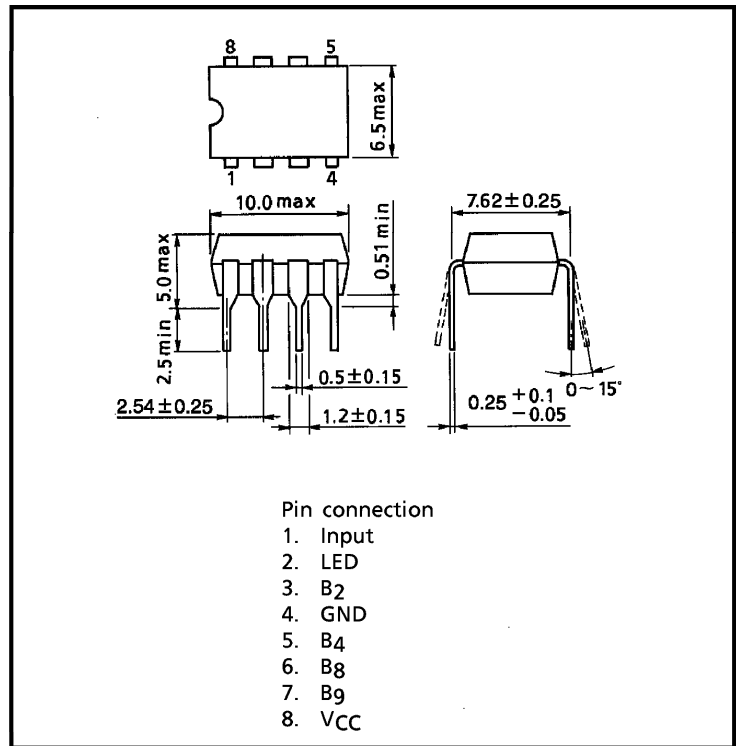
FIBER OPTIC TRANSMITTING PERIPHERAL IC

TA8513P

LED DRIVE CIRCUIT FOR OPTICAL TRANSMISSION

Unit : mm

- TTL interface
- Data rate : Up to 20 Mb/s (NRZ code)



1. Maximum Ratings (Ta = 25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Storage Temperature	T _{stg}	-55~150	°C
Operating Temperature	T _{opr}	-40~85	°C
Power Supply	V _{CC}	-0.5~7	V
Input Voltage	V _{IN}	-0.5~V _{CC}	V
LED Terminal Voltage	V _{LED}	V _{CC} - 2.5~V _{CC}	V
Package Allowable Loss		0.9	W
Soldering Temperature	T _{sol}	260 ⁽¹⁾	°C

(Note) : ⁽¹⁾ Soldering time ≤ 10 s (More than 1mm apart from the package).

2. Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
Power Supply	V _{CC}	4.75	5.00	5.25	V
Data Rate		DC	—	20	Mb/s

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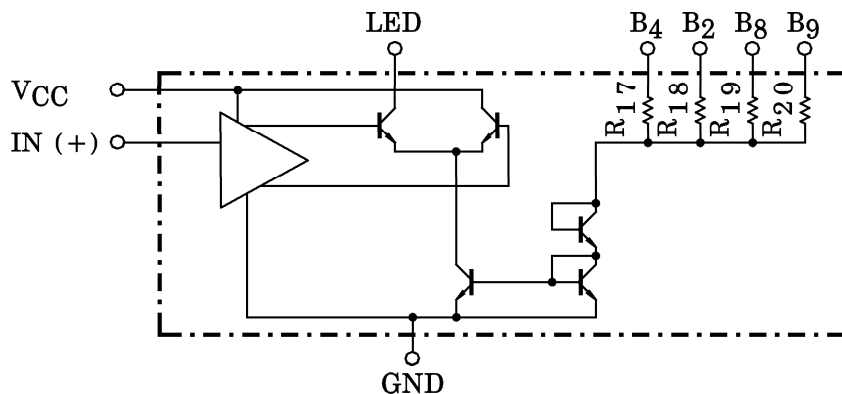
3. Electrical Characteristics (Ta = 25°C, VCC = 5 V, VLED = VCC - 2.5V)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP.	MAX	UNIT	
Current Consumption	ICC	VCC = VLED = 5.25 V	B2, B4, B8, B9 = OPEN	—	1.2	—	mA
			VB9 = 5.25 V	6	10	14	
			VB8 = 5.25 V	15	26	37	
			VB2 = 5.25 V	29	42	55	
			VB4 = 5.25 V	45	64	83	
Current Limiting Resistor	R17		—	1.8	—	kΩ	
	R18		—	3	—		
	R19		—	4.9	—		
	R20		—	14.8	—		
LED Output Current	ILED	VB9 = 5.0 V	5	7	9	mA	
		VB8 = 5.0 V	15	20	25		
		VB2 = 5.0 V	24	32	40		
		VB4 = 5.0 V	37	50	63		
LED Cut-off Current	Ioff		—	—	12	μA	

4. Input Logic Part (Ta = 25°C, VCC = 5 V, VLED = VCC - 2.5 V)

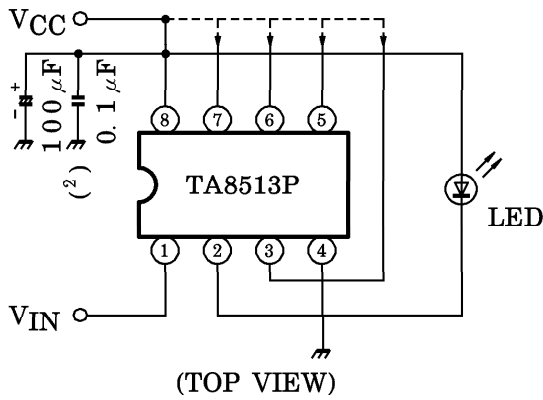
PARAMETER	SYMBOL	CONDITIONS	MIN	TYP.	MAX	UNIT	
TTL Input Unit	Low Level Input Current	IIL	VIL = 0.4 V	—	—	-0.4	mA
	High Level Input Current	IIH	VIH = 2.4 V	—	—	40	
			VIH = 2.7 V	—	—	20	
	Maximum High Level Input Current	IIHMAX	VIH = VCC = 5 V	—	—	10	μA
	Low Level Input Voltage	VIL		—	—	0.8	V
	High Level Input Voltage	VIH		2.0	—	—	V
Input Clamp Voltage	VIK	VCC = 4.75 V, IIL = -10 mA	—	—	-1.5	V	

5. Equivalent Circuit



6. Application Circuit

Example of a recommended circuit ($V_{LED} \leq 2.5\text{ V}$)



See item next figure for connection method of pins No.3, 5, 6 and 7.

Pin No.	LED OUTPUT CURRENT ($V_{CC} = 5\text{ V}$, Turn ON, Typ.)
3	32 mA
5	50 mA
6	20 mA
7	7 mA

- (2) Install $0.1\ \mu\text{F}$ capacitor within 5 mm from No.8 pin and $100\ \mu\text{F}$ capacitor within 15 mm from No.8 pin.

7. IC Logic

INPUT LEVEL	OPTICAL OUTPUT (LED OUTPUT CURRENT)
Hi	ON
Lo	OFF

8. Precautions for Operation

- (1) The maximum ratings show the limits, which must not be exceeded even momentarily regardless of the external condition.
Operation beyond the limit of the maximum rating may cause failure of the devices. Therefore, special attention should be given to the maximum ratings.
- (2) Do not use acid or alkaline soldering flux cleaner solvent.
- (3) Ground all GND pins.