

PRODUCT SPECIFICATION

DATE: 05/02/2002

COSMO ELECTRONICS CORPORATION	Photocoupler : KPC6N135	NO. 60P51002	PRELIMINARY REV. 1
		SHEET 1 OF 4	

General Purpose Type Photocoupler

● Features

1. High speed response t_{PHL} , t_{PLH}
(MAX. 1.5us at $R_L=4.1k\Omega$)
2. High common mode rejection voltage
(CM_H : TYP. 1kV/us)
3. Standard dual-in-line package

● Applications

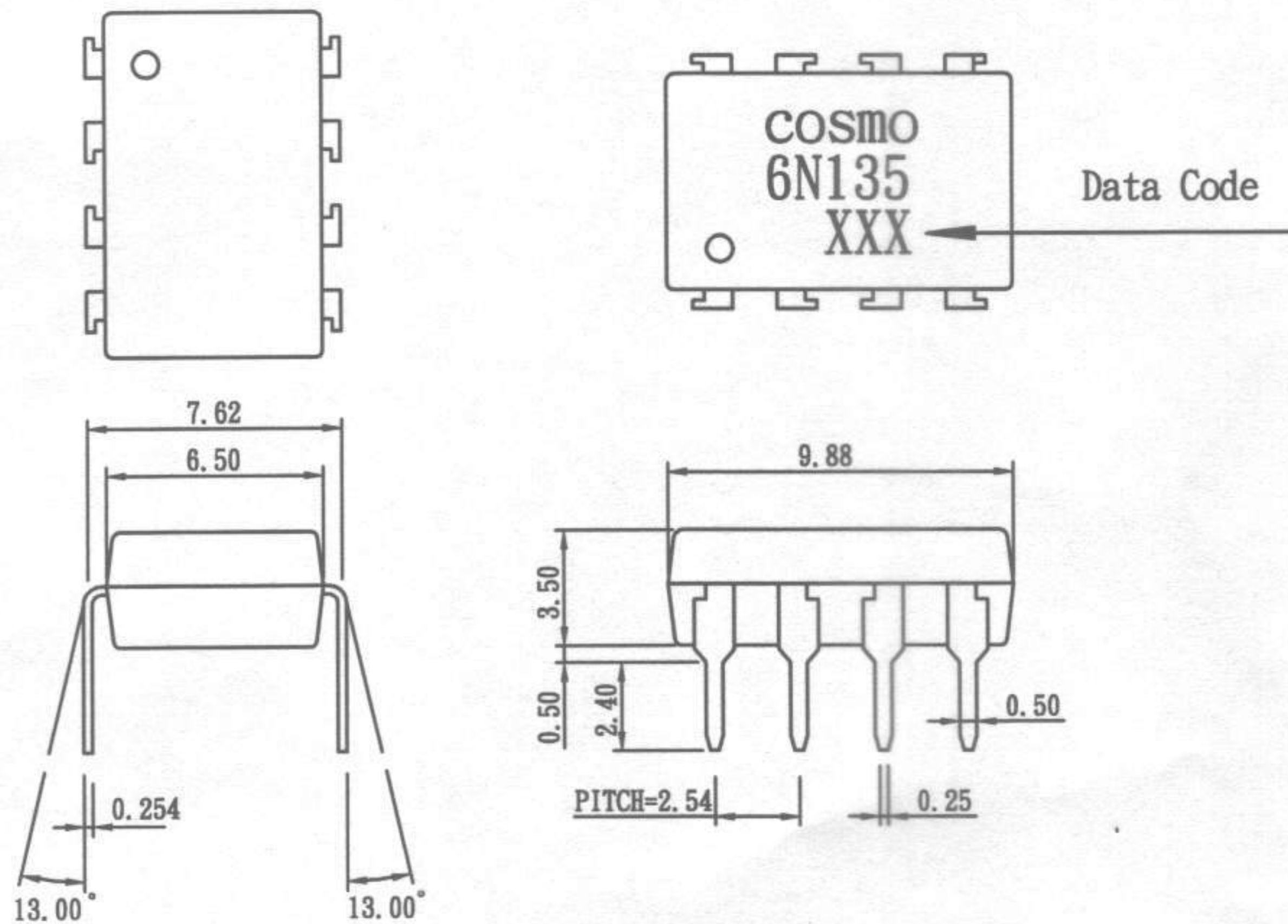
1. Computers, measuring instruments, control equipment
2. High speed line receivers, high speed logic
3. Telephone sets
4. Signal transmission between circuits of
different potentials and impedances

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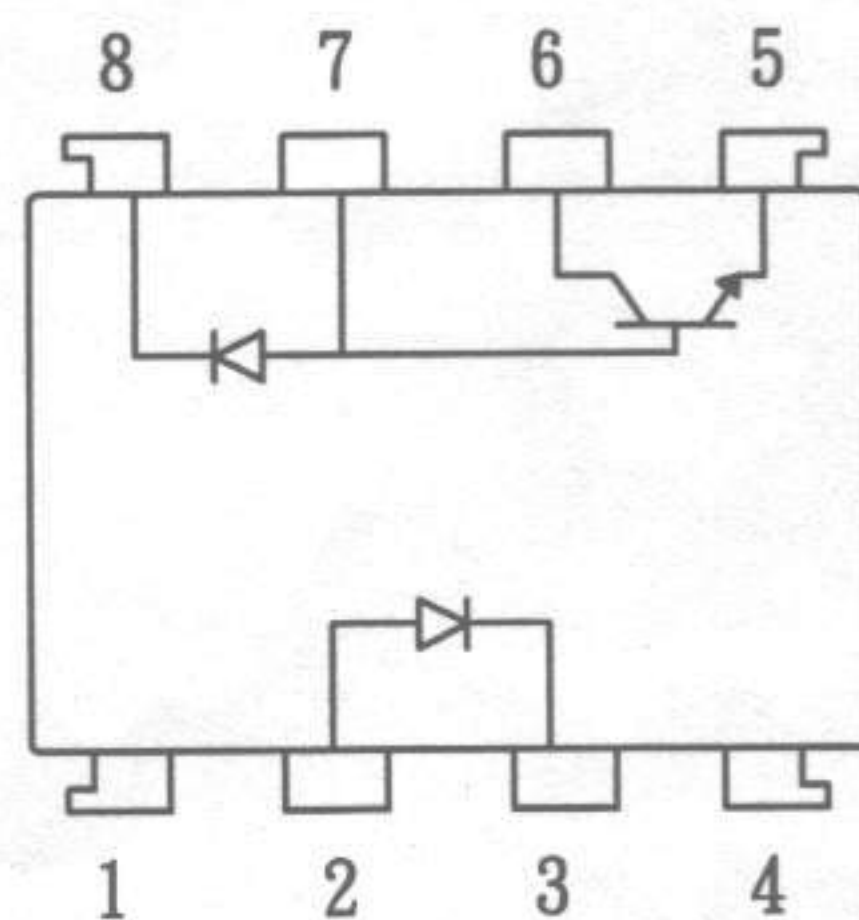
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1. OUTSIDE DIMENSION : UNIT (mm)



Tolerance: ± 0.2 mm

2. SCHEMATIC : TOP VIEW



- 1. NC
- 2. Anode
- 3. Cathode
- 4. NC
- 5. GND
- 6. V_o
- 7. V_B
- 8. V_{CC}

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● Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit	
Input	Forward current	IF	25	mA
	*1 Peak forward current	IF	50	mA
	*2 Peak transient forward current	IFM	1	A
	Reverse voltage	VR	5	V
	Power dissipation	P	45	mW
Output	Supply voltage	Vcc	-0.5 to 15	V
	Output voltage	Vo	-0.5 to 15	V
	Emitter-base reverse with-stand voltage (Pin 5 to 7)	VEBO	5	V
	Average output current	Io	8	mA
	Peak output current	Iop	16	mA
	Base current (Pin 7)	IB	5	mA
	Power dissipation	Po	100	mW
*3 Isolation voltage 1 minute	Viso	2500	Vrms	
Operating temperature	Topr	-55 to +100	°C	
Storage temperature	Tstg	-55 to +125	°C	
*4 Soldering temperature	Tsol	260	°C	

*1 50% duty cycle, Pulse width : 1mS
Decreases at the rate of 1.6mA/°C if the external temperature is 70°C or more.

*2 Pulse width ≤ 1μS, 300pulse/sec

*3 40 to 60% RH, AC for 1 minute

*4 For 10 seconds

● Electro-optical Characteristics

(Ta=0 to +70°C unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*5 Current transfer ratio	CTR (1)	Ta= 25°C , IF = 16mA Vo = 0.4V , Vcc = 4.5V	7	40	-	%
	CTR (2)	IF = 16mA Vo = 0.5V , Vcc = 4.5V	5	43	-	%
Logic (0) output voltage	Vol	*6 Vcc = 4.5V, IF = 16mA	-	0.1	0.4	V
Logic (1) output current	IOH (1)	Ta= 25°C , IF = 0 Vo = Vcc = 5.5V	-	3.0	500	nA
	IOH (2)	Ta' = 25°C , IF = 0 Vo = Vcc = 15V	-	0.01	1.0	μA
	IOH (3)	Vcc = Vo = 15V, IF = 0	-	-	50	μA
Logic (0) supply current	ICCL	IF = 16mA Vo = open , Vcc = 15V	-	200	-	μA
Logic (1) supply current	ICCH (1)	Ta= 25°C , Io = 0 VF = open , Vcc = 15V	-	0.02	1.0	μA
	ICCH (2)	Io = 0 Vo = open , Vcc = 15V	-	-	2.0	μA
Input forward voltage	VF	Ta= 25°C , IF = 16mA	-	1.7	1.95	V
Input forward voltage temperature coefficient	ΔVF / ΔTa	IF = 16mA	-	-1.9	-	mV/°C
Input reverse voltage	BVR	Ta= 25°C , IR = 10μA	5.0	-	-	V
Input capacitance	CIN	VF=0 , f=1MHz	-	60	-	pF
*7 Leak current(input-output)	II-O	Ta= 25°C , 45 % RH VI-O = 3kVDC , t = 5s	-	-	1.0	μA
*7 Isolation resistance(input-output)	RI-O	VI-O = 500VDC	-	10 ¹²	-	Ω
*7 Capacitance(input-output)	CI-O	f=1MHz	-	0.6	-	pF
Transistor current amplification factor	hFE	Vo = 5V , Io = 3mA	-	70	-	

*5 Current transfer ratio is the ratio of input current and output current expressed in %

*6 Io = 1.1mA

*7 Measured as 2-pin element (Short 1, 2, 3, 4 and 5, 6, 7, 8)

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● Switching Characteristics

(Ta=25°C, Vcc=5V, If=16mA)

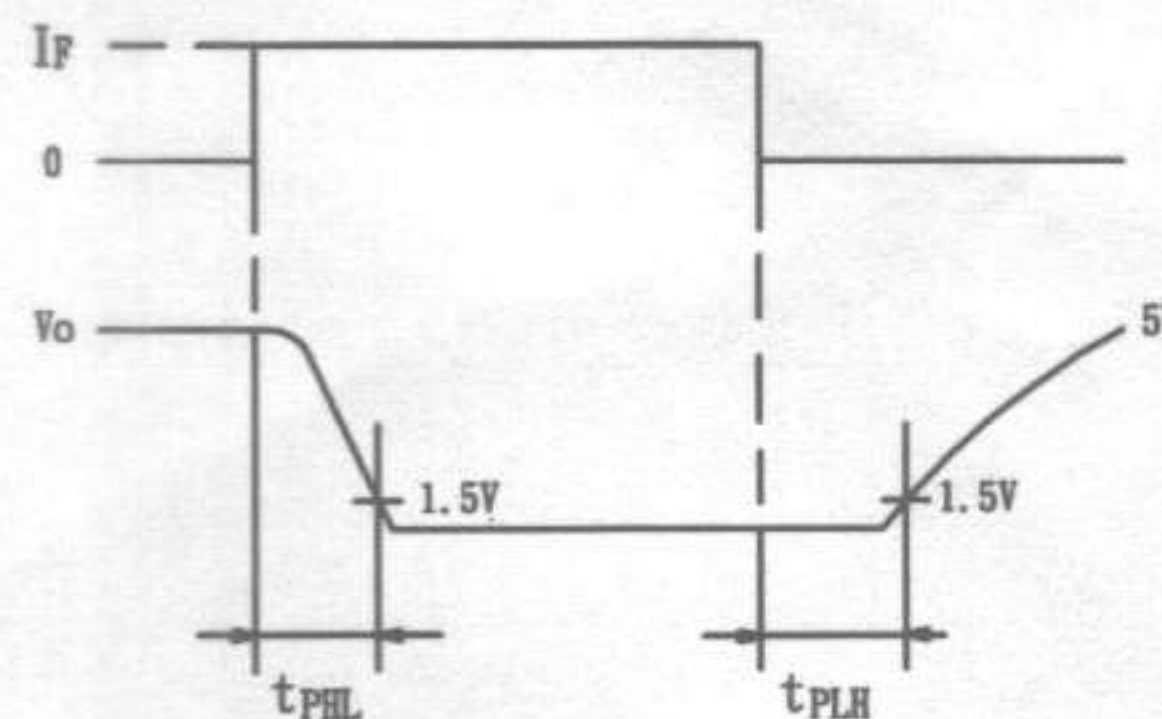
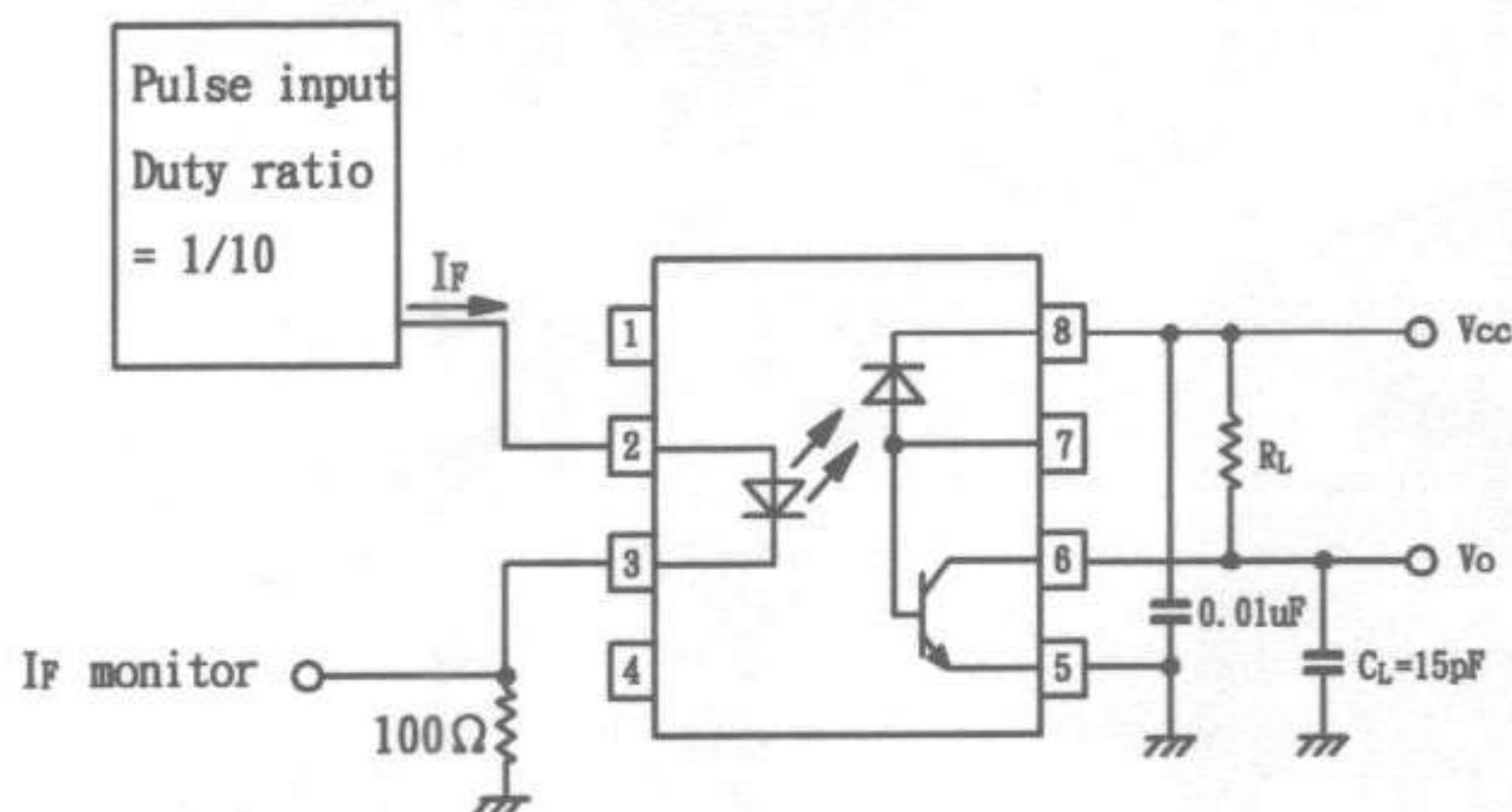
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 *9 Propagation delay time Output (1)→(0)	t _{PHL}	R _L = 4.1kΩ	-	0.3	1.5	μs
*8 *9 Propagation delay time Output (0)→(1)	t _{PLH}	R _L = 4.1kΩ	-	0.4	1.5	μs
*10 *11 Instantaneous common mode rejection voltage "Output (1)"	CM _H	I _F =0, V _{CM} = 10V _{p-p}	-	1000	-	V/μs
*10 *11 Instantaneous common mode rejection voltage "Output (0)"	CM _L	I _F =16mA, V _{CM} = 10V _{p-p}	-	-1000	-	V/μs
*12 Bandwidth	BW	R _L = 100Ω	-	2.0	-	MHz

*8 R_L=4.1kΩ is equivalent to one LSTTL and 6.1kΩ pull-up resistor.

*10 Instantaneous common mode rejection voltage "output(1)" represents a common mode voltage variation that can hold the output above (1) level (V_o > 2.0V)
 Instantaneous common mode rejection voltage "output(0)" represents a common mode voltage variation that can hold the output above (0) level (V_o < 0.8V)

*12 Bandwidth represents a point where AC input goes down by 3dB.

*9 Tset Circuit Propagation Delay Time



*11 Tset Circuit for Instantaneous Common Mode Rejection Voltage

