PRODUCT SPECIFICATION

DATE：03/26/2012

cosmo ELECTRONICS CORPORATION	Photocoupler： KPC6N135H	NO.62P51002	REV. 2
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General Purpose Type Photocoupler

● Features

1. Pb free and RoHS compliant.
2. High speed response t_{PHL}, t_{PLH}
   (MAX. 1.5us at RL=4.1KΩ)
3. High common mode rejection voltage
   (CM_H：TYP. 1KV/us)
4. Standard dual-in-line package
5. Agency Approvals
   UL approved：UL1577 , No.E169586
   CUL approved：C22.2 No.1 & NTC No.5 , No.E169586
   VDE approved：EN60747 , No.40006080
   FIMKO approved：EN 60065 No. FI 25798
   EN 60950 No. FI 25798

● Application：

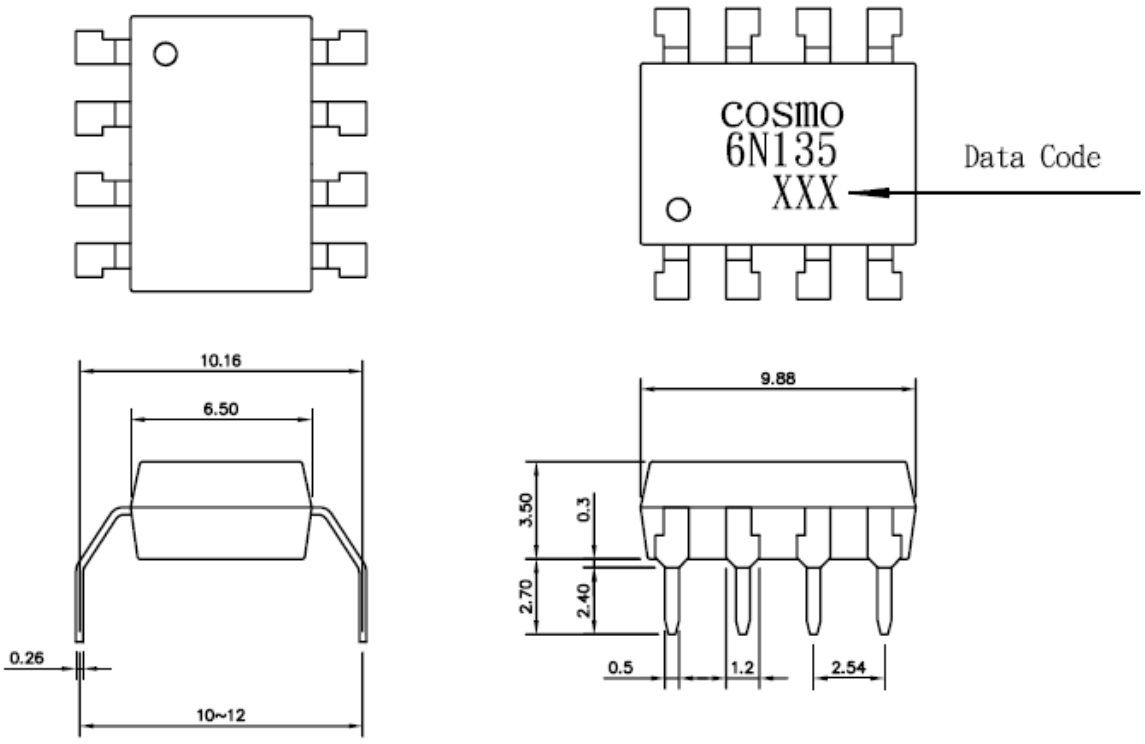
1. Computers, measuring instruments, control equipment.
2. High speed line receivers, high speed logic.
3. Telephone sets.
4. Signal transmission between circuits of different Potentials and impedances.

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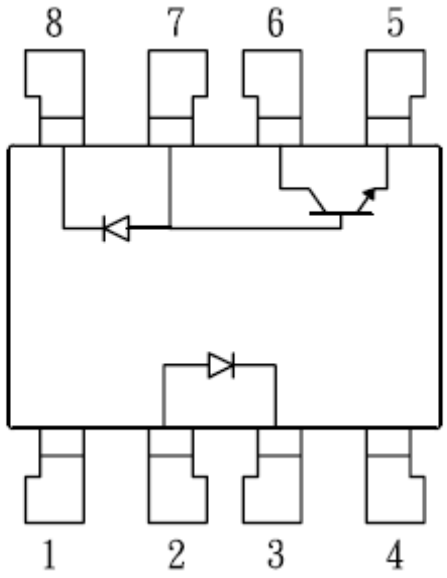
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● Outside Dimension：Unit (mm)



TOLERANCE：±0.2mm

● 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℃)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	25	mA
	*1 Peak forward current	I_F	50	mA
	*2 Peak transient forward current	I_{FM}	1	A
	Reverse voltage	V_R	5	V
	Power dissipation	P	45	mW
Output	Supply voltage	V_{CC}	-0.5 to 15	V
	Output voltage	V_O	-0.5 to 15	V
	Emitter-base reverse with stand voltage (Pin5 to 7)	V_{EBO}	5	V
	Average output current	I_O	8	mA
	Peak output current	I_{OP}	16	mA
	Base current (Pin7)	I_B	5	mA
	Power dissipation	P_O	100	mW
*3 Isolation voltage 1 minute		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-55 to +100	℃
Storage temperature		T_{stg}	-55 to +125	℃
*4 Soldering temperature 10 second		T_{sol}	260	℃

*1 50% duty cycle, Pulse width：1mS
Decreases at the rate of 1.6mA/℃ if the external temperature is 70℃ or more.
*2 Pulse width≦1uS, 300pulse/sec
*3 40 to 60% RH, AC for 1 minute
*4 For 10 seconds

● Electro-optical Characteristics

(Ta=0 to +70℃ unless otherwise specified)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*5 Current transfer ratio	CTR(1)	Ta=25℃, I_F=16mA V_O=0.4V, V_{CC}=4.5V	7	40	-	%
	CTR(2)	I_F=16mA V_O=0.5V, V_{CC}=4.5V	5	43	-	%
Logic (0) output voltage	V_{OL}	*6 V_{CC}=4.5V, I_F=16mA	-	0.1	0.4	V
Logic (1) output current	I_{OH}(1)	Ta=25℃, I_F=0 V_O=V_{CC}=5.5V	-	3.0	500	nA
	I_{OH}(2)	Ta=25℃, I_F=0 V_O=V_{CC}=15V	-	0.01	1.0	uA
	I_{OH}(3)	V_{CC}=V_O=15V, I_F=0	-	-	50	uA
Logic (0) supply current	I_{CCL}	I_F=16mA V_O=open, V_{CC}=15V	-	200	-	uA
Logic (1) supply current	I_{CCH}(1)	Ta=25℃, I_O=0 V_F=open, V_{CC}=15V	-	0.02	1.0	uA
	I_{CCH}(2)	I_O=0 V_O=open, V_{CC}=15V	-	-	2.0	uA
Input forward voltage	V_F	Ta=25℃, I_F=16mA	-	1.7	1.95	V
Input forward voltage temperature coefficient	$\triangle V_F/\triangle Ta$	I_F=16mA	-	-1.9	-	mV/℃
Input reverse voltage	BV_R	Ta=25℃, I_R=10uA	5.0	-	-	V
Input capacitance	C_{IN}	V_F=0, f=1MHz	-	60	-	pF
*7 Leak current (input-output)	I_{I-O}	Ta=25℃, 45%RH V_{I-O}=3KVDC, t=5s	-	-	1.0	uA
*7 Isolation resistance (input-output)	R_{I-O}	V_{I-O}=500VDC	-	10^{12}	-	Ω
*7 Capacitance (input-output)	C_{I-O}	f=1MHz	-	0.6	-	pF
Transistor current amplification factor	h_{FE}	V_O=5V, I_O=3mA	-	70	-	

*5 Current transfer ratio is the ratio of input current and output current expressed in %
*6 I_O=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℃, V_{CC}=5V, IF=16mA)

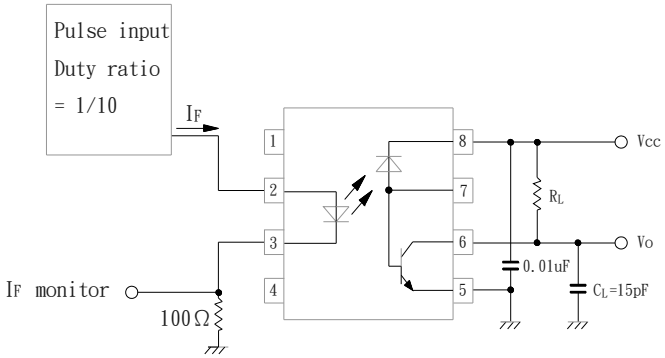
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 Propagation delay time *9 Output (1) → (0)	t_{PHL}	R_L=4.1KΩ	-	0.3	1.5	uS
*8 Propagation delay time *9 Output (0) → (1)	t_{PLH}	R_L=4.1KΩ	-	0.4	1.5	uS
*10 *11 Instantaneous common mode rejection voltage " Output (1) "	CM_H	I_F=0, V_{CM}=10V_{P-P}	-	1000	-	V/uS
*10 *11 Instantaneous common mode rejection voltage " Output (0) "	CM_L	I_F=16mA, V_{CM}=10V_{P-P}	-	-1000	-	V/Us
*12 Bandwidth	BW	R_L=100Ω	-	2.0	-	MHz

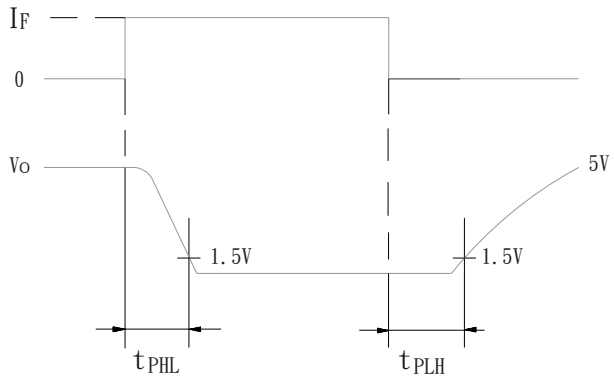
***8** R_L=4.1KΩ is equivalent to one LSTTL and 6.1KΩ pull-up resistor.

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

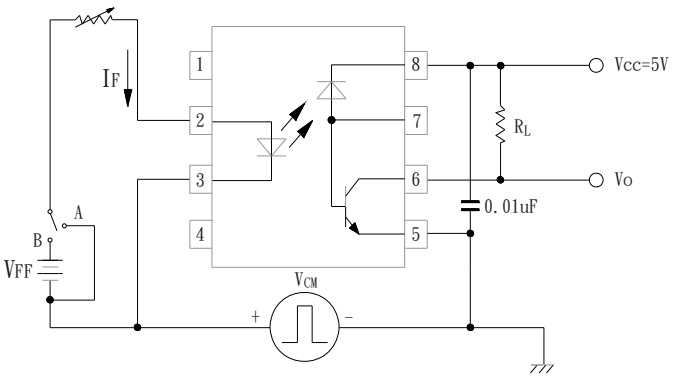
***12** Bandwidth represents a point where AC input goes down by 3dB.

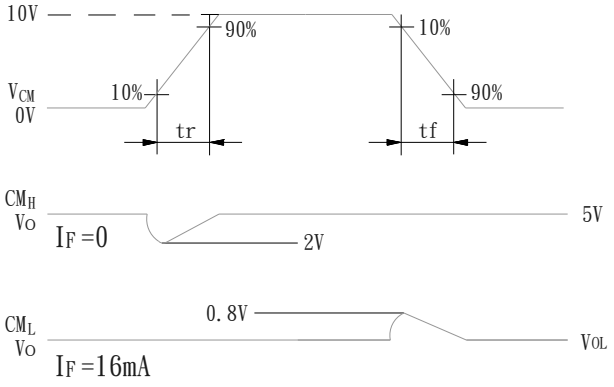
***9** Test Circuit Propagation Delay Time





***11** Test Circuit for Instantaneous Common Mode Rejection Voltage





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