PRODUCT SPECIFICATION

DATE：03/26/2012

cosmo ELECTRONICS CORPORATION	Photocoupler： KPC6N139S	NO.61P51004	REV. 2
		SHEET 1 OF 5	

General Purpose Type Photocoupler

● Features

1. Pb free and RoHS compliant.
2. High current transfer ratio
   (CTR：MIN. 500% at I_F=1.6mA)
3. High speed response
   (t_{PHL}：TYP. 0.2us at R_L=270Ω)
4. High common mode rejection voltage
   (CM_H：TYP. 500V/us)
5. TTL compatible output
6. 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. Interfaces for computer peripherals.

2. Electronic calculators, measuring instruments, control equipment.

3. Telephone sets.

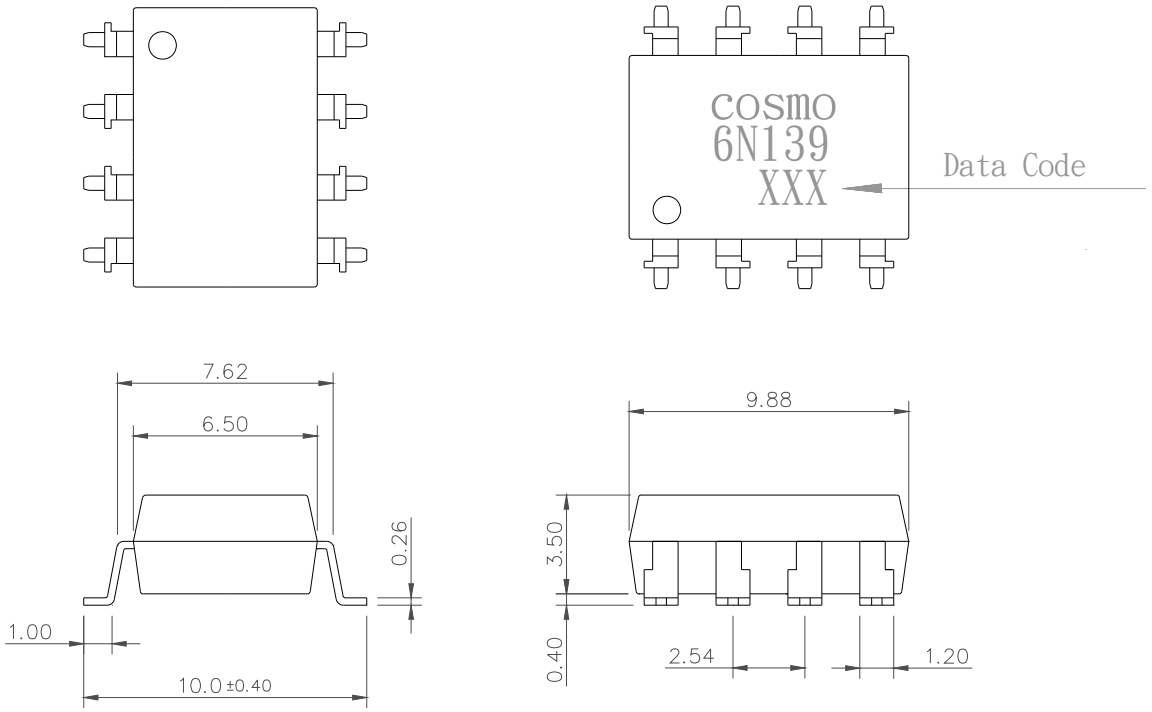
4. Signal transmission between circuits of different Potentials and impedances.

PRODUCT SPECIFICATION

DATE：03/26/2012

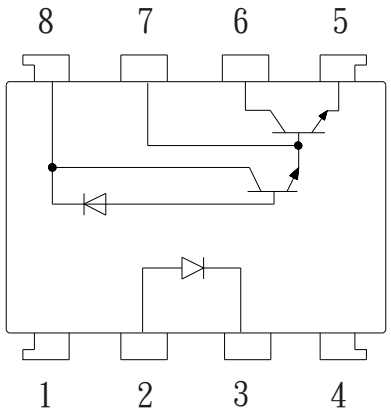
cosmo ELECTRONICS CORPORATION	Photocoupler： KPC6N139S	NO.61P51004	REV. 2
		SHEET 2 OF 5	

● 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}

PRODUCT SPECIFICATION

DATE：03/26/2012

cosmo ELECTRONICS CORPORATION	Photocoupler： KPC6N139S	NO.61P51004	REV. 2
		SHEET 3 OF 5	

● Absolute Maximum Ratings

(Ta=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	20	mA
	*1 Peak forward current	I_F	40	mA
	*2 Peak transient forward current	I_{FM}	1	A
	Reverse voltage	V_R	5	V
	Power dissipation	P	35	mW
Output	Supply voltage	V_{CC}	-0.5 to 18	V
	Output voltage	V_O	-0.5 to 18	V
	Emitter-base reverse with stand voltage (Pin5 to 7)	V_{EBO}	0.5	V
	*3 Average output current	I_O	60	mA
	Power dissipation	P_O	100	mW
*4 Isolation voltage 1 minute		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	0 to +100	℃
Storage temperature		T_{stg}	-55 to +125	℃
*5 Soldering temperature 10 second		T_{sol}	260	℃

***1** 50% duty cycle, Pulse width：1ms
***2** Pulse width≦1us, 300pps
***3** Decreases at the rate of 0.7mA/℃ if the external temperature is more than 25℃.
***4** 40 to 60% RH, AC for 1 minute
***5** For 10 seconds

● Electro-optical Characteristics

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

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*6 Current transfer ratio	CTR(1)	I_F=0.5mA, V_O=0.4V, V_{CC}=4.5V	400	1800	-	%
	CTR(2)	I_F=1.6mA, V_O=0.4V, V_{CC}=4.5V	500	1600	-	%
Logic (0) output voltage	V_{OL}(1)	I_F=6.4mA, I_O=1.6mA, V_{CC}=4.5V	-	0.1	0.4	V
	V_{OL}(2)	I_F=5mA, I_O=15mA, V_{CC}=4.5V	-	0.1	0.4	V
	V_{OL}(3)	I_F=12mA, I_O=24mA, V_{CC}=4.5V	-	0.1	0.4	V
Logic (1) output current	I_{OH}	I_F=0, V_O=V_{CC}=18V	-	0.05	100	uA
Logic (0) supply current	I_{CCL}	I_F=1.6mA, V_O=open, V_{CC}=5V	-	0.5	-	mA
Logic (1) supply current	I_{CCH}	I_F=0, V_F=open, V_{CC}=5V	-	10	-	nA
Input forward voltage	V_F	Ta=25℃, I_F=1.6mA	-	1.5	1.7	V
Input forward voltage temperature coefficient	$\triangle V_F/\triangle Ta$	I_F=1.6mA	-	-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

***6** Current transfer ratio is the ratio of input current and output current expressed in %.
***7** Measured as 2-pin element (Short 1, 2, 3, 4 and 5, 6, 7, 8)

PRODUCT SPECIFICATION

DATE：03/26/2012

cosmo ELECTRONICS CORPORATION	Photocoupler： KPC6N139S	NO.61P51004	REV. 2
		SHEET 4 OF 5	

● Switching Characteristics

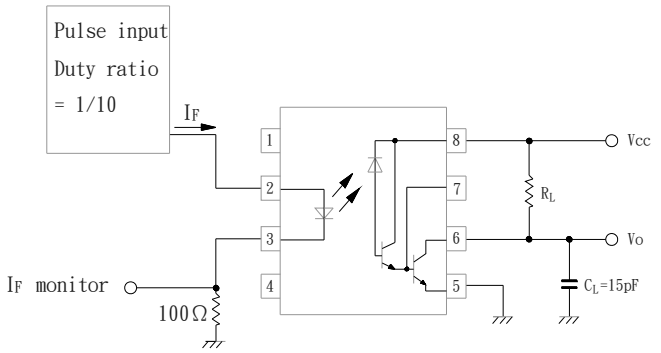
(Ta=25℃, V_{CC}=5V)

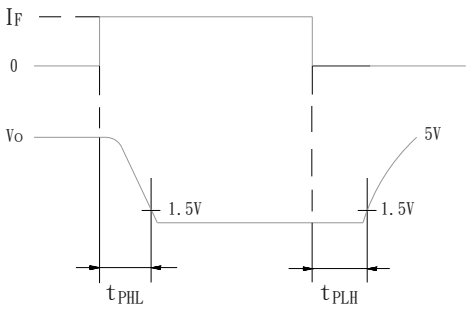
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
*8 Propagation delay time Output (1) → (0)	t_{PHL}	R_L=4.7KΩ, I_F=0.5mA	-	5	25	uS
		R_L=270Ω, I_F=12mA	-	0.3	1	uS
*8 Propagation delay time Output (0) → (1)	t_{PLH}	R_L=4.7KΩ, I_F=0.5mA	-	10	60	uS
		R_L=270Ω, I_F=12mA	-	1.5	7	uS
*9 *10 Instantaneous common mode rejection voltage " Output (1) "	CM_H	I_F=0, V_{CM}=10V_{P-P}, R_L=2.2KΩ	-	500	-	V/uS
*9 *10 Instantaneous common mode rejection voltage " Output (0) "	CM_L	I_F=1.6mA, V_{CM}=10V_{P-P}, R_L=2.2KΩ	-	-500	-	V/uS

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

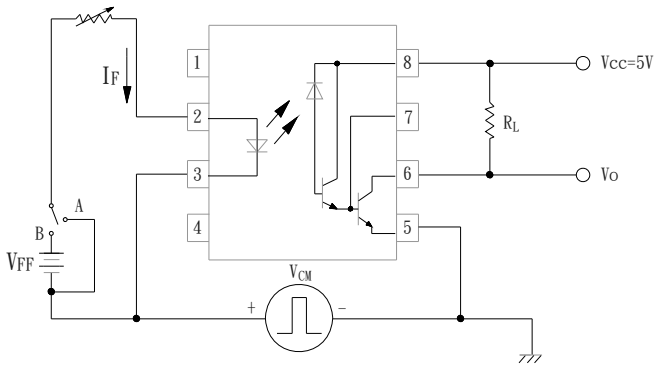
***10** Instantaneous common mode rejection voltage " output (0) " represents a common mode voltage variation that can hold the output above (0) level (Vo < 0.8V)

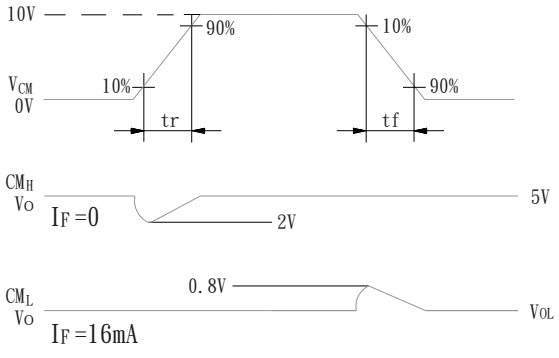
***8** Test Circuit Propagation Delay Time





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





PRODUCT SPECIFICATION

DATE：03/26/2012

● Notice

The information contained in this document is intended to be a general product description and is subject to change without notice. Please contact cosmo in order to obtain the latest device data sheets before using any cosmo device. cosmo does not assume any responsibility for use of any circuitry described. No circuit patent licenses are implied. This publication is the property of cosmo. No part of this publication may be reproduced or copied in any form or by any means, or transferred to any third party without the prior written consent of cosmo Electronics Corporation.

The devices listed in this document are designed for general applications only in electronic equipment. No devices shall be deployed which require higher level of reliability such as：

- Medical and other life support equipments.
- Space application.
- Telecommunication equipment (trunk lines).
- Nuclear power control equipment.

Unless it received prior written approval from cosmo.

cosmo takes no responsibility for damages arise form the improper usage of our device. Please contact cosmo for further information regarding the above notices.