PRODUCT SPECIFICATION

DATE：01/29/2010

cosmo ELECTRONICS CORPORATION	Photocoupler： KPC4N33S	NO.61P21008 SHEET 1 OF 6	REV. 1

High Reliability Photocoupler

● Features

1. Current transfer ratio
   (CTR：Min. 500% at IF=1mA, V_{CE}=2V)
2. High isolation voltage between input and output(Viso：5000Vrms)
3. Compact surface mount type package.

● Application：

1. System appliances, measuring instruments.
2. Industrial robots.
3. Copiers, automatic vending machines..
4. Signal transmission between circuits of different potentials and impedances.
5. Telephone sets.
6. Copiers, facsimiles.
7. Interface with various power supply circuits, power distribution boards.
8. Numerical control machines.

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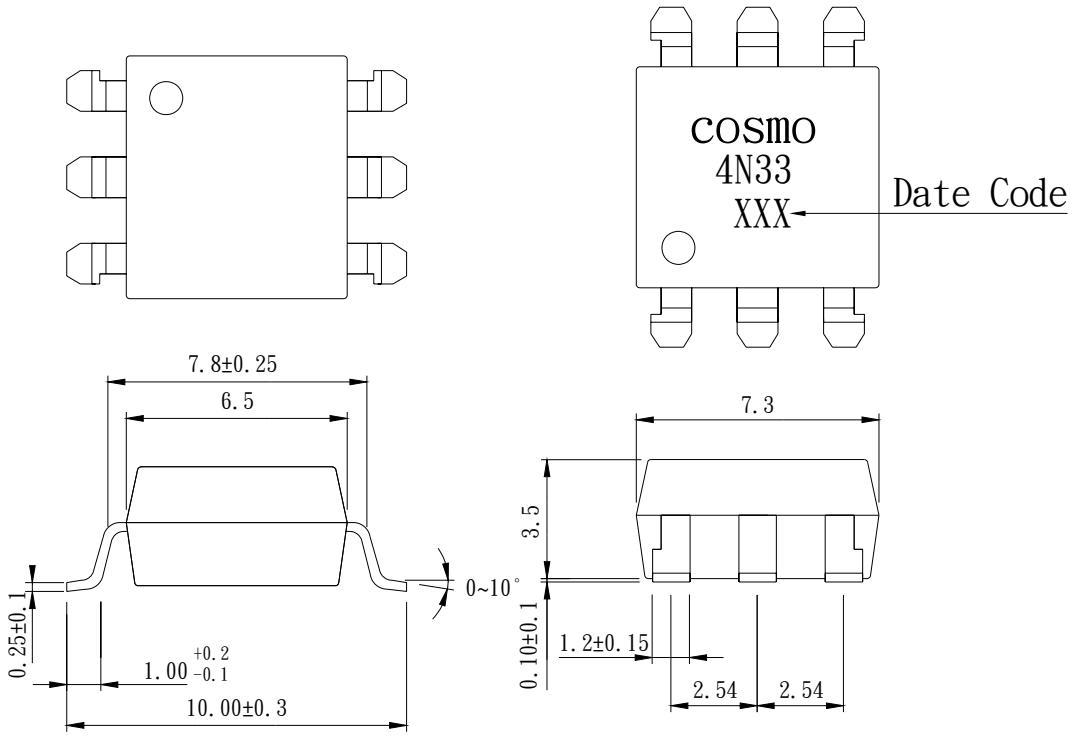
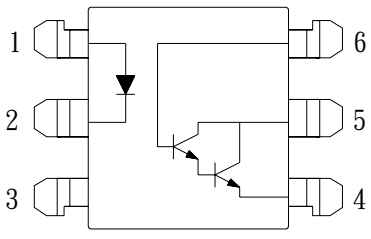
● Outside Dimension：Unit (mm)



TOLERANCE：±0.2mm

● Schematic：Top View



1. Anode
2. Cathode
3. NC
4. Emitter
5. Collector
6. Base

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• Absolute Maximum Ratings

(Ta=25℃)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	70	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Collector-base voltage	V_{CBO}	30	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	150	mA
	Collector power dissipation	P_C	200	mW
Total power dissipation		P_{tot}	200	mW
Isolation voltage 1 minute		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-55 to +100	℃
Storage temperature		T_{stg}	-55 to +125	℃
Soldering temperature 10 second		T_{sol}	260	℃

● Electro-optical Characteristics

(Ta=25℃)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	I_F=20mA	-	1.2	1.4	V
	Peak forward voltage	V_{FM}	I_{FM}=0.5A	-	-	3.5	V
	Reverse Current	I_R	VR=4V	-	-	10	V
	Terminal capacitance	C_t	V=0, f=1KHz	-	30	-	pF
Output	Collector dark current	I_{CEO}	V_{CE}=10V, I_F=0	-	-	0.1	μA
Transfer charac-teristics	Current transfer ratio	CTR	I_F=1mA, V_{CE}=2V	500	-	-	%
	Collector-emitter saturation	$V_{CE(sat)}$	I_F=8mA, I_C=2mA	-	-	1.5	V
	Isolation resistance	R_{iso}	DC500V	$5x10^{10}$	-	-	Ω
	Floating capacitance	C_f	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency	f_C	V_{CC}=5V, I_C=2mA, R_L=100Ω	-	7	-	KHz
	Response time (Rise)	t_r	V_{CE}=10V, I_C=50mA, R_L=100Ω	-	60	100	μs
	Response time (Fall)	t_f		-	5	20	μs

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Fig.1 **Forward Current vs. Ambient Temperature**

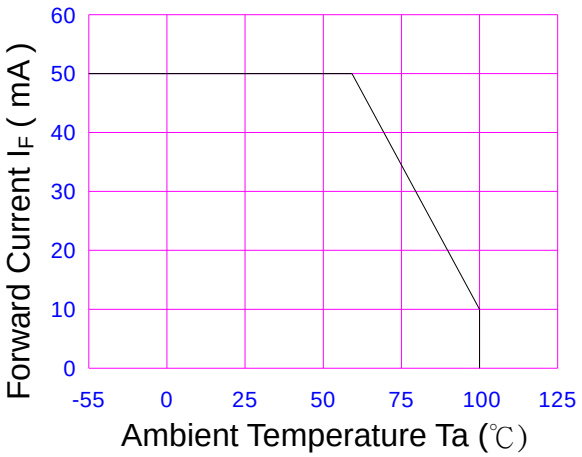

Fig.2 **Collector Power Dissipation vs. Ambient Temperature**

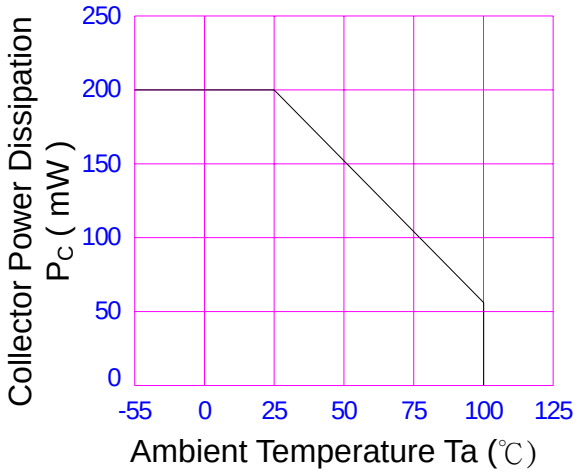

Fig.3 **Peak Forward Current vs. Duty Ratio**

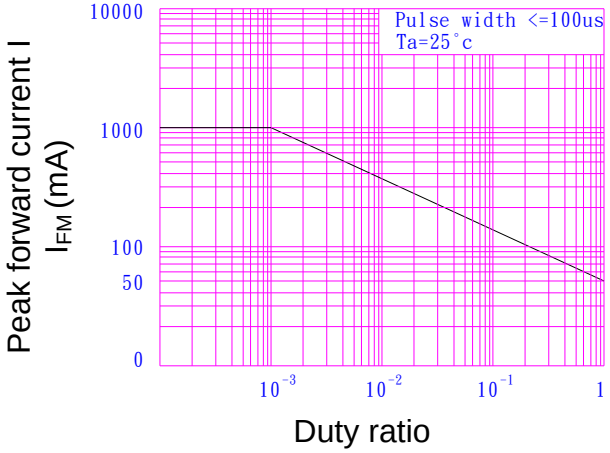

Fig.4 **Forward Current vs. Forward Voltage**

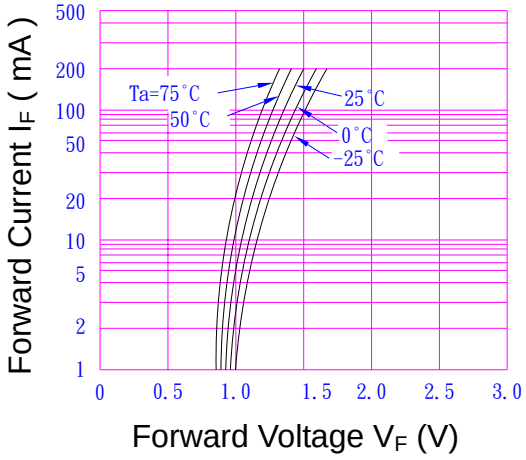

Fig.5 **Current Transfer Ratio vs. Forward Current**

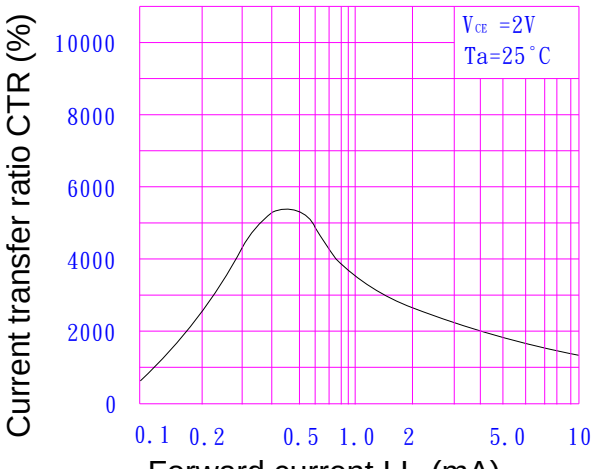

Fig.6 **Collector Current vs. Collector-emitter Voltage**

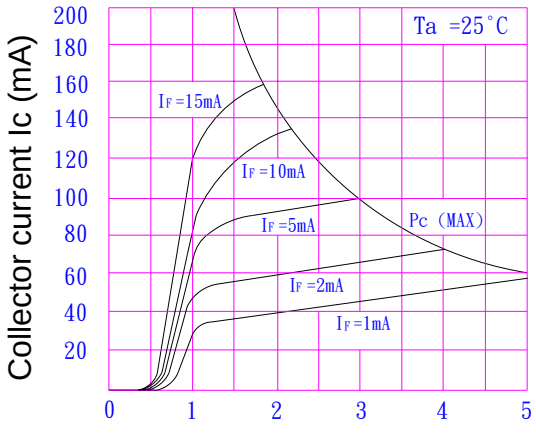

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Fig.7 **Relative Current Transfer Ratio vs. Ambient Temperature**

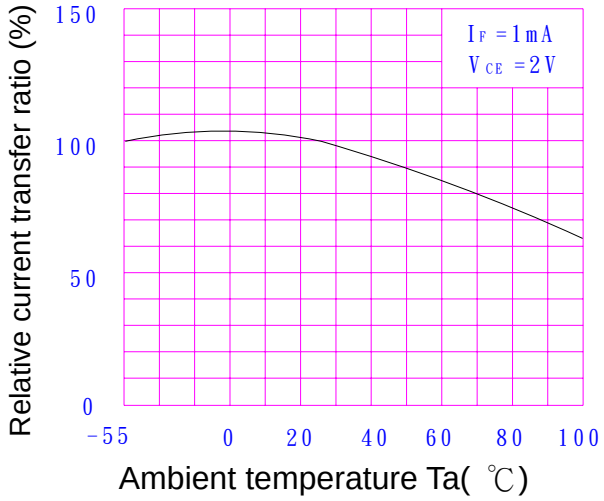


Fig.8 **Collector-emitter Saturation Voltage vs. Ambient Temperature**

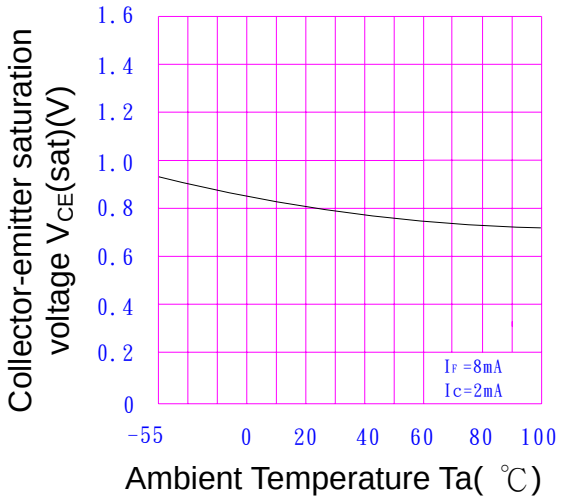


Fig.9 **Collector Dark Current vs. Ambient Temperature**

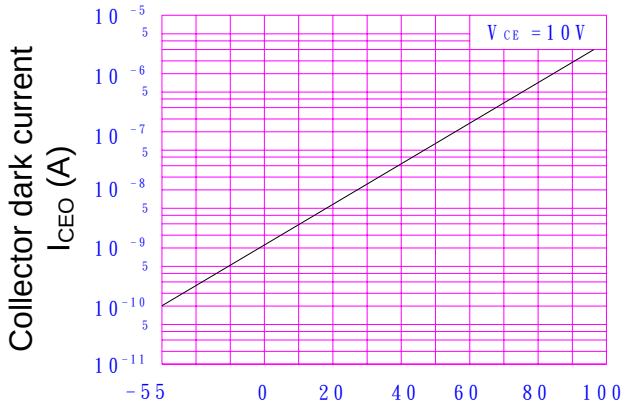


Fig.10 **Response Time vs. Load Resistance**

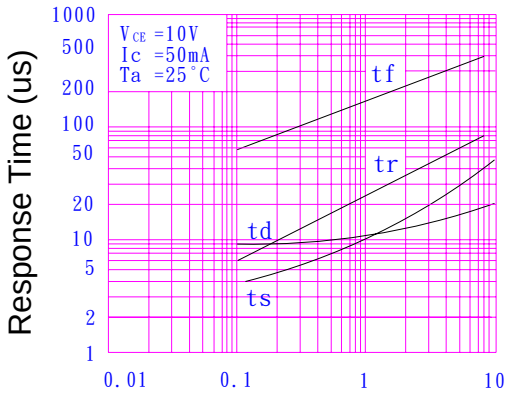
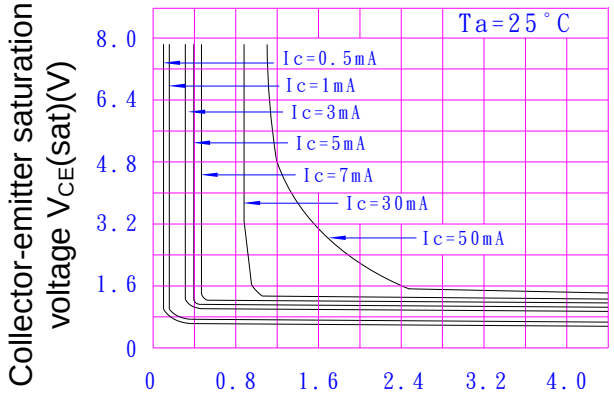


Fig.11 **Collector-emitter Saturation Voltage vs. Forward current**



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