PRODUCT SPECIFICATION

DATE：05/05/2011

cosmo ELECTRONICS CORPORATION	Photocoupler： KP5010L	NO.63P21001	REV. 1
		SHEET 1 OF 6	

High Reliability Photocoupler

● Features

1. High current transfer ratio (Vceo：300V min)
   (CTR：Min. 600% at IF=1mA V_{CE}=2V)
2. High isolation voltage between input and output
   (Viso：5000Vrms)
3. Compact long creepage distance for 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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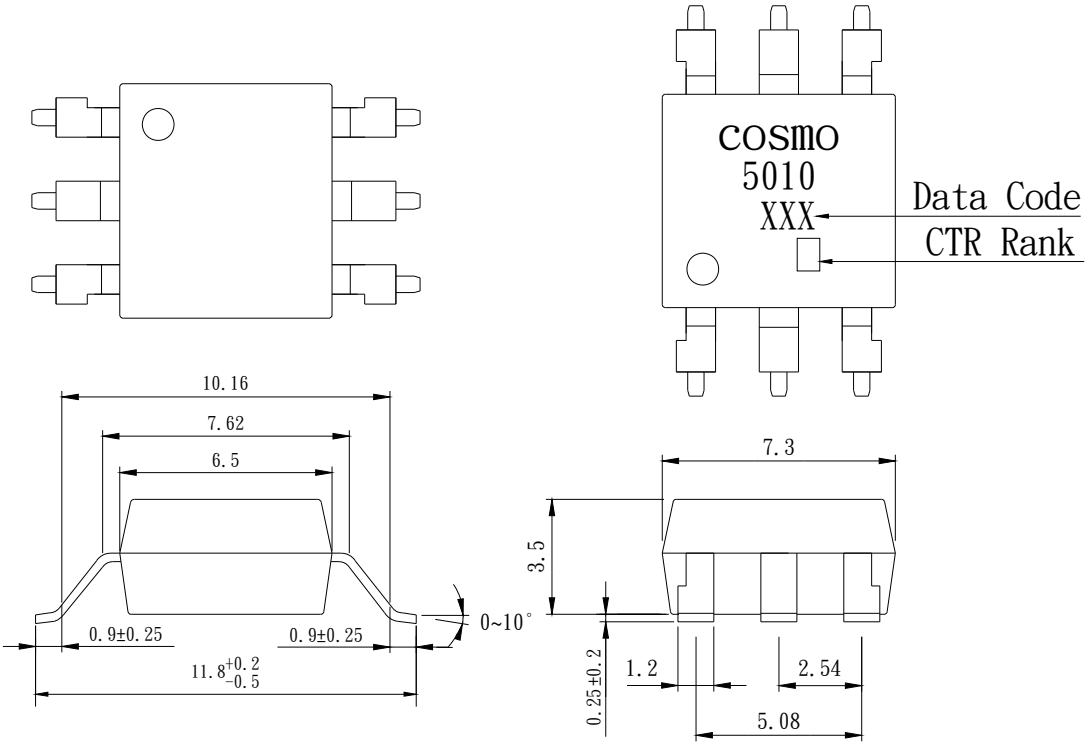
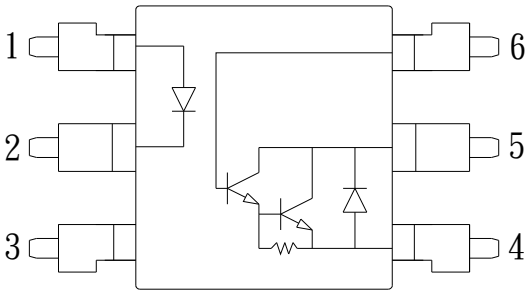
● Outside Dimension：Unit (mm)



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

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}	300	V
	Collector-base voltage	V_{CBO}	300	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

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	V_R=4V	-	-	10	μA
	Terminal capacitance	C_t	V=0, f=1KHz	-	30	-	pF
Output	Collector dark current	I_{CEO}	V_{CE}=200V	-	-	1	μA
Transfer charac-teristics	Current transfer ratio	CTR	I_F=1mA, V_{CE}=2V	600	-	9000	%
	Collector-emitter saturation	$V_{CE(sat)}$	I_F=20mA, I_C=5mA	-	-	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}=2V, I_C=20mA, R_L=100Ω	-	60	300	μs
	Response time (Fall)	t_f		-	50	250	μs

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Classification table of current transfer ratio is shown below.

Model No.	CTR (%)
KP50106A	600 ~ 2000
KP50106B	1500 ~ 4000
KP50106C	3000 ~ 6000
KP50106D	5000 ~ 9000
KP50106E	600 ~ 9000

Fig.1 **Current Transfer Ratio vs. Forward Current**

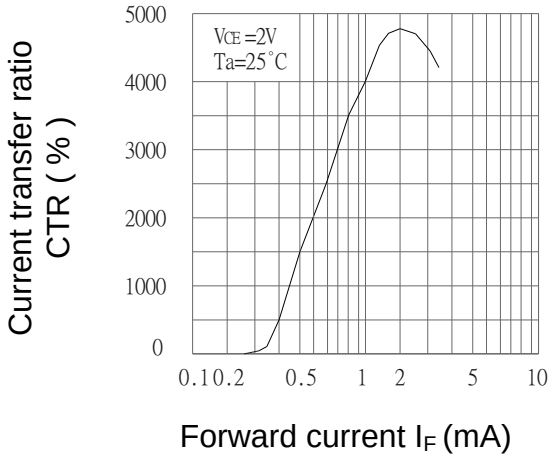

Fig.2 **Collector Power Dissipation vs. Ambient Temperature**

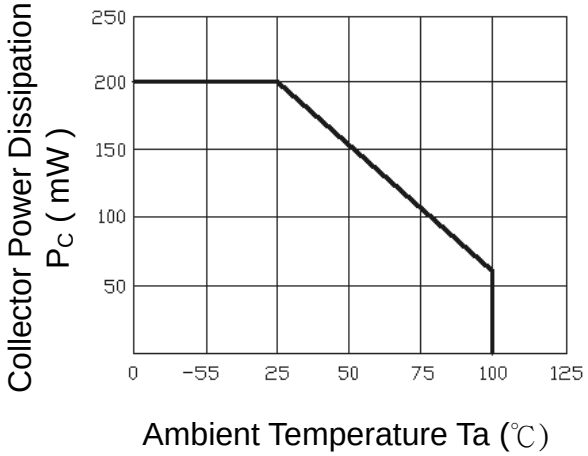

Fig.3 **Collector Dark Current vs. Ambient Temperature**

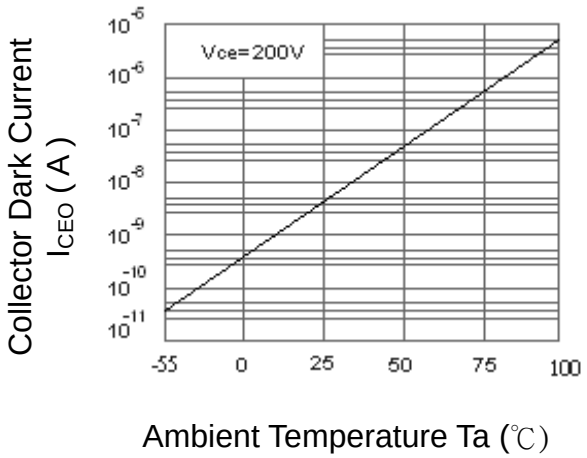

Fig.4 **Forward Current vs. Ambient Temperature**

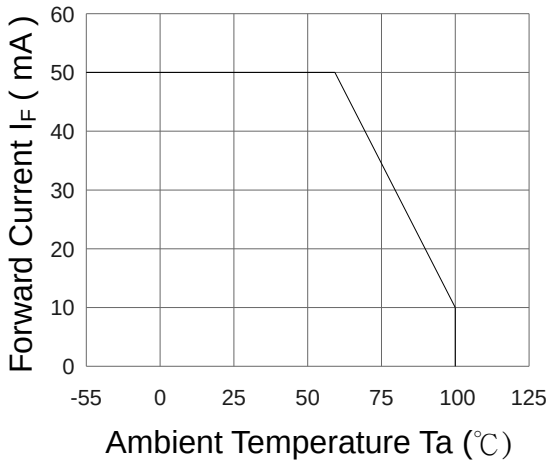

Fig.5 **Forward Current vs. Forward Voltage**

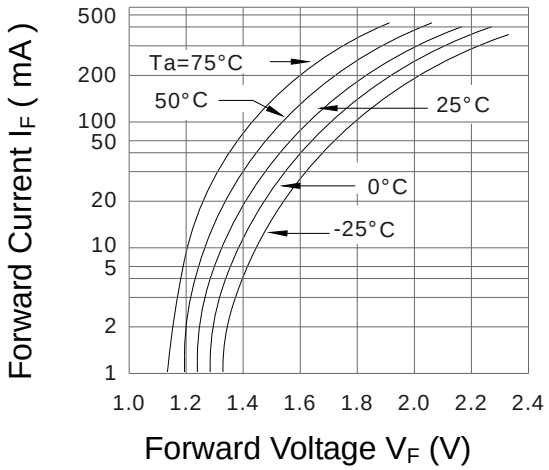

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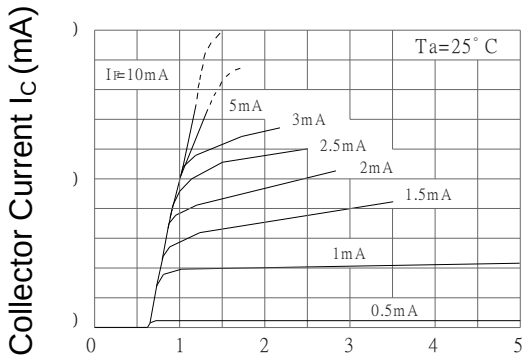
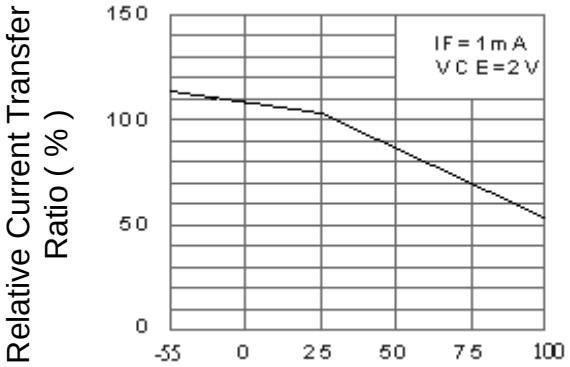
Fig.6 **Collector Current vs. Collector-Emitter Voltage**



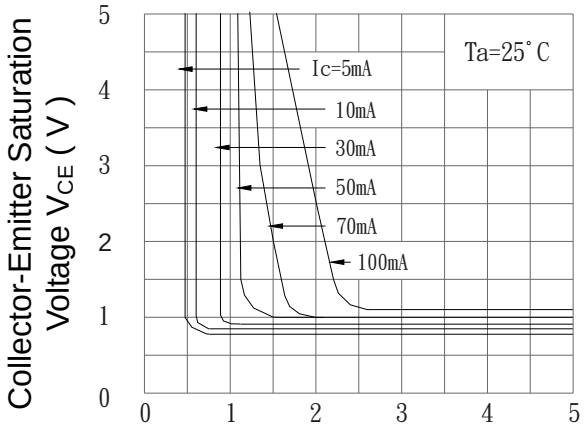
Collector-Emitter Voltage V_{CE} (V)

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



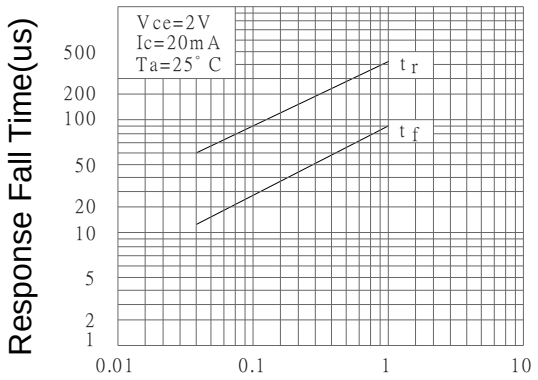
Ambient Temperature Ta (℃)

Fig.8 **Collector-Emitter Saturation Voltage vs. Forward Current**



Forward Current I_F (mA)

Fig.9 **Response ime vs. Load Resistance**



Load Resistance RL (K ohm)

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