

# PRODUCT SPECIFICATION

DATE : 03/19/2012

<b>cosmo</b> ELECTRONICS CORPORATION	Photocoupler : <b>K3010H</b>	NO.62P10005	REV.
		SHEET 1 OF 6	2

## High Reliability Photocoupler

### ● Features

1. Current transfer ratio  
( CTR : Min. 60% at  $I_F = \pm 1\text{mA}$   $V_{CE} = 5\text{V}$  )
2. High isolation voltage between input and output  
( Viso : 5000Vrms )
3. Compact long creepage distance type package.
4. AC input.
5. Pb free and RoHS compliant.
6. Agency Approvals
  - UL UL1577 / CUL C22.2 No.1 & NTC No.5, File No. E169586
  - VDE EN60747, File No.101347
  - FIMKO EN60065, File No.FI23149
  - FIMKO EN60950, File No.FI24584
  - SEMKO EN60065, File No.1016484
  - SEMKO EN60950, File No.1016433
  - CQC GB4943 / GB8898, File No.CQC10001049555/CQC08001023986

### ● Application :

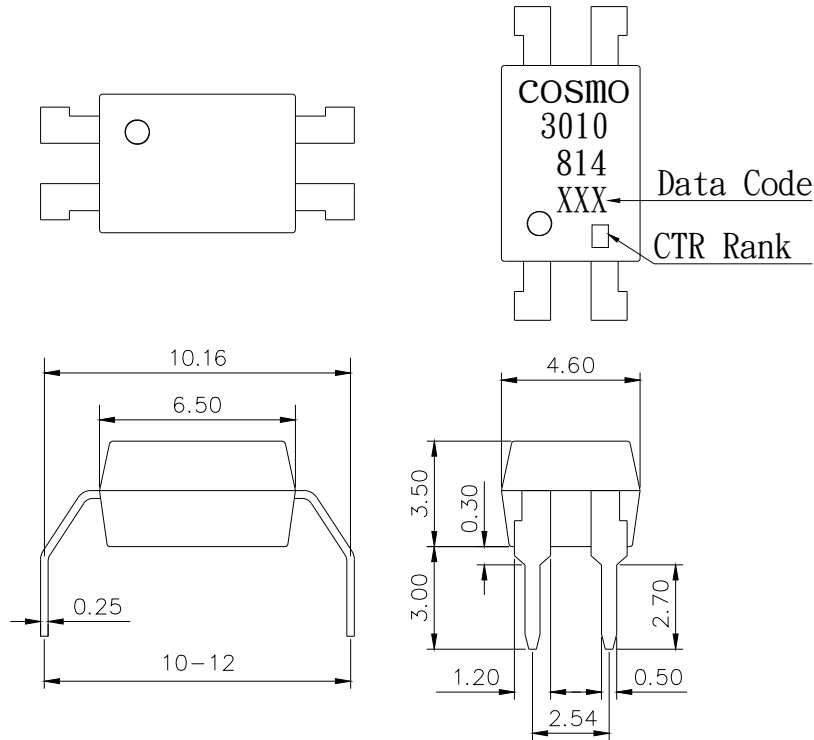
1. Programmable Controller Applications for Low Input Photocouplers and High Vceo Photocouplers.
2. Telephone sets, telephone exchangers.
3. System appliances, Limit Switches, Sensors, Thermostats etc.
4. Signal transmission between circuits of different potentials and impedances.

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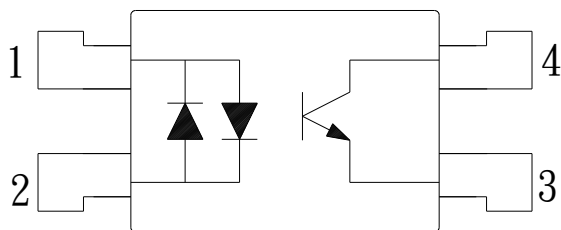
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## ● Outside Dimension : Unit ( mm )



**TOLERANCE : ±0.2mm**

## ● Schematic : Top View



1. Anode, Cathode
2. Anode, Cathode
3. Emitter
4. Collector

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## ● Absolute Maximum Ratings

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	$\pm 50$	mA
	Peak forward current	$I_{FM}$	$\pm 1$	A
	Power dissipation	$P_D$	70	mW
Output	Collector-emitter voltage	$V_{CEO}$	80	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	50	mA
	Collector power dissipation	$P_C$	150	mW
Total power dissipation		$P_{tot}$	200	mW
Isolation voltage 1 minute		$V_{iso}$	5000	Vrms
Operating temperature		$T_{opr}$	-55 to +115	$^{\circ}C$
Storage temperature		$T_{stg}$	-55 to +125	$^{\circ}C$
Soldering temperature 10 second		$T_{sol}$	260	$^{\circ}C$

## ● Electro-optical Characteristics

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$	$I_F = \pm 20mA$	-	1.2	1.4	V
	Peak forward voltage	$V_{FM}$	$I_{FM} = \pm 0.5A$	-	-	3.0	V
	Terminal capacitance	$C_t$	$V=0, f=1KHz$	-	30	-	pF
Output	Collector dark current	$I_{CEO}$	$V_{CE}=20V$	-	-	0.1	$\mu A$
Transfer characteristics	Current transfer ratio	CTR	$I_F = \pm 1mA, V_{CE}=5V$	60	-	600	%
	Collector-emitter saturation	$V_{CE(sat)}$	$I_F = \pm 20mA, I_C = 1mA$	-	0.1	0.3	V
	Isolation resistance	$R_{iso}$	DC500V	$5 \times 10^{10}$	$10^{11}$	-	$\Omega$
	Floating capacitance	$C_f$	$V=0, f=1MHz$	-	0.6	1.0	pF
	Cut-off frequency	$f_c$	$V_{CC}=5V, I_C=2mA, R_L=100\Omega$	-	80	-	KHz
	Response time ( Rise )	$t_r$	$V_{CE}=2V, I_C=2mA, R_L=100\Omega$	-	5	20	$\mu s$
	Response time ( Fall )	$t_f$		-	4	20	$\mu s$

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Classification table of current transfer ratio is shown below.

Model No.	CTR (%)
K30103A	60 ~ 600
K30103B	60 ~ 300

Fig.1 Current Transfer Ratio vs. Forward Current

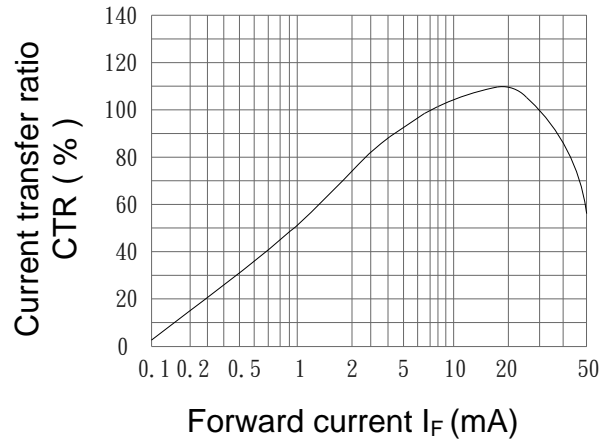


Fig.2 Collector Power Dissipation vs. Ambient Temperature

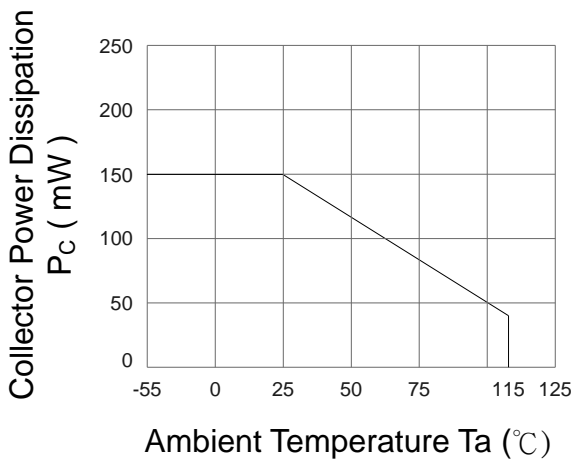


Fig.3 Collector Dark Current vs. Ambient Temperature

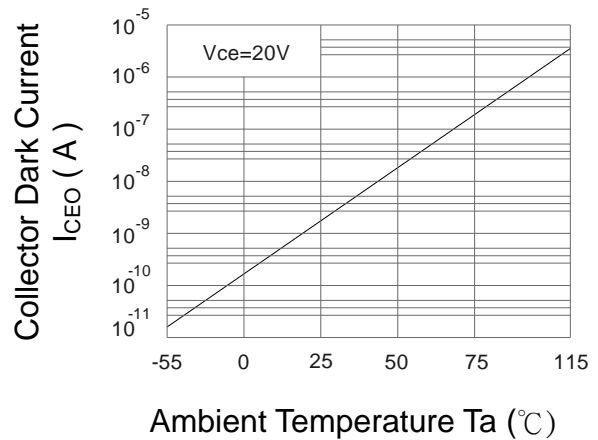


Fig.4 Forward Current vs. Ambient Temperature

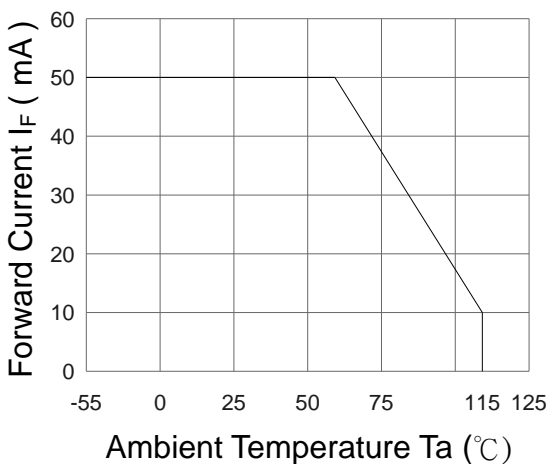
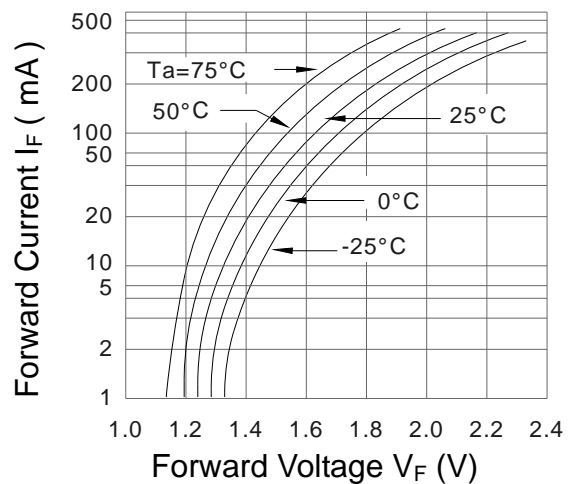


Fig.5 Forward Current vs. Forward Voltage

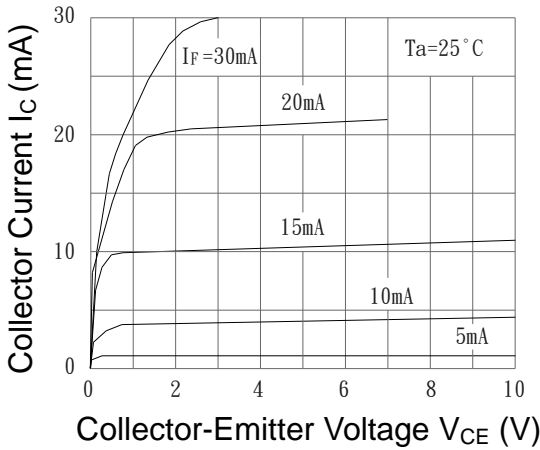


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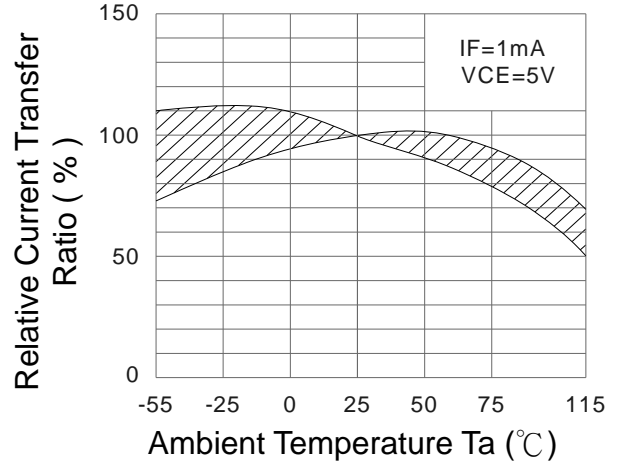
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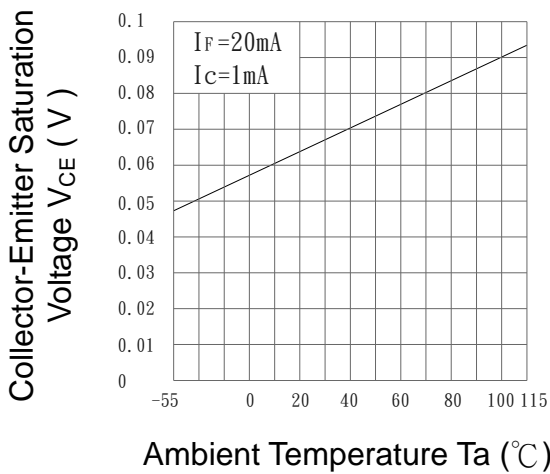
**Fig.6 Collector Current vs. Collector-Emitter Voltage**



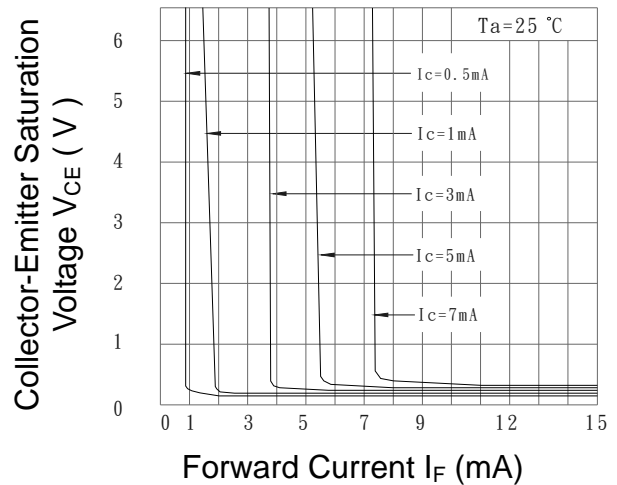
**Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature**



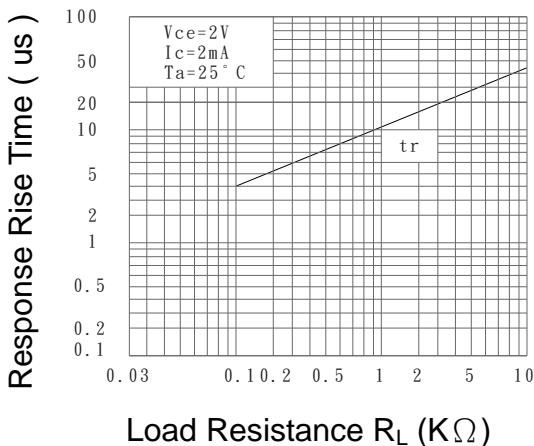
**Fig.8 Collector-Emitter Saturation Voltage vs. Ambient Temperature**



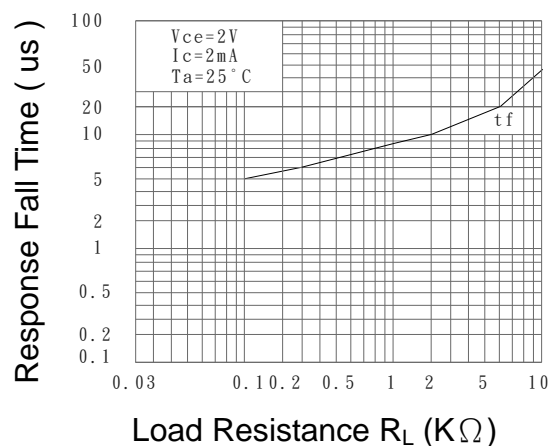
**Fig.9 Collector-Emitter Saturation Voltage vs. Forward Current**



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



**Fig.11 Response Time vs. Load Resistance**



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