

# PRODUCT SPECIFICATION

DATE:05/14/2007

<b>cosmo</b> ELECTRONICS CORPORATION	Photocoupler : <b>KP1210</b>	NO.60P00036	REV. 4
		SHEET 1 OF 6	

## High Reliability Photocoupler

### ●Features

- 1.Current transfer ratio (CTR : 50~600% at  $I_F=5\text{mA}$   $V_{ce}=5\text{V}$ )
- 2.High isolation voltage between input and output (Viso : 5000Vrms).
- 3.Compact dual-in-line package.

### ●Applications

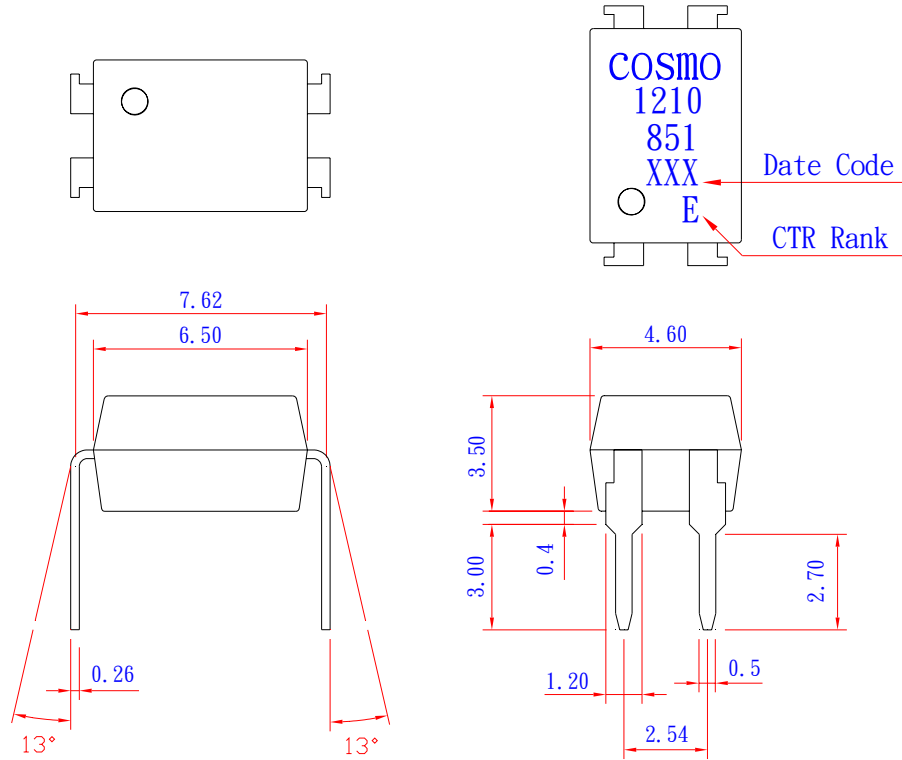
1. Registers, copiers, automatic vending machines.
2. System appliances, measuring instruments.
3. Computer terminals, programmable controllers.
4. Communications, telephone, etc.
5. Electric home appliances, such as oil fan heaters, Microwave oven , Washer, Refrigerator, Air conditioner, etc.
6. Medical instruments, physical and chemical equipment.
7. Signal transmission between circuits of different potentials and impedances.
8. Facsimile equipment, Audio, Video
9. Switching power supply, Laser beam printer.

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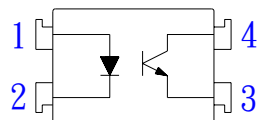
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## 1. OUTSIDE DIMENSION : UNIT (mm)



**TOLERANCE : ±0.2mm**

## 2. SCHEMATIC : TOP VIEW



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

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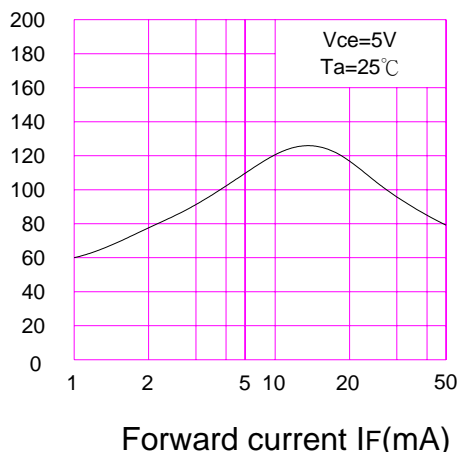
## ● Absolute Maximum Ratings

	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	$V_{CEO}$	350	V
	Emitter-collector voltage	$V_{ECO}$	7	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	$V_{rms}$
	Operating temperature	$T_{opr}$	-55 to +115	°C
	Storage temperature	$T_{sta}$	-55 to +125	°C
	Soldering temperature 10 second	$T_{sol}$	260	°C

## ● Electro-optical Characteristics

	Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$	$I_F=10mA$	1.0	1.2	1.3	V
	Peak forward voltage	$V_{FM}$	$I_{FM}=0.5A$	-	-	3.0	V
	Reverse current	$I_R$	$V_R=5V$	-	-	10	uA
	Terminal capacitance	$C_t$	$V=0, f=1MHz$	-	30	-	pF
Output	Collector dark current	$I_{CEO}$	$V_{CE}=300V$	-	10	200	nA
Transfer characteristics	Current transfer ratio	CTR	$I_F=5mA, V_{CE}=5V$	50	-	600	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=8mA, I_C=2.4mA$	-	-	0.4	V
	Isolation resistance	$R_{iso}$	DC500V	$5 \times 10^{10}$	$10^{11}$	-	ohm
	Floating capacitance	$C_f$	$V=0, f=1MHz$	-	0.6	1.0	pF
	Cut-off frequency	$f_c$	$V_{CC}=5V, I_C=2mA, R_L=100ohm$	-	80	-	kHz
	Response time (Rise)	$t_r$	$V_{CC}=10V, I_C=2mA, R_L=100ohm$	-	2	-	us
	Response time (Fall)	$t_f$		-	3	-	us

Fig. 1 Current Transfer Ratio Vs. Forward Current



Classification table of current transfer ratio is shown below.

Model NO.	CTR(%)
KP12101E	50 TO 600

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Fig.2 Collector Power Dissipation vs. Ambient Temperature

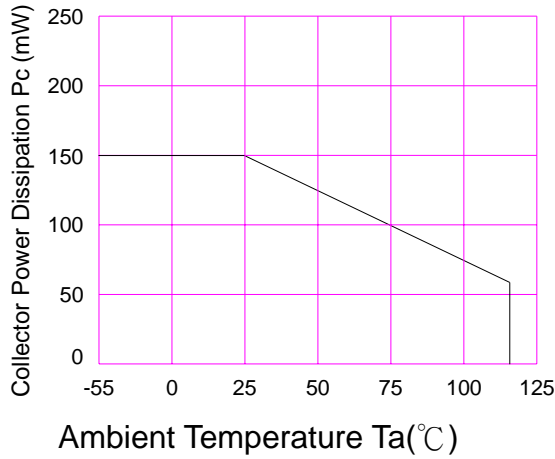


Fig.3 Collector Dark Current vs. Ambient Temperature

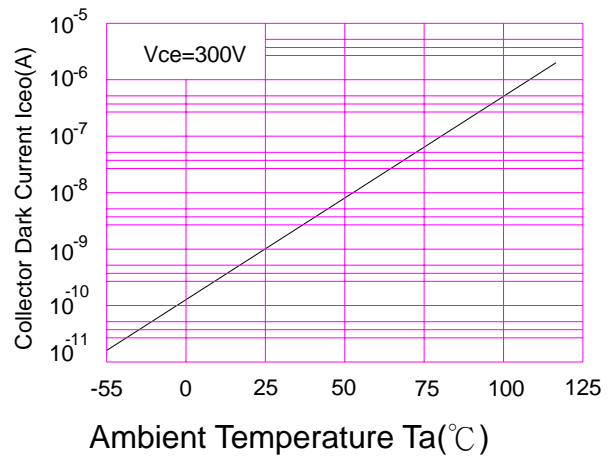


Fig.4 Forward Current vs. Ambient Temperature

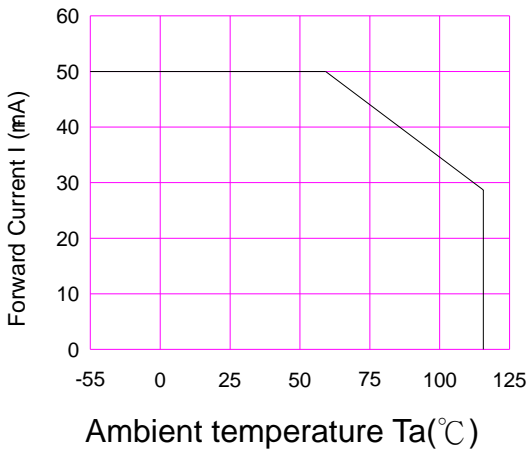


Fig.5 Forward Current vs. Forward Voltage

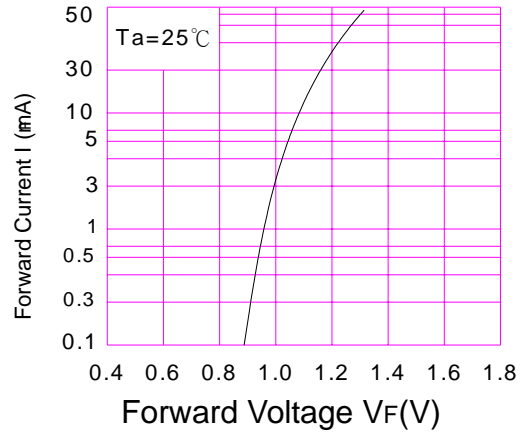


Fig.6 Collector Current vs. Collector-emitter Voltage

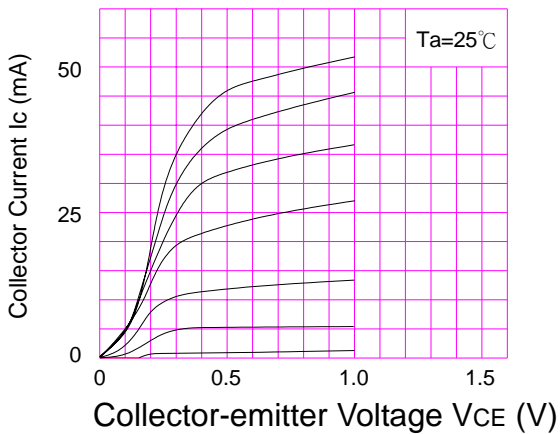
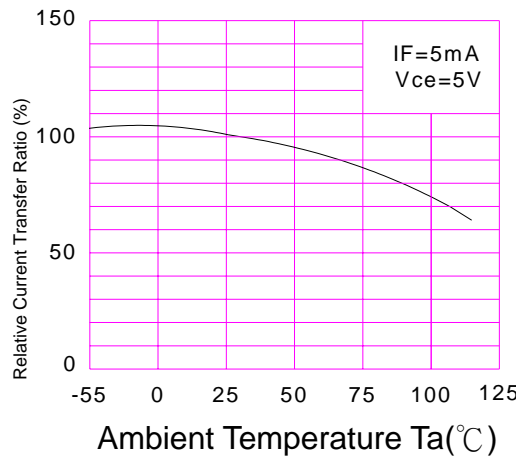


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature



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

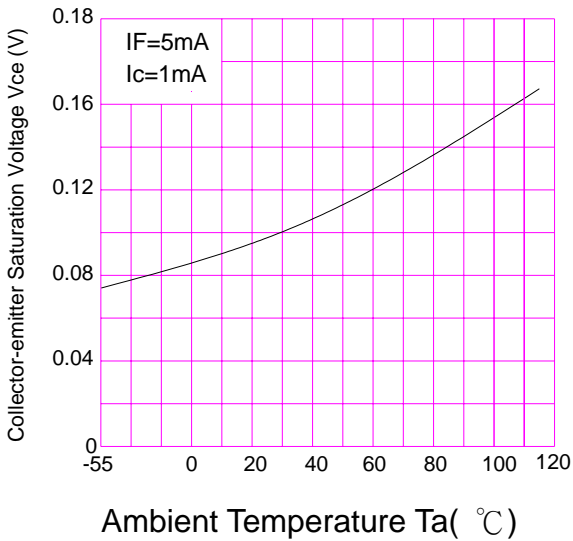


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

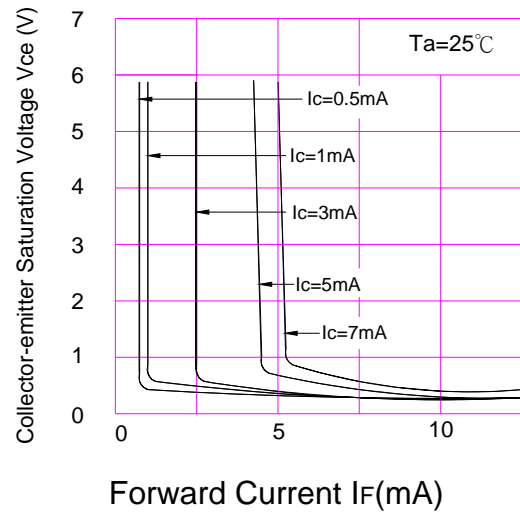


Fig.10 Response Time vs. Load Resistance

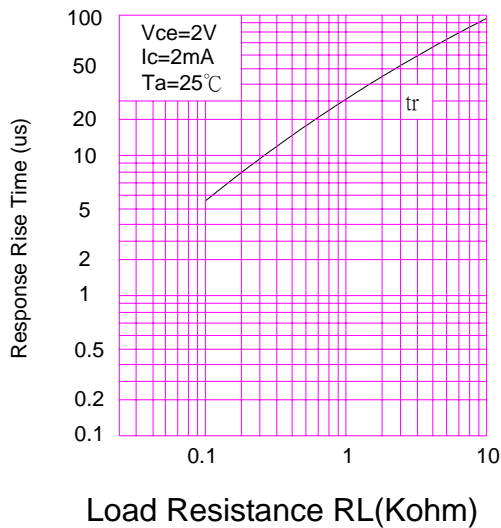
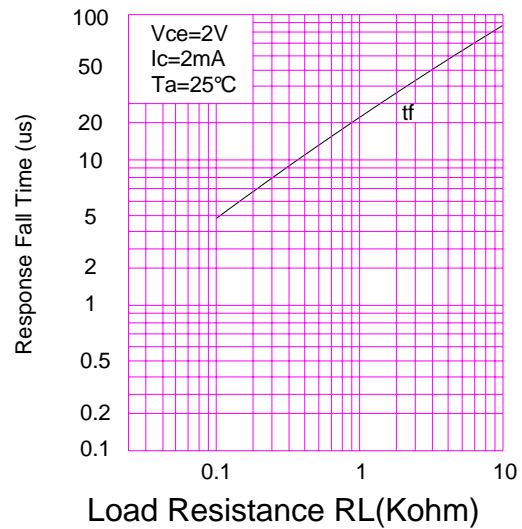


Fig.11 Response Time vs. Load Resistance



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