PRODUCT SPECIFICATION

COSMO ELECTRONICS CORP.	Photocoupler : K1010	SHEET 1 OF 5

High Reliability Photocoupler

● Features

1. Current transfer ratio

   (CTR : MIN.50% at I_F=5mA Vce=5V)

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.

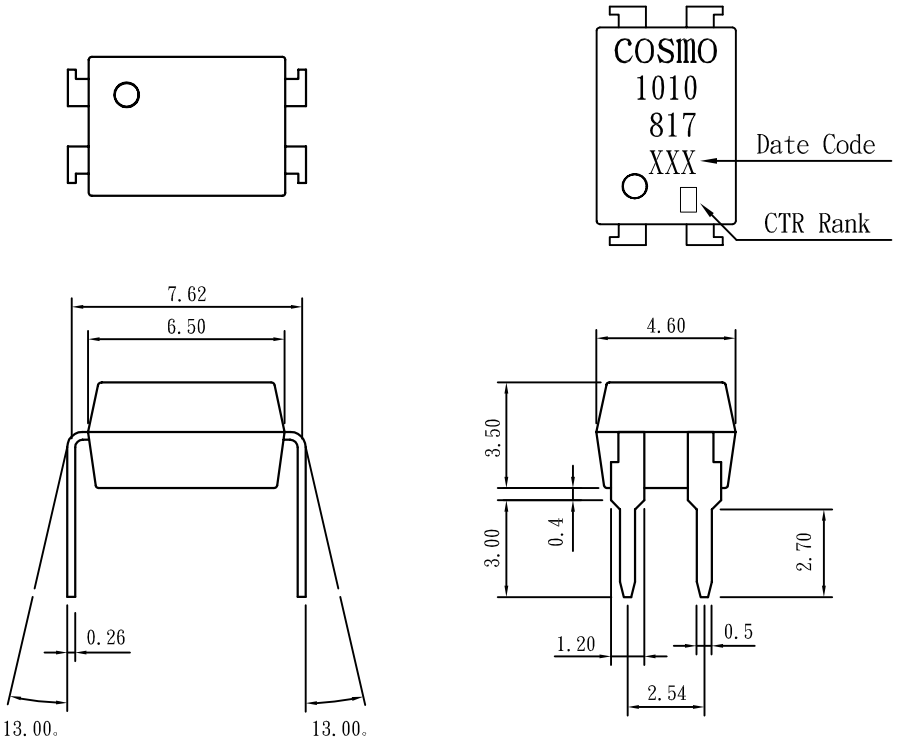
8. Facsimile equipment, Audio, Video.

9. Switching power supply, Laser beam printer.

PRODUCT SPECIFICATION

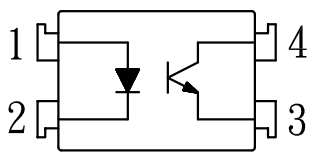
COSMO ELECTRONICS CORP.	Photocoupler : K1010	SHEET 2 OF 5

1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE : ±0.2mm

2. SCHEMATIC : TOP VIEW



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

PRODUCT SPECIFICATION

COSMO ELECTRONICS CORP.	Photocoupler : K1010	SHEET 3 OF 5

• Absolute Maximum Ratings

(Ta=25。C)

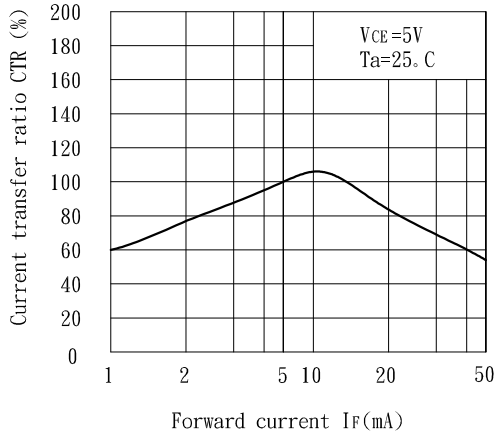
Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	70	mW
Output	Collector-emitter voltage	V_{CEO}	60	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	Ic	50	mA
	Collector power dissipation	Pc	150	mW
Total power dissipation		P_{tot}	200	mW
Isolation voltage 1 minute		Viso	5000	Vrms
Operating temperature		Topr	-30 to +100	。C
Storage temperature		Tstg	-55 to +125	。C
Soldering temperature 10 second		Tsol	260	。C

• Electro-optical Characteristics

(Ta=25。C)

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	-	-	3.0	V
	Reverse current	I_R	V_R=4V	-	-	10	uA
	Terminal capacitance	C_t	V=0, f=1kHz	-	30	-	pF
Output	Collector dark current	I_{CEO}	V_{CE}=20V	-	-	0.1	uA
Transfer charac-teristics	Current transfer ratio	CTR	I_F=5mA, V_{CE}=5V	50	-	600	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	I_F=20mA, I_C=1mA	-	0.1	0.2	V
	Isolation resistance	Riso	DC500V	$5x10^{10}$	10^{11}	-	ohm
	Floating capacitance	C_f	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency	fc	V_{CC}=5V, I_C=2mA, R_L=100ohm	-	80	-	kHz
	Response time (Rise)	tr	V_{CC}=2V, I_C=2mA, R_L=100ohm	-	4	18	us
	Response time (Fall)	tf		-	3	18	us

Fig.1 Current Transfer Ratio vs. Forward Current



Classification table of current transfor ratio is shown below.

Model NO.	CTR (%)
K1010 A	80 TO 160
K1010 B	130 TO 260
K1010 C	200 TO 400
K1010 D	300 TO 600
K1010 E	50 TO 600

PRODUCT SPECIFICATION

COSMO ELECTRONICS CORP.	Photocoupler : K1010	SHEET 4 OF 5

Fig.2 Collector Power Dissipation vs. Ambient Temperature

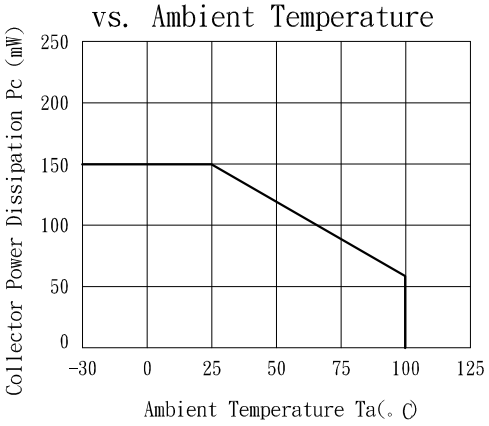


Fig.3 Collector Dark Current vs. Ambient Temperature

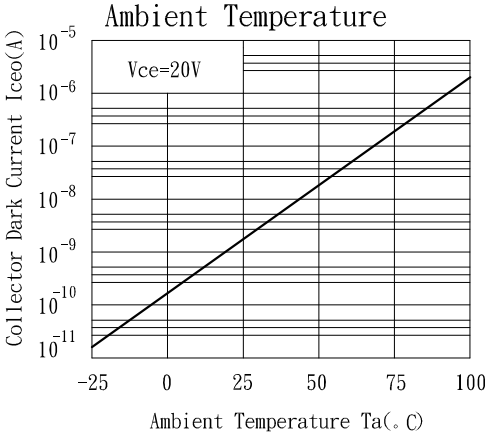


Fig.4 Forward Current vs. Ambient Temperature

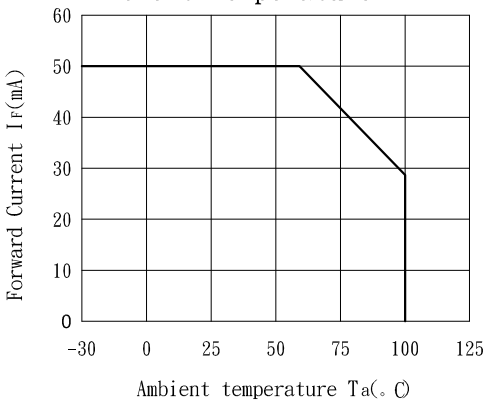


Fig.5 Forward Current vs. Forward Voltage

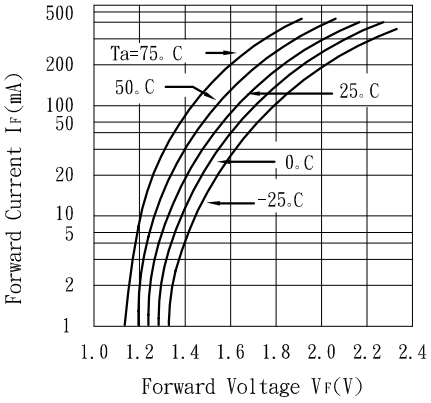


Fig.6 Collector Current vs. Collector-emitter Voltage

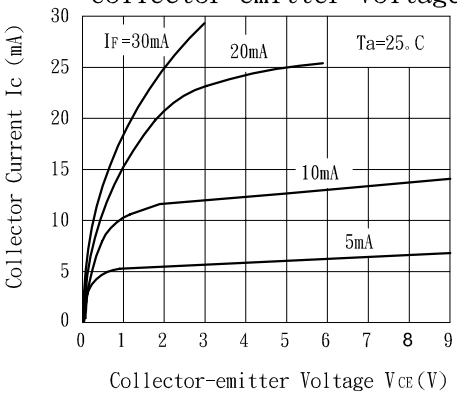
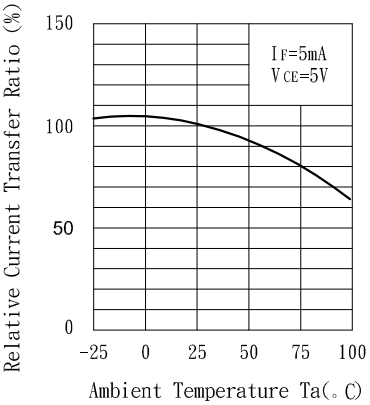


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature



PRODUCT SPECIFICATION

COSMO ELECTRONICS CORP.	Photocoupler : K1010	SHEET 5 OF 5

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

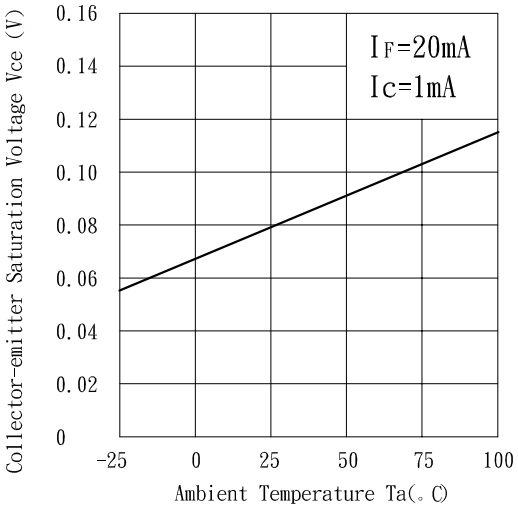


Fig.9 Collector-emitter Saturation Voltage vs. Forward Current

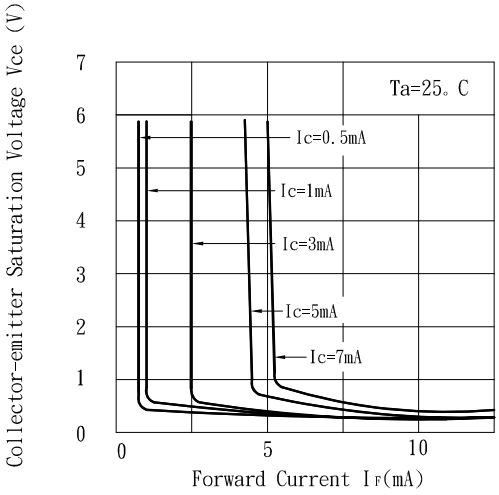


Fig.10 Response Time vs. Load Resistance

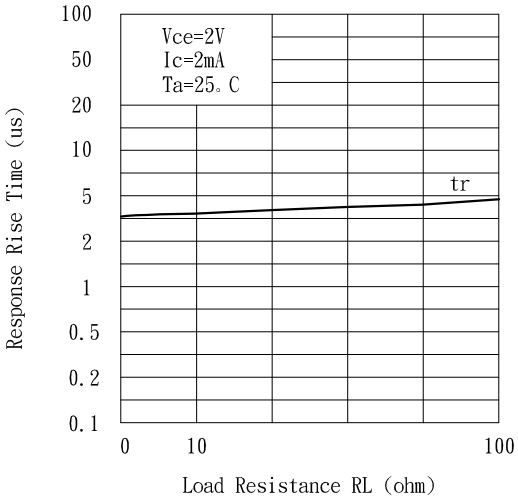


Fig.11 Response Time vs. Load Resistance