cosmo

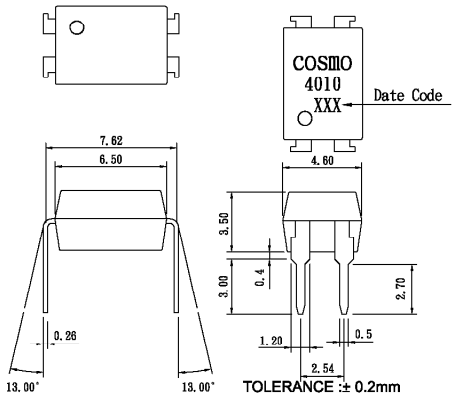
High Reliability Photo Coupler KP4010

UL 1577 (File No.E169586) VDE 0884 / 0860 / 0805 (File No.101347)

Features

1. High current transfer ratio (V_{CEO}:300V MIN)
   (CTR:MIN.600% at I_F=1mA, Vce=2V)
2. High isolation voltage between input and output
   (Viso:5000Vrms).
3. Compact dual-in-line package.
4. Available package : DIP/ SMD/ H.

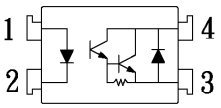
Outside Dimension : Unit (mm)



Applications

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.

Schematic : Top View



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

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}	300	V
	Emitter-collector voltage	V_{ECO}	0.1	V
	Collector current	I_C	150	mA
	Collector power dissipation	P_C	200	mW
Total power dissipation		Ptot	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	—	—	3.5	V
	Reverse current	I_R	V_R =4V	—	—	10	uA
	Terminal capacitance	Ct	V=0, f=1kHz	—	30	—	pF
Output	Collector dark current	I_{CEO}	V_{CE} =200V, I_F=0	—	—	1.0	uA
Transfer charac-teristics	Current transfer ratio	CTR	I_F =1mA,V_{CE}=2V	600	—	9000	%
	Collector-emitter saturation voltage	V_{CE} (sat)	I_F=20mA, I_C=5mA	—	—	1.5	V
	Isolation resistance	Riso	DC500V	$5X10^{10}$	—	—	ohm
	Floating capacitance	Cf	V=0, f=1MHz	—	0.6	1.0	pF
	Cut-off frequency	fc	V_{CC}=5V, I_C=2mA, R_L=100ohm	—	7	—	kHz
	Response time (Rise)	tr	V_{CE}=2V, I_C=20mA, R_L=100ohm	—	60	300	us
	Response time (Fall)	tf		—	50	250	us

Classification table of current transfer ratio is shown below.

Model NO.	CTR (%)
*KP4010 A	600 TO 2000
KP4010 B	1500 TO 4000
KP4010 C	3000 TO 6000
*KP4010 D	5000 TO 9000
KP4010 E	600 TO 9000

*SPECIAL OPTION

Fig.1 Current Transfer Ratio vs. Forward Current

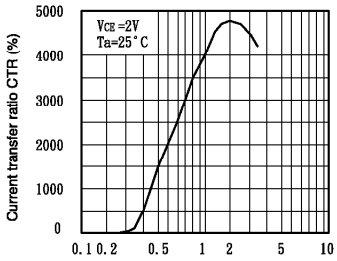


Fig.2 Collector Power Dissipation vs. Ambient Temperature

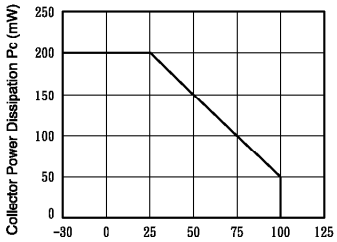


Fig.3 Collector Dark Current vs. Ambient Temperature

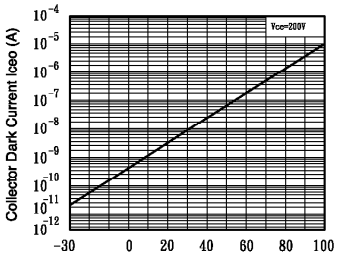


Fig.4 Forward Current vs. Ambient Temperature

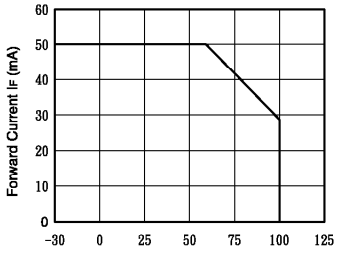


Fig.5 Forward Current vs. Forward Voltage

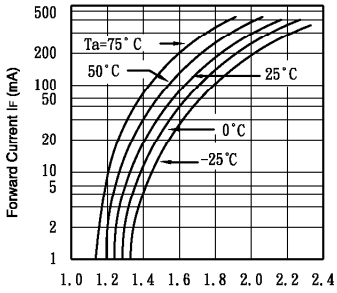


Fig.6 Collector Current vs. Collector-emitter Voltage

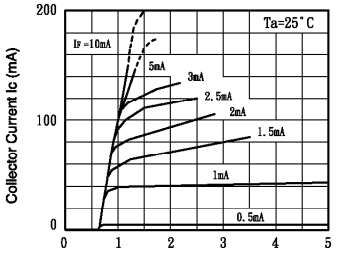


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

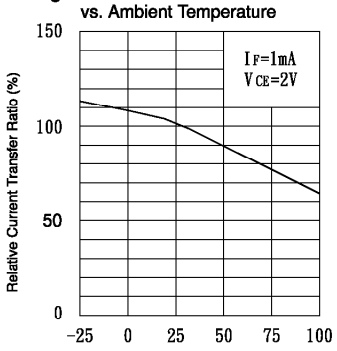


Fig.8 Collector-emitter Saturation Voltage vs. Forward Current

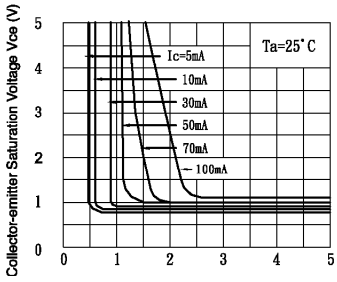


Fig.9 Response Time vs. Load Resistance