

PRODUCT SPECIFICATION

COSMO ELECTRONICS CORP.	Photocoupler : KP3020	SHEET 1 OF 5
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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 dual-in-line package.
4. AC input.

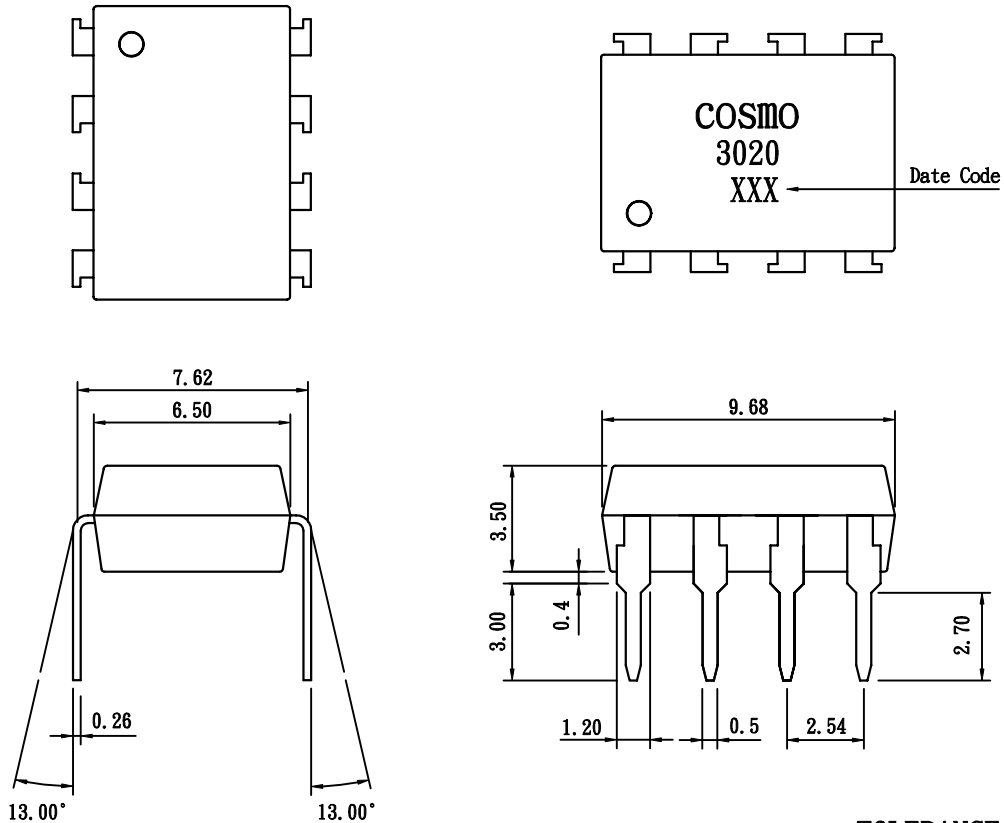
● Applications

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

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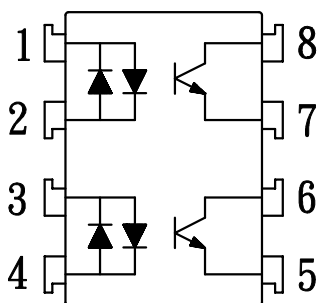
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1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE : $\pm 0.2\text{mm}$

2. SCHEMATIC : TOP VIEW



- 1, 2. Anode, Cathode
- 3, 4. Anode, Cathode
- 5, 7. Emitter
- 6, 8. Collector

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• Absolute Maximum Ratings

(Ta=25°C)

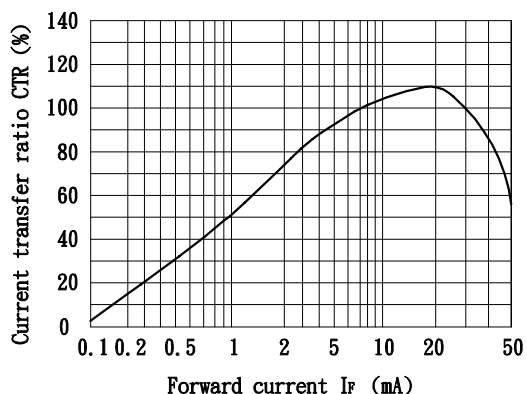
	Parameter	Symbol	Rating	Unit
Input	Forward current	I_F	± 50	mA
	Peak forward current	I_{FM}	± 1	A
	Power dissipation	P_D	70	mW
Output	Collector-emitter voltage	V_{CE0}	60	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_c	50	mA
	Collector power dissipation	P_c	150	mW
	Total power dissipation	P_{tot}	200	mW
	Isolation voltage 1 minute	V_{iso}	5000	Vrms
	Operating temperature	T_{opr}	-30 to +100	° C
	Storage temperature	T_{stg}	-55 to +125	° C
	Soldering temperature 10 second	T_{sol}	260	° C

• Electro-optical Characteristics

(Ta=25°C)

	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}	$I_{FM} = \pm 0.5A$	-	-	3.5	V
	Terminal capacitance	C_t	$V=0, f=1kHz$	-	30	-	pF
Output	Collector dark current	I_{CE0}	$V_{CE}=20V, I_F=0$	-	-	0.1	uA
	Current transfer ratio	CTR	$I_F = \pm 1mA, V_{CE}=5V$	60	-	600	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = \pm 20mA, I_c = 1mA$	-	0.1	0.3	V
Transfer characteristics	Isolation resistance	R_{iso}	DC500V	5×10^{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	$V_{CC}=2V, I_c=2mA, R_L=100ohm$	-	5	20	us
	Response time (Fall)	t_f		-	4	20	us

Fig.1 Current Transfer Ratio vs. Forward Current



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Fig.2 Collector Power Dissipation vs. Ambient Temperature

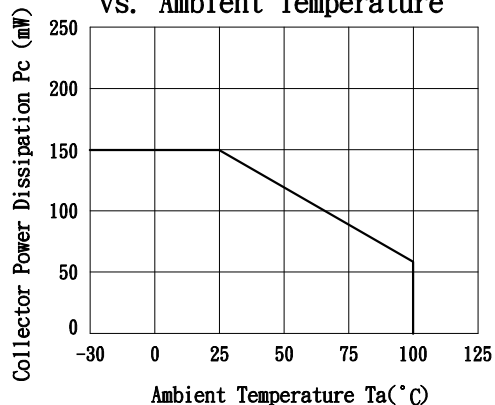


Fig.3 Collector Dark Current vs. Ambient Temperature

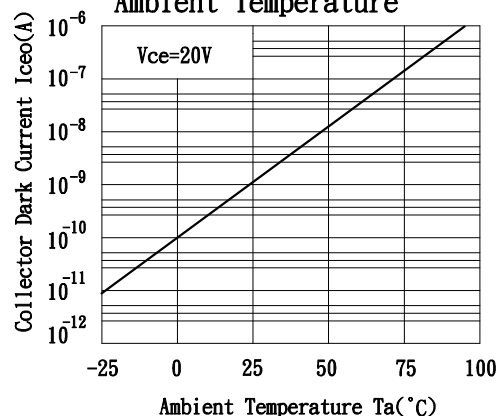


Fig.4 Forward Current vs. Ambient Temperature

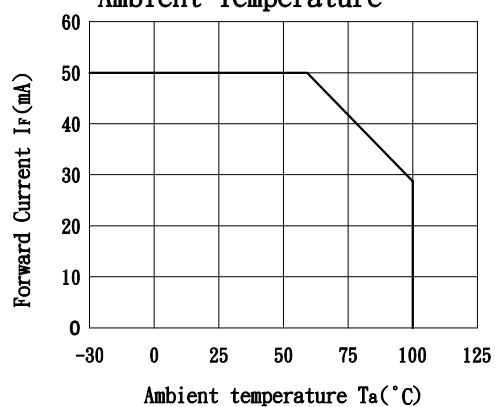


Fig.5 Forward Current vs. Forward Voltage

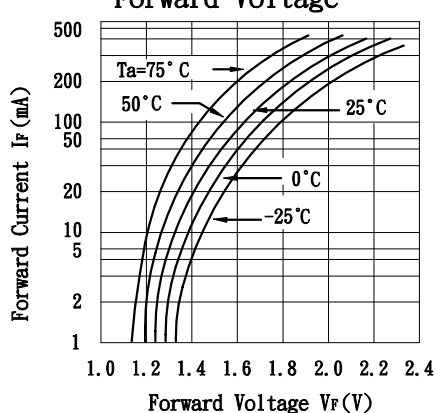


Fig.6 Collector Current vs. Collector-emitter Voltage

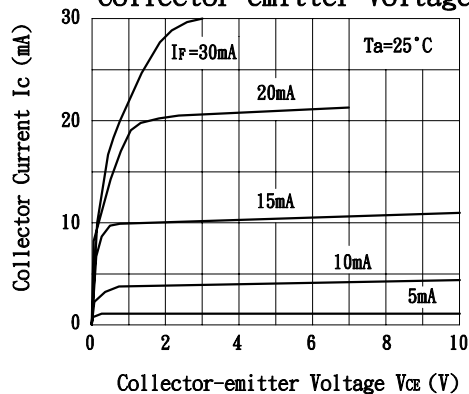
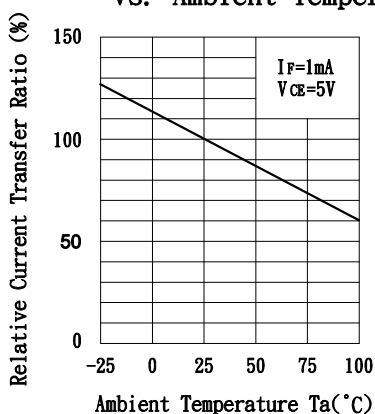


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature



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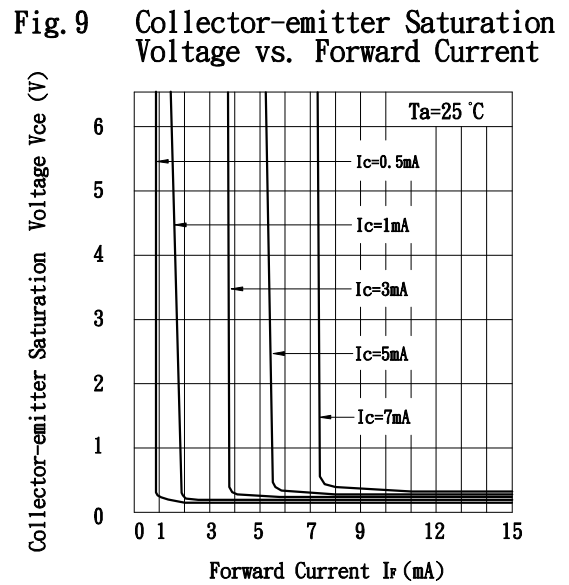
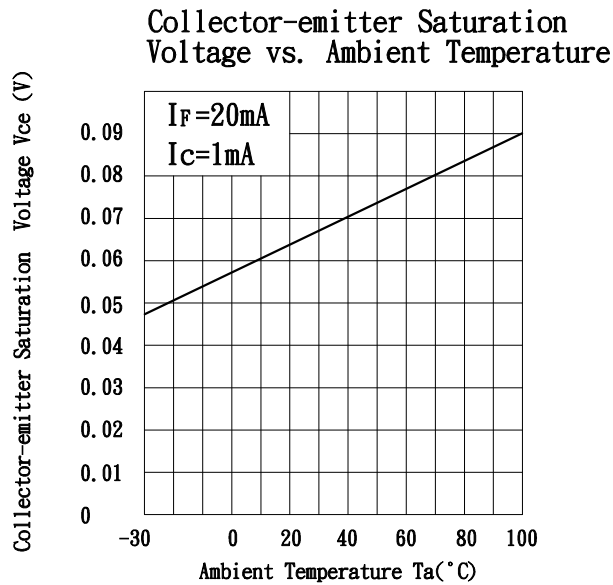


Fig. 10 Response Time vs. Load Resistance

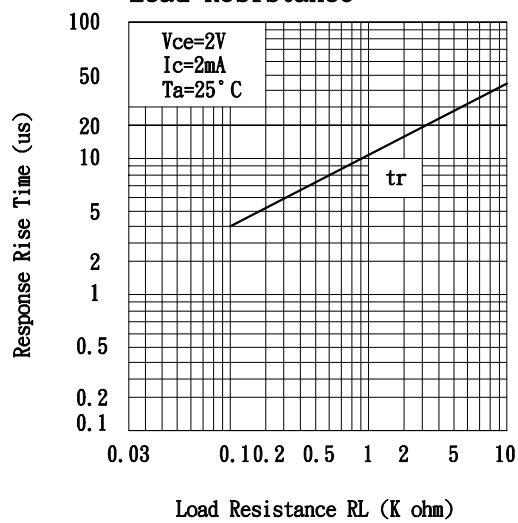


Fig. 11 Response Time vs. Load Resistance

