

PRODUCT SPECIFICATION

DATE:05/14/2007

cosmo ELECTRONICS CORPORATION	Photocoupler : KPC4N33	NO.60P21011	REV. 1
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High Reliability Photocoupler

●Features

- 1.High current transfer ratio.
(CTR : MIN.500% at $I_F = 1\text{mA}$, $V_{ce} = 2\text{V}$)
- 2.High isolation voltage between input and output (Viso : 5000Vrms).
- 3.Compact dual-in-line package.

●Applications

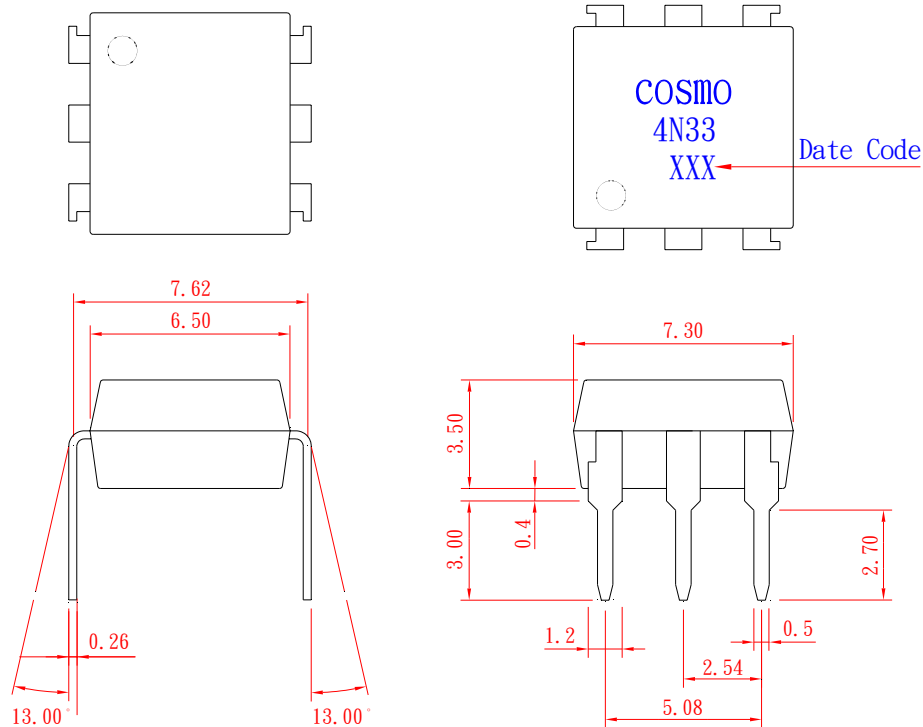
1. System appliances, measuring instruments.
2. Industrial robots.
3. Copiers, automatic vending machines.
4. Signal transmission between circuits of different potentials and impedances.
5. Telephone sets.
6. Copiers, facsimiles.
7. Interface with various power supply circuits, power distribution boards.
8. Numerical control machines.

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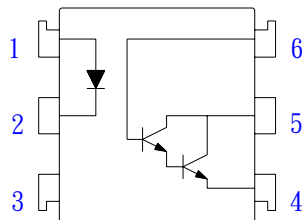
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1. OUTSIDE DIMENSION : UNIT (mm)



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

2. SCHEMATIC : TOP VIEW



- 1. Anode
- 2. Cathode
- 3. NC
- 4. Emitter
- 5. Collector
- 6. Base

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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}	30	V
	Collector-base voltage	V_{CBO}	30	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	150	mA
	Collector power dissipation	P_C	200	mW
Total power dissipation		P_{tot}	200	mW
Isolation voltage 1 minute		V_{iso}	5000	Vrms
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	$I_F=10mA$	-	1.2	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	C_t	$V=0, f=1kHz$	-	30	-	pF
Output	Collector dark current	I_{CEO}	$V_{CE}=10V, I_F=0$	-	-	0.1	uA
Transfer characteristics	Current transfer ratio	CTR	$I_F=1mA, V_{CE}=2V$	500	4000	-	%
	Collector-emitter saturation	$V_{CE(sat)}$	$I_F=8mA, I_C=2mA$	-	-	1.0	V
	Isolation resistance	R_{iso}	DC500V	5×10^{10}	-	-	ohm
	Floating capacitance	C_f	$V=0, f=1MHz$	-	0.6	1.0	pF
	Cut-off frequency	f_c	$V_{cc}=5V, I_C=2mA, R_L=100ohm$	-	7	-	kHz
	Response time (Rise)	t_r	$V_{ce}=10V, I_C=50mA, R_L=100ohm$	-	5	40	us
	Response time (Fall)	t_f		-	60	100	us

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Fig.1 Forward Current vs. Ambient Temperature

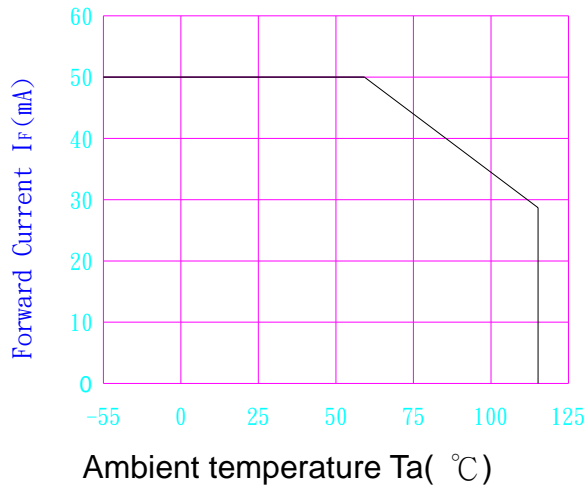


Fig.2 Collector Power Dissipation vs. Ambient Temperature

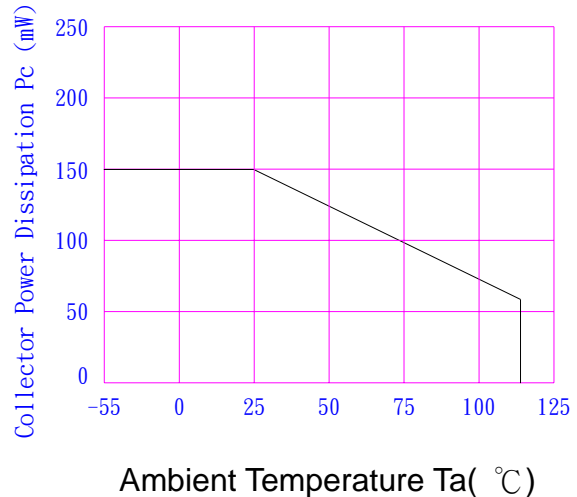


Fig.3 Peak Forward Current vs. Duty Ratio

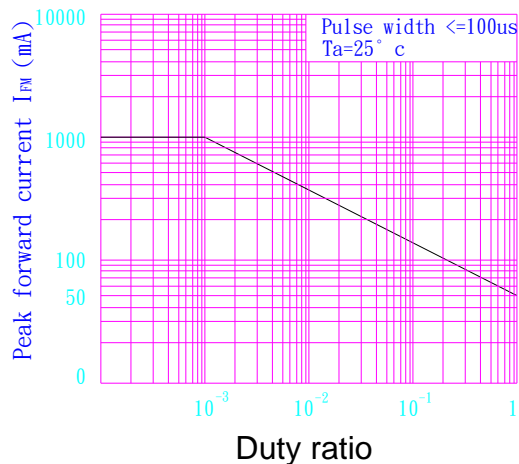


Fig.4 Forward Current vs. Forward Voltage

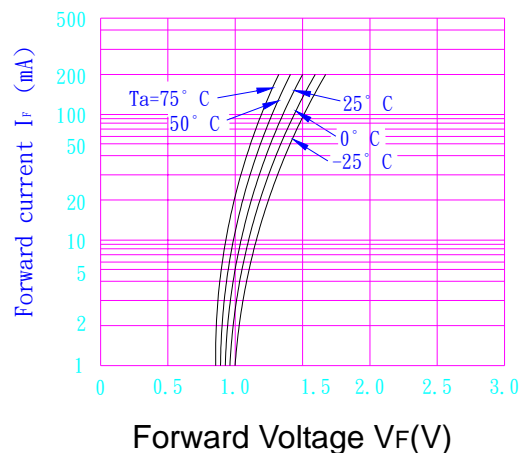


Fig.5 Current Transfer Ratio vs. Forward Current

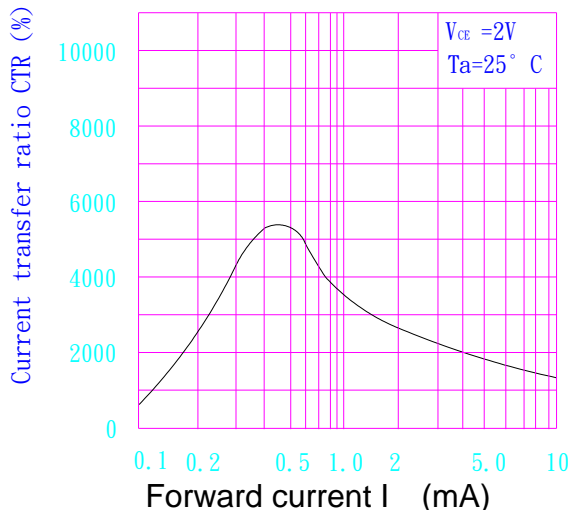
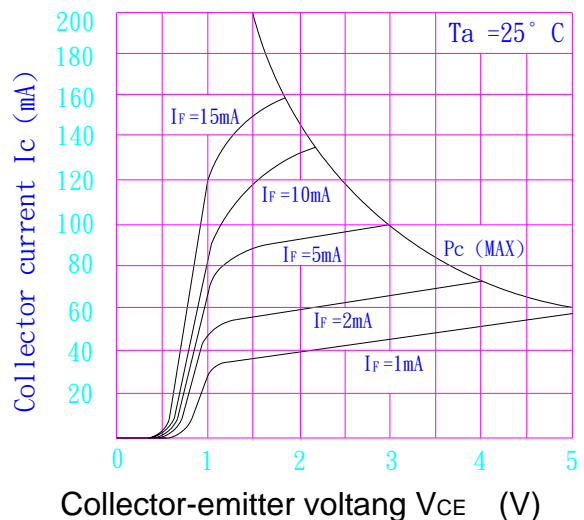


Fig.6 Collector Current vs. Collector-emitter Voltage



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Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

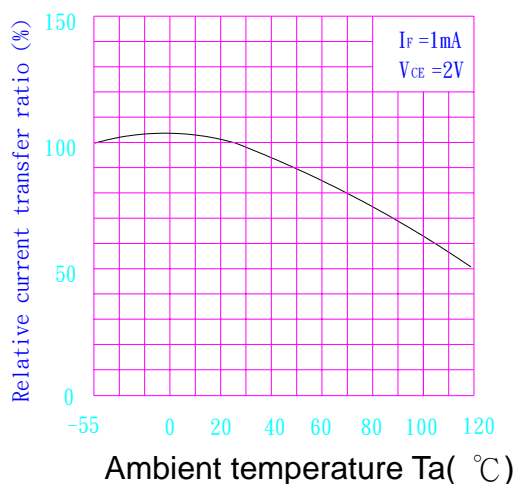


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

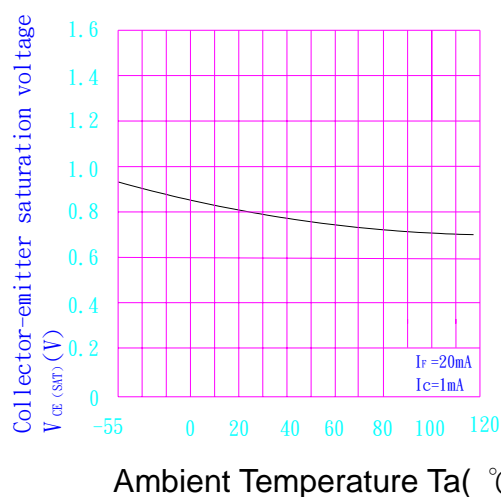


Fig.9 Collector Dark Current vs. Ambient Temperature

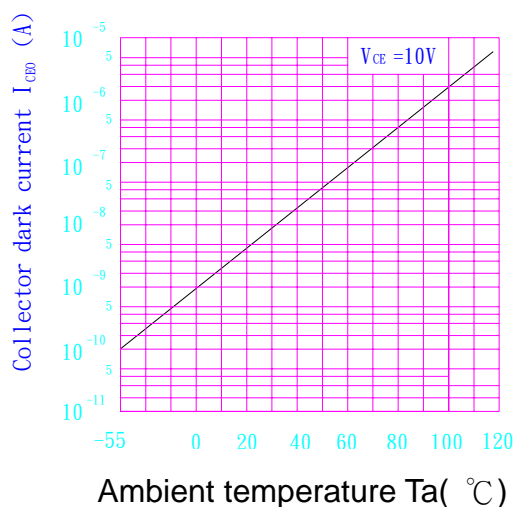


Fig.10 Response Time vs. Load Resistance

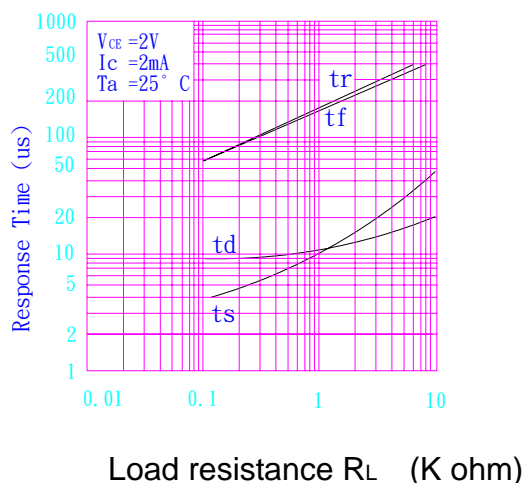
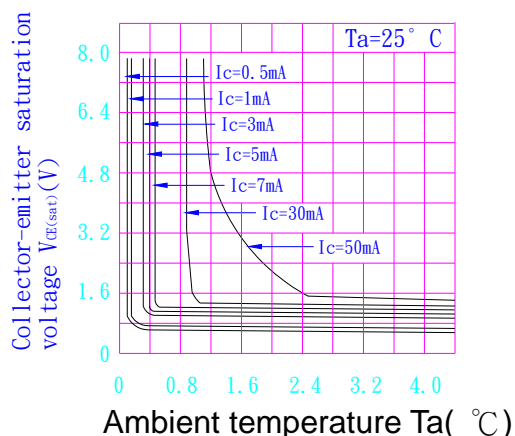


Fig.11 Collector-emitter Saturation Voltage vs. Forward current



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