

PRODUCT SPECIFICATION

DATE:06/04/2012

cosmo ELECTRONICS CORPORATION	Photocoupler : KT1010	NO.61P04117	REV.
		SHEET 1 OF 8	7

4Pin Long Mini-Flat Package DC Input Response General Purpose Photocoupler

● Features

1. Halogen Free.
2. Pb free and RoHS compliant.
3. Temperature range -55°C to 115°C.
4. High isolation voltage 5000Vrms.
5. Opaque type,SMD low profile 4 lead package.
6. Current transfer ratio.
(CTR : MIN.50% at IF=5mA VCE=5V)
7. 8mm outer creepage distance.
8. DC input with transistor output.
9. Agency Approvals
 - UL approved : UL1577 , No.E169586
 - CUL approved : C22.2 No.1 & NTC No.5 , No.E169586
 - VDE approved : EN 60747-5-5 No.40031267
 - FIMKO approved : EN 60065 , EN 60950 , EN 60335-1
No.FI26204 M1

● Applications

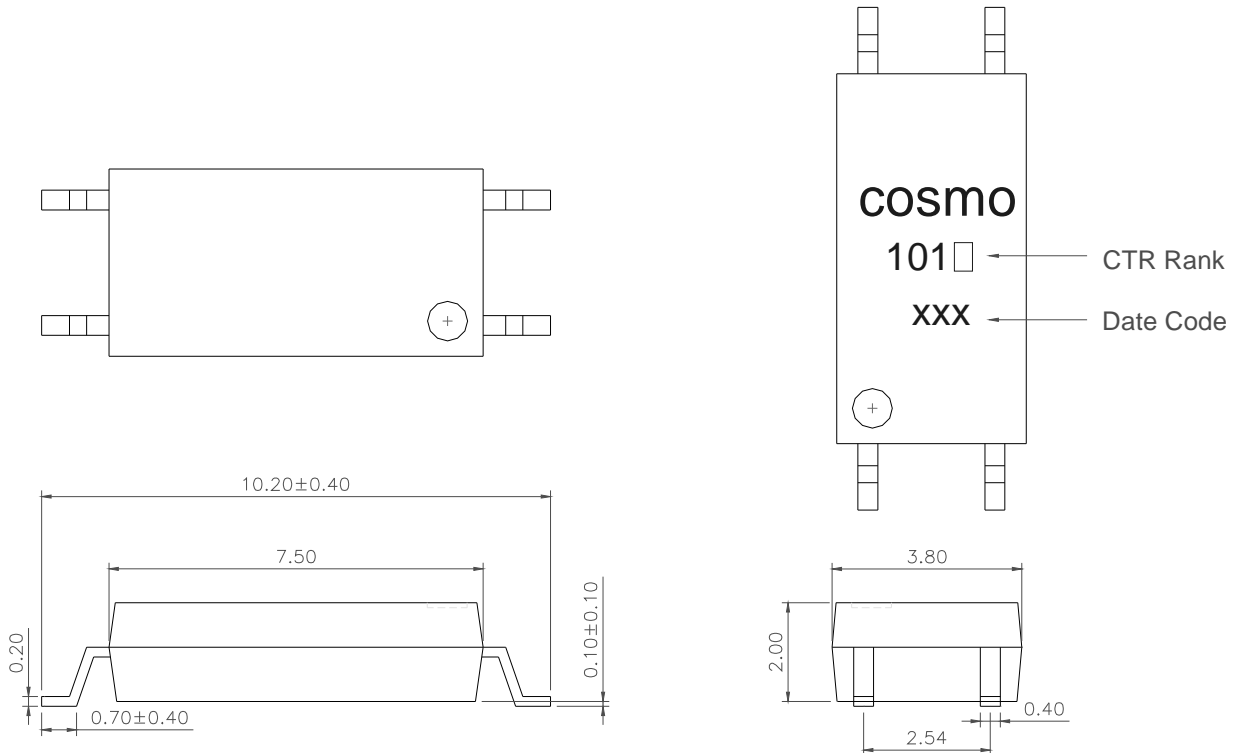
1. Hybrid substrates that require high density mounting.
2. Programmable controllers.
3. Switchmode power supplies.
4. Microprocessor system interface.

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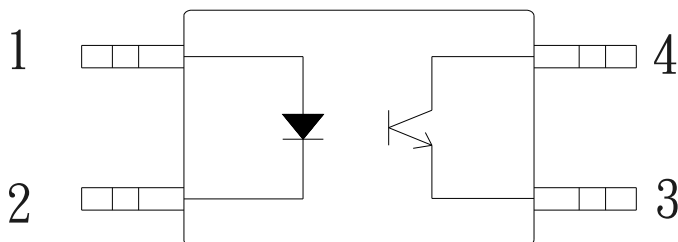
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1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE : ± 0.2 mm

2. SCHEMATIC : TOP VIEW



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

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●Absolute Maximum Ratings(TA=25°C)

Parameter	Symbol	Rating	Unit	
Input	Forward current	IF	60	mA
	Peak forward current	IFP	1	A
	Reverse voltage	VR	6	V
	Power dissipation	PD	100	mW
Output	Collector-emitter voltage	VCEO	80	V
	Emitter-collector voltage	VECO	7	V
	Collector current	IC	50	mA
	Collector power dissipation	PC	150	mW
Total power dissipation	Ptot	250	mW	
Isolation voltage 1 minute	Viso	5000	Vrms	
Operating temperature	Topr	-55 to +115	°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	VF	IF=20mA	-	1.2	1.4	V
	Reverse current	IR	VR=4V	-	-	10	uA
	Terminal capacitance	Ct	V=0, f=1kHz	-	30	250	pF
Output	Collector dark current	ICEO	VCE=20V, IF=0	-	-	0.1	uA
	Collector-emitter breakdown voltage	BVCEO	IC=0.1mA, IF=0	80	-	-	V
	Emitter-collector breakdown voltage	BVECO	IE=100uA, IF=0	7	-	-	V
Transfer characteristics	Current transfer ratio	CTR	IF=5mA, VCE=5V	50	-	600	%
	Collector-emitter saturation voltage	VCE(sat)	IF=10mA, IC=1mA	-	0.1	0.3	V
	Isolation resistance	Riso	DC500V, 40 to 60%RH	5x10 ¹⁰	10 ¹¹	-	ohm
	Floating capacitance	Cf	V=0, f=1MHz	-	0.6	1.0	pF
	Response time (Rise)	tr	Vcc=2V, IC=2mA, RL=100ohm	-	5	-	us
Response time (Fall)	tf	-		4	-	us	

●Classification table of current transfer ratio is shown below.

CTR RANK	CTR(%)
KT1015	50 TO 150
KT1016	100 TO 300
KT1017	80 TO 160
KT1018	130 TO 260
KT1019	200 TO 400
KT1010	50 TO 600

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Fig.1 Relative Current Transfer Ratio vs. Ambient Temperature

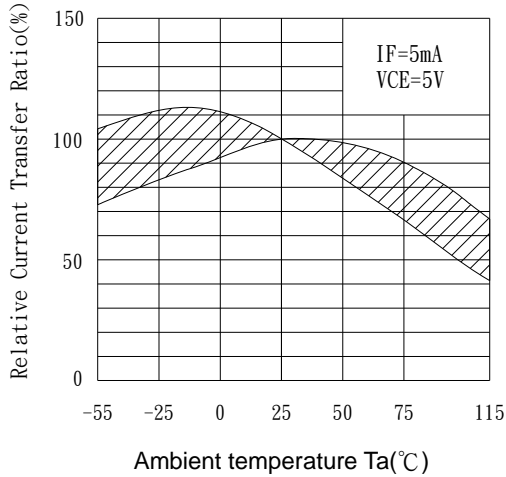


Fig.2 Diode Power Dissipation vs. Ambient Temperature

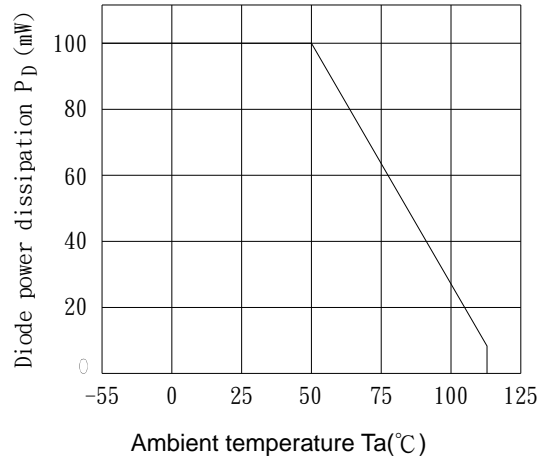


Fig.3 Collector Power Dissipation vs. Ambient Temperature

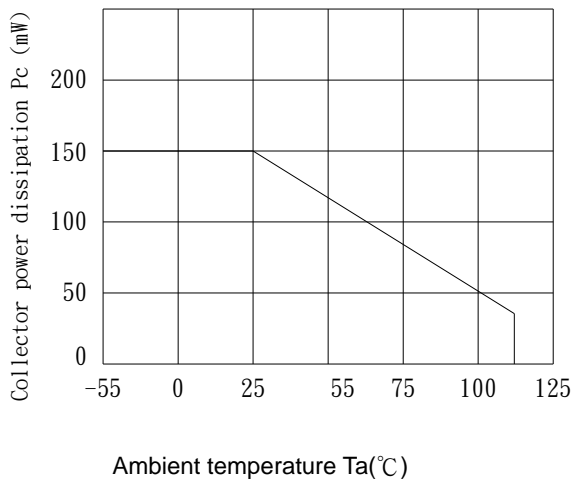


Fig.4 Total Power Dissipation vs. Ambient Temperature

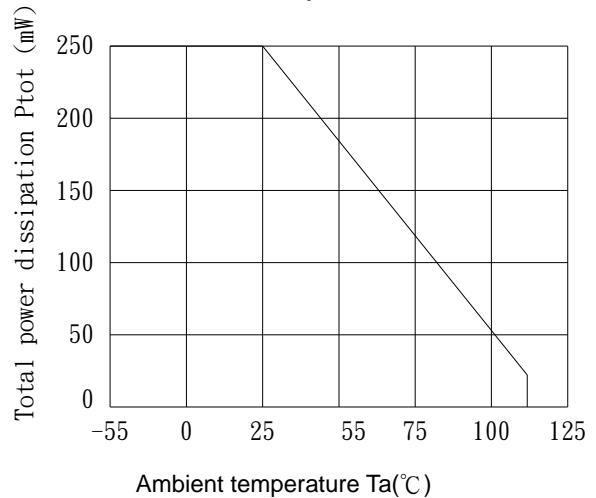


Fig.5 Current Transfer Ratio vs. Forward Current

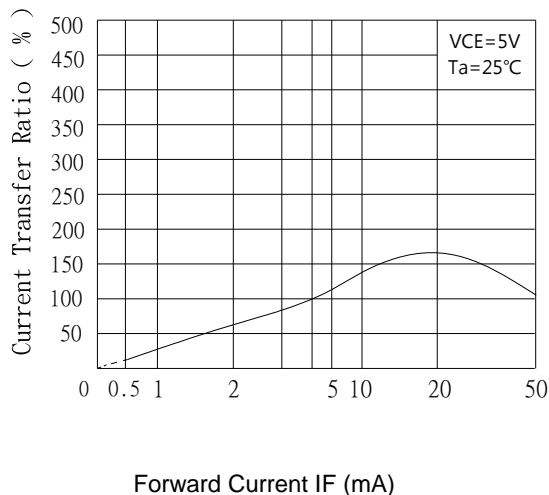
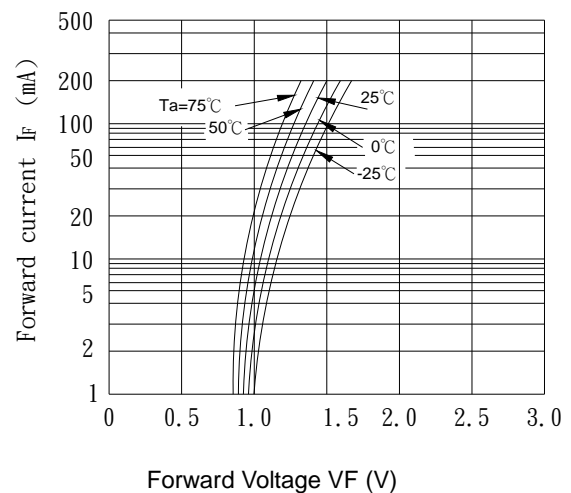


Fig.6 Forward Current vs. Forward Voltage



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Fig.7 Collector Dark Current vs. Ambient Temperature

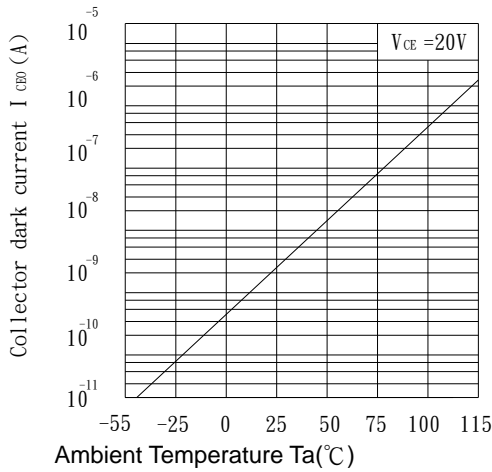


Fig.8 Collector Current vs. Collector-Emitter Voltage

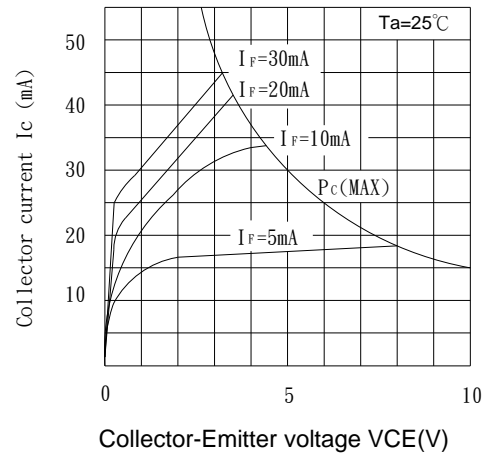


Fig.9 Response Time vs. Load Resistance

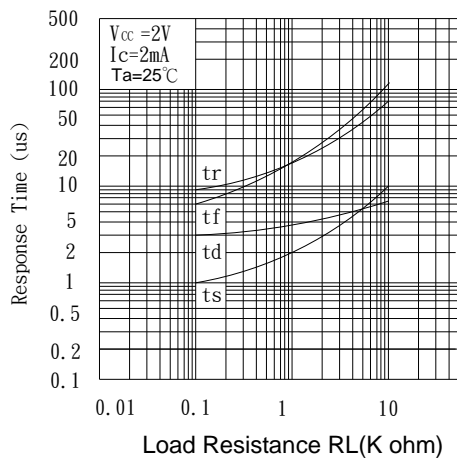
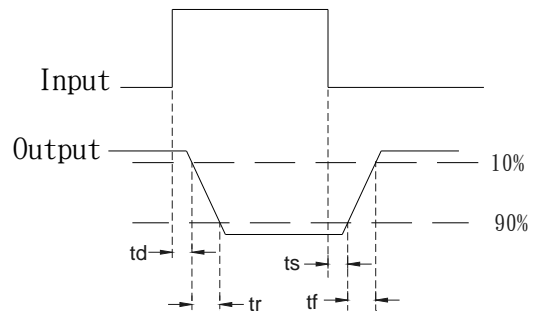
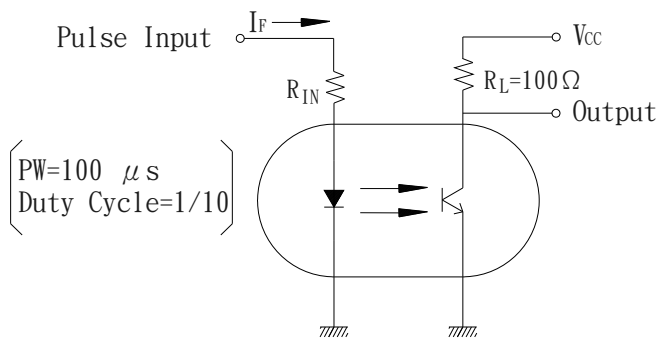


Fig.10 Test Circuit For Response Time

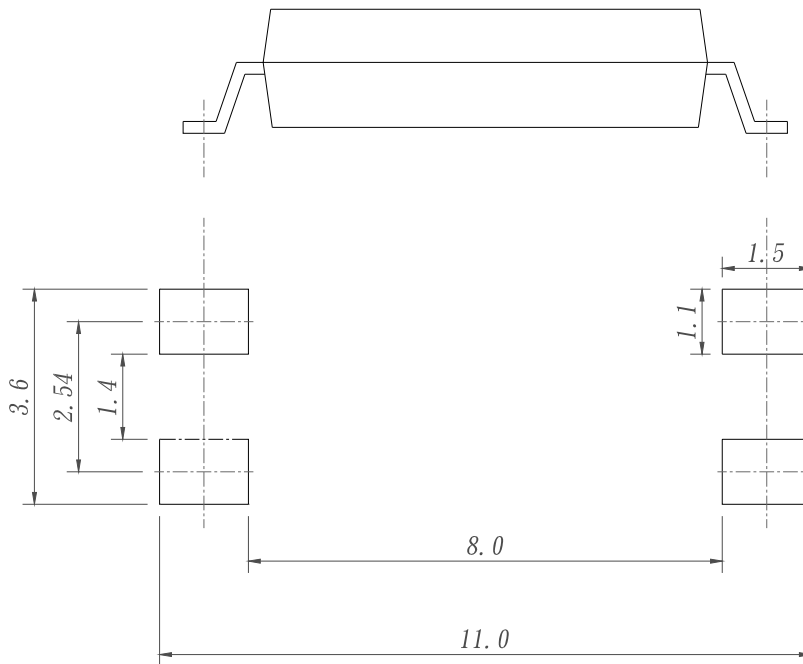


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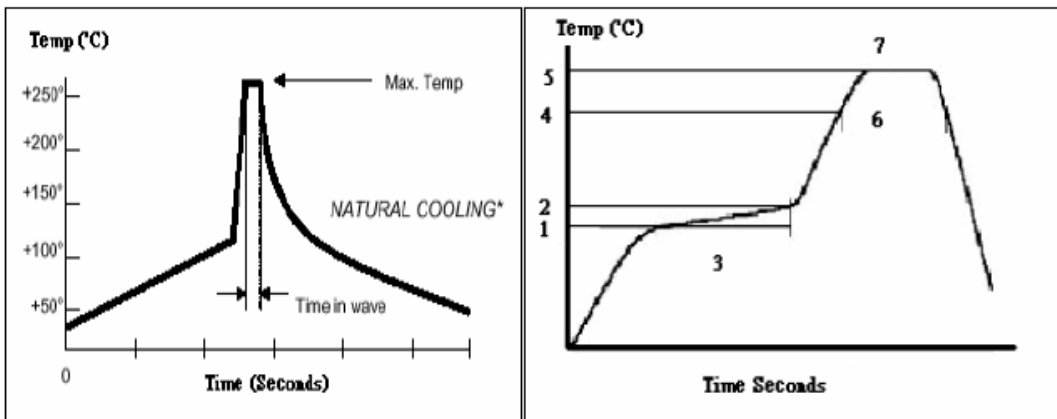
Fig.11 Recommended Mount Pad Dimensions



(Unit:mm)

Recommended Reflow / Wave Soldering Profile Conditions

	Recommended Profile Parameter	Wave Soldering	Infrared Red Reflow
1	Preheat start temperature, °C	N/A	150°C
2	Preheat finish temperature, °C	N/A	180°C
3	Preheat time, seconds	N/A	90 to 120 seconds
4	Melting temperature, °C	N/A	230°C
5	Peak temperature, °C	260°C	260°C
6	Time above melting, seconds	N/A	30 seconds
7	Peak temperature retained time, seconds	10 seconds	10 seconds



The recommended soldering conditions of Hand Soldering Test is Temperature=380±10°C, Duration=3+1 / -0 sec.

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