

Photocoupler

KODENSHI

K4N35 • K4N36 • K4N37

These Photocouplers consist of a Gallium Arsenide Infrared Emitting Diode and a Silicon NPN Phototransistor in 6-pin package.

FEATURES

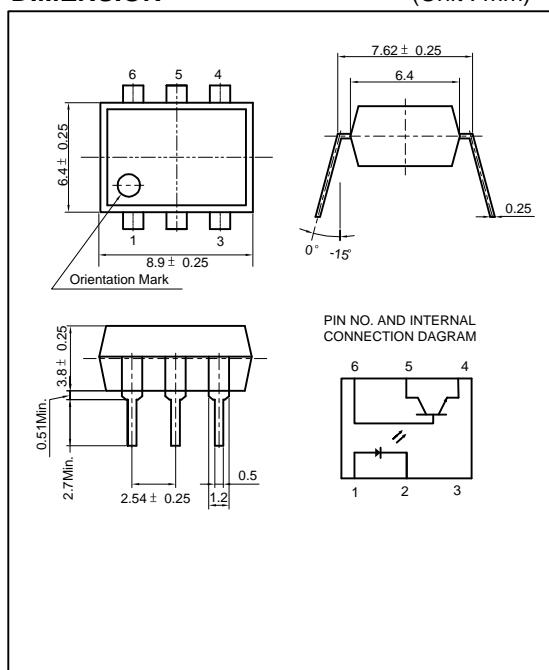
- Switching Time - Typ. 3μs
- Collector-Emitter Voltage : Min.30V
- Current Transfer Ratio : Typ.100% (at $I_F=10mA$, $V_{CE}=10V$)
- Electrical Isolation Voltage : AC2500V_{rms}
- UL Recognized File No. E107486

APPLICATIONS

- Interface between two circuits of different potential
- Vending Machine, Voltage Regulator
- Traffic Controller System
- Programmable Controller

DIMENSION

(Unit : mm)



MAXIMUM RATINGS

(Ta=25 °C)

Parameter	Symbol	Rating	Unit
Input	Forward Current	IF	60
	Reverse Voltage	VR	5
	Peak Forward Current ^{*1}	IFP	3
	Power Dissipation	PD	70
Output	Collector-Emitter Breakdown Voltage	BVCEO	35 ^{*4}
	Emitter-Collector Breakdown Voltage	BVECO	6
	Collector-Base Breakdown Voltage	BVCBO	70
	Collector Current	Ic	50
	Collector Power Dissipation	Pc	150
Input to Output Isolation Voltage ^{*2}	V _{iso}	AC2500	V _{rms}
Storage Temperature	T _{stg}	-55~+125	
Operating Temperature	T _{opr}	-30~+100	
Lead Soldering Temperature ^{*3}	T _{sol}	260	
Total Power Dissipation	P _{tot}	200	mW

*1. Input current with 100μs pulse width, 1% duty cycle

*2. Measured at RH=40~60% for 1min

*3. 1/16 inch form case for 10sec

*4. Customer Option

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(Ta=25°C, unless otherwise noted)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit.
Input	Forward Voltage	V _F	I _F =10mA	-	1.15	1.30	V
	Reverse Current	I _R	V _R =5V	-	-	10	μA
	Capacitance	C _T	V=0, f=1MHz	-	30	-	pF
Output	Collector-Emitter Breakdown Voltage	BV _{C EO}	I _c =1mA	35	-	-	V
	Emitter-Collector Breakdown Voltage	BV _{E CO}	I _E =0.1mA	6	-	-	V
	Collector-Base Breakdown Voltage	BV _{C BO}	I _c =0.1mA	70	-	-	V
	Collector Dark Current	I _{C EO}	I _F =0, V _{C E} =10V	-	-	50	nA
	Capacitance	C _{C E}	V _{C E} =0, f=1MHz	-	10	-	pF
Coupled	Current Transfer Ratio ⁵	CTR	I _F =10mA, V _{C E} =10V	100	-	-	%
	Collector-Emitter Saturation Voltage	V _{C E(SAT)}	I _F =10mA, I _c =0.5mA	-	0.15	0.3	V
	Input-Output Capacitance	C _{IO}	V=0, f=1MHz	-	1	-	pF
	Input-Output Isolation Resistance	R _{IO}	RH=40~60%, V=500V	-	10 ¹¹	-	
	Rise Time	tr	V _{C C} =10V, R _L =100Ω	-	3	10	
	Fall Time	tf		-	3	10	

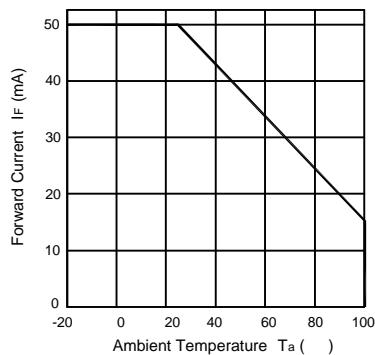
*5. CTR=(I_c/I_F) X 100 (%)

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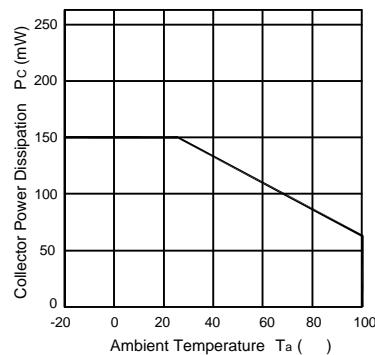
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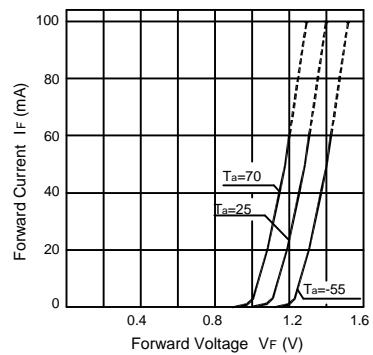
**Forward Current vs.
Ambient Temperature**



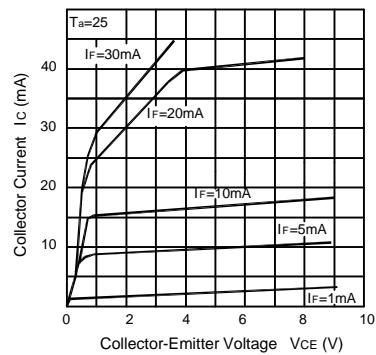
**Collector Power Dissipation vs.
Ambient Temperature**



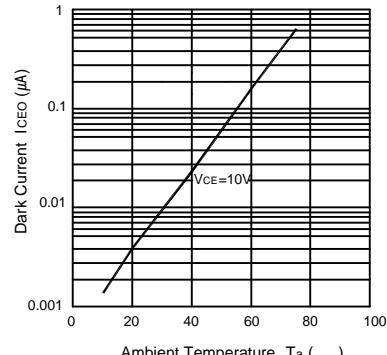
**Forward Current vs.
Forward Voltage**



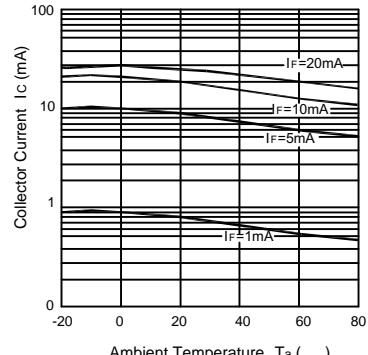
**Collector Current vs.
Collector-Emitter Voltage**



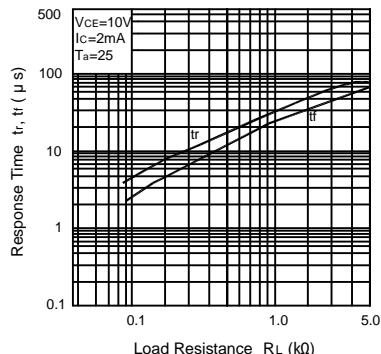
**Dark Current vs.
Ambient Temperature**



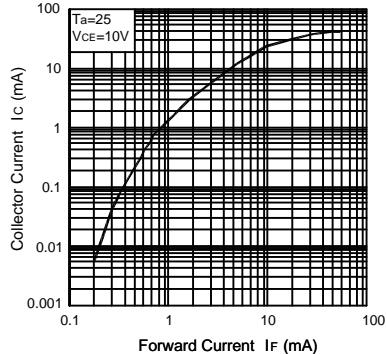
**Collector Current vs.
Ambient Temperature**



**Response Time vs.
Load Resistance**



**Collector Current vs.
Forward Current**



Switching Time Test Circuit

