

KB827

GENERAL PURPOSE HIGH ISOLATION VOLTAGE SINGLE TRANSISTOR TYPE PHOTOCOUPLER SERIES

### **FEATURES**

 High isolation voltage between input and output (Viso=5000 Vrms).
Compact dual-in-line package KB827:2-channel type
Recognized by UL and CUL, file NO.E225308.
Approved by VDE 0884 Teil2(NO:40006364)
(Creepage distance between input and output:7mm or more).
Rohs compliant.

## DESCRIPTION

1. The KB827 (2-channel) is optically coupled isolators containing a GaAS light emitting diode and an NPN silicon phototransistor.

2.The lead pitch is 2.54mm.

3. Solid insulation thickness between emitting diode and output phototransistor:>=0.6mm.

## APPLICATIONS

- 1.Computer terminals.
- 2.Registers,copiers,automatic vending machines.
- 3.System appliances, measuring instruments.
- 4. Programmable logic controller.
- 5. Signal transmission between circuits of different potentials and impedances.

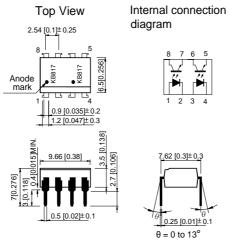
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## \*PACKAGE DIMENSIONS (UNIT:mm) DIP Type

TOLERANCE : ±0.5[±0.02] UNLESS OTHERWISE NOTED.

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

## \*Absolute Maximum Ratings (Ta=25°C)

	Parameter	Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	6	V
	Power dissipation	Р	70	mW
Output	Collector-emitter voltage	V <sub>ceo</sub>	35	V
	Emitter-collector voltage	V <sub>eco</sub>	6	V
	Collector current	Ι <sub>c</sub>	50	mA
	Collector power dissipation	Pc	150	mW
Total power dissipation		Ptot	200	mW
<sup>11</sup> Isolation voltage		Viso	5000	Vrms
Operating temperature		Topr	-30~+100	°C
Storage temperature		Tstg	-55~+125	°C
<sup>2</sup> Soldering temperature		Tsol	260	°C

<sup>\*1</sup> 40 to 60% RH,AC for 1 minute.

<sup>\*2</sup> For 10 seconds.

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## \*Electro-optical Characteristics

Parameter		Symbol	Conditions	Min.	Тур.	Max.	Unit	
	Forward voltage		VF	IF=20mA		1.2	1.4	V
Input	Peak forward voltage		VFM	Ігм=0.5А			3.0	V
	Reverse current		lR	VR=4V			10	μΑ
Output	Collector dark cur	rent	ICEO	Vce=20V,IF=0mA			10 <sup>-7</sup>	А
Transfer charact- eristics	*1Current transfer	ratio	CTR	IF=5mA,Vce=5V	50		600	%
	Collector-emitter s	aturation voltage	Vce(sat)	IF=20mA, Ic=1mA		0.1	0.2	v
	Cut-off frequency		fc	Vce=5V, lc=2mA R∟=100Ω,-3dB		80		KHz
	Response time	Rise time	tr	Vcε=2V, lc=2mA RL=100Ω		4	18	μs
		Fall time	tf			3	18	μs

\*1 Classification table of current transfer ratio is shown below.

 $CTR = \frac{Ic}{IF} \times 100\%$ 

Model No.	Rank mark CTR (%	
KB827L	L	50 to 100
KB827A	А	80 to 160
KB827B	В	130 to 260
KB827C	С	200 to 400
KB827D	D	300 to 600
KB827AB	A or B	80 to 260
KB827BC	B or C 130 to	
KB827CD	C or D	200 to 600
KB827AC	A,B or C	80 to 400
KB827BD	B,C or D 130 to 6	
KB827AD	A,B,C or D 80 to 600	
KB827	L,A,B,C,D or No mark 50 to 600	

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#### Fig. 1 Current Transfer Ratio vs. Forward Current

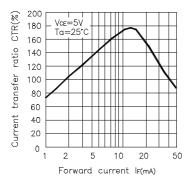
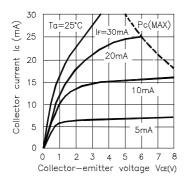
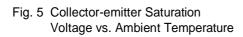


Fig. 3 Collector Current vs. Collector-emitter Voltage





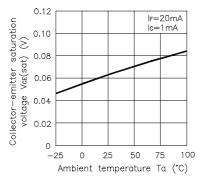
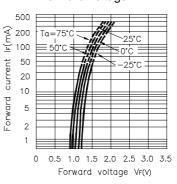


Fig. 2 Forward Current vs. Forward voltage





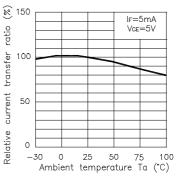
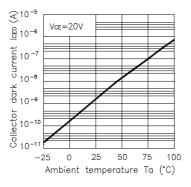


Fig. 6 Collector Dark Current vs. Ambient Temperature



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#### Fig. 7 Forward Current vs. Ambient Temperature

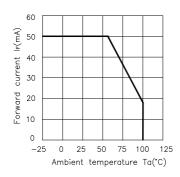
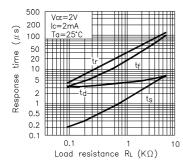


Fig. 9 Response Time vs. Load Resistance



#### Fig. 10 Frequency Response

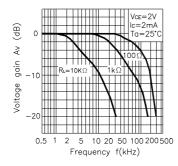
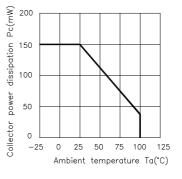
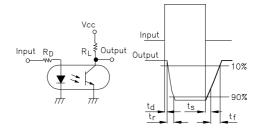


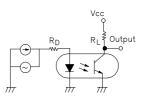
Fig. 8 Collector Power Dissipation vs. Ambient Temperature



**Test Circuit for Response Time** 



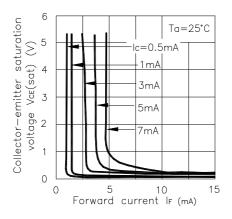
#### **Test Circuit for Frequency Response**





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#### Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



### **\*NOTES ON HANDLING**

#### 1.Recommended soldering conditions (Dip soldering)

#### (1) Dip soldering

Temperature	260 °C or below (molten solder temperature)
Time	Less than 10 seconds.
Cycle	One cycle allowed to be dipped in solder including plastic mold portion.
Flux Rosin flux containing small amount of chorine (The flux with a maximum chlorine content of 0.2 Wt % is reco	

#### (2) Cautions

#### Fluxes

Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.

#### 2.Cautions regarding noise

Be aware that power is suddenly into the componment any surge current may cause damage happen, even if the voltage is within the absolute maximum ratings.



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#### CAUTION

Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested.

GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them.

### RESTRICTIONS ON PRODUCT USE

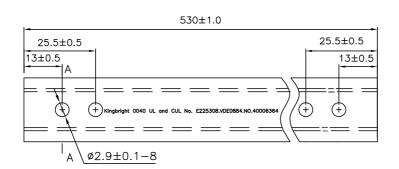
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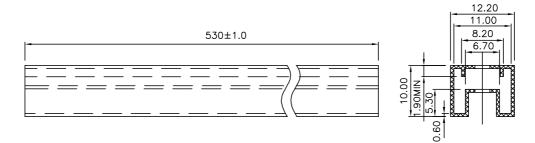
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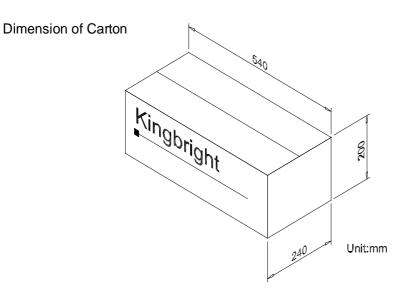
Dimension of Tube

TOLERANCE : ±0.4[±0.012] UNLESS OTHERWISE NOTED. Unit:mm



A-A Side view





#### \*ORDERING INFORMATION

Part Number	Package	Package Style	
KB827	8-pin DIP	50pcs/each tube	