

Kingbright

PHOTOCOUPLER

Part Number: KB837

**GENERAL PURPOSE
HIGH ISOLATION VOLTAGE
SINGLE TRANSISTOR TYPE
PHOTOCOUPLER SERIES**

FEATURES

- 1.High isolation voltage between input and output (Viso=5000 Vrms).
- 2.Compact dual-in-line package
KB837:3-channel type
- 3.Recognized by UL and CUL, file NO.E225308.
- 4.Approved by VDE 0884 Teil2(NO:40006364)
(Creepage distance between input and output:7mm or more).
- 5.RoHS Compliant.

DESCRIPTION

- 1.The KB837 (3-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: $\geq 0.6\text{mm}$.

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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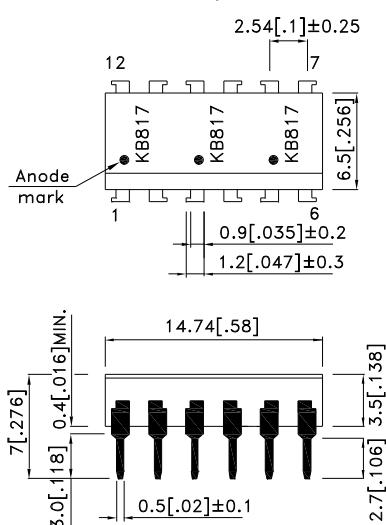
*PACKAGE DIMENSIONS (UNIT:mm)

DIP Type

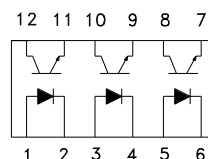
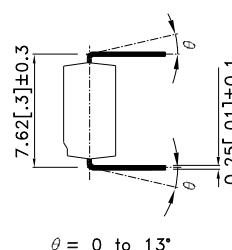
TOLERANCE : $\pm 0.5[\pm 0.02]$ UNLESS OTHERWISE NOTED.

KB837

Top View



Internal connection diagram



1 3 5 Anode
2 4 6 Cathode

7 9 11 Emitter
8 10 12 Collector

*Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	35	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
*1 Isolation voltage		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-30~+100	°C
Storage temperature		T_{stg}	-55~+125	°C
*2 Soldering temperature		T_{sol}	260	°C

*1 40 to 60% RH, AC for 1 minute.

*2 For 10 seconds.

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*Electro-optical Characteristics

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	$I_F=20\text{mA}$	—	1.2	1.4	V
	Peak forward voltage		V_{FM}	$I_{FM}=0.5\text{A}$	—	—	3.0	V
	Reverse current		I_R	$V_R=4\text{V}$	—	—	10	μA
Output	Collector dark current		I_{CEO}	$V_{CE}=20\text{V}, I_F=0\text{mA}$	—	—	10^{-7}	A
Transfer characteristics	*1Current transfer ratio		CTR	$I_F=5\text{mA}, V_{CE}=5\text{V}$	50	—	600	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$	—	0.1	0.2	V
	Cut-off frequency		f_c	$V_{CE}=5\text{V}, I_C=2\text{mA}$ $R_L=100\Omega, -3\text{dB}$	—	80	—	KHz
	Response time	Rise time	t_r	$V_{CE}=2\text{V}, I_C=2\text{mA}$ $R_L=100\Omega$	—	4	18	μs
		Fall time	t_f		—	3	18	μs

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

$$\text{CTR} = \frac{I_C}{I_F} \times 100\%$$

Fig. 1 Current Transfer Ratio vs. Forward Current

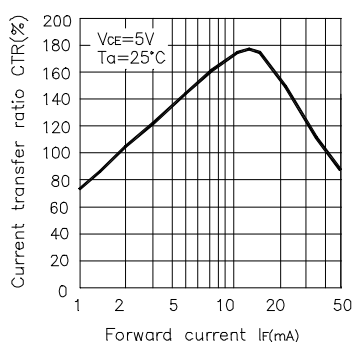


Fig. 2 Forward Current vs. Forward voltage

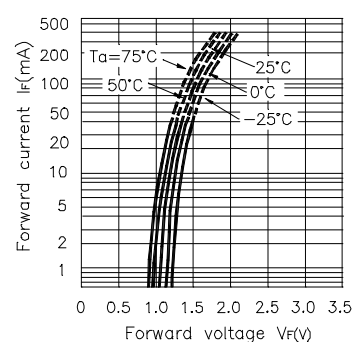


Fig. 3 Collector Current vs. Collector-emitter Voltage

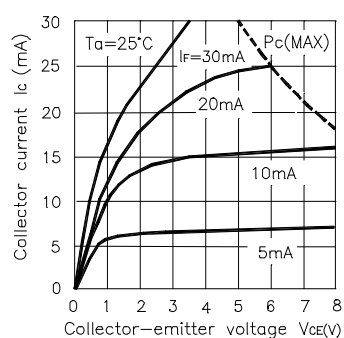


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

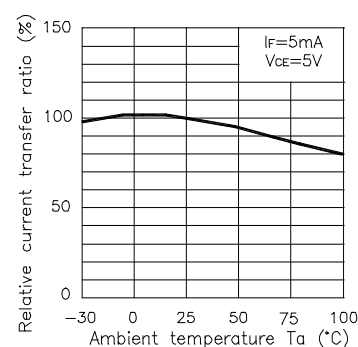


Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature

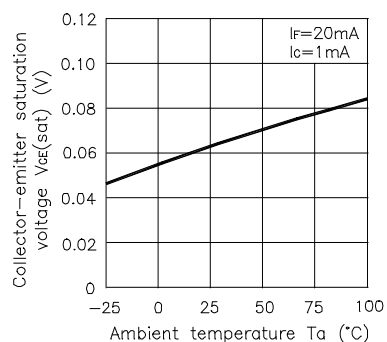
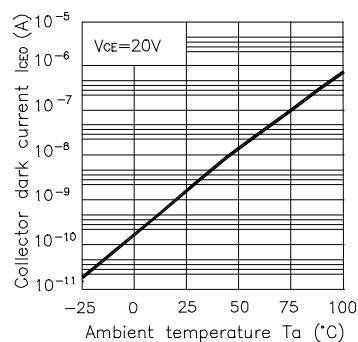


Fig. 6 Collector Dark Current vs. Ambient Temperature



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Fig. 7 Forward Current vs. Ambient Temperature

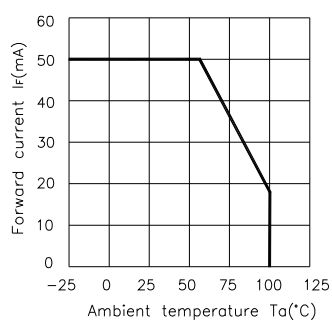


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

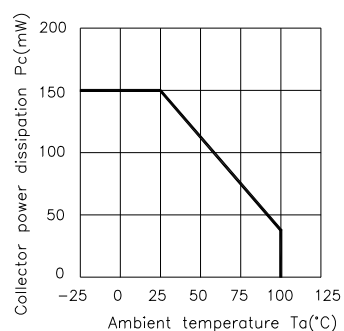
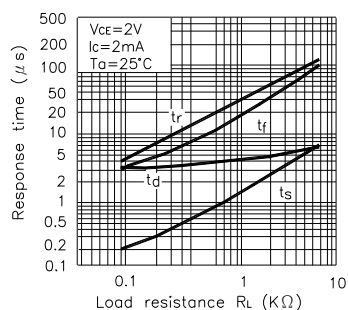


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

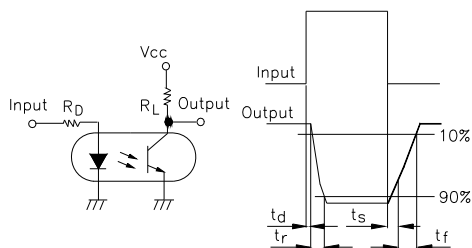
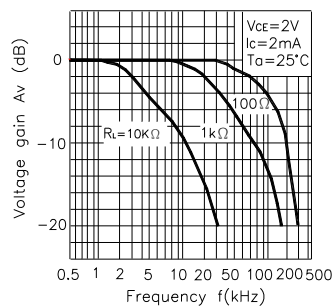


Fig. 10 Frequency Response



Test Circuit for Frequency Response

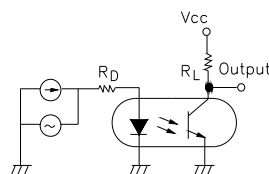
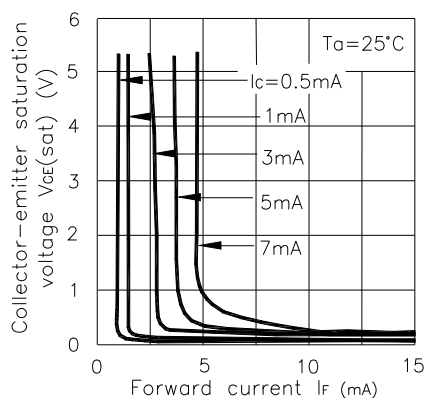


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



*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 recommended.)

(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.

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.

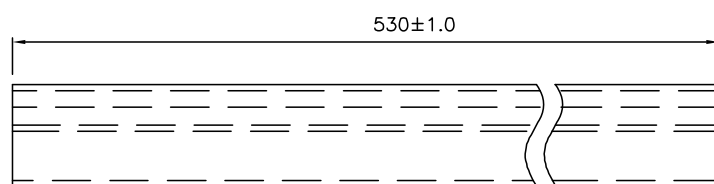
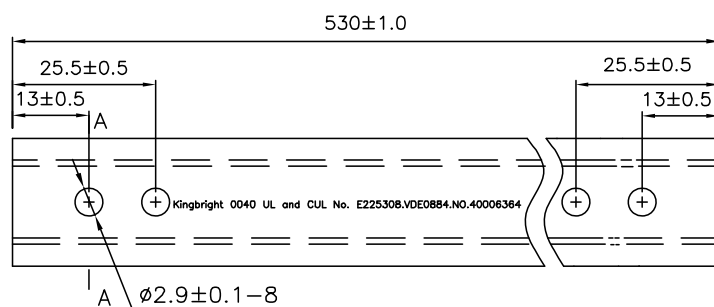
RESTRICTIONS ON PRODUCT USE

- The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version. Not all devices / types available in every country.
- We mention about our product quality stability, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing KINGBRIGHT products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a KINGBRIGHT product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that KINGBRIGHT products are used within specified operating ranges as set forth in the most recent products specifications.

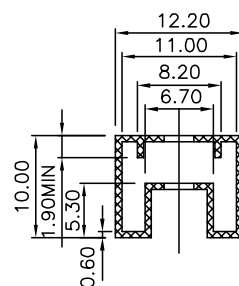
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Dimension of Tube

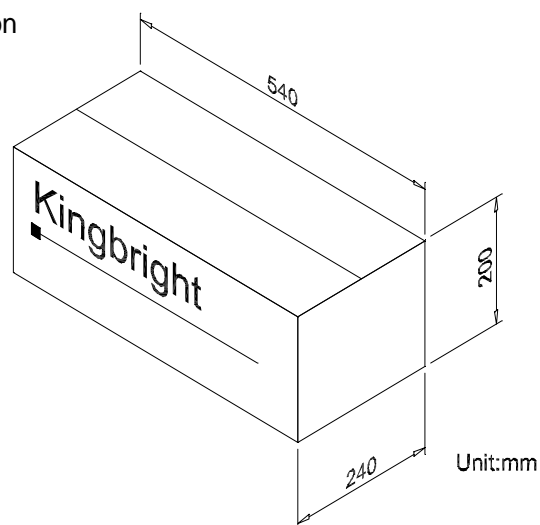
TOLERANCE : ± 0.4 [± 0.012] UNLESS OTHERWISE NOTED.
Unit:mm



A-A Side view



Dimension of Carton



*ORDERING INFORMATION

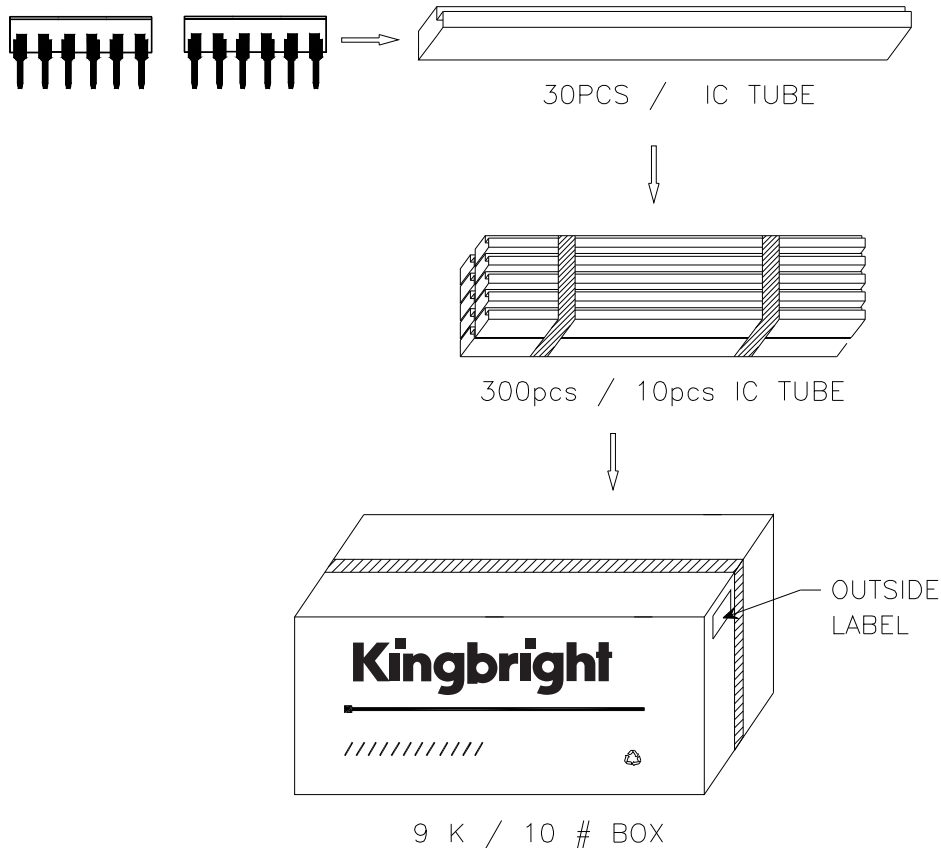
Part Number	Package	Package Style
KB837	12-pin DIP	30pcs/each tube


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PACKING & LABEL SPECIFICATIONS



Kingbright	
P/N : KB837	
QTY: 300 pcs	Q.C. Q.C. xx xx-xxxx PASSED
S/N: XXXX	
CODE: XXX	
LOT NO:	
	
RoHS Compliant	