Kingbright

PHOTOCOUPLER

Part Number: KB816

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

FEATURES

1.High isolation voltage between input and output (Viso=5000 Vrms).
2.High Collector-emitter voltage (Vceo=70V).
3.Compact dual-in-line package
  KB816:1-channel type
4.Recognized by UL and CUL, file NO.E225308.
5.Approved by VDE 0884 Teil2(NO:40006364).
6.Rohs compliant.

DESCRIPTION

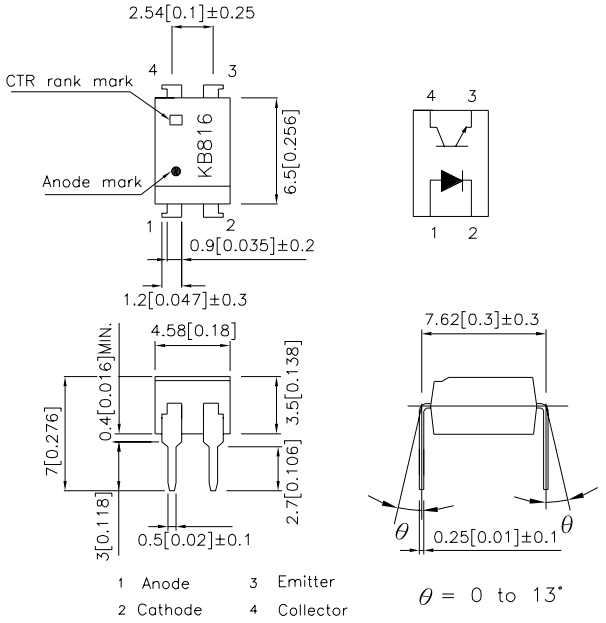
1.The KB816 (1-channel) is optically coupled isolators containing
  a GaAS light emitting diode and an NPN silicon phototransistor.
2.The lead pitch is 2.54mm.
3.Solid insulation thickness between emitting diode and output phototransistor:>=0.6mm.

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.

*PACKAGE DIMENSIONS (UNIT:mm)

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



*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}	70	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	150	mW
Total power dissipation		Ptot	200	mW
*1Isolation voltage		Viso	5000	Vrms
Operating temperature		Topr	-30~+100	°C
Storage temperature		Tstg	-55~+125	°C
*2Soldering temperature		Tsol	260	°C

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

*2 For 10 seconds.

*Electro-optical Characteristics (Ta=25°C)

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

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

$$CTR=\frac{Ic}{I_F}\ X\ 100\%$$

Model NO.	Rank mark	CTR(%)
KB816L	L	50 to 100
KB816A	A	80 to 160
KB816B	B	130 to 260
KB816C	C	200 to 400
KB816D	D	300 to 600
KB816AB	A or B	80 to 260
KB816BC	B or C	130 to 400
KB816CD	C or D	200 to 600
KB816AC	A,B or C	80 to 400
KB816BD	B,C or D	130 to 600
KB816AD	A,B,C or D	80 to 600
KB816	L,A,B,C,D or No mark	50 to 600

Fig. 1 Current Transfer Ratio vs. Forward Current

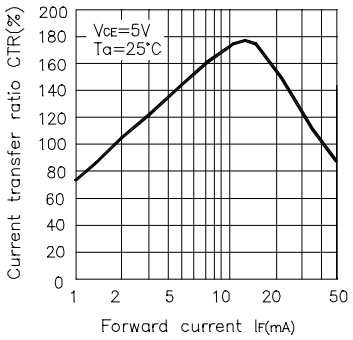


Fig. 2 Forward Current vs. Forward voltage

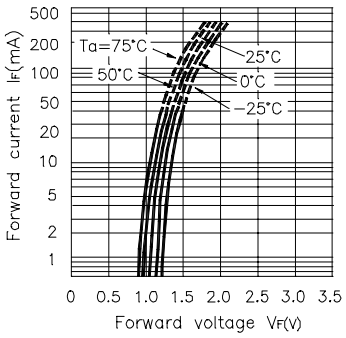


Fig. 3 Collector Current vs. Collector-emitter Voltage

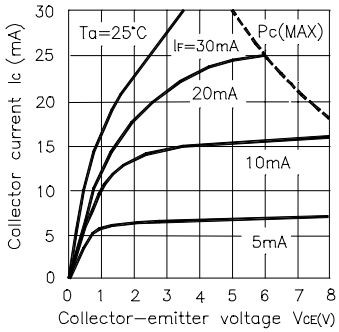


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

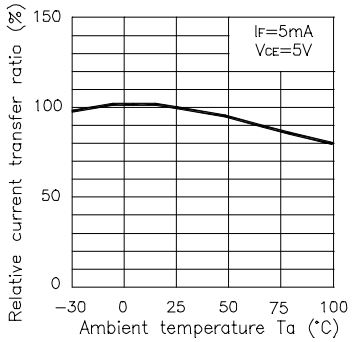


Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature

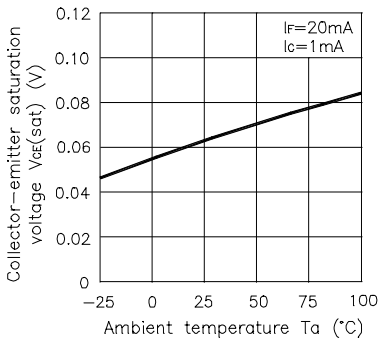


Fig. 6 Collector Dark Current vs. Ambient Temperature

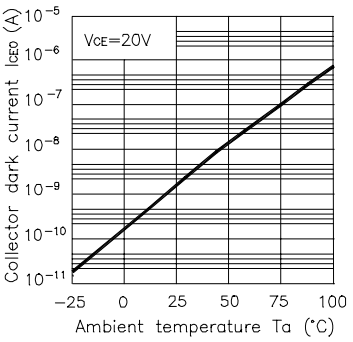


Fig. 7 Forward Current vs. Ambient Temperature

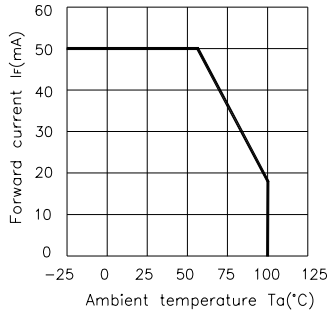


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

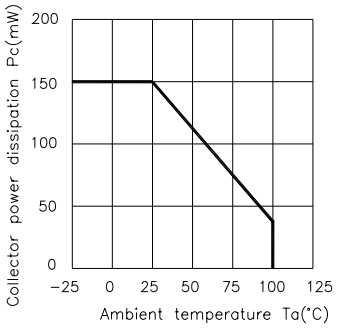
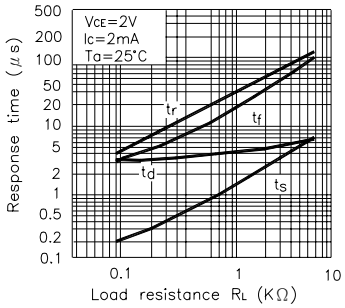


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

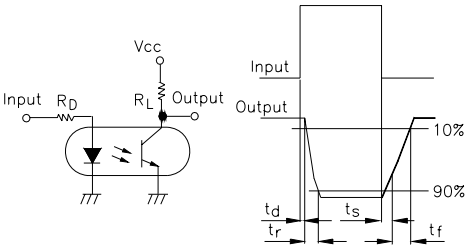
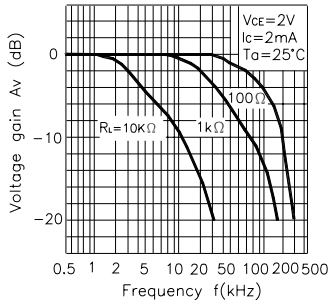


Fig. 10 Frequency Response



Test Circuit for Frequency Response

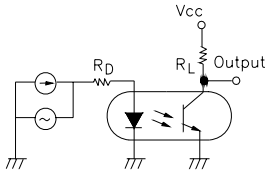
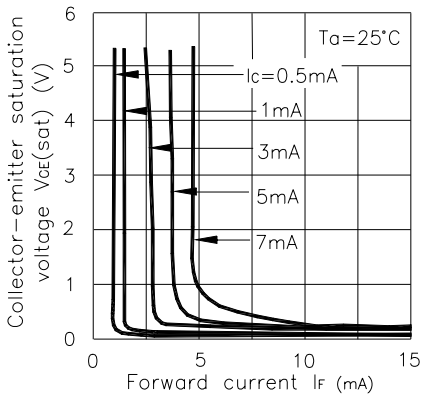


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



*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

Avovid 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.

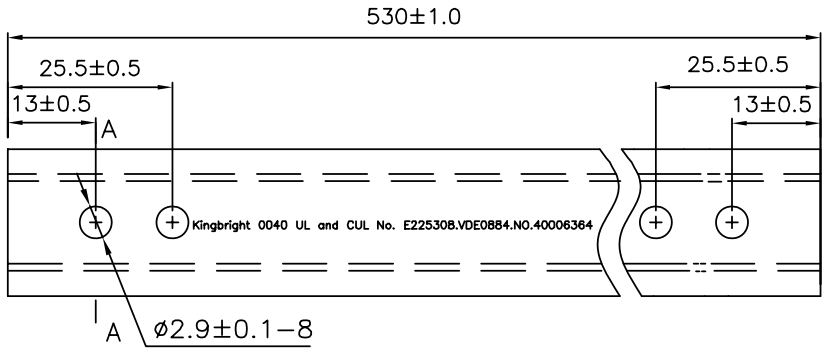
RESTRICTIONS ON PRODUCT USE

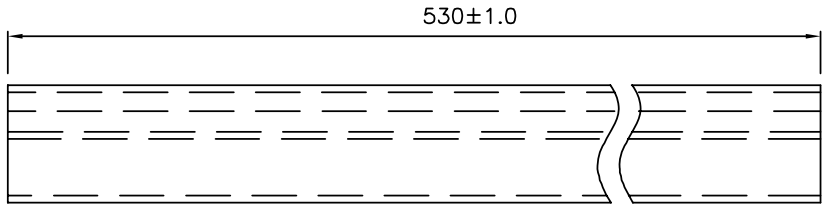
- The information in this document is subject to change without notice. Before using this document, please confirm that this is the latest version. Not all devices / types available in every country.
- We are mention about our product quality stablity, semiconductor devices in general can malfunction 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 a 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.

Part Number: KB816

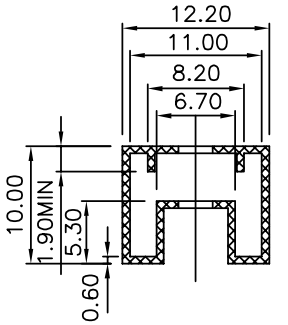
Dimension of Tube

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

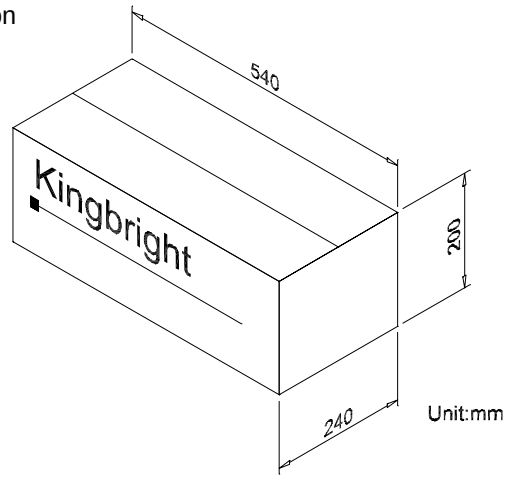




A−A Side view

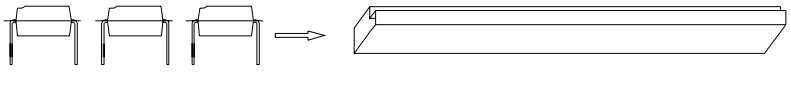


Dimension of Carton

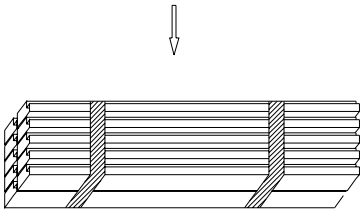


Part Number	Package	Package Style
KB816	4-pin DIP	100pcs/each tube

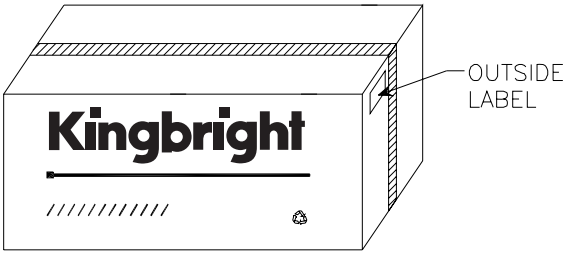
PACKING & LABEL SPECIFICATIONS



100 PCS / IC TUBE



1,000 pcs / 10pcs IC TUBE



30 K / 10# BOX

