

# Kingbright

## PHOTOCOUPLER

### KB815

GENERAL PURPOSE  
HIGH ISOLATION VOLTAGE  
HIGH SENSITIVITY  
PHOTOCOUPLER SERIES

### FEATURES

- 1.High current transfer ratio.(CTR:MIN.600% at  $I_F=1\text{mA}$ .  $V_{CE}=2\text{V}$ )
- 2.High isolation voltage between input and output ( $V_{iso}=5000\text{Vrms}$ ).
- 3.Compact dual-in-line package  
KB815 :1-channel type
- 4.Recognized by UL and CUL, file NO.E225308.
- 5.Rohs Compliant.

### DESCRIPTION

- 1.The KB815 (1-channel) is optically coupled isolators containing a GaAS light emitting diode and a darlington silicon phototransistor.
- 2.The lead pitch is 2.54mm.

### APPLICATIONS

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

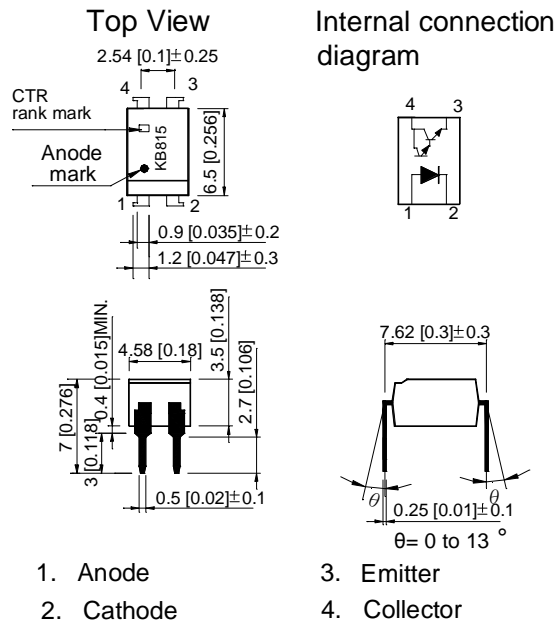


### KB815

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

DIP Type

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



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

Parameter		Symbol	Rating	Unit
Input	Forward current	$I_F$	50	mA
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	$V_{CEO}$	35	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	80	mA
	Collector power dissipation	$P_C$	150	mW
Total	power dissipation	$P_{tot}$	200	mW
*1 Isolation voltage		Viso	5000	$V_{rms}$
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

#### \*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	$\mu\text{A}$	
Output	Collector dark current	$I_{CEO}$	$V_{CE}=10\text{V}, I_F=0\text{mA}$	—	—	$10^{-6}$	A	
Transfer characteristics	*1 Current transfer ratio	CTR	$I_F=1\text{mA}, V_{CE}=2\text{V}$	600	1600	7500	%	
	Collector-emitter saturation voltage	$V_{CE(Sat)}$	$I_F=20\text{mA}, I_C=5\text{mA}$	—	0.8	1.0	V	
	Response time	Rise time	$t_r$	$V_{CE}=2\text{V}, I_C=10\text{mA}, R_L=100\Omega$	—	60	300	$\mu\text{S}$
		Fall time	$t_f$		—	53	250	$\mu\text{S}$

\*1  $CTR = \frac{I_C}{I_F} \times 100\%$

Model No.	Rank mark	CTR(%)
KB815L	L	600 to 1200
KB815A	A	1100 to 2200
KB815B	B	2100 to 4200
KB815C	C	4100 to 7500

Fig. 1 Current Transfer Ratio vs. Forward Current

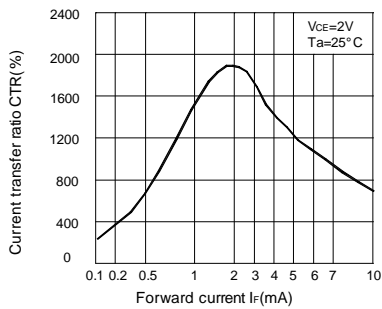


Fig. 2 Forward Current vs. Forward Voltage

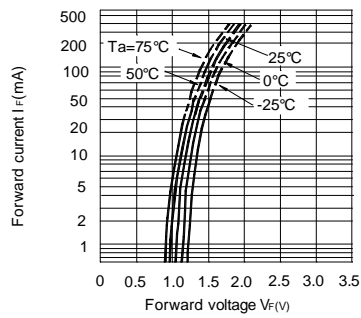


Fig. 3 Collector Current vs. Collector-emitter Voltage

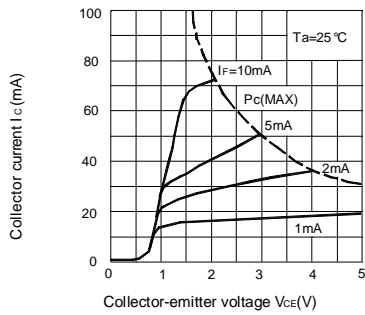


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

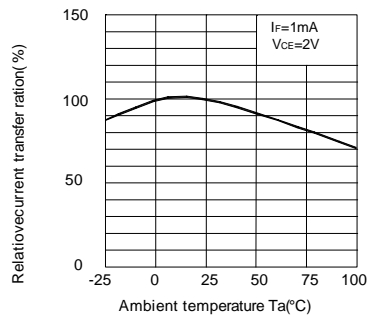


Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature

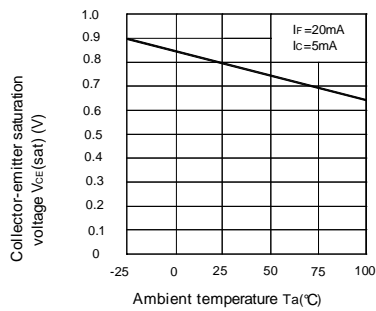


Fig. 6 Collector Dark Current vs. Ambient Temperature

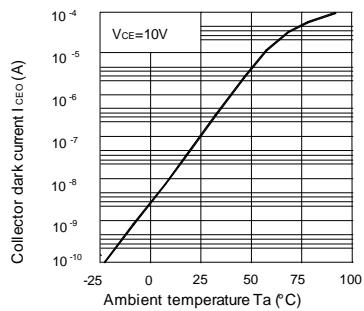


Fig. 7 Forward Current vs. Ambient Temperature

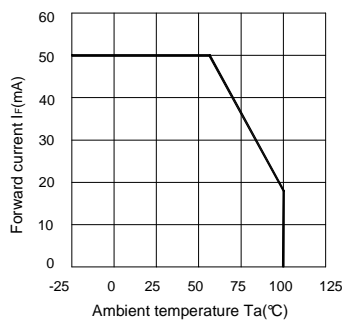


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

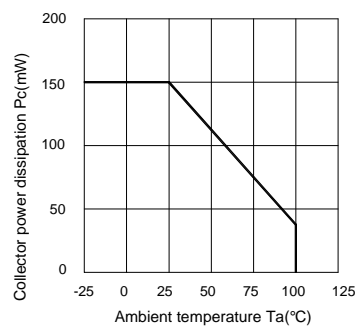
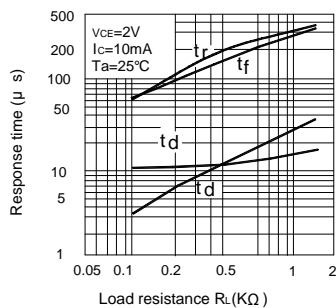


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

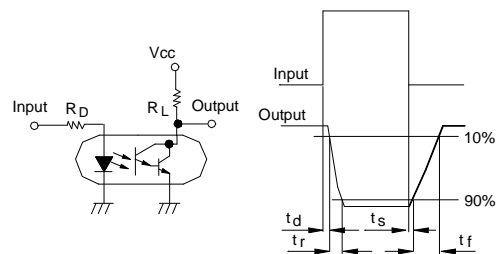
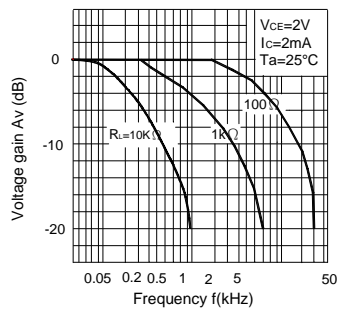


Fig. 10 Frequency Response



Test Circuit for Frequency Response

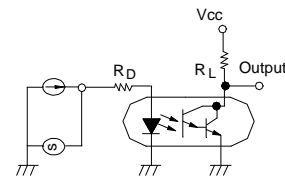
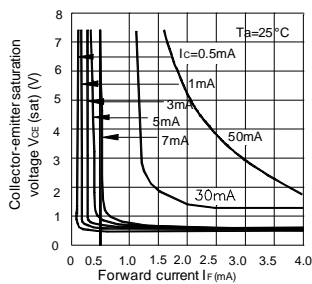


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



#### \* 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 chlorine (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 component 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

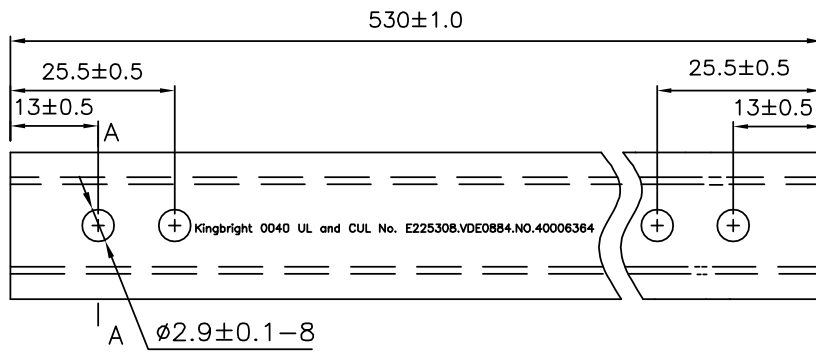
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- We mention about our product quality stability, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing KINGBRIGHT 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.

### KB815

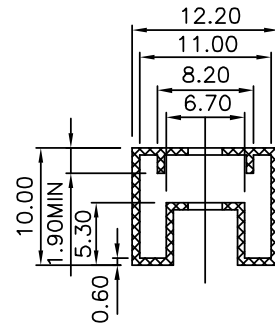
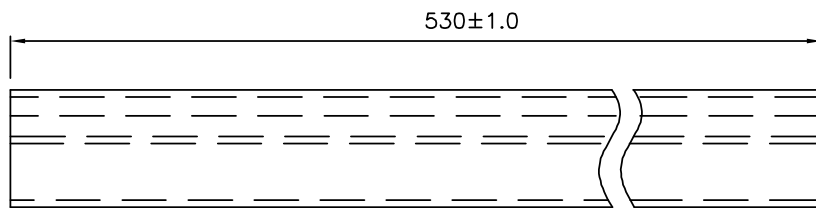
#### Dimension of Tube

TOLERANCE :  $\pm 0.4[\pm 0.012]$  UNLESS OTHERWISE NOTED.

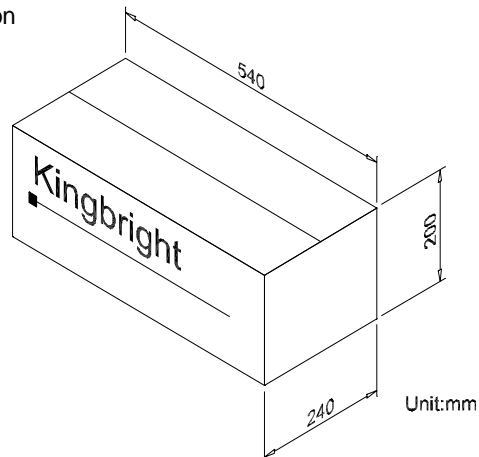
Unit:mm



A-A Side view



#### Dimension of Carton



#### \*ORDERING INFORMATION

Part Number	Package	Package Style
KB815	4-pin DIP	100pcs/each tube