Kingbright

KB837-B

GENERAL PURPOSE
HIGH ISOLATION VOLTAGE
SINGLE TRANSISTOR TYPE
PHOTOCOUPLER SERIES

FEATURES

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

DESCRIPTION

1.The KB837-B (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:>=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.

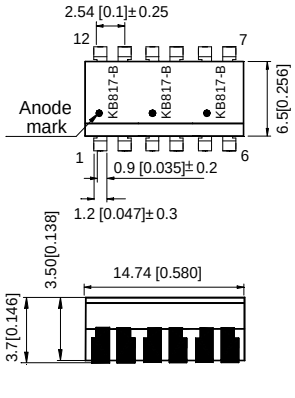
*PACKAGE DIMENSIONS (UNIT:mm)

Lead Bending Type

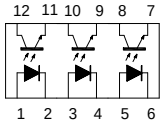
TOLERANCE : ±0.5[±0.02] UNLESS OTHERWISE NOTED.

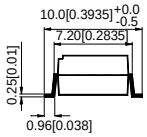
KB837-B

Top View



Internal connection diagram





1, 3, 5. Anode	7, 9, 11. Emitter
2, 4, 6. Cathode	8, 10, 12. Collector

*Absolute Maximum Ratings (Ta=25℃)

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		Ptot	200	mW
*1 Isolation voltage		Viso	5000	Vrms
Operating temperature		Topr	-30~+100	°C
Storage temperature		Tstg	-55~+125	°C
*2 Soldering temperature		Tsol	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=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}	nA
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.

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

Model No.	Rank mark	CTR(%)
KB837L-B	L	50 to 100
KB837A-B	A	80 to 160
KB837B-B	B	130 to 260
KB837C-B	C	200 to 400
KB837D-B	D	300 to 600
KB837AB-B	A or B	80 to 260
KB837BC-B	B or C	130 to 400
KB837CD-B	C or D	200 to 600
KB837AC-B	A,B or C	80 to 400
KB837BD-B	B,C or D	130 to 600
KB837AD-B	A,B,C or D	80 to 600
KB837-B	L,A,B,C,D or No mark	50 to 600

Fig. 1 Current Transfer Ratio vs. Forward Current

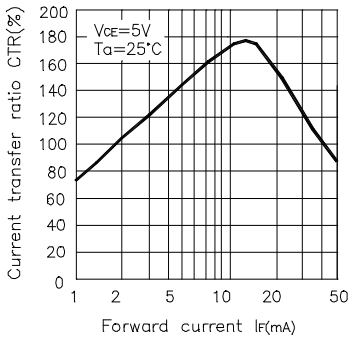


Fig. 2 Forward Current vs. Forward voltage

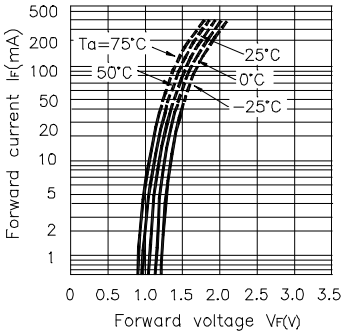


Fig. 3 Collector Current vs. Collector-emitter Voltage

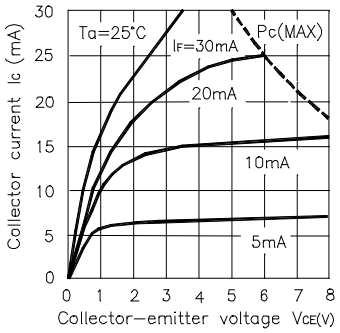


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

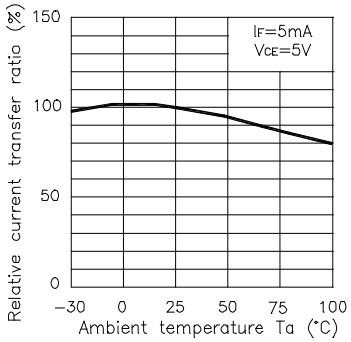


Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature

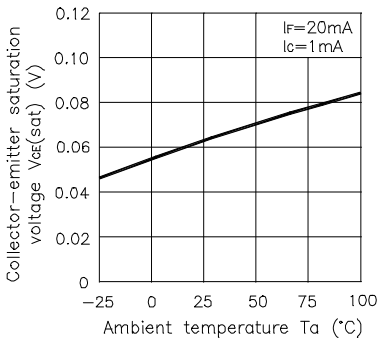


Fig. 6 Collector Dark Current vs. Ambient Temperature

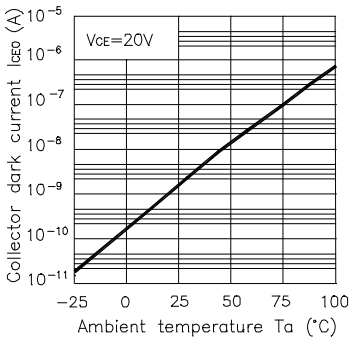


Fig. 7 Forward Current vs. Ambient Temperature

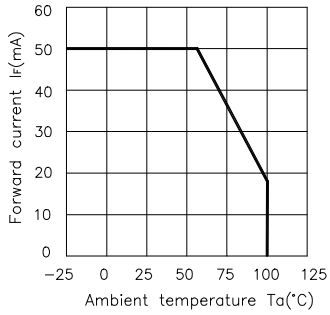


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

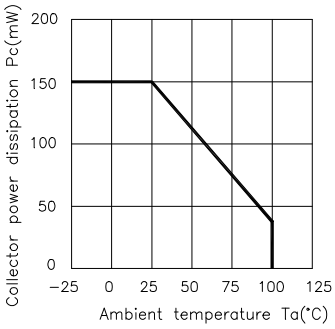
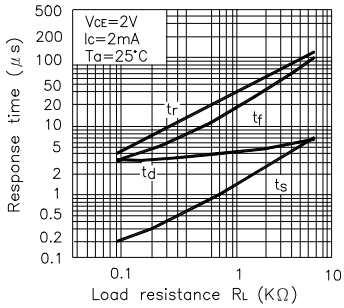


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

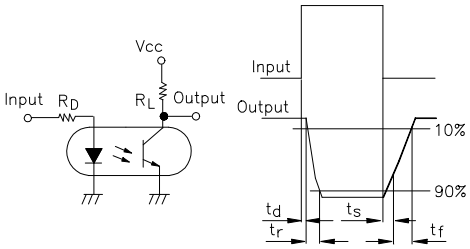
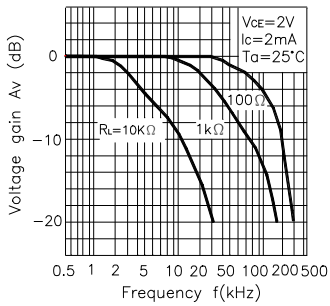


Fig. 10 Frequency Response



Test Circuit for Frequency Response

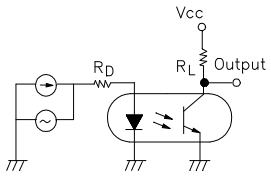
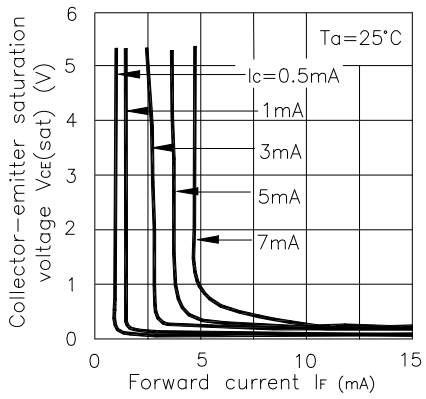


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



*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

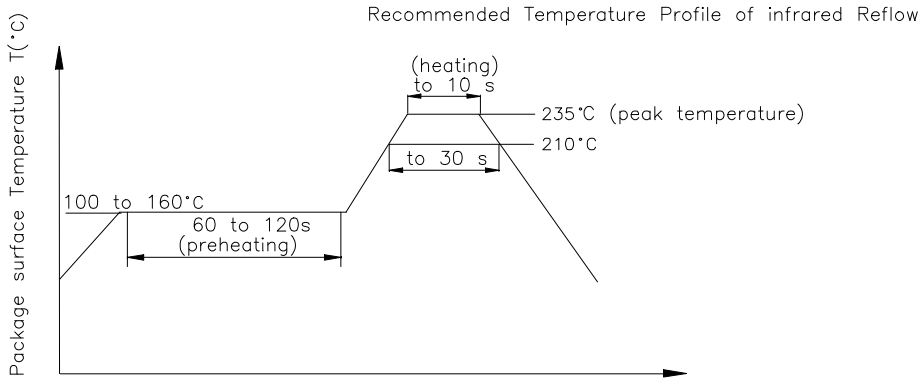
Be aware that power is suddenly into the componment any surge current may cause damage happen, even if the voltage is within the absolute maximum ratings.

NOTES ON HANDLING

1.Recommended soldering conditions

(1).Infrared reflow soldering

●Peak reflow temperature	235°C or below (package surface temperature)
●Time of temperature higher than 210°C	30 seconds or less
●Number or reflows	Three
●Flux	Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2Wt% is recommended.)



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.
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