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KB824

GENERAL PURPOSE
HIGH ISOLATION VOLTAGE
SINGLE TRANSISTOR TYPE
PHOTOCOUPLER SERIES

FEATURES

1. AC Input

2. High isolation voltage between input and output (Viso=5000 Vrms)

3. Compact dual-in-line package

   KB824:2-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)
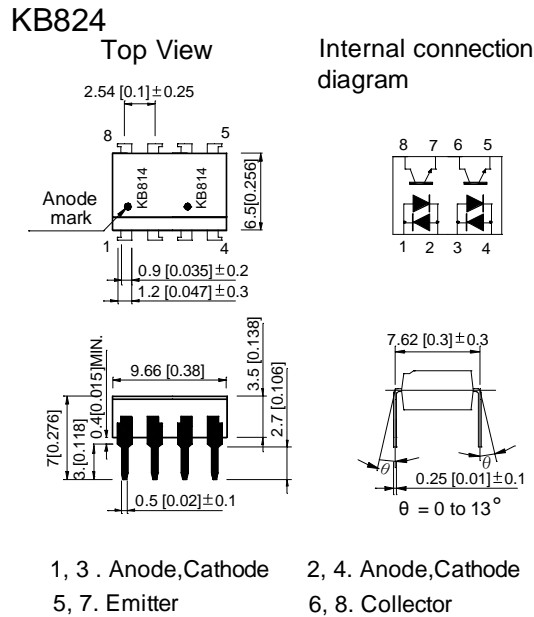
6. Rohs Compliant.

DESCRIPTION

1. The KB824(2-channel) is optically coupled isolators containing two GaAs light emitting diode and an NPN 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. Programmable logic controller.
5. Signal transmission between circuits of different potentials and impedances.

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*PACKAGE DIMENSIONS (UNIT:mm)
DIP Type

KB824

Top View

Internal connection diagram

2.54 [0.1] ±0.25

8   5

Anode mark

KB814   KB814

6.5[0.256]

1   4

0.9 [0.035] ±0.2

1.2 [0.047] ±0.3

8   7   6   5

1   2   3   4

3.5 [0.138]

9.66 [0.38]

2.7 [0.106]

7[0.276]

0.4[0.015]MIN.

3 [0.118]

0.5 [0.02] ±0.1

7.62 [0.3] ±0.3

0.25 [0.01] ±0.1

θ = 0 to 13°

1, 3 . Anode,Cathode   2, 4. Anode,Cathode

5, 7. Emitter   6, 8. Collector

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

* Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	IF	± 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	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

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* Electro-optical Characteristics (Ta=25℃)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage	V_F	$I_F=\pm\ 20mA$	—	1.2	1.4	V
	Peak forward voltage	V_{FM}	$I_{FM}=\pm\ 0.5A$	—	—	3.0	V
Output	Collector dark current	I_{CEO}	$V_{CE}=20V, I_F=0mA$	—	—	10^{-7}	A
Transfer characteristics	*1 Current transfer ratio	CTR	$I_F=\pm\ 1mA,\ V_{CE}=5V$	20	—	300	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=\pm\ 20mA,\ I_C=1mA$	—	0.1	0.2	V
	Response time — Rise time	t_r	$V_{CE}=2V,\ I_C=2mA$ $R_L=100\Omega$	—	4	18	μS
	Response time — Fall time	t_f		—	3	18	μS

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

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

Model NO.	Rank mark	CTR(%)
KB824L	L	20~60
KB824A	A	50~150
KB824B	B	120~300
KB824LA	L or A	20~150
KB824AB	A or B	50~300
KB824	L,A,B or No mark	20~300

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Fig. 1 Current Transfer Ratio vs.
          Forward Current

Vce=5V
Ta=25°C

Current transfer ratio CTR(%)

Forward current IF(mA)
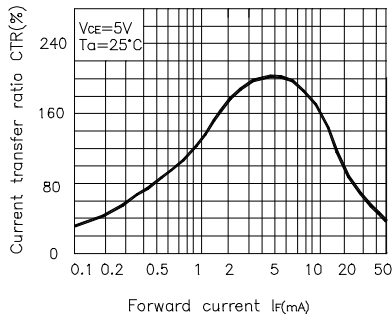
Fig. 2 Forward Current vs.
          Forward voltage

Ta=75°C   25°C
50°C   0°C
          −25°C

Forward current IF(mA)

Forward voltage VF(V)
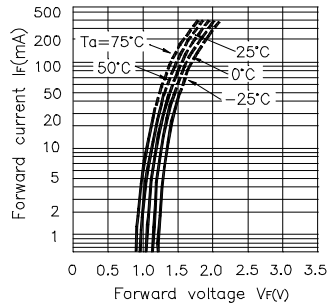
Fig. 3 Collector Current vs.
        Collector-emitter Voltage

Ta=25°C
30mA
20mA   Pc(MAX)
10mA
5mA
1mA

Collector current Ic (mA)

Collector−emitter voltage VcE(V)
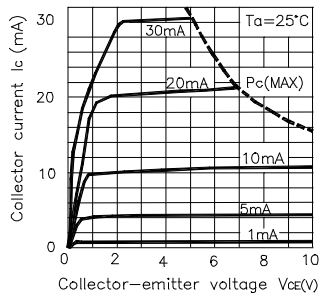
Fig. 4 Relative Current Transfer Ratio
         vs. Ambient Temperature

IF=1mA
VcE=5V

Relative current transfer ration(%)

Ambient temperature Ta(°C)
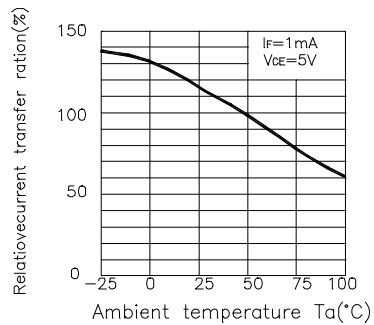
Fig. 5 Collector-emitter Saturation
         Voltage vs. Ambient Temperature

IF=20mA
Ic=1mA

Collector−emitter saturation
voltage VcE(sat) (V)

Ambient temperature Ta (°C)
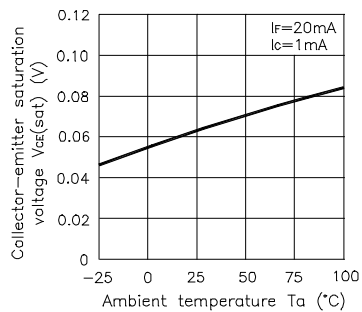
Fig. 6 Collector Dark Current vs.
         Ambient Temperature

VcE=20V

Collector dark current IcEO (A)
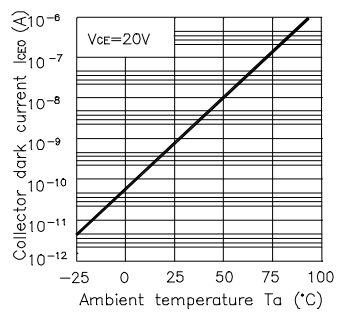
Ambient temperature Ta (°C)

Fig. 7 Forward Current vs.
Ambient Temperature
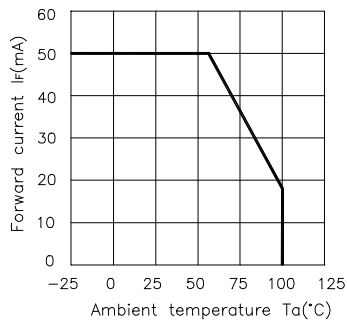
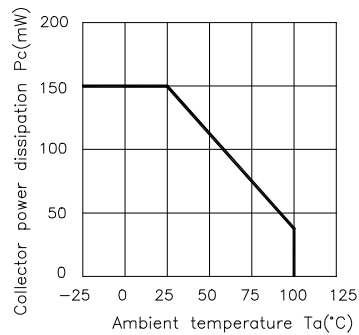Fig. 8 Collector Power Dissipation vs.
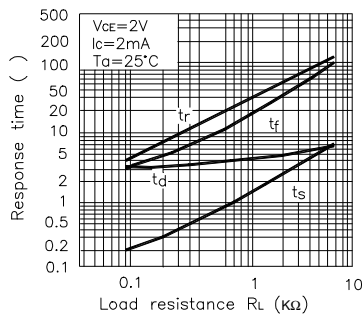Ambient Temperature

Fig. 9 Response Time vs.
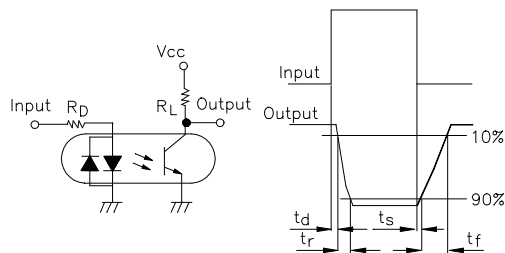Load Resistance

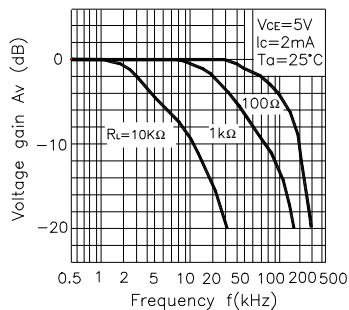Test Circuit for Response Time

Fig. 10 Frequency Response
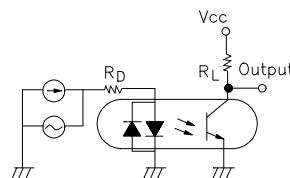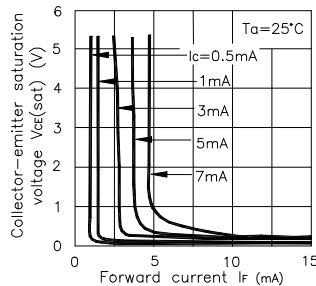

Test Circuit for Frequency Response

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 nold 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.
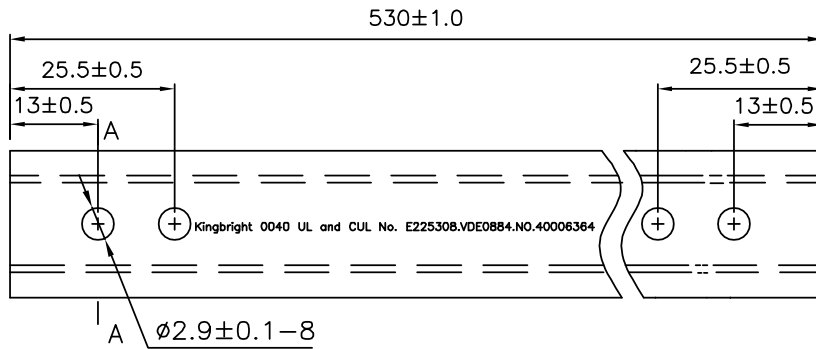
RESTRICTIONS ON PRODUCT USE

- 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.
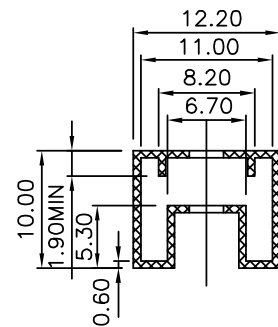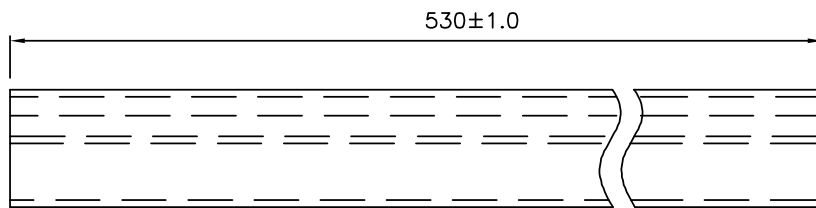
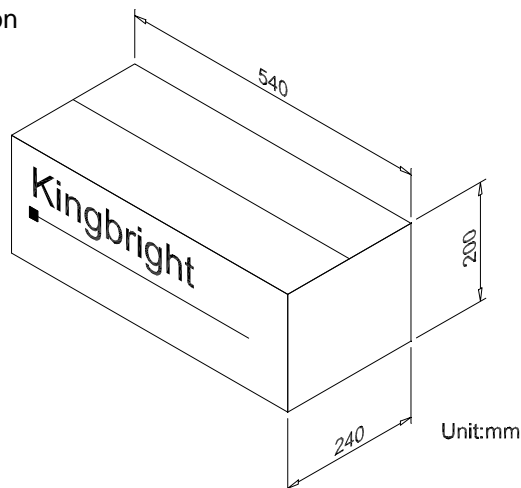TOLERANCE : ± 0.4[± 0.012] UNLESS OTHERWISE NOTED.

Unit:mm

Dimension of Tube

530±1.0

25.5±0.5

13±0.5

A

Kingbright 0040 UL and CUL No. E225308.VDE0884.NO.40006364

25.5±0.5

13±0.5

A

Ø2.9±0.1−8

530±1.0

A−A Side view

12.20
11.00
8.20
6.70

10.00
1.90MIN
5.30
0.60

Dimension of Carton

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540

200

240

Unit:mm

Part Number	Package	Packing Style
KB824	8-pin DIP	50pcs / each tube

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KB824

PACKING & LABEL SPECIFICATIONS
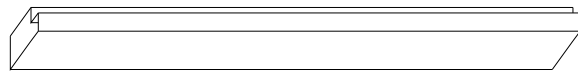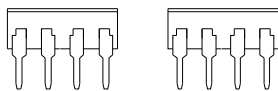
50PCS / IC TUBE
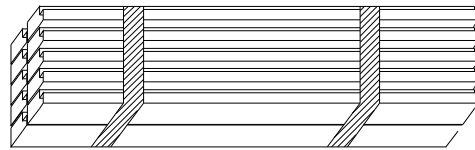
500pcs / 10pcs IC TUBE

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Q.C.

QC
XXX XX. XXXX
PASSED

TYPE NO : KB824

QUANTITY : 500 pcs

S/N : XXX   CODE: XX

LOT NO:

xxxxxxxxxxxxxxxxxxxx

MADE IN CHINA   RoHS Compliant

OUTSIDE
LABEL

Kingbright

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15K / 10 # BOX