

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

DESCRIPTION

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

APPLICATIONS

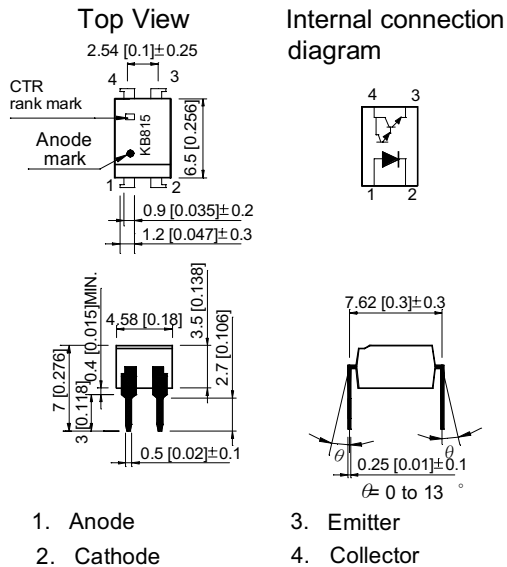
- 1.Computer terminals
- 2.Registers, copiers, automatic vending machines
- 3.System appliances, measuring instruments
- 4.Industrial robots
- 5.Signal transmission between circuits of different potentials and impedances

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_{CE0} | 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 | | 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 | $I_F=20\text{mA}$ | — | 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} | $V_{CE}=10\text{V}, I_F=0\text{mA}$ | — | — | 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 | μS |
| | | Fall time | t_f | | — | 53 | 250 | μS |

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

Fig. 1 Current Transfer Ratio vs. Forward Current

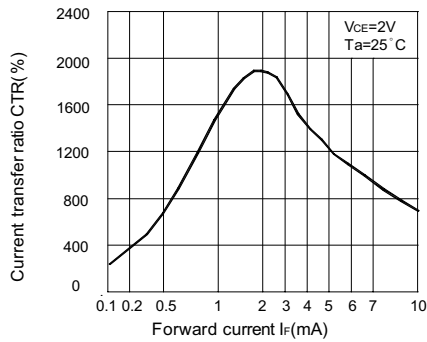


Fig. 2 Forward Current vs. Forward Voltage

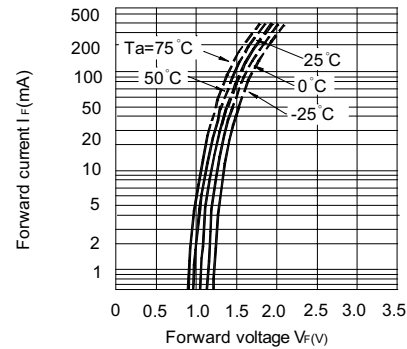


Fig. 3 Collector Current vs. Collector-emitter Voltage

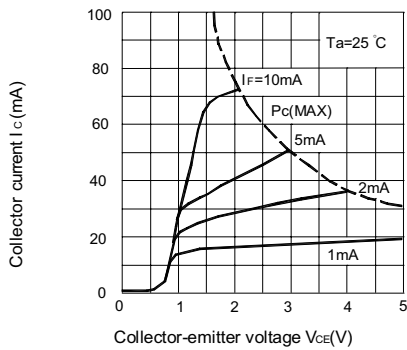


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

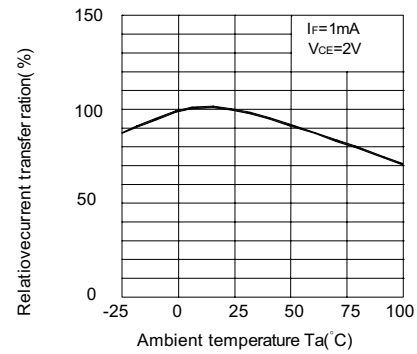


Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature

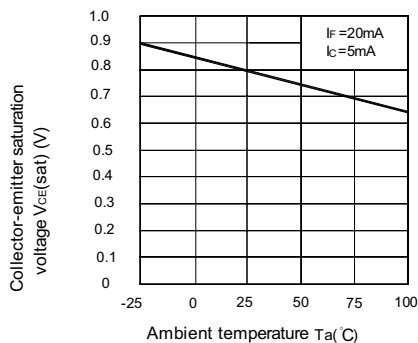


Fig. 6 Collector Dark Current vs. Ambient Temperature

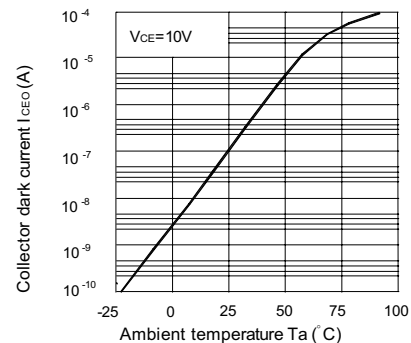


Fig. 7 Forward Current vs. Ambient Temperature

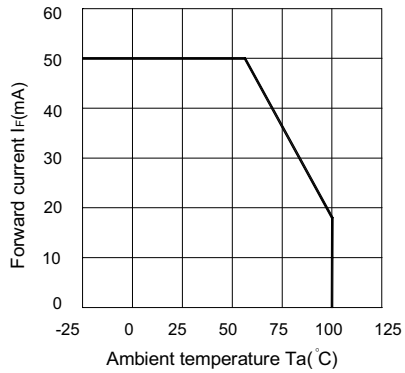


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

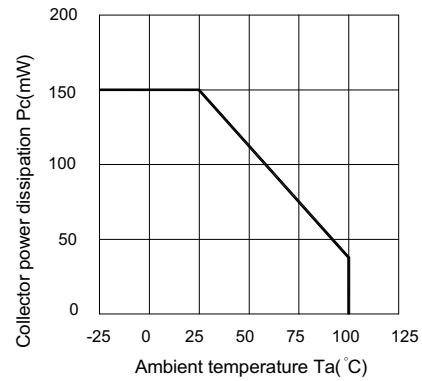
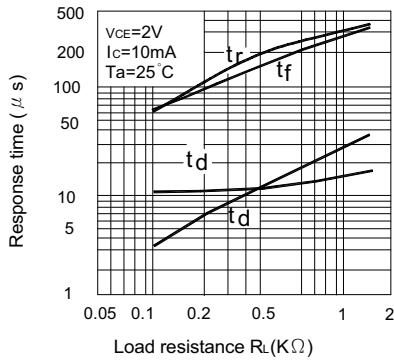


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

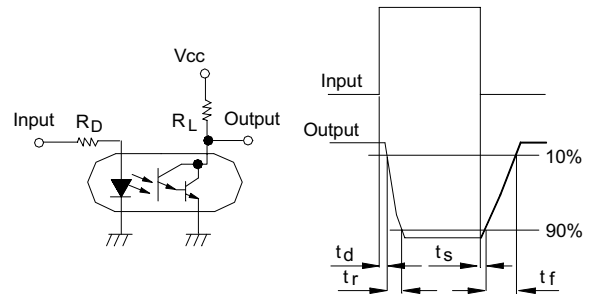
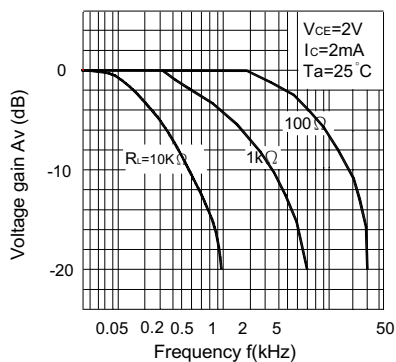


Fig. 10 Frequency Response



Test Circuit for Frequency Response

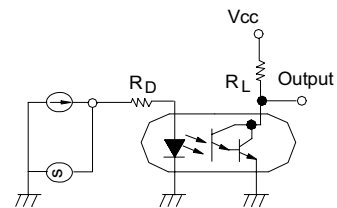
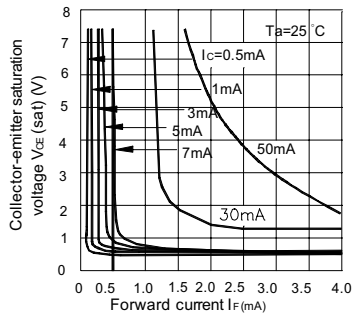


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



* 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

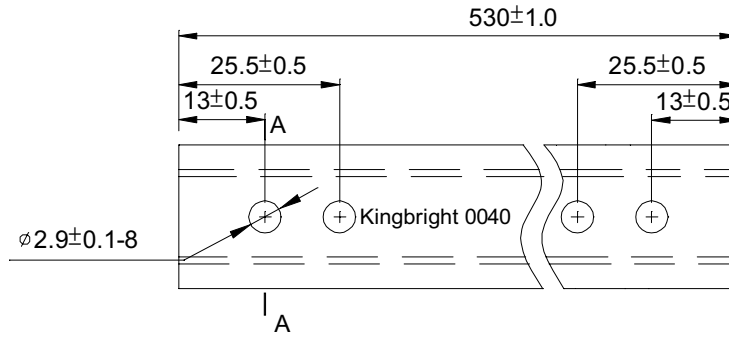
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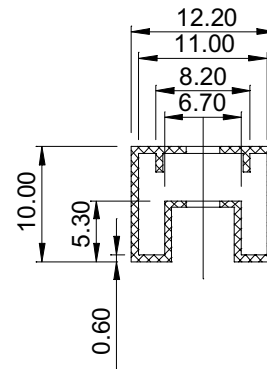
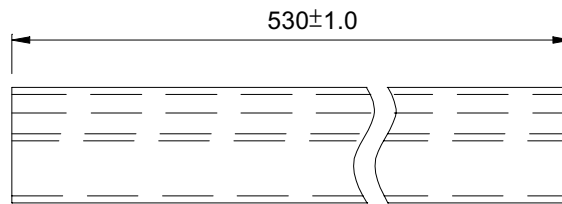
Dimension of Tube

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

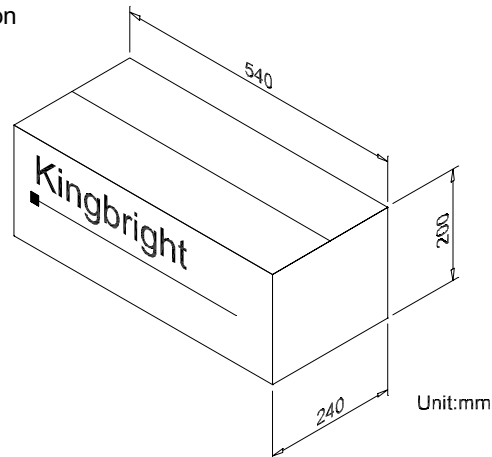
Unit:mm



A-A Side view



Dimension of Carton



Unit:mm

* ORDERING INFORMATION

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