

### KB8141

GENERAL PURPOSE  
HIGH ISOLATION VOLTAGE  
HIGH SENSITIVITY  
PHOTOCOUPLER SERIES

### FEATURES

1. AC Input.
2. High current transfer ratio.(CTR:Min 600%,at  $I_F = \pm 1\text{mA}$  ,  $V_{CE} = 2\text{V}$ )
3. High isolation voltage between input and output ( $V_{iso} = 5000 \text{Vrms}$ )
4. Compact dual-in-line package  
KB8141: 1-channel type
5. Recognized by UL and CUL, file NO. E225308

### DESCRIPTION

- 1.The KB8141 (1-channel) is optically coupled isolators containing two GaAs light emitting diode and a darlington silicon phototransistor.
- 2.The lead pitch is 2.54mm

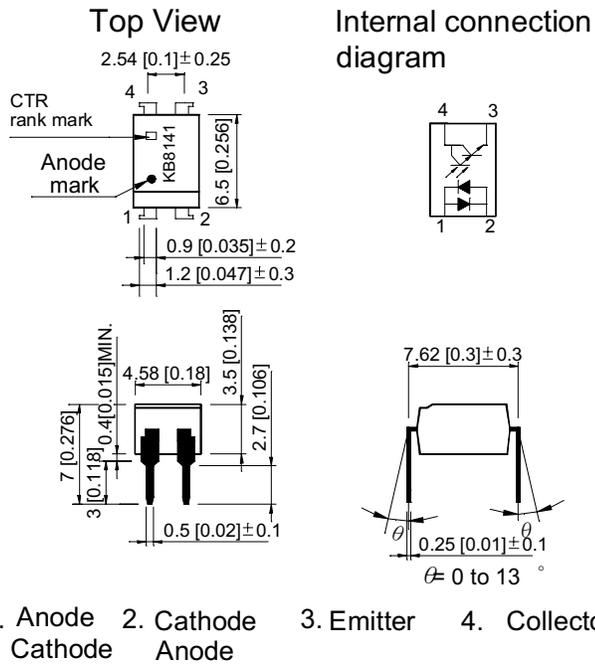
### APPLICATIONS

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

## KB8141

\* PACKAGE DIMENSIONS (UNIT: mm)

DIP Type



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

### KB8141

\* 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		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 (Ta=25 °C)

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	$I_{CEO}$	$V_{CE} = 10V, I_F = 0mA$	—	—	$10^{-6}$	A
Transfer characteristics	*1 Current transfer ratio	CTR	$I_F = \pm 1mA, V_{CE} = 2V$	600	—	7500	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = \pm 20mA, I_C = 5mA$	—	0.8	1	V
	Cut-off frequency	$f_c$	$V_{CE} = 5V, I_C = 2mA$ $R_L = 100\Omega, -3dB$	—	6	—	kHz
	Response time	Rise time	$t_r$	$V_{CE} = 2V, I_C = 10mA$ $R_L = 100\Omega$	—	60	300
Fall time		$t_f$	—		53	250	$\mu S$

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

Fig. 1 Current Transfer Ratio vs. Forward Current

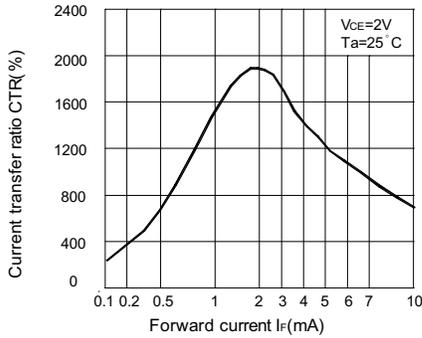


Fig. 2 Forward Current vs. Forward voltage

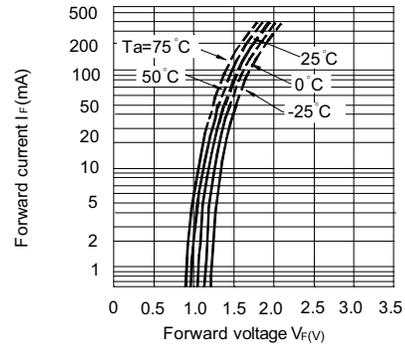


Fig. 3 Collector Current vs. Collector-emitter Voltage

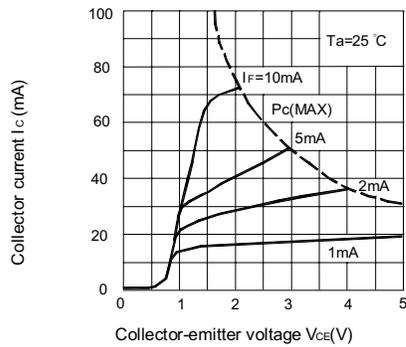


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

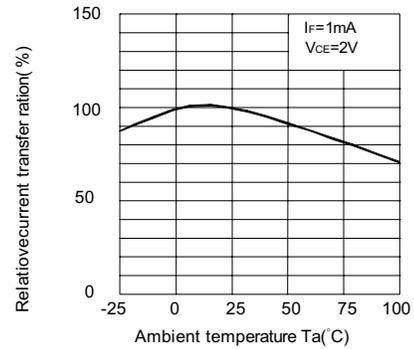


Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature

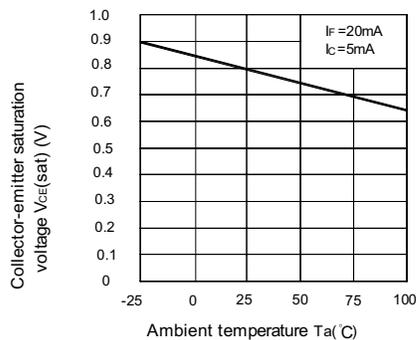
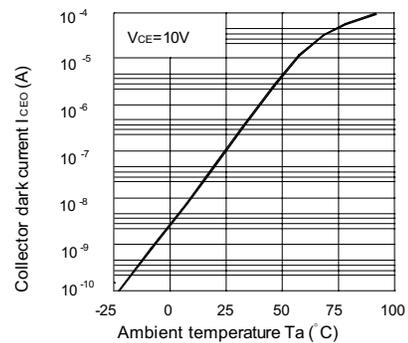
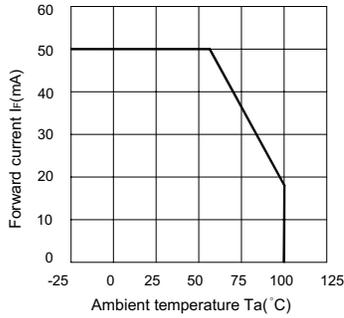


Fig. 6 Collector Dark Current vs. Ambient Temperature

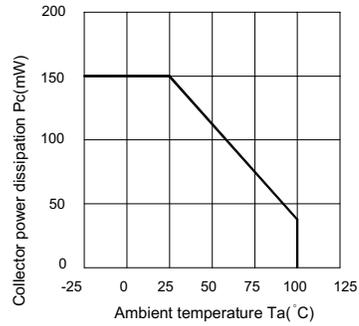


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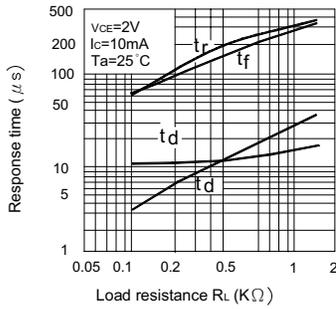
**Fig. 7 Forward Current vs. Ambient Temperature**



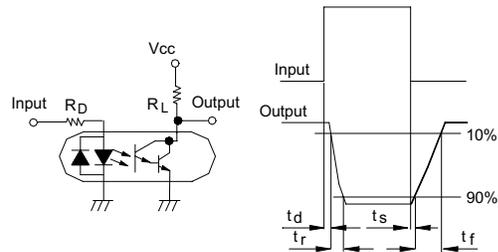
**Fig. 8 Collector Power Dissipation vs. Ambient Temperature**



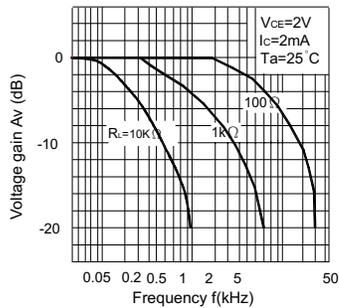
**Fig. 9 Response Time vs. Load Resistance**



**Test Circuit for Response Time**



**Fig. 10 Frequency Response**



**Test Circuit for Frequency Response**

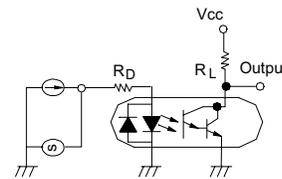
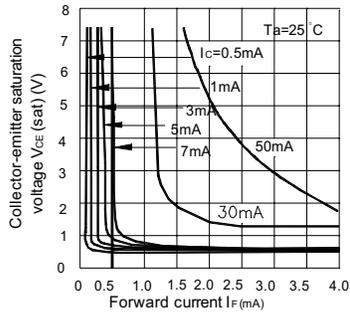


Fig. 11 Collector-emitter Saturation Voltage vs. Forward Current



**\* 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

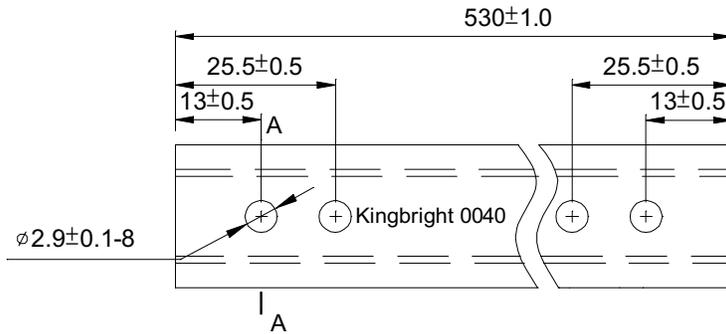
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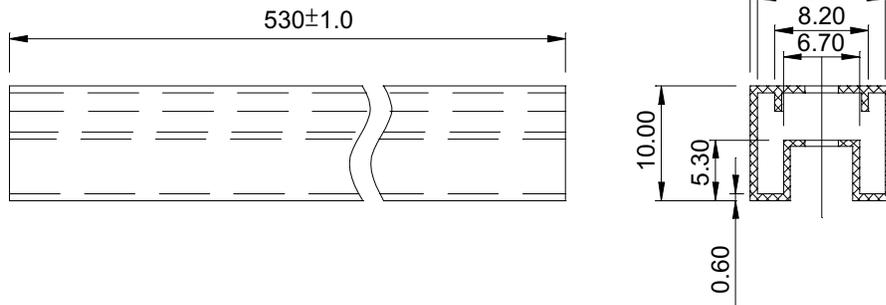
Dimension of Tube

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

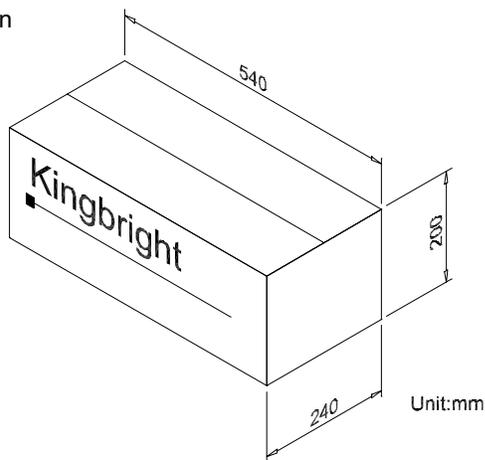
Unit:mm



A-A Side view



Dimension of Carton



Part Number	Package	Package Style
KB8141	4-pin DIP	100pcs/each tube