

AB814B-B

Photocoupler

DESCRIPTIONS

- The AB814B-B is optically coupled isolators containing two GaAs Light Emitting Diode and an NPN silicon phototransistor
- The lead pitch is 2.54mm

FEATURES

- AC input
- High isolation voltage between input and output (Viso=5000 Vrms)
- Compact dual-in-line package AB814B-B:1-channel type
- Package: 1000 pcs / reel
- Moisture sensitivity level : 4
- RoHS compliant

APPLICATIONS

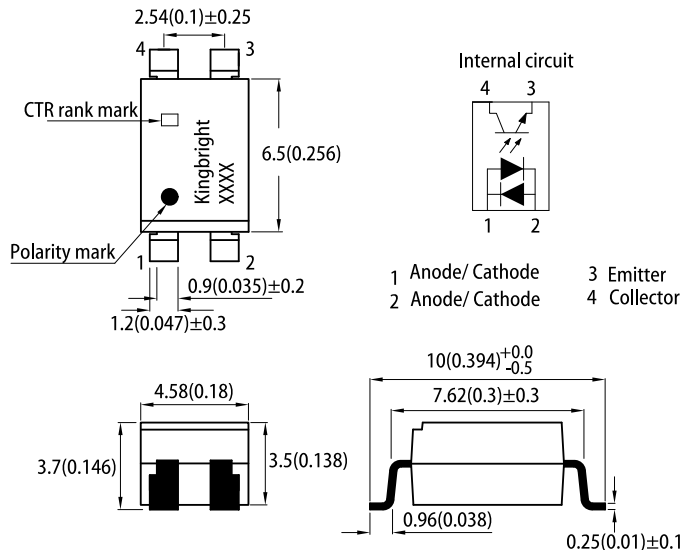
- Computer terminals
- Registers, copiers, automatic vending machines
- System appliances, measuring instruments
- Programmable logic controller
- Signal transmission between circuits of different potentials and impedances

NOTES ON HANDLING

Cautions regarding electrical noise

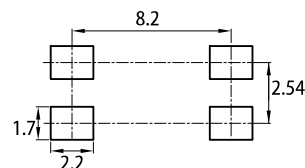
Please ensure the power supply is stable at all times. Even if the designed operating voltage is within specification limits, sudden voltage spikes at startup may damage the component.

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.15)



- Notes:
1. All dimensions are in millimeters (inches).
 2. Tolerance is ±0.5(0.02") unless otherwise noted.
 3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.
 4. The device has a single mounting surface. The device must be mounted according to the specifications.

ELECTRICAL / OPTICAL CHARACTERISTICS at T_A=25°C

Parameter	Symbol	Value			Units	Test Conditions	
		Min.	Typ.	Max.			
Input	Forward voltage	V _F	-	1.2	1.4	V	I _F =±20mA
	Peak forward voltage	V _{FM}	-	-	3.0	V	I _{FM} =±0.5A
Output	Collector dark current	I _{CEO}	-	-	10 ⁻⁷	A	I _F =0mA, V _{CE} =20V
Transfer characteristics	Current transfer ratio ^[1]	CTR	120	-	300	%	I _F =±1mA, V _{CE} =5V
	Collector-emitter saturation voltage	V _{CE(sat)}	-	0.1	0.2	V	I _F =±20mA, I _C =1mA
	Response time	Rise time	t _r	-	4	18	μs
Fall time		t _f	-	3	18	μs	

Notes:
1. Classification table of current transfer ratio is shown below.
CTR = $\frac{I_C}{I_F} \times 100\%$.

2. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

ABSOLUTE MAXIMUM RATINGS at $T_A=25^\circ\text{C}$

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	± 50	mA
	Power dissipation	P_D	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		P_{tot}	200	mW
Isolation voltage ^[1]		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-30~+100	$^\circ\text{C}$
Storage temperature		T_{stg}	-55~+125	$^\circ\text{C}$

Notes:
 1. 40 to 60% RH, AC for 1 minute.
 2. Relative humidity levels maintained between 40% and 60% in production area are recommended to avoid the build-up of static electricity – Ref JEDEC/JESD625-A and JEDEC/J-STD-033.

TECHNICAL DATA

Fig. 1 Current Transfer Ratio vs. Forward Current

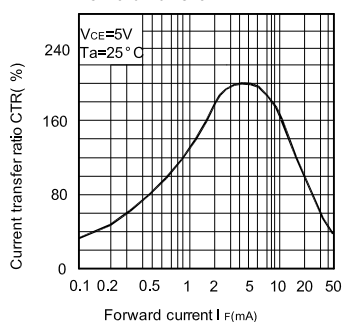


Fig. 2 Forward Current vs. Forward Voltage

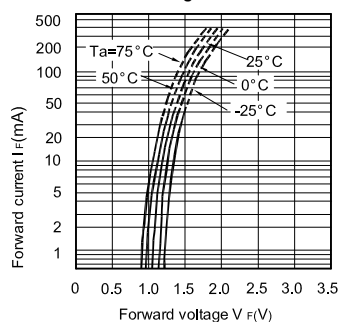


Fig. 3 Collector Current vs. Collector-Emitter Voltage

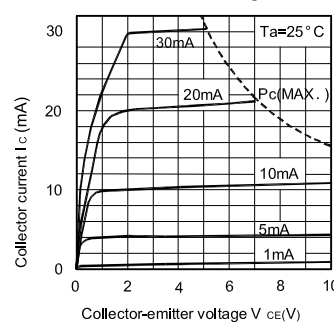


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

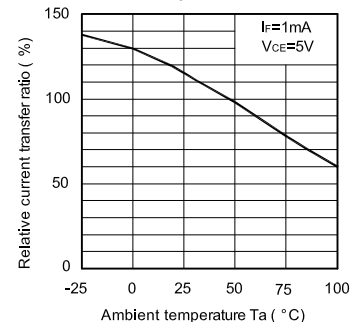


Fig. 5 Collector-Emitter Saturation Voltage vs. Ambient Temperature

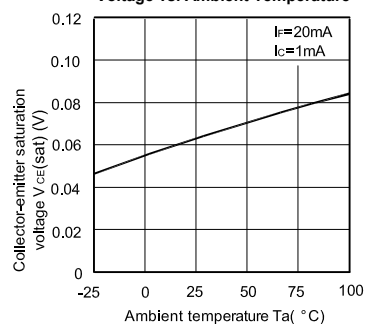


Fig. 6 Collector Dark Current vs. Ambient Temperature

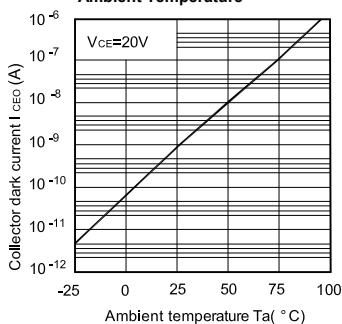


Fig. 7 Forward Current vs. Ambient Temperature

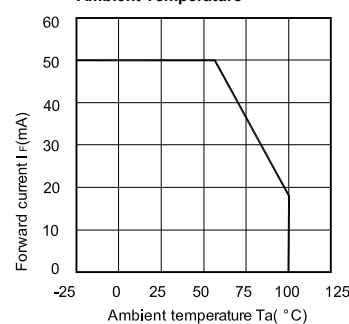


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

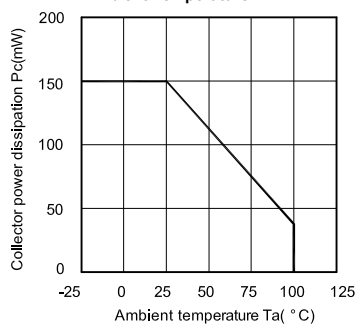


Fig. 9 Response Time vs. Load Resistance

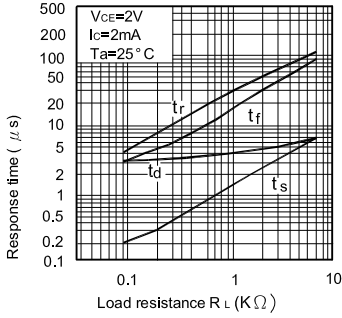


Fig.10 Frequency Response

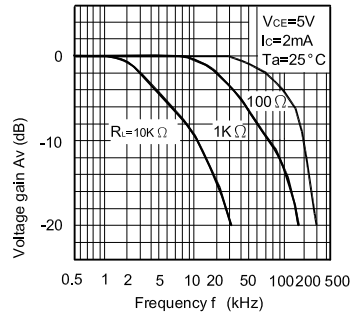
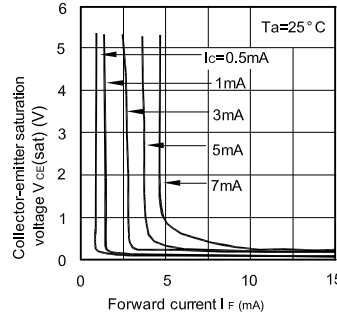
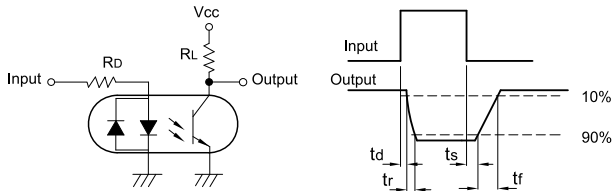


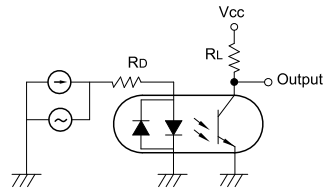
Fig.11 Collector-Emitter Saturation Voltage vs. Forward Current



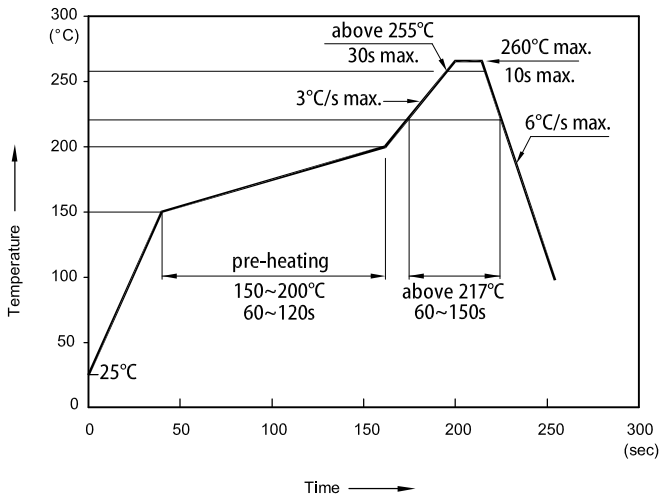
Test Circuit for Response Time



Test Circuit for Frequency Response

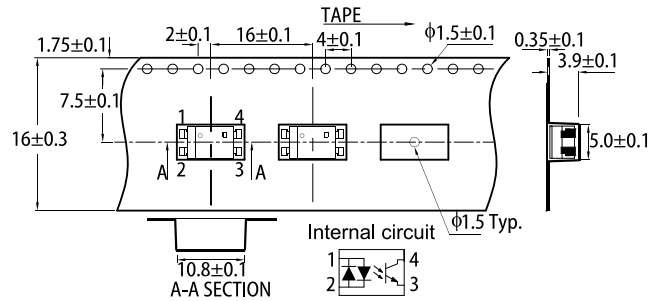


REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

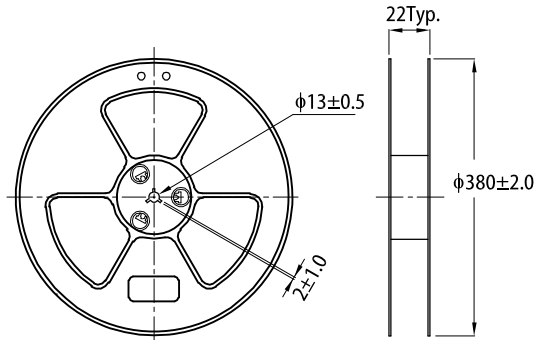


- Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
 2. The maximum number of reflow soldering passes is 2 times.
 3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

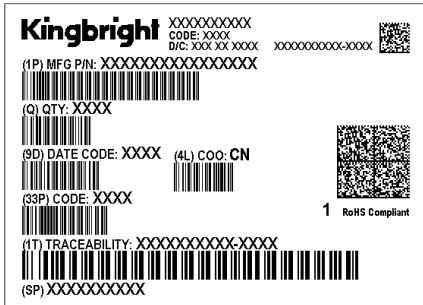
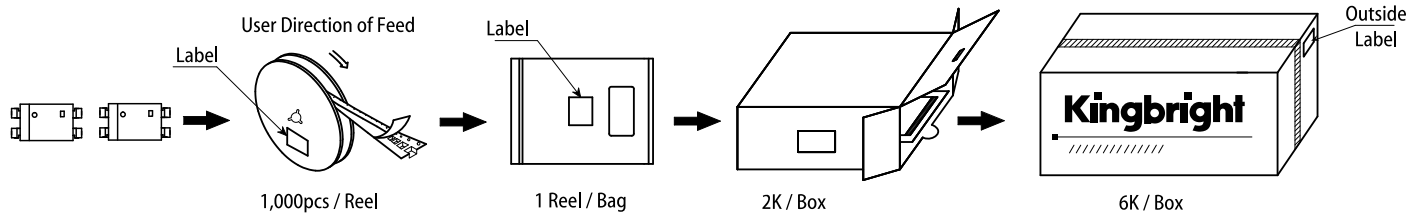
TAPE SPECIFICATIONS (units : mm)



REEL DIMENSION (units : mm)



PACKING & LABEL SPECIFICATIONS



RESTRICTIONS ON PRODUCT USE

1. The information in this document represents typical usage and is provided for technical reference.
2. The information in this document is subject to change without notice. Please refer to the latest version of this document for the most updated information.
3. Please ensure this product is used in accordance with the electrical and environmental specifications and tolerances listed in this document. If the usage exceeds the specification range, Kingbright will not be responsible for any subsequent issues.
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