

AB817D-B Photocoupler

DESCRIPTIONS

- The AB817D-B (1-channel) is optically coupled isolators containing a GaAs Light Emitting Diode and an NPN silicon phototransistor
- The lead pitch is 2.54mm

FEATURES

- Lead forming (gull wing) type, for surface mounting
- Maximum working isolation voltage $V_{IOWM} = 630 V_{RMS}$
- Maximum repetitive peak isolation voltage $V_{IORM} = 890 V_{peak}$
- Maximum transient isolation voltage $V_{IOTM} = 7 kV_{peak}$
- Maximum withstanding isolation voltage $V_{ISO} = 5000 V_{RMS}$
- Compact dual-in-line package AB817D-B:1-channel type
- Recognized by UL and CUL, file NO.E225308
- 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.

ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A=25^{\circ}C$

Parameter			Symbol	Value			Unit	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
	Reverse Current		I _R	-	-	10	μA	V _R =4V
Output	Collector Dark Current		I _{CEO}	-	-	10 ⁻⁷	A	I _F =0mA, V _{CE} =20V
Transfer Characteristics	Current Transfer Ratio ^[1]		CTR	300	-	600	%	I _F =5mA, V _{CE} =5V
	Collector-Emitter Saturation Voltage		V _{CE(sat)}	-	0.1	0.2	V	I _F =20mA, I _C =1mA
	Cut-off Frequency		f _c	-	80	-	kHz	V _{CE} =5V, I _C =2mA R _L =100 Ω, -3dB
	Response Time	Rise Time	t _r	-	4	18	μs	V _{CE} =2V, I _C =2mA R _L =100 Ω
		Fall Time	t _f	-	3	18	μs	

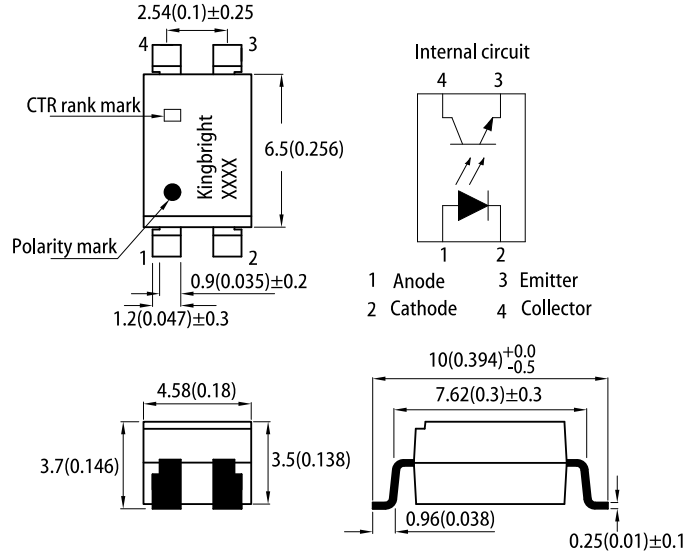
Notes:

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

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

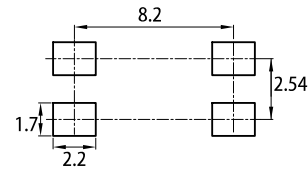
2. Excess driving current and / or operating temperature higher than recommended conditions may result in severe light degradation or premature failure.

PACKAGE DIMENSIONS



RECOMMENDED SOLDERING PATTERN

(units : mm; tolerance : ± 0.15)



Notes:

1. All dimensions are in millimeters (inches).

2. Tolerance is $\pm 0.5(0.02")$ 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.

ABSOLUTE MAXIMUM RATINGS at T_A=25°C

Parameter		Symbol	Rating	Unit
Input	Forward Current	I _F	50	mA
	Reverse Voltage	V _R	6	V
	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	°C
Storage Temperature		T _{stg}	-55~+125	°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.

MAXIMUM SAFETY RATINGS

Parameter	Symbol	Value			Unit	Test Condition
		Min.	Typ.	Max.		
Input Current	I _{SI}	-	-	300	mA	-
Output Power Dissipation	P _{SO}	-	-	500	mW	-
Ambient Safety Temperature	T _S	-	-	150	°C	-

Note:
1. This optocoupler is designed for electrical isolation only when operating within its specified safety ratings.
Compliance with these ratings must be guaranteed by implementing appropriate protective circuits.

TECHNICAL DATA

Fig. 1 Current Transfer Ratio vs. Forward Current

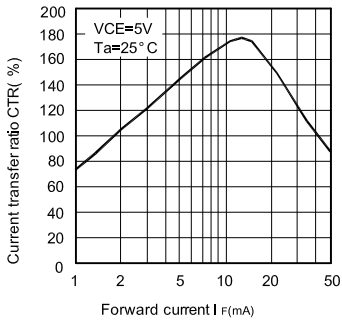


Fig. 2 Forward Current vs. Forward Voltage

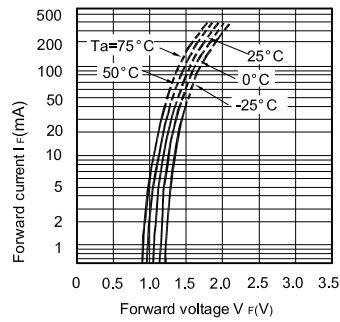


Fig. 3 Collector Current vs. Collector-Emitter Voltage

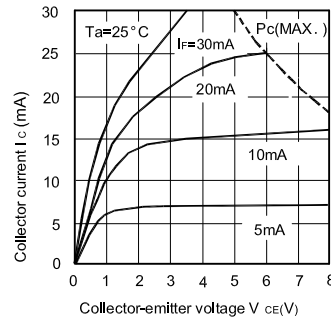


Fig. 4 Relative Current Transfer Ratio vs. Ambient Temperature

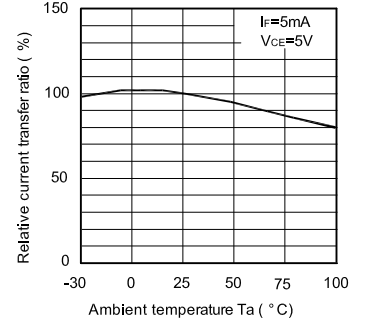


Fig. 5 Collector-Emitter Saturation Voltage vs. Ambient Temperature

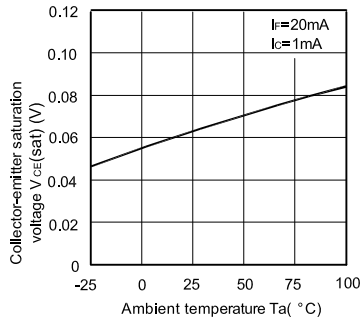


Fig. 6 Collector Dark Current vs. Ambient Temperature

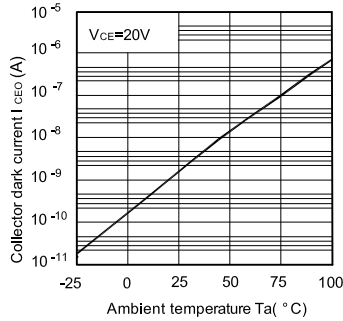


Fig. 7 Forward Current vs. Ambient Temperature

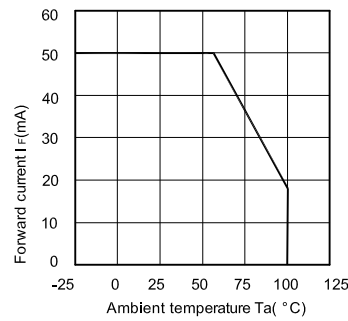


Fig. 8 Collector Power Dissipation vs. Ambient Temperature

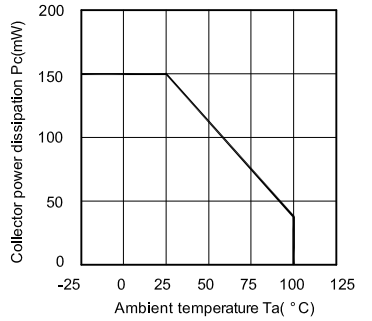


Fig. 9 Response Time vs. Load Resistance

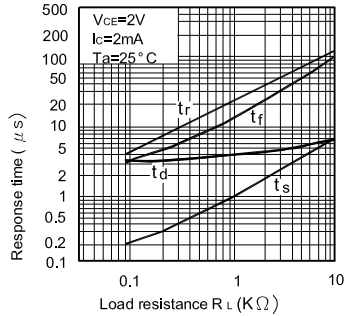


Fig.10 Frequency Response

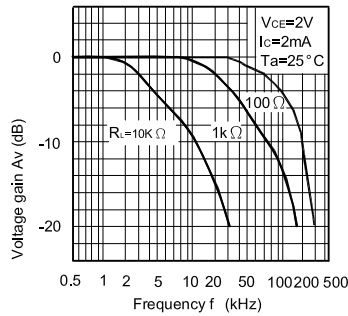
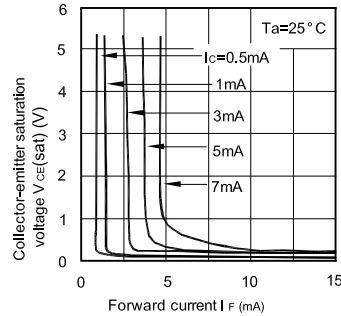
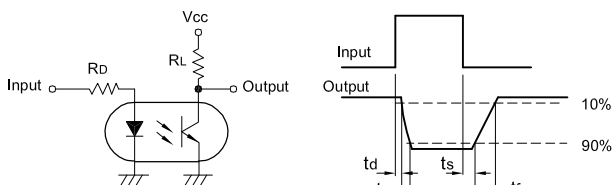


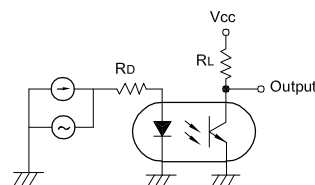
Fig.11 Collector-Emitter Saturation Voltage vs. Forward Current



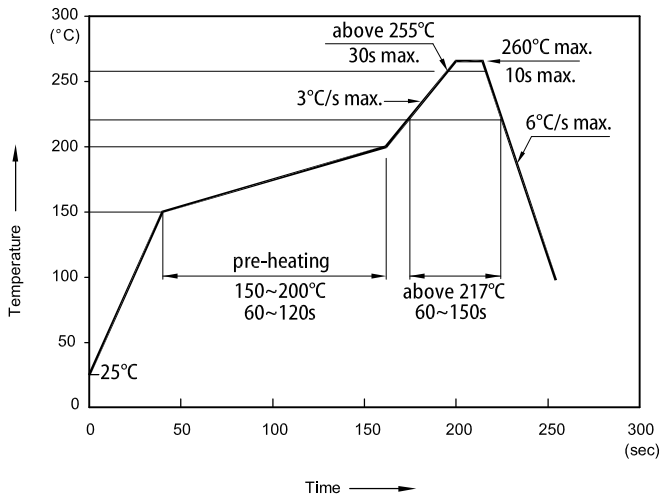
Test Circuit for Response Time



Test Circuit for Frequency Response

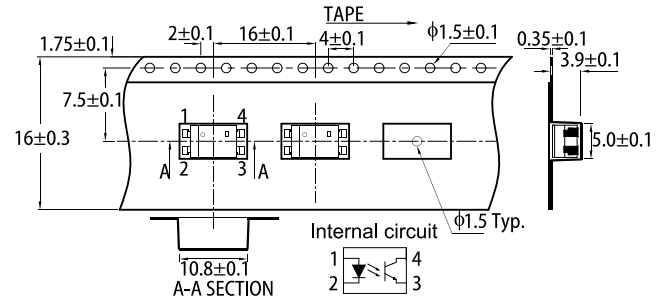


REFLOW SOLDERING PROFILE for LEAD-FREE SMD PROCESS

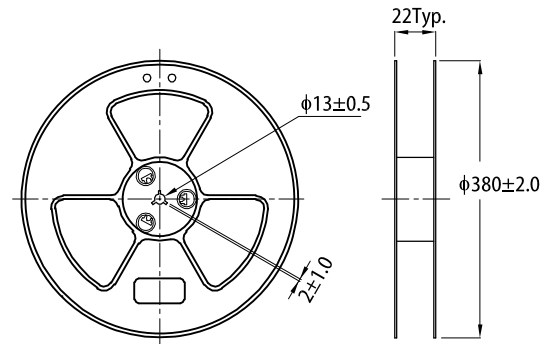


- Notes:
1. Don't cause stress to the LEDs while it is exposed to high temperature.
 2. The maximum number of reflow soldering passes is 2 times.
 3. Reflow soldering is recommended. Other soldering methods are not recommended as they might cause damage to the product.

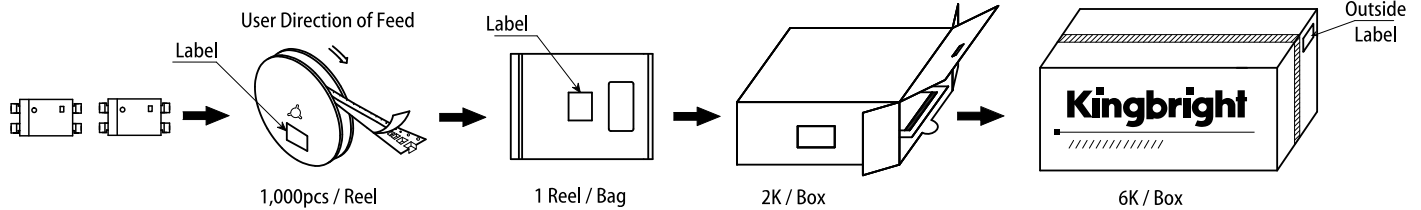
TAPE SPECIFICATIONS (units : mm)



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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