

Part Number: KB354NT

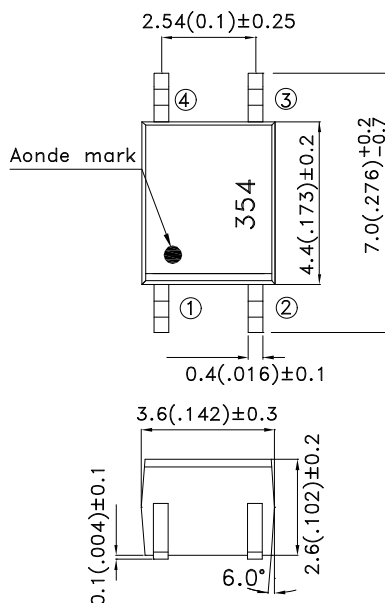
### Features

- 1.AC inputs.
- 2.High current transfer ratio.
- 3.Opaque type, mini-flat package.
- 3.Subminiature type (The volume is smaller than that of our conventional DIP type by as far as 30%).
- 4.Isolation voltage between input and output Viso:3750Vrms.
- 5.Employs double transfer mold technology.
- 6.Recognized by UL and CUL, file NO.E225308.
- 7.Approved by VDE 0884 Teil2(NO:40017614).
- 8.Package : 1000Pcs / Reel.
- 9.RoHS Compliant.

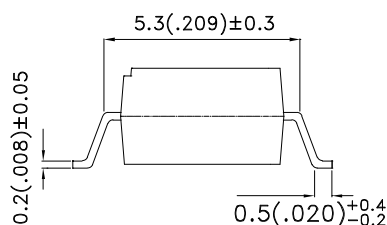
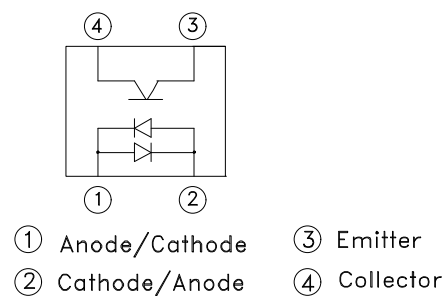
### Applications

- 1.Hybrid substrates that require high density mounting.
- 2.Programmable controllers.

### \*PACKAGE DIMENSIONS (UNIT:mm)



### Internal connection diagram



UNIT : MM[INCH]  
TOLERANCE :  $\pm 0.5[\pm 0.02]$  UNLESS OTHERWISE NOTED.



### \*Absolute Maximum Ratings (Ta=25°C)

| Parameter                |                             | Symbol           | Rating      | Unit             |
|--------------------------|-----------------------------|------------------|-------------|------------------|
| Input                    | Forward current             | I <sub>F</sub>   | ±50         | mA               |
|                          | Power dissipation           | P                | 70          | mW               |
| Output                   | Collector-emitter voltage   | V <sub>CEO</sub> | 35          | V                |
|                          | Emitter-collector voltage   | V <sub>ECO</sub> | 6           | V                |
|                          | Collector current           | I <sub>C</sub>   | 50          | mA               |
|                          | Collector power dissipation | P <sub>C</sub>   | 150         | mW               |
| Total power dissipation  |                             | P <sub>tot</sub> | 170         | mW               |
| *1 Isolation voltage     |                             | V <sub>iso</sub> | 3750        | V <sub>rms</sub> |
| Operating temperature    |                             | T <sub>opr</sub> | -30 to +100 | °C               |
| Storage temperature      |                             | T <sub>stg</sub> | -40 to +125 | °C               |
| *2 Soldering temperature |                             | T <sub>sol</sub> | 260         | °C               |

\*1 40 to 60%RH, AC for 1 minute.

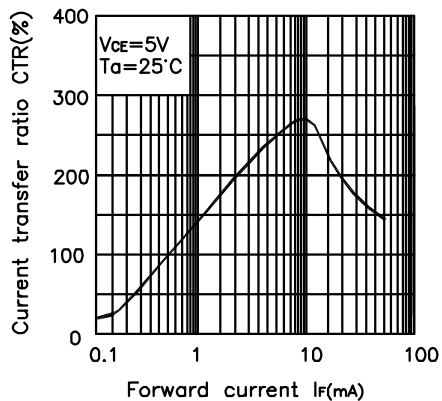
\*2 For 10 seconds.

### \*Electro-optical Characteristics

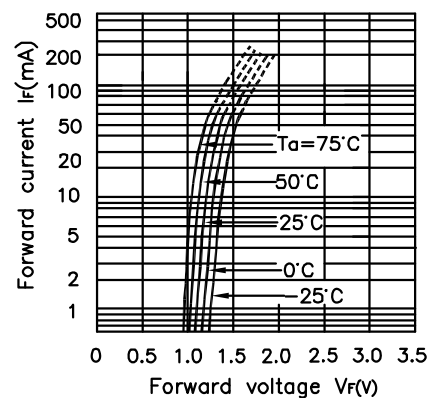
| Parameter                |                                      |           | Symbol                | Conditions                                                      | Min. | Typ. | Max.             | Unit |
|--------------------------|--------------------------------------|-----------|-----------------------|-----------------------------------------------------------------|------|------|------------------|------|
| Input                    | Forward voltage                      |           | V <sub>F</sub>        | I <sub>F</sub> =± 20mA                                          | -    | 1.2  | 1.4              | V    |
|                          | Peak forward voltage                 |           | V <sub>FM</sub>       | I <sub>FM</sub> =0.5A                                           | -    | -    | 3.0              | V    |
| Output                   | Collector dark current               |           | I <sub>CEO</sub>      | V <sub>ce</sub> =20V I <sub>F</sub> =0                          | -    | -    | 10 <sup>-7</sup> | A    |
|                          | Collector-emitter breakdown voltage  |           | BV <sub>CEO</sub>     | I <sub>C</sub> =0.1mA I <sub>F</sub> =0                         | 35   | -    | -                | V    |
|                          | Emitter-collector breakdown voltage  |           | BV <sub>ECO</sub>     | I <sub>E</sub> =10uA I <sub>F</sub> =0                          | 6    | -    | -                | V    |
| Transfer characteristics | Current transfer ration              |           | CTR                   | I <sub>F</sub> =± 1mA V <sub>ce</sub> =5V                       | 20   | -    | 400              | %    |
|                          | Collector-emitter saturation voltage |           | V <sub>CE (sat)</sub> | I <sub>F</sub> =± 20mA I <sub>C</sub> =1mA                      | -    | 0.1  | 0.2              | V    |
|                          | Response time                        | Rise time | t <sub>r</sub>        | V <sub>ce</sub> =2V I <sub>C</sub> =2mA<br>R <sub>L</sub> =100Ω | -    | 4    | 18               | uS   |
|                          |                                      | Fall time | t <sub>f</sub>        |                                                                 | -    | 3    | 18               | uS   |

| Model No. | Rank mark    | CTR(%)    |
|-----------|--------------|-----------|
| KB354N1T  | A            | 50 to 150 |
| KB354NT   | A or No mark | 20 to 400 |

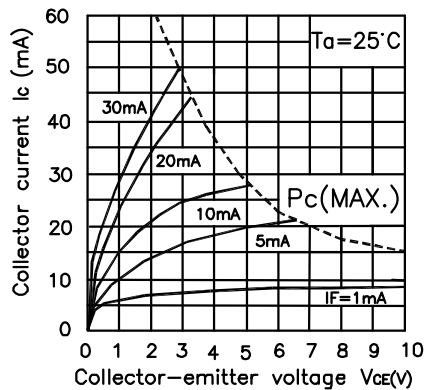
**Fig. 1 Current Transfer vs. Forward Current**



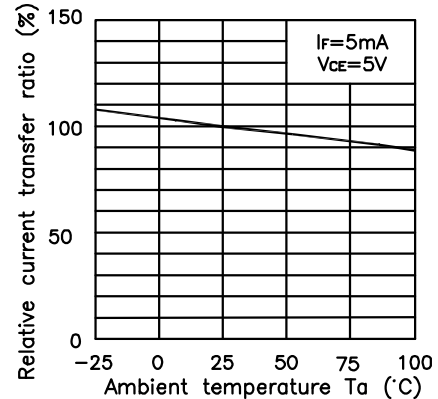
**Fig. 2 Forward Current vs. Forward voltage**



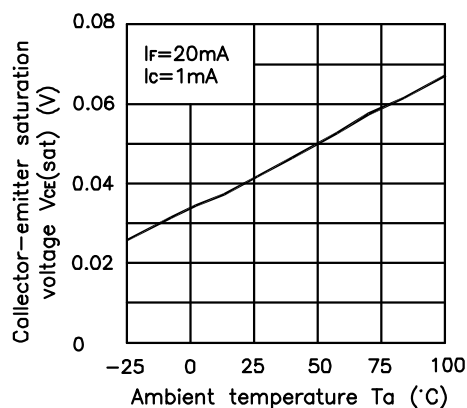
**Fig. 3 Collector Current vs. Collector-emitter Voltage**



**Fig. 4 Forward Current vs. Ambient Temperature**

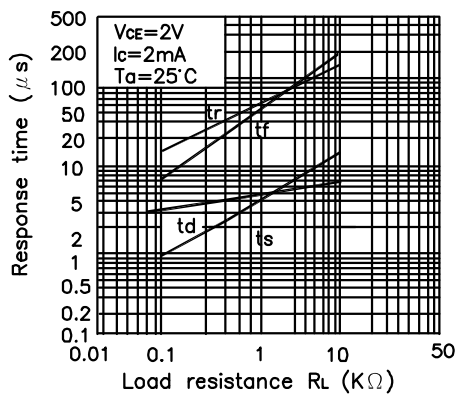


**Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature**

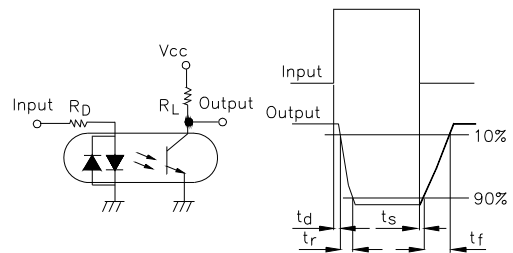


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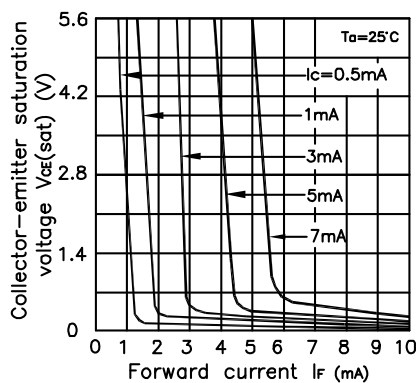
**Fig. 6 Response Time vs. Load Resistance**



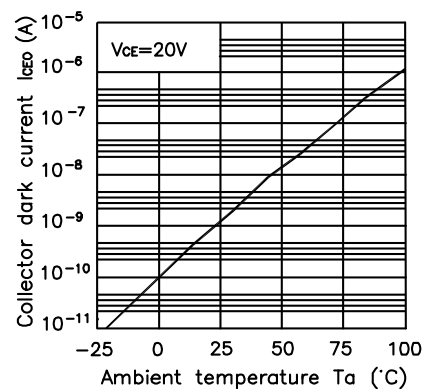
**Test Circuit for Response Time**



**Fig. 7 Collector-emitter Saturation Voltage vs. Forward Current**



**Fig. 8 Collector Dark Current vs. Ambient Temperature**



### \* 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<br>(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.

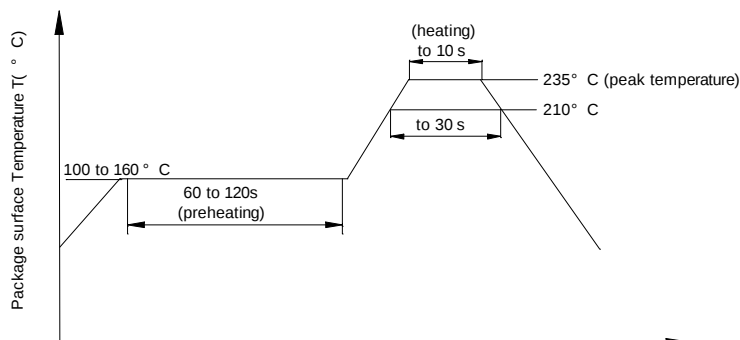
### NOTES ON HANDLING

#### 1.Recommended soldering conditions

##### (1).Infrared reflow soldering

- Peak reflow temperature                      235 ° C or below(package surface temperature)
- Time of temperature higher than 210 ° C    30 seconds or less
- Number of reflows                                Three
- Flux                                                    Rosin flux containing small amount of chlorine(The flux with a maximum chlorine content of 0.2Wt % is recommended.)

Recommended Temperature Profile of infrared Reflow



### CAUTION

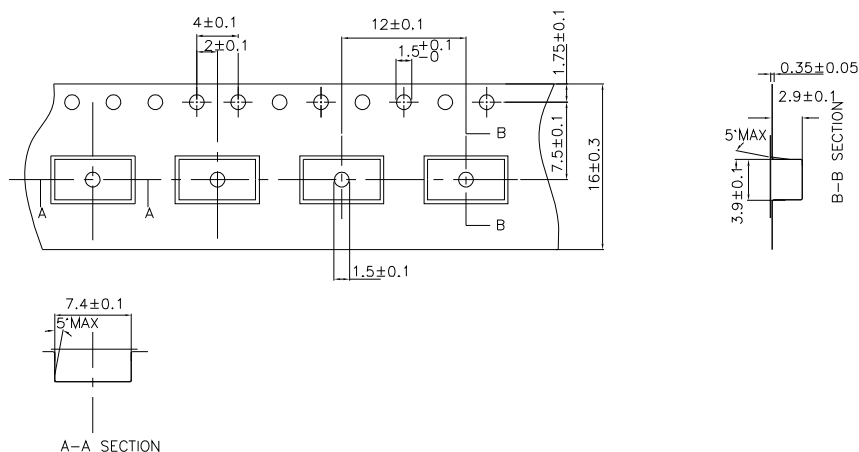
Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them.

### RESTRICTIONS ON PRODUCT USE

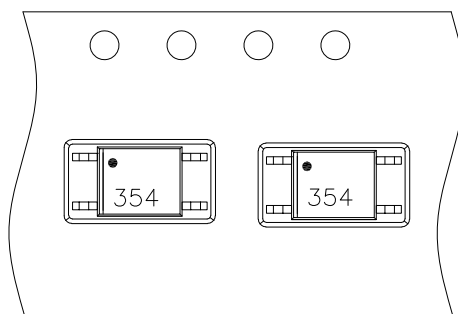
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- We mention about our product quality stability, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing KINGBRIGHT products, to observe standards of safety, and to 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.

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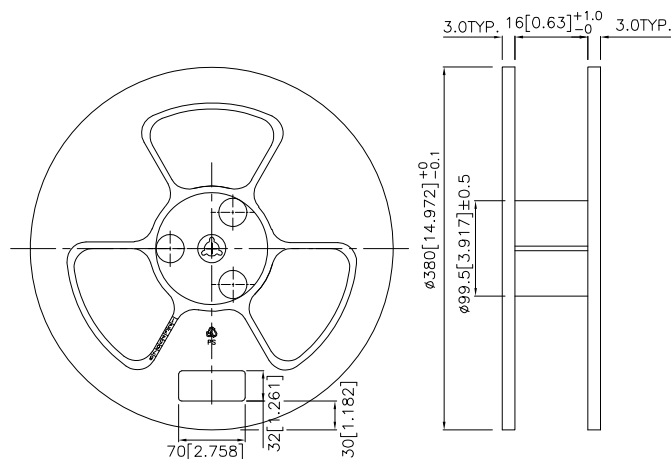
### Outline and Dimension (Tape) (Units : mm)



### Tape Direction



### Outline and Dimension (Reel)

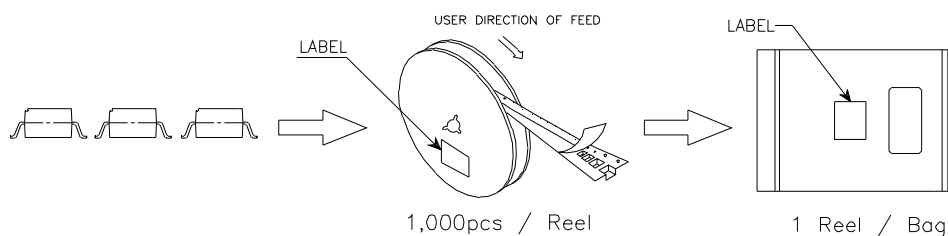


Packing: 1000pcs/reel

# Kingbright

## PHOTOCOUPLER

Part Number: KB354NT



30K / 20# BOX



15K / 55# Box

|                                                                                                                     |                                                  |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>Kingbright</b>                                                                                                   |                                                  |
| P/N : KB354NT                                                                                                       |                                                  |
| QTY: 1,000 pcs                                                                                                      | Q.C. <div>Q C<br/>xx - xx. xxxx<br/>PASSED</div> |
| S/N: XXXX                                                                                                           |                                                  |
| CODE: XXX                                                                                                           |                                                  |
| LOT NO:                                                                                                             |                                                  |
| <br>xxxxxxxxxxxxxxxxxxxxxxxxxxxx |                                                  |
| RoHS Compliant                                                                                                      |                                                  |