

## Features

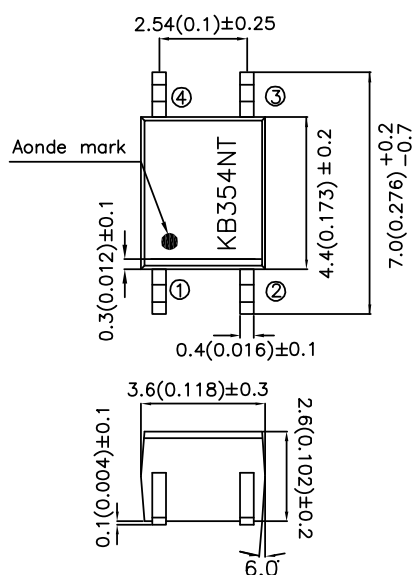
- 1.AC inputs.
- 2.High current transfer ratio.
- 2.Opaque type, mini-flat package.
- 3.Subminiature type (The volume is smaller than that of our conventional DIP type by as far as 30%).
- 4.Isolation voltage between input and output Viso:3750Vrms.
- 5.Employs double transfer mold technology.
- 6.Recognized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

## Applications

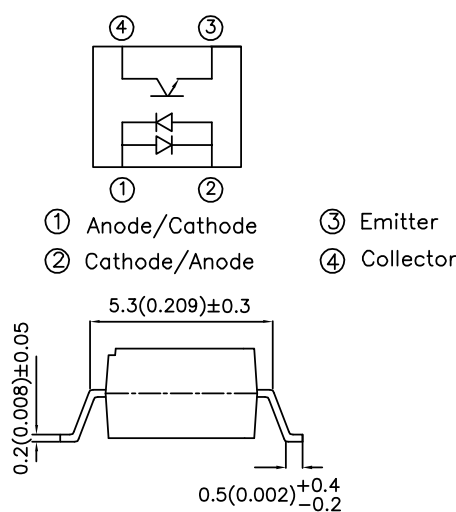
1. Hybrid substrates that require high density mounting.
2. Programmable controllers.

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

### SMD Type



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             | IF     | ±50         | mA   |
|                          | Power dissipation           | P      | 70          | mW   |
| Output                   | Collector-emitter voltage   | VCEO   | 35          | V    |
|                          | Emitter-collector voltage   | VECO   | 6           | V    |
|                          | Collector current           | IC     | 50          | mA   |
|                          | Collector power dissipation | Pc     | 150         | mW   |
| Total power dissipation  |                             | P tot  | 170         | mW   |
| *1 Isolation voltage     |                             | V iso  | 3750        | Vrms |
| Operating temperature    |                             | T opr  | -30 to +100 | °C   |
| Storage temperature      |                             | T stg  | -55 to +125 | °C   |
| *2 Soldering temperature |                             | T sol  | 260         | °C   |

\*1 40 to 60%RH, AC for1 minute.

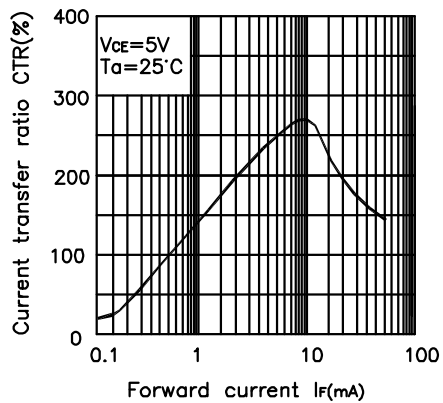
\*2 For 10 seconds.

#### \*Electro-optical Characteristics

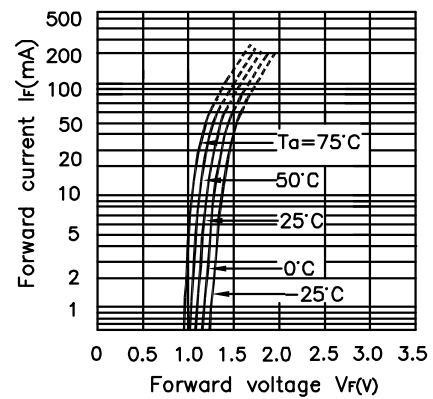
| Parameter                |                                      |           | Symbol    | Conditions               | Min. | Typ. | Max.             | Unit |
|--------------------------|--------------------------------------|-----------|-----------|--------------------------|------|------|------------------|------|
| Input                    | Forward voltage                      |           | VF        | IF=± 20mA                | -    | 1.2  | 1.4              | V    |
|                          | Peak forward voltage                 |           | VFM       | IFM=0.5A                 | -    | -    | 3.0              | V    |
| Output                   | Collector dark current               |           | ICEO      | Vce=20V IF=0             | -    | -    | 10 <sup>-7</sup> | A    |
|                          | Collector-emitter breakdown voltage  |           | BVCEO     | IC=0.1mA IF=0            | 35   | -    | -                | V    |
|                          | Emitter-collector breakdown voltage  |           | BVECO     | IE=10uA IF=0             | 6    | -    | -                | V    |
| Transfer characteristics | Current transfer ration              |           | CTR       | IF=± 1mA Vce=5V          | 20   | -    | 400              | %    |
|                          | Collector-emitter saturation voltage |           | VCE (sat) | IF=± 20mA IC=1mA         | -    | 0.1  | 0.2              | V    |
|                          | Response time                        | Rise time | tr        | Vce=2V IC=2mA<br>RL=100Ω | -    | 4    | 18               | uS   |
|                          |                                      | Fall time | tr        |                          | -    | 3    | 18               | uS   |

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

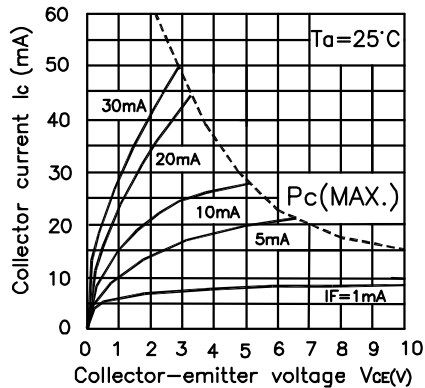
**Fig. 1 Current Transfer vs. Forward Current**



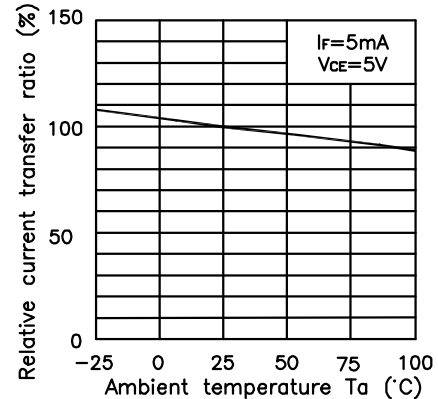
**Fig. 2 Forward Current vs. Forward voltage**



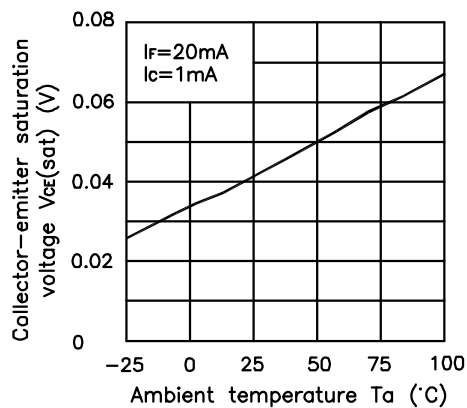
**Fig. 3 Collector Current vs. Collector-emitter Voltage**



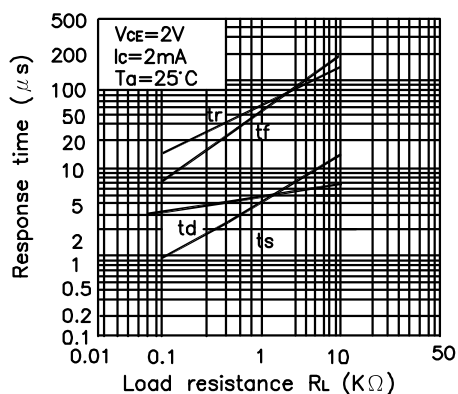
**Fig. 4 Forward Current vs. Ambient Temperature**



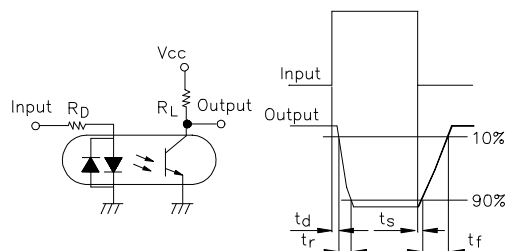
**Fig. 5 Collector-emitter Saturation Voltage vs. Ambient Temperature**



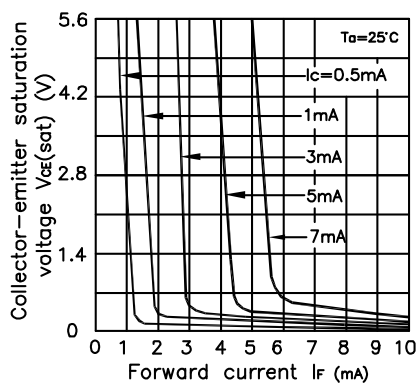
**Fig. 6 Response Time vs. Load Resistance**



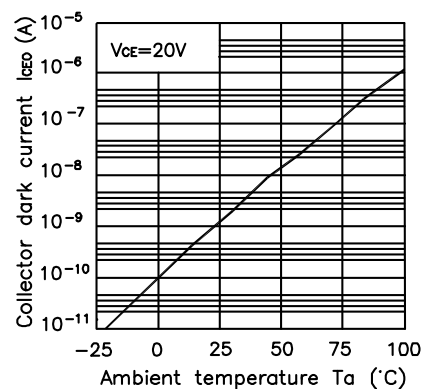
**Test Circuit for Response Time**



**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.

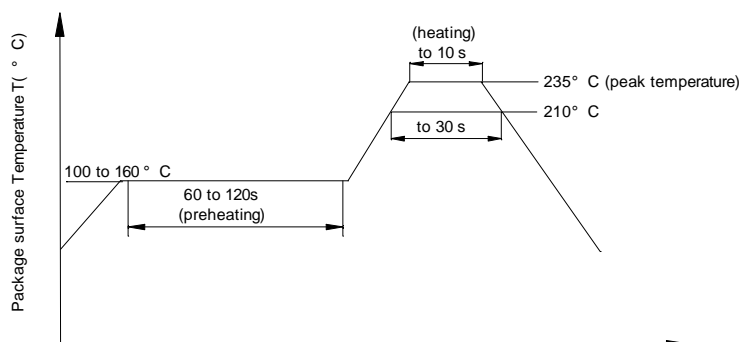
#### NOTES ON HANDLING

##### 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 or 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

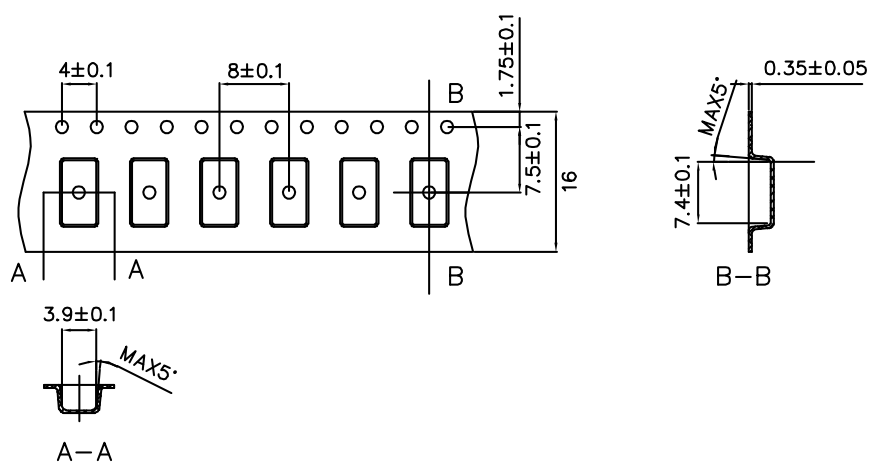
Within this device there exists GaAs (Gallium Arsenide) material which is a harmful substance if ingested. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them.

#### RESTRICTIONS ON PRODUCT USE

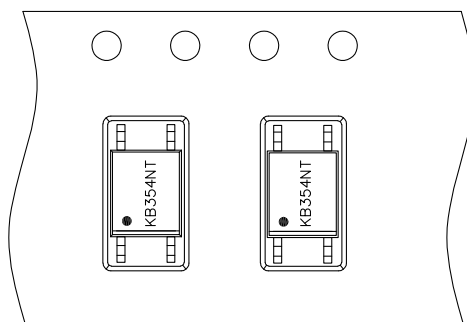
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### KB354NT

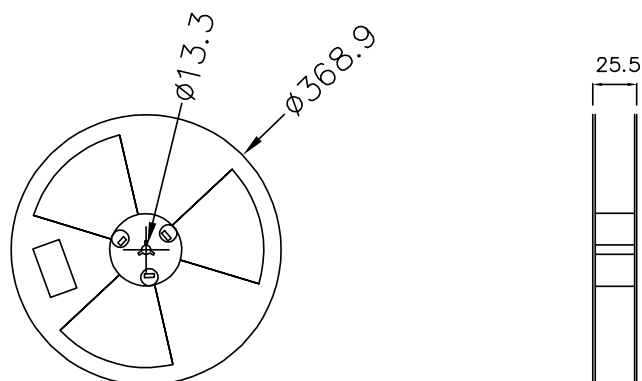
#### Outline and Dimension(Tape) (Units : mm)



#### Tape Direction



#### Outline and Dimension(Reel)



Packing: 1000pcs/reel