# ARA021

## Photointerrupter - Transmissive Type

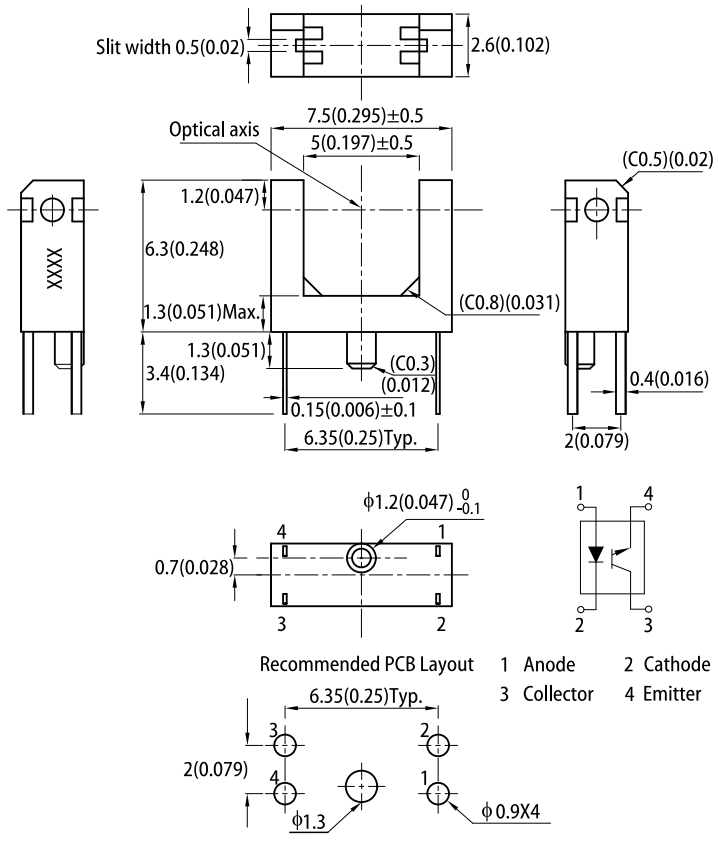
### FEATURES

- Compact package
- High sensing accuracy (Slit width: 0.5mm)
- Printed wiring board direct mounting type (with a locating pin)
- Gap between light emitter and detector: 5mm
- Housing UL rating: 94V-0
- RoHS compliant

### APPLICATIONS

- Copiers, printers and Fax Machines
- VCRs and CD players
- Various position detection sensor

### PACKAGE DIMENSIONS




*Notes:*
*1. All dimensions are in millimeters (inches).*
*2. Tolerance is ±0.15(0.006") unless otherwise noted.*
*3. The specifications, characteristics and technical data described in the datasheet are subject to change without prior notice.*

### ELECTRICAL / OPTICAL CHARACTERISTICS at $T_A$=25°C

| Parameter | | Symbol | Value | | | Unit | Conditions |
|---|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | | |
| Input | Forward voltage | $V_F$ | - | 1.15 | 1.4 | V | $I_F$=10mA |
| | Reverse current | $I_R$ | - | - | 10 | μA | $V_R$=5V |
| Output | Collector current | $I_C$ / $I_F$ | 2.5 | - | 50 | % | $I_F$=10mA,$V_{CE}$=2V |
| | Collector dark current | $I_D$ | - | - | 100 | nA | $V_{CE}$ =24V,0LX |
| | Collector-emitter saturation voltage | $V_{CE(sat)}$ | - | 0.1 | 0.4 | V | $I_C$=0.25mA $I_F$=20mA |
| Rise time | | $t_r$ | - | 15 | 50 | μs | $V_{CE}$=5V, $R_L$=1K Ω $I_C$=1mA |
| Fall time | | $t_f$ | - | 15 | 50 | | |

*Note:*
*1. 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°C

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward current [1] | $I_F$ | 30 | mA |
| | Reverse voltage | $V_R$ | 5 | V |
| | Power dissipation | $P_D$ | 35 | mW |
| | Peak Forward Current [2] | $I_{FP}$ | 100 | mA |
| Output | Collector-emitter voltage | $V_{CEO}$ | 35 | V |
| | Emitter-collector voltage | $V_{ECO}$ | 5 | V |
| | Collector current | $I_C$ | 50 | mA |
| | Collector power dissipation | $P_C$ | 75 | mW |
| Operating temperature | | $T_{opr}$ | -30~+85 | °C |
| Storage temperature | | $T_{stg}$ | -40~+100 | °C |
| Soldering temperature (5s) [3] | | $T_{sol}$ | 260 | °C |

*Notes:*
*1.Refer to the temperature rating chart if the ambient temperature exceeds 25°C.*
*2.Duty:1/100, Pulse Width: 0.1ms.*
*3.At the location of 1.5mm from the package bottom.*
*4.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 Forward Current vs. Forward Voltage**

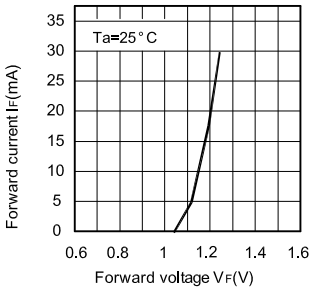



**Fig. 2 Collector Current vs. Forward Current**

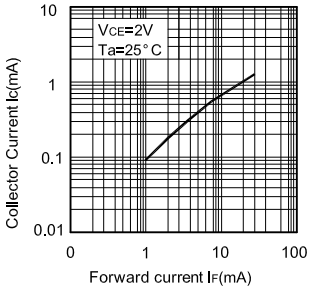



**Fig. 3 Collector Current vs. Ambient Temperature**

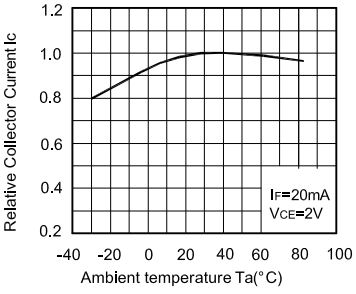



**Fig. 4 Collector-Emitter Saturation Voltage vs. Ambient Temperature**

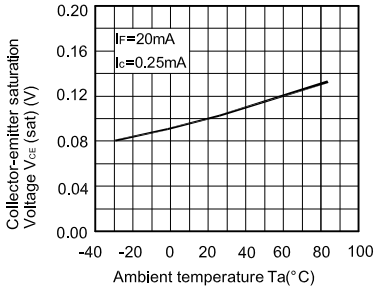



**Fig. 5 Forward Current vs. Collector Dissipation Temperature Rating**

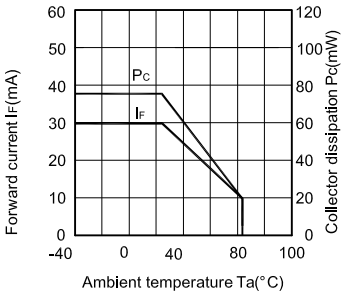



**Fig. 6 Collector Current vs. Collector-Emitter Voltage**

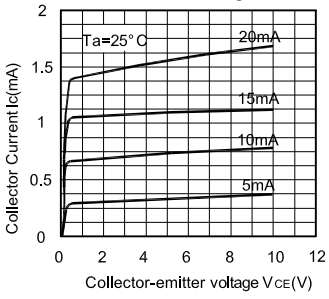



**Fig. 7 Relative Collector Current vs. Shield Distance(1)**

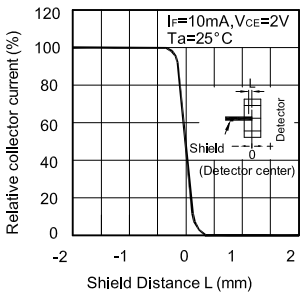



**Fig. 8 Relative Collector Current vs. Shield Distance(2)**

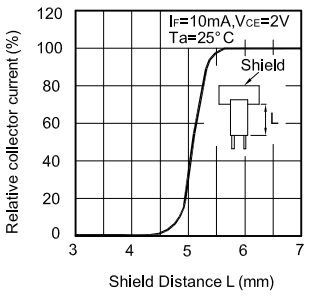
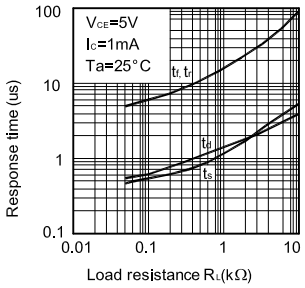
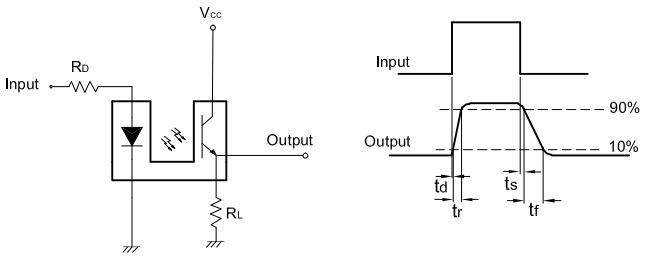


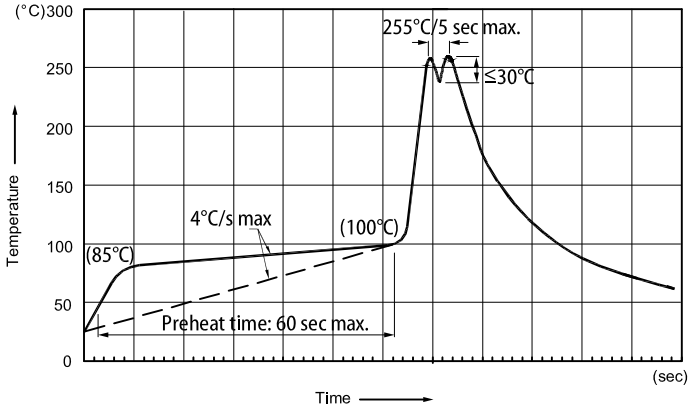
**Fig. 9 Response Time vs. Load Resistance**




**Test Circuit for Response Time**




## RECOMMENDED WAVE SOLDERING PROFILE




*Notes:*

1. *Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C*
2. *Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).*
3. *Do not apply stress to the epoxy resin while the temperature is above 85°C.*
4. *Fixtures should not incur stress on the component when mounting and during soldering process.*
5. *SAC 305 solder alloy is recommended.*
6. *No more than one wave soldering pass.*

## PACKING & LABEL SPECIFICATIONS