

## \*Application

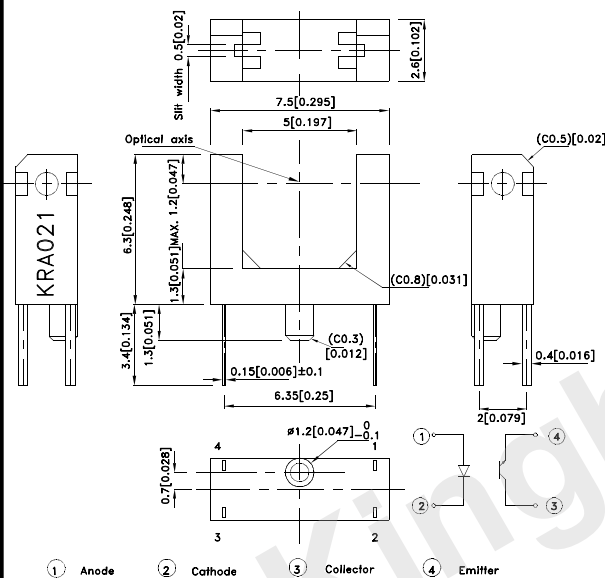
1. Copiers, printers and Fax Machines.
2. VCRs and CD players.
3. Various position detection sensor.

## \*Features

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

## \*Dimensions

Note: All units are in millimeters unless otherwise indicated.



Unless otherwise, the tolerances are  $\pm 0.15$ mm.

## \*Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )

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		$T_{opr}$	$-30 \sim +85$	$^\circ\text{C}$
Storage temperature		$T_{stg}$	$-40 \sim +100$	$^\circ\text{C}$
Soldering temperature (5s) [3]		$T_{sol}$	260	$^\circ\text{C}$

Notes:

1. Refer to the temperature rating chart if the ambient temperature exceeds  $25^\circ\text{C}$ .
2. Duty: 1/100, Pulse Width: 0.1mS.
3. At the location of 1.5mm from the package bottom.

## \*Electrical / Optical Characteristics at $T_A=25^\circ\text{C}$

Parameter		Symbol	Value			Conditions
			Min.	Typ.	Max.	
Input	Forward voltage	$V_F$	-	1.15V	1.40V	$I_F=10\text{mA}$
	Reverse current	$I_R$	-	-	$10\mu\text{A}$	$V_R=5\text{V}$
	Peak Wavelength	$\lambda_p$	-	940nm	-	-
Output	Collector current	$I_C/I_F$	2.5%	-	50%	$I_F=10\text{mA}, V_{CE}=2\text{V}$
	Collector dark current	$I_D$	-	-	$100\text{nA}$	$V_{CE}=24\text{V}, I_F=0$
	Collector-emitter saturation voltage	$V_{CE(sat)}$	-	0.1V	0.4V	$I_C=0.25\text{mA}, I_F=20\text{mA}$
	Peak spectral sensitivity wavelength	$\lambda_p$	-	920nm	-	-
Rise time		$t_r$	-	$15\mu\text{sec}$	$50\mu\text{sec}$	$V_{CC}=5\text{V}, R_L=1\text{K}\Omega, I_C=1\text{mA}$
Fall time		$t_f$	-	$15\mu\text{sec}$	$50\mu\text{sec}$	



Fig.1 Forward Current vs. Forward Voltage

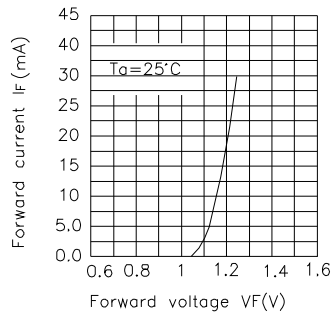


Fig.2 Collector Current vs. Forward Current

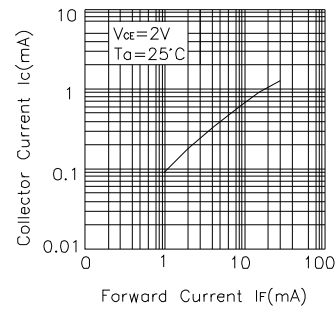


Fig.3 Collector Current vs. Ambient Temperature

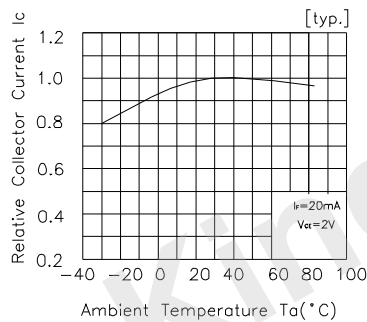


Fig.4 Collector-Emitter Saturation Voltage vs. Ambient Temperature

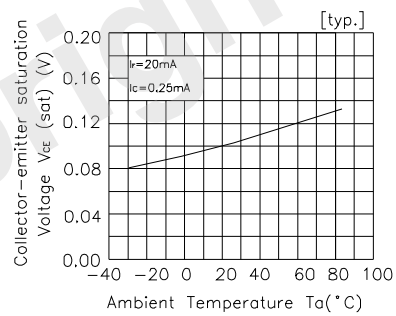


Fig.5 Forward Current vs. Collector Dissipation Temperature Rating

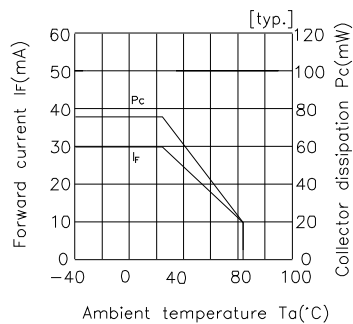


Fig.6 Forward Current vs. Collector-Emitter Voltage

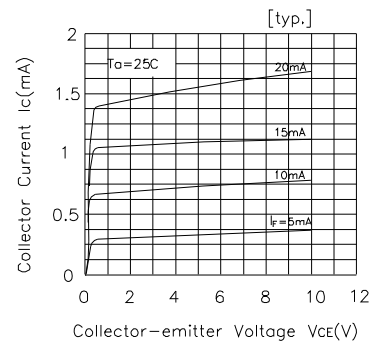


Fig.7 Relative Collector Current vs. Shield Distance(1)

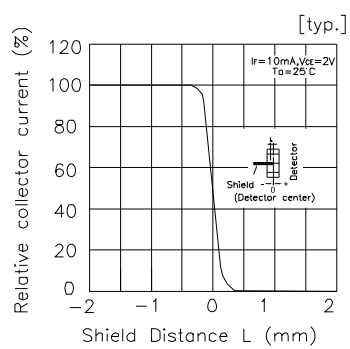


Fig.8 Relative Collector Current vs. Shield Distance(2)

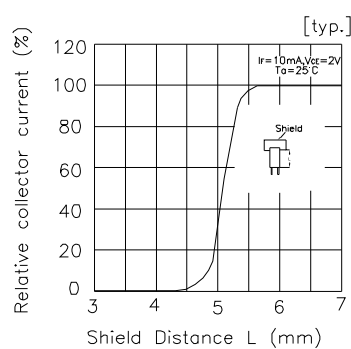
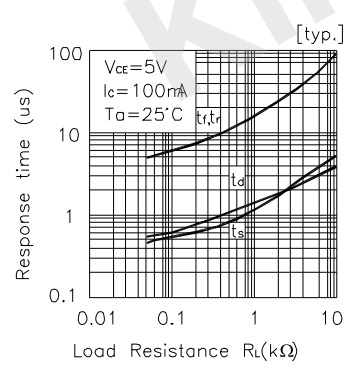
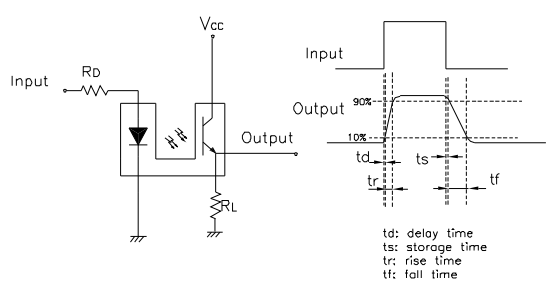


Fig.9 Response Time vs Load Resistance

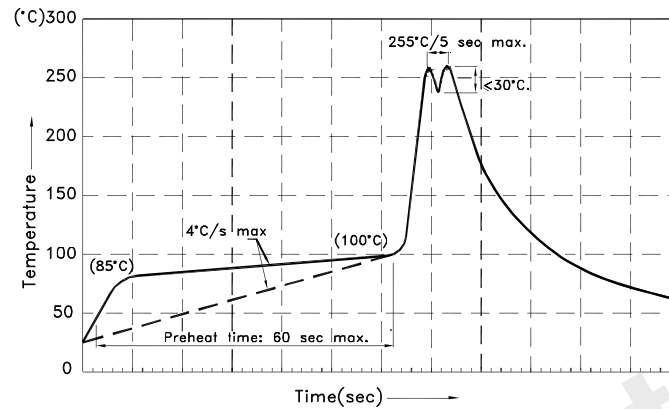


Test Circuit for Response Time



KRA021

Wave Soldering Profile For Lead-free Through-hole LED.

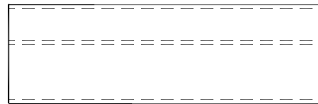
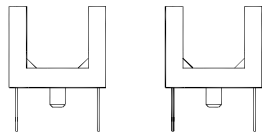


Notes:

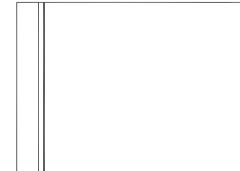
1. Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C.
2. Peak wave soldering temperature between 245°C ~ 255°C for 3 sec (5 sec max).
3. Do not apply stress to 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

KRA021



50PCS / IC TUBE

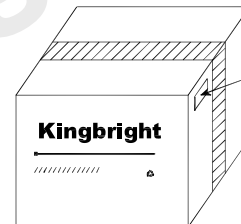


20 TUBE / BAG



16K / 56# BOX

OUTSIDE LABEL



OUTSIDE LABEL

8K / 55# BOX

# Kingbright

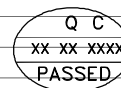
P/NO: KRAxxx

QTY: 1000 pcs

Q.C.

S/N: XXXX

CODE: XXX



LOT NO:



RoHS Compliant

Detailed application notes are listed on our website.

[http://www.kingbright.com/application\\_notes](http://www.kingbright.com/application_notes)