

### KTIR0411S

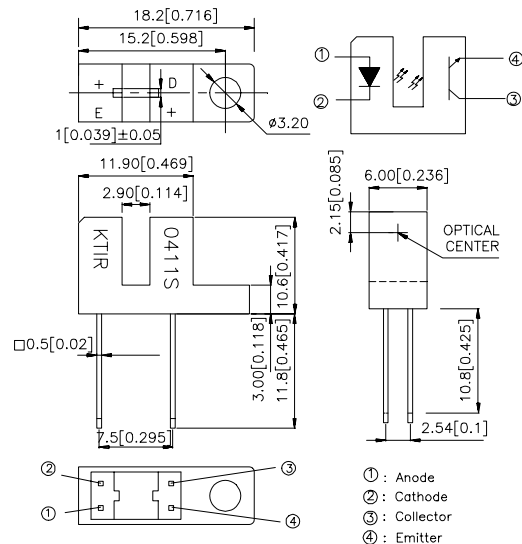
#### Features

- Ultra-small
- Minimal influence from stray light
- Low collector-emitter saturation voltage

#### Applications

- Optical control equipment.
- Cameras.
- Floppy disk drives.

#### Package Dimensions



#### Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is ±0.15(0.006") unless otherwise noted.
3. Lead spacing is measured where the lead emerge package.
4. Specifications are subject to change without notice.

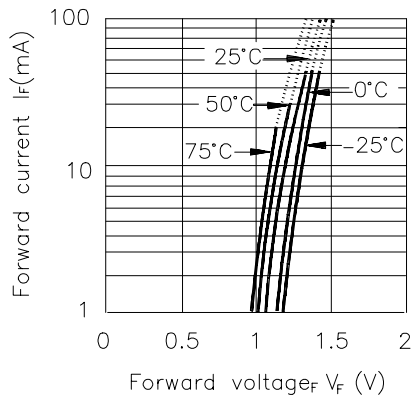
#### Absolute Maximum Ratings (T<sub>a</sub>=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I <sub>F</sub>	50	mA
	Reverse voltage	V <sub>R</sub>	5	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V <sub>CEO</sub>	30	V
	Emitter-collector voltage	V <sub>ECO</sub>	5	V
	Collector current	I <sub>C</sub>	20	mA
	Collector power dissipation	P <sub>C</sub>	75	mW
Operating temperature		T <sub>opr</sub>	-25~+85	°C
Storage temperature		T <sub>stg</sub>	-40~+100	°C
Soldering temperature (1/16 inch from body for 5 seconds)		T <sub>sol</sub>	260	°C

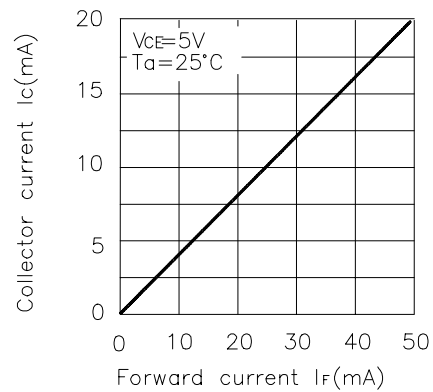
## Electro-optical Characteristics (Ta=25°C)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage	$V_F$	$I_F=20\text{mA}$	—	1.2	1.5	V
	Reverse current	$I_R$	$V_R=5\text{V}$	—	—	10	$\mu\text{A}$
Output	Collector dark current	$I_{CEO}$	$V_{CE}=20\text{V}$	—	—	100	nA
Transfer characteristics	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=1\text{mA}$ $I_F=40\text{mA}$	—	—	0.4	V
	Current transfer ratio	CTR	$V_{CE}=5\text{V}$ $I_F=20\text{mA}$	—	38	—	%
	Response time	Rise time	$t_r$	$V_{CE}=2\text{V}$ $I_C=2\text{mA}$ $R_L=100\Omega$	—	5	25
Fall time		$t_f$	—		4	20	$\mu\text{sec}$

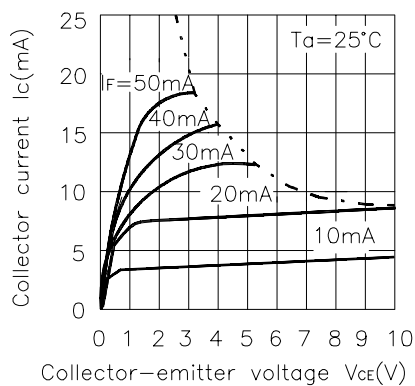
**Fig.1 Forward Current vs. Forward Voltage**



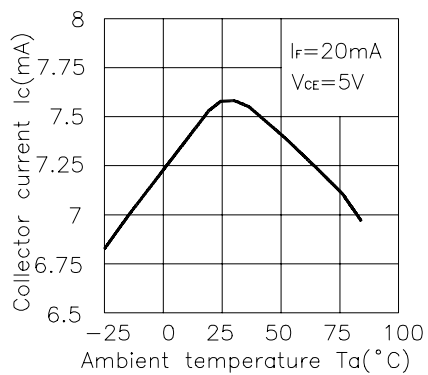
**Fig.2 Collector Current vs. Forward Current**



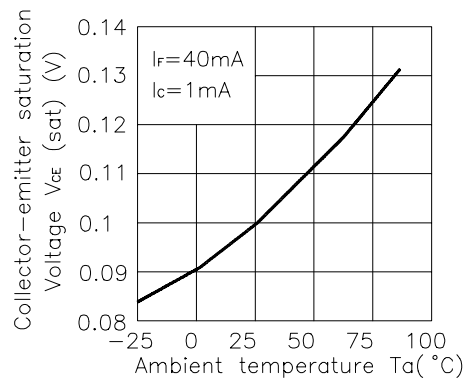
**Fig.3 Collector Current vs. Collector-emitter Voltage**



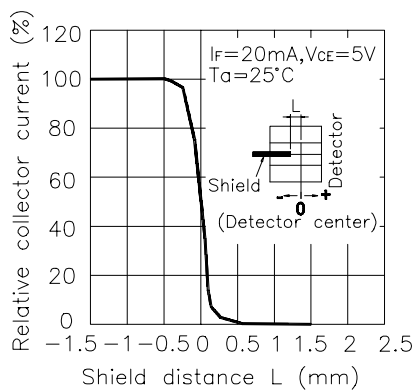
**Fig.4 Collector Current vs. Ambient Temperature**



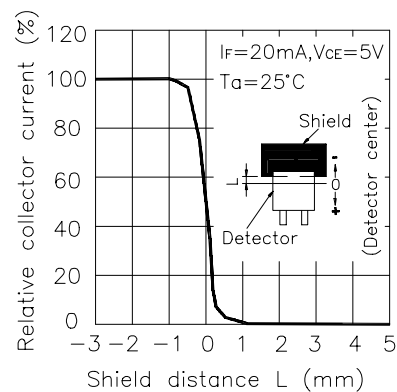
**Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature**



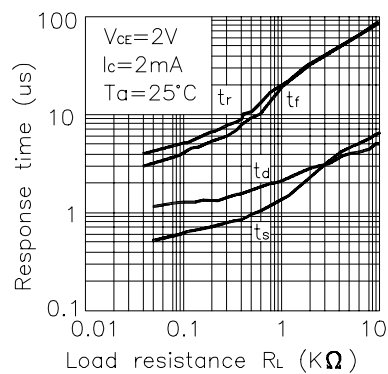
**Fig.6 Relative Collector Current vs. Shield Distance(1)**



**Fig.7 Relative Collector Current vs. Shield Distance(2)**



**Fig.8 Response Time vs. Load Resistance**



**Test Circuit for Response Time**

