KTIR0121DS

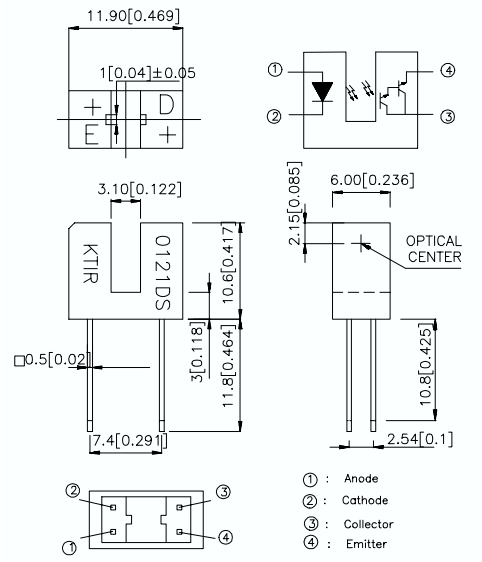
Features

- ●High sensing accuracy
- ●High current transfer ratio
- ●Both-sides mounting type

Applications

- ●OA equipment, such as floppy disk drives, printers, facsimiles, etc
- ●VCRs

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_a=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	5	V
	Collector current	I_C	40	mA
	Collector power dissipation	P_C	75	mW
Operating temperature		Topr	-25~+85	°C
Storage temperature		Tstg	-40~+100	°C
Soldering temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

Electro-optical Characteristics (T_a=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	I_F=20mA	_	1.2	1.5	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	_	2	4	V
	Reverse current		I_R	V_R=5V	_	_	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=10V,I_F=0mA	_	_	10^{-6}	A
Transfer charact-eristics	Current transfer ratio		CTR	V_{CE}=2V,I_F=1mA	_	600	_	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω	_	90	400	μsec
		Fall time	t_f		_	80	300	μsec

Fig.1 Forward Current vs. Forward Voltage

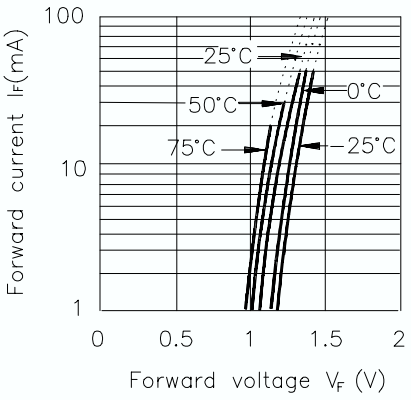


Fig.2 Collector Current vs. Forward Current

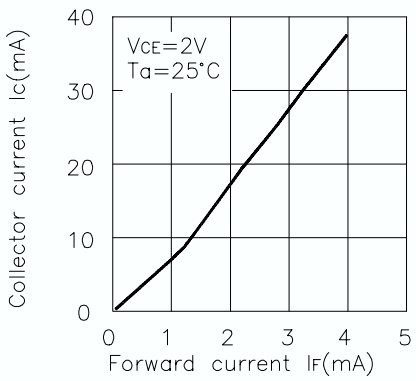


Fig.3 Collector Current vs. Collector-emitter Voltage

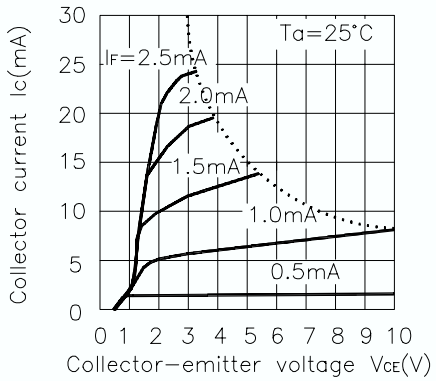


Fig.4 Collector Current vs. Ambient Temperature

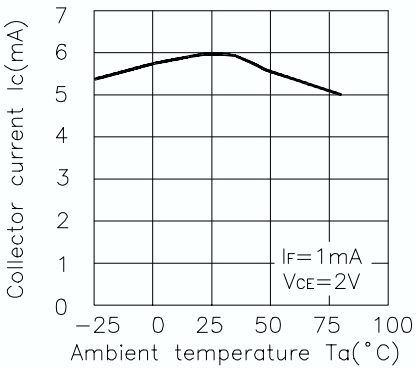


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

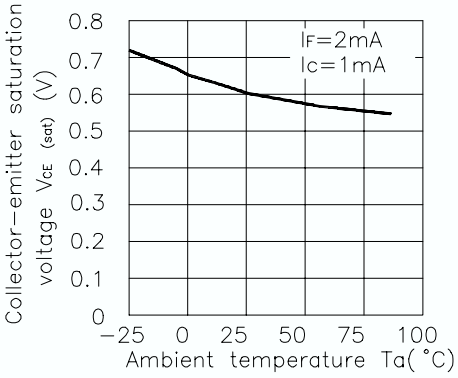


Fig.6 Relative Collector Current vs. Shield Distance(1)

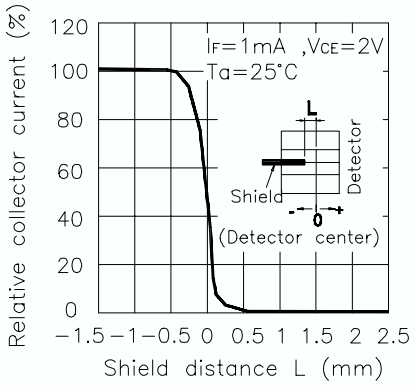


Fig.7 Relative Collector Current vs. Shield Distance(2)

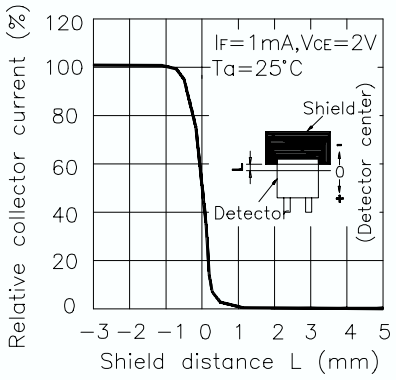
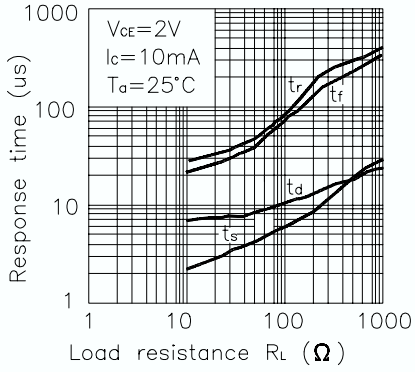
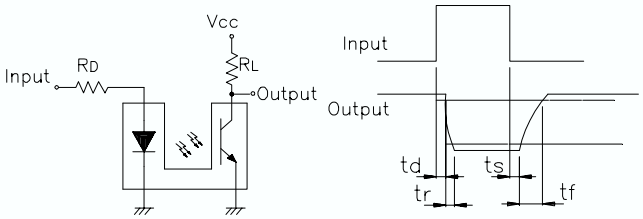


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time



KTIR0221DS

Features

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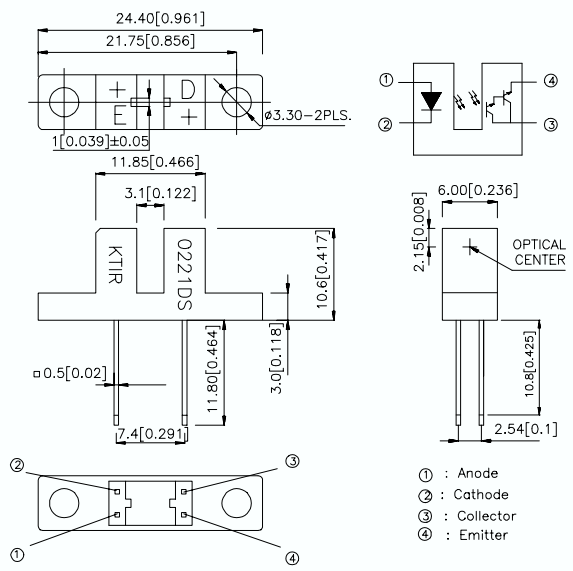
- ●High current transfer ratio
- ●Both-sides mounting type

Applications

- ●OA equipment, such as floppy disk drives, printers, facsimiles, etc
- ●VCRs

Package Dimensions



Notes:
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Absolute Maximum Ratings (T_a=25°C)

Parameter		Symbol	Rating	Unit
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	Power dissipation	P	75	mW
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Operating temperature		Topr	-25~+85	°C
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Soldering temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

Electro-optical Characteristics (T_a=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	I_F=20mA	_	1.2	1.5	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	_	2	4	V
	Reverse current		I_R	V_R=5V	_	_	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=10V,I_F=0mA	_	_	10^{-6}	A
Transfer charact-eristics	Current transfer ratio		CTR	V_{CE}=2V,I_F=1mA	_	600	_	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω	_	90	400	μsec
		Fall time	t_f		_	80	300	μsec

Fig.1 Forward Current vs. Forward Voltage

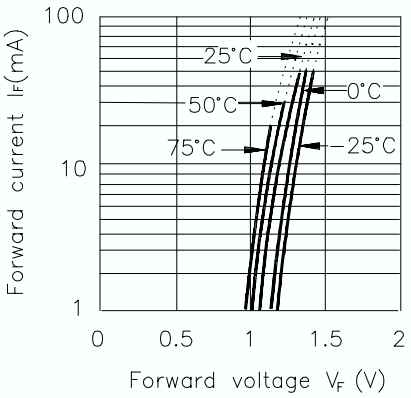


Fig.2 Collector Current vs. Forward Current

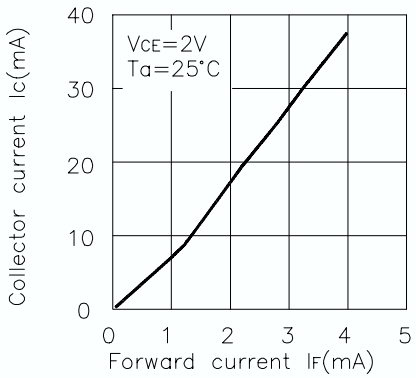


Fig.3 Collector Current vs. Collector-emitter Voltage

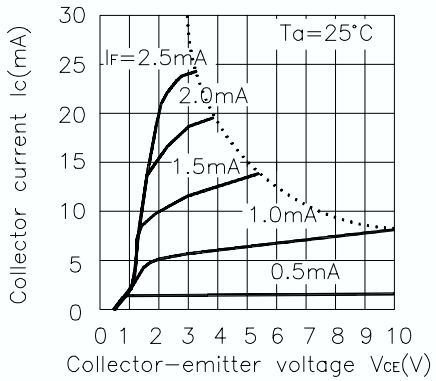


Fig.4 Collector Current vs. Ambient Temperature

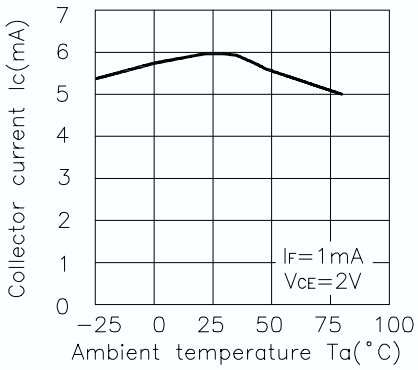


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

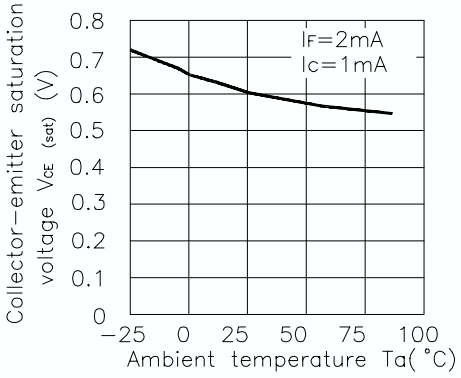


Fig.6 Relative Collector Current vs. Shield Distance(1)

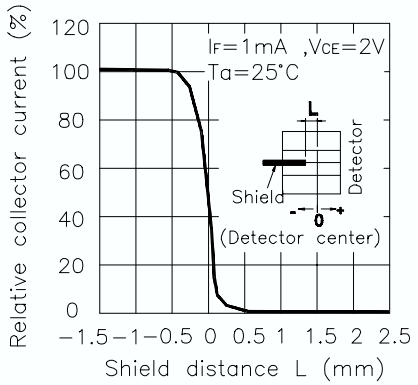


Fig.7 Relative Collector Current vs. Shield Distance(2)

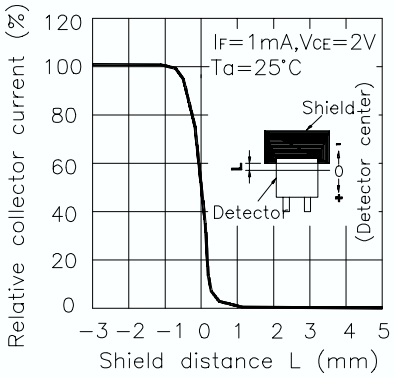
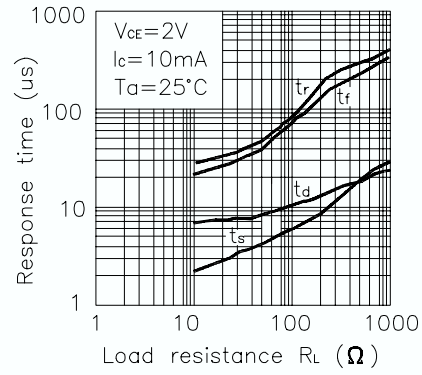
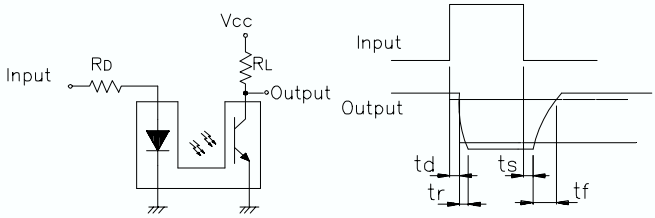


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time



KTIR0321DS

Features

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Applications

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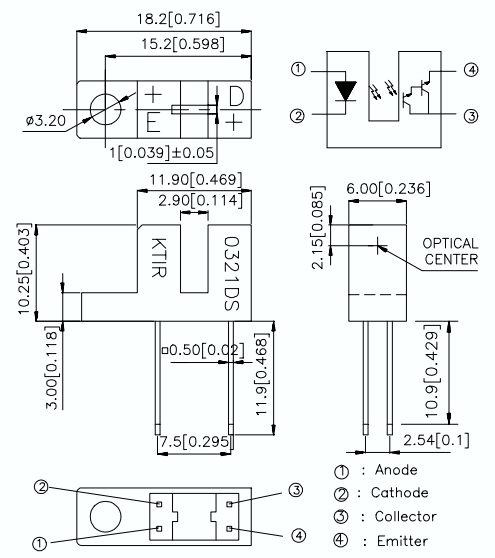
Package Dimensions



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Transfer charact-eristics	Current transfer ratio		CTR	V_{CE}=2V,I_F=1mA	_	650	_	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω	_	90	400	μsec
		Fall time	t_f		_	80	300	μsec

Fig.1 Forward Current vs. Forward Voltage

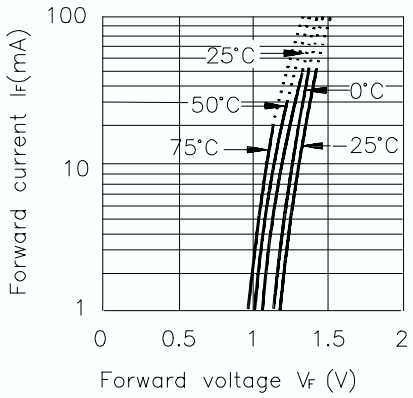


Fig.2 Collector Current vs. Forward Current

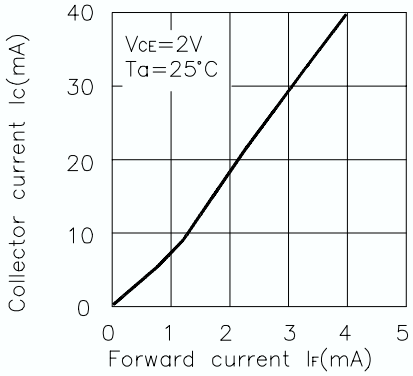


Fig.3 Collector Current vs. Collector-emitter Voltage

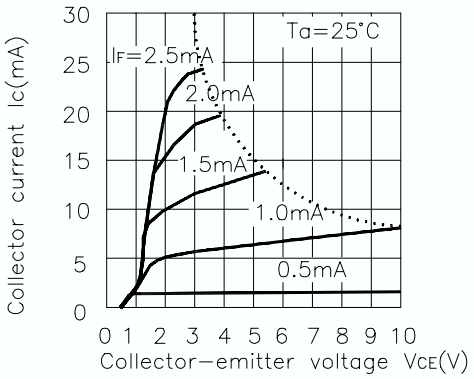


Fig.4 Collector Current vs. Ambient Temperature

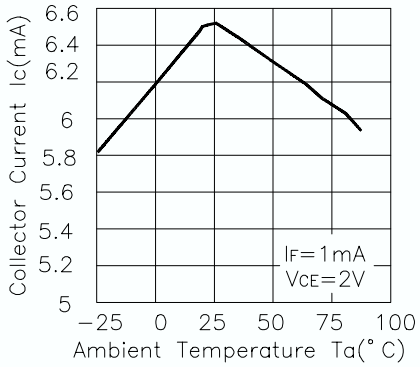


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

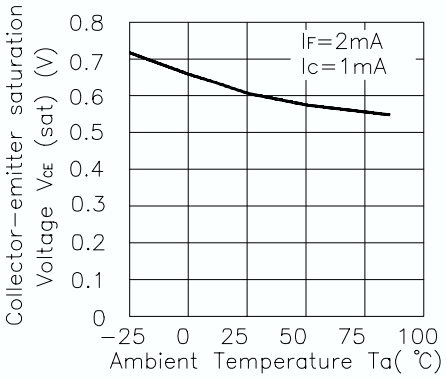


Fig.6 Relative Collector Current vs. Shield Distance(1)

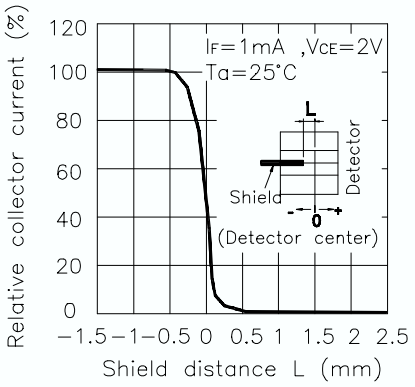


Fig.7 Relative Collector Current vs. Shield Distance(2)

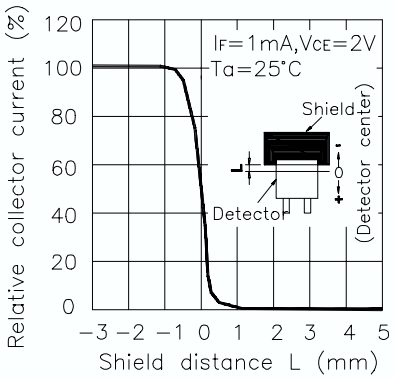
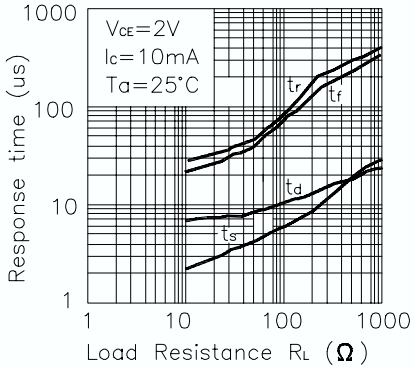
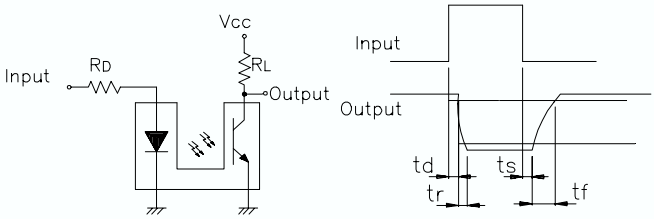


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time



KTIR0421DS

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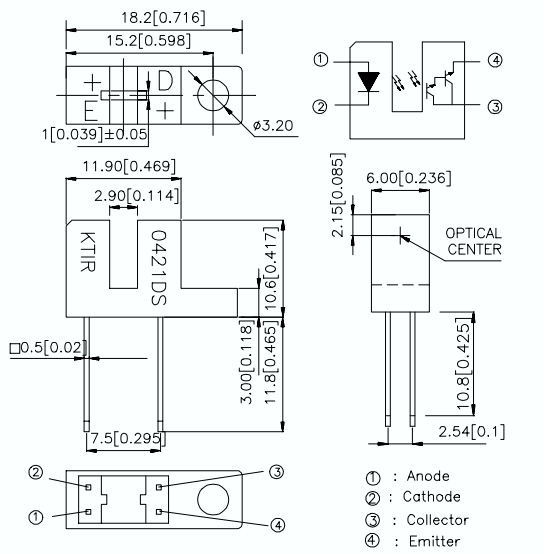

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	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
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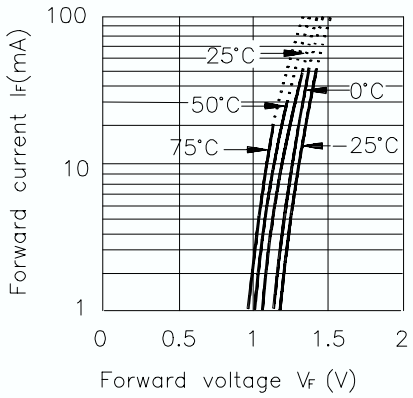


Fig.2 Collector Current vs. Forward Current

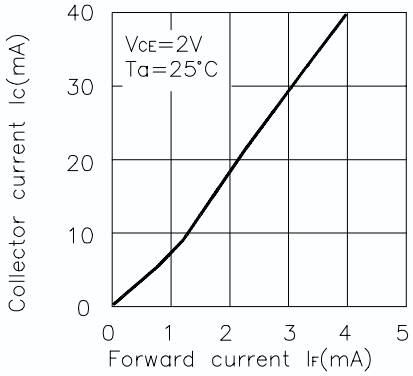


Fig.3 Collector Current vs. Collector-emitter Voltage

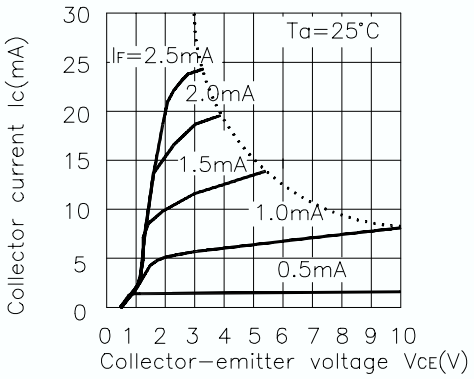


Fig.4 Collector Current vs. Ambient Temperature

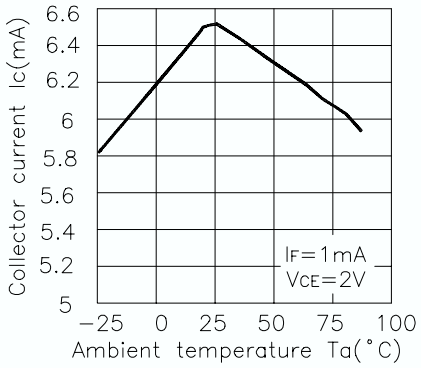


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

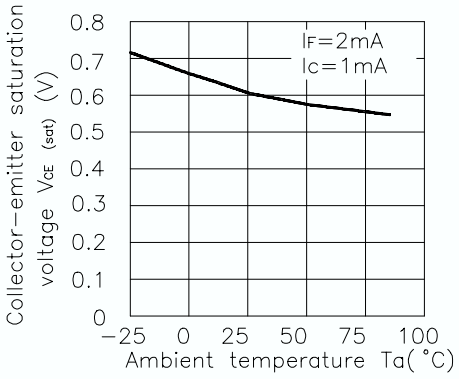


Fig.6 Relative Collector Current vs. Shield Distance(1)

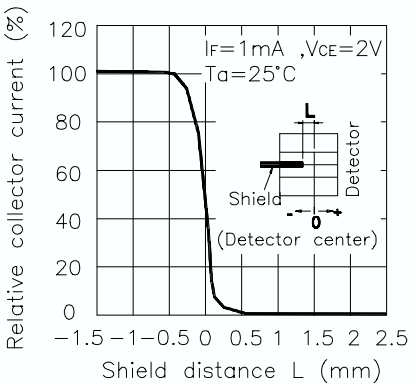


Fig.7 Relative Collector Current vs. Shield Distance(2)

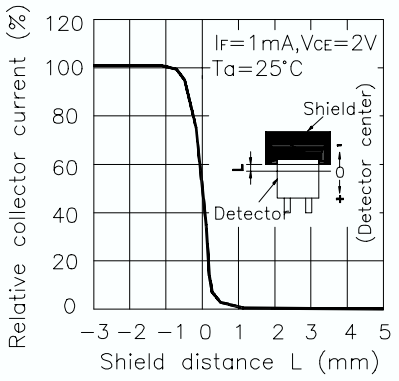
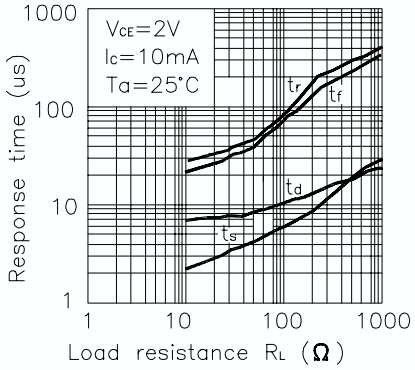
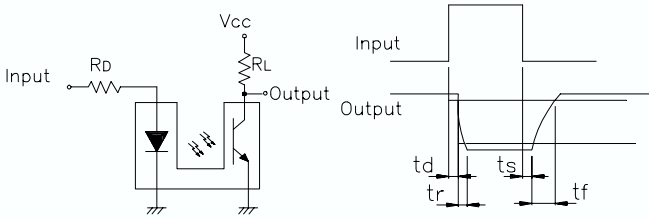


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time



KTIR0521DS

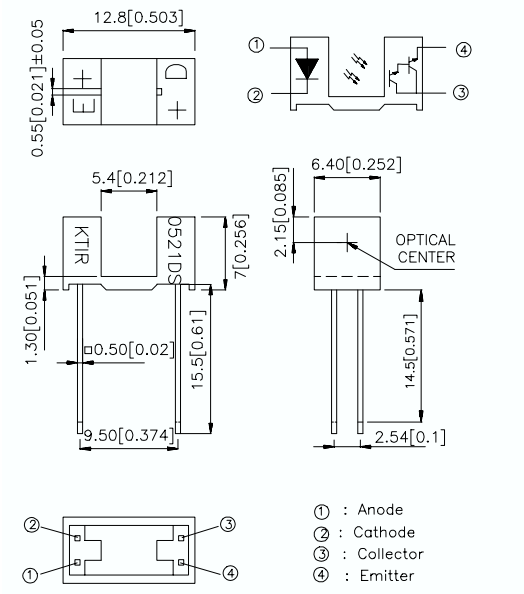
Features

- ●High sensing accuracy
- ●High current transfer ratio
- ●Both-sides mounting type

Applications

- ●OA equipment, such as floppy disk drives, printers, facsimiles, etc
- ●VCRs

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_a=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	5	V
	Collector current	I_C	40	mA
	Collector power dissipation	P_C	75	mW
Operating temperature		Topr	-25~+85	°C
Storage temperature		Tstg	-40~+100	°C
Soldering temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

Electro-optical Characteristics (T_a=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	I_F=20mA	_	1.2	1.5	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	_	2	4	V
	Reverse current		I_R	V_R=5V	_	_	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=10V,I_F=0mA	_	_	10^{-6}	A
Transfer charact-eristics	Current transfer ratio		CTR	V_{CE}=2V,I_F=1mA	_	180	_	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω	_	90	400	μsec
		Fall time	t_f		_	80	300	μsec

Fig.1 Forward Current vs. Forward Voltage

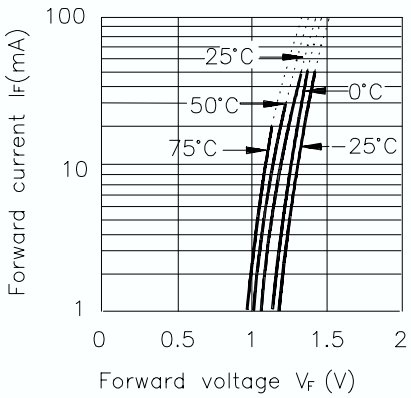


Fig.2 Collector Current vs. Forward Current

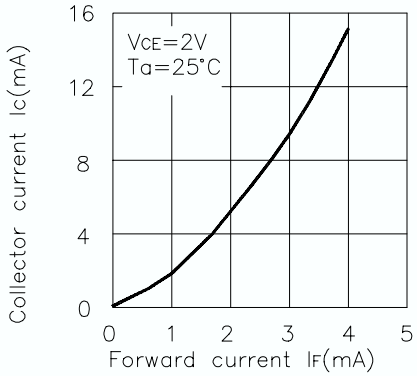


Fig.3 Collector Current vs. Collector-emitter Voltage

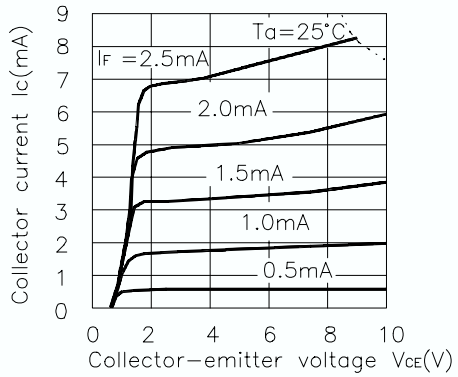


Fig.4 Collector Current vs. Ambient Temperature

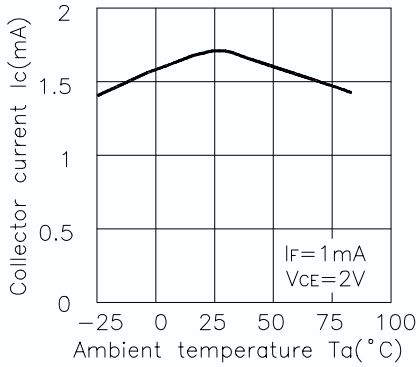


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

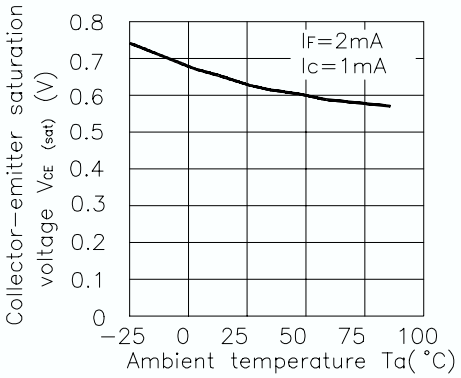


Fig.6 Relative Collector Current vs. Shield Distance(1)

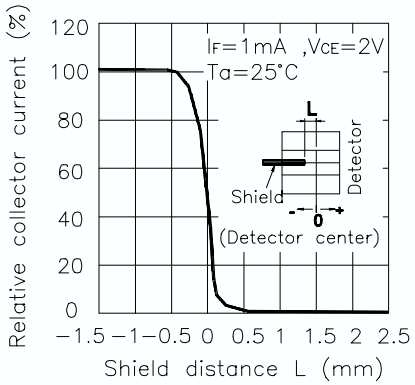


Fig.7 Relative Collector Current vs. Shield Distance(2)

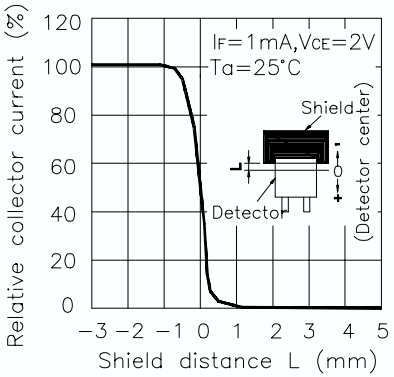
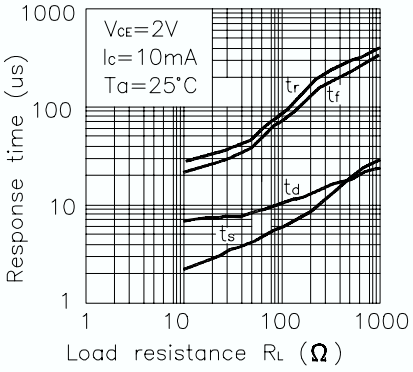
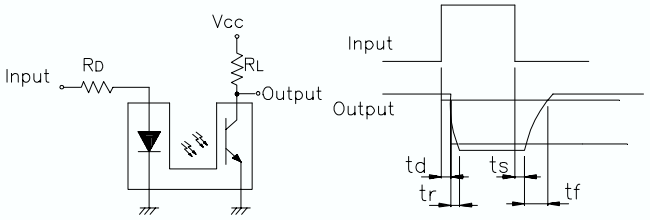


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time



KTIR0621DS

Features

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- ●Both-sides mounting type

Applications

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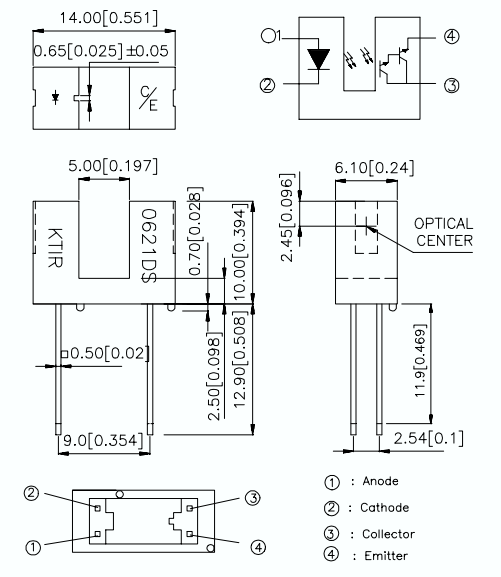
Package Dimensions



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Absolute Maximum Ratings (T_a=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	75	mW
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	Emitter-collector voltage	V_{ECO}	5	V
	Collector current	I_C	40	mA
	Collector power dissipation	P_C	75	mW
Operating temperature		Topr	-25~+85	°C
Storage temperature		Tstg	-40~+100	°C
Soldering temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

Electro-optical Characteristics (T_a=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	I_F=20mA	_	1.2	1.5	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	_	2	4	V
	Reverse current		I_R	V_R=5V	_	_	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=10V,I_F=0mA	_	_	10^{-6}	A
Transfer charact-eristics	Current transfer ratio		CTR	V_{CE}=2V,I_F=1mA	_	200	_	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω	_	90	400	μsec
		Fall time	t_f		_	80	300	μsec

Fig.1 Forward Current vs. Forward Voltage

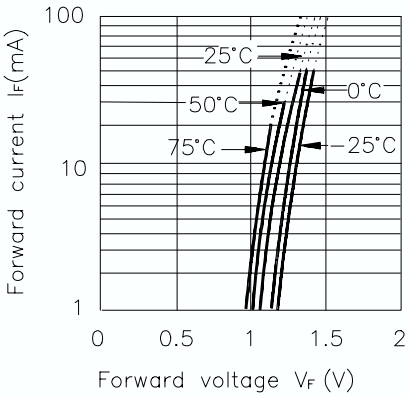


Fig.2 Collector Current vs. Forward Current

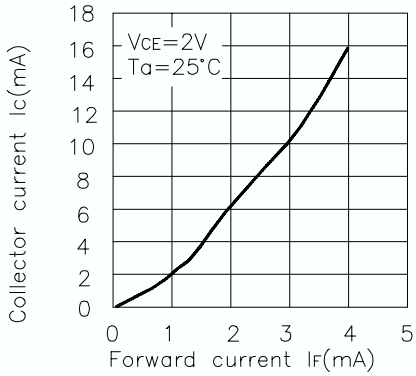


Fig.3 Collector Current vs. Collector-emitter Voltage

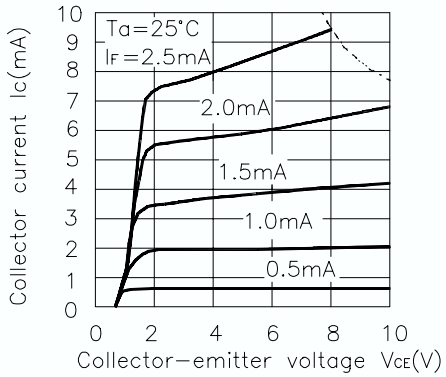


Fig.4 Collector Current vs. Ambient Temperature

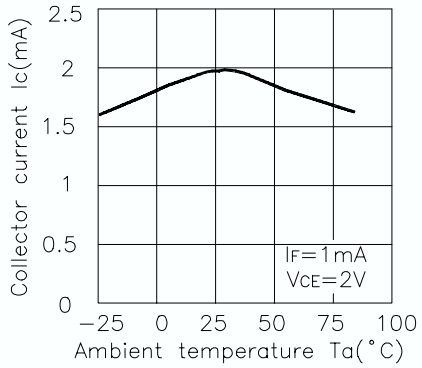


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

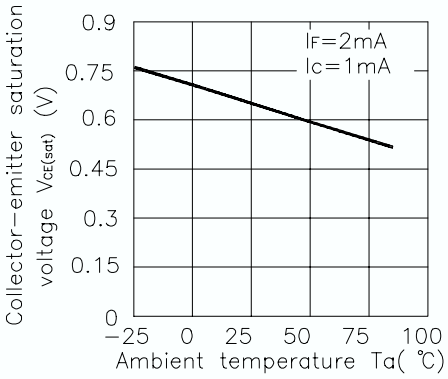


Fig.6 Relative Collector Current vs. Shield Distance(1)

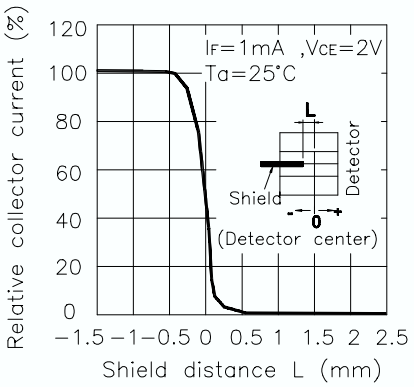


Fig.7 Relative Collector Current vs. Shield Distance(2)

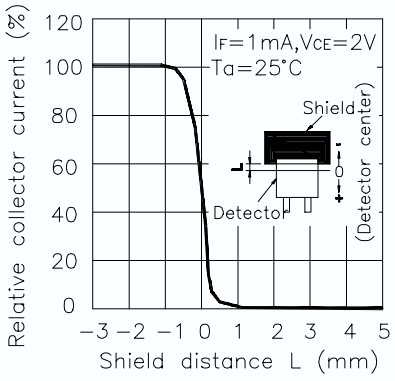
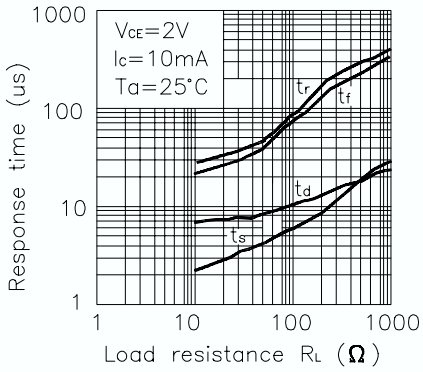


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time

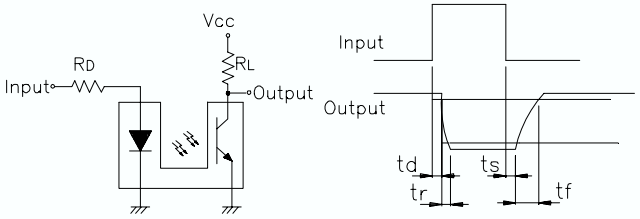


PHOTO-INTERRUPTER

KTIR0721DS

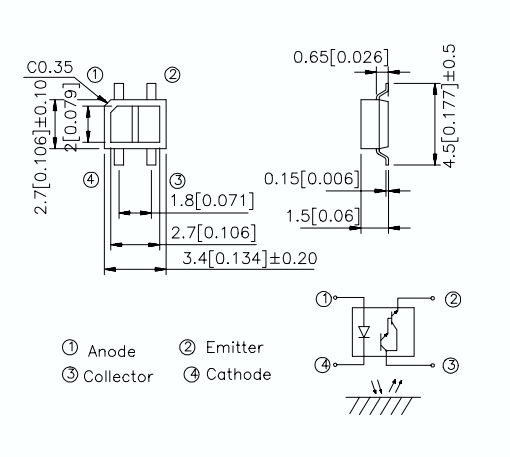
Features

- Compact and thin
- Visible light cut-off type
- High sensitivity

Applications

- Cassette tape recorders, VCRs
- Floppy disk drives
- Various microcomputerized control equipment

Package Dimensions



Notes:
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2. Tolerance is ±0.25(0.01") 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_a=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	5	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	75	mW
Operating temperature		Topr	-25~+85	°C
Storage temperature		Tstg	-40~+100	°C
Soldering temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

Electro-optical Characteristics (T_a=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	I_F=20mA	_	1.2	1.5	V
	Reverse current		I_R	V_R=5V	_	_	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=10V,I_F=0mA	_	_	10^{-6}	A
Transfer charact-eristics	*1Collector current		I_C	V_{CE}=2V,I_F=4mA	_	3	_	mA
	*2Leak current		I_{LEAK}	V_{CE}=5V,I_F=4mA	_	_	5	μA
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω,d=1mm	_	80	400	μsec
		Fall time	t_f		_	70	400	μsec

*1 The condition and arrangement of the reflective object are shown below
*2 Without reflective object

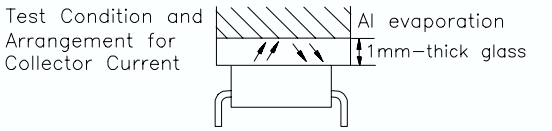


Fig.1 Forward Current vs. Forward Voltage

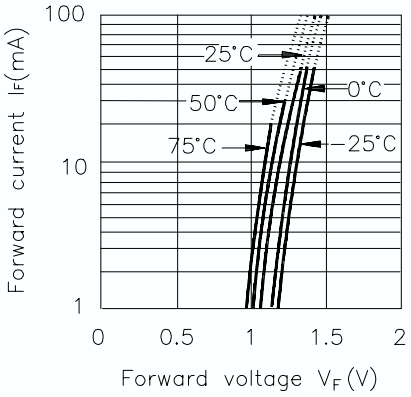


Fig.2 Collector Current vs. Forward Current

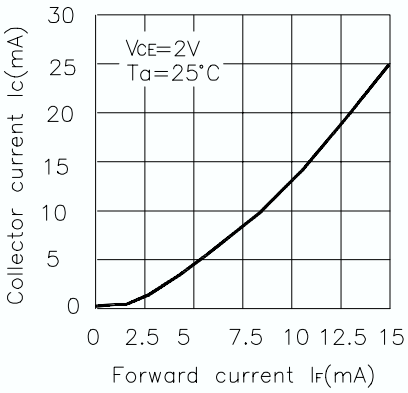


Fig.3 Collector Current vs. Collector-emitter Voltage

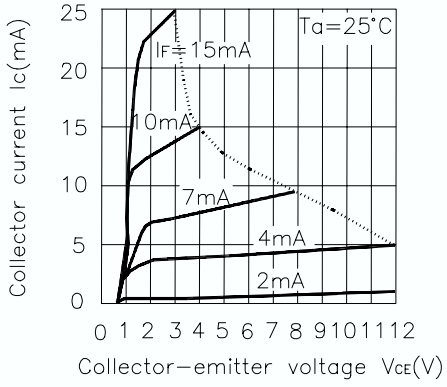


Fig.4 Relative Collector Current vs. Ambient Temperature

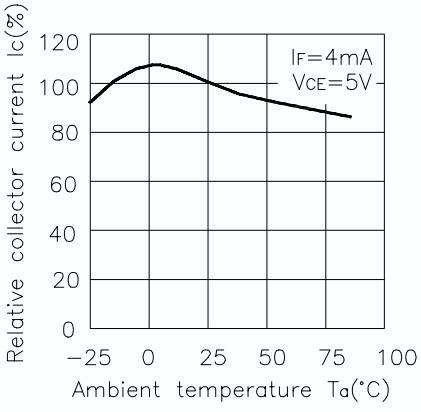
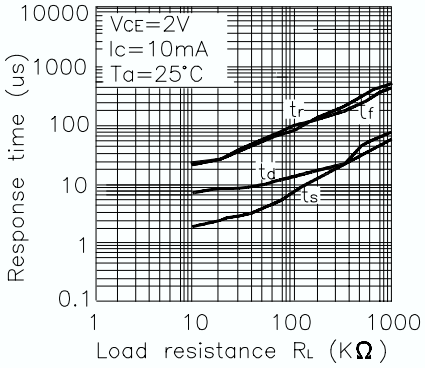


Fig.5 Response Time vs Load Resistance



Test Circuit for Response Time

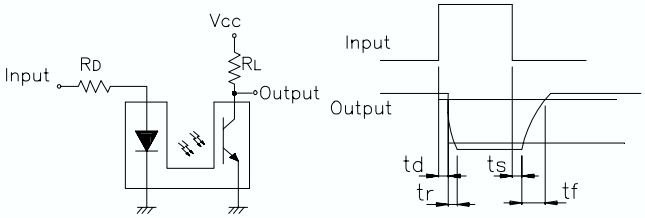


Fig.6 Collector Dark Current vs Ambient Temperature

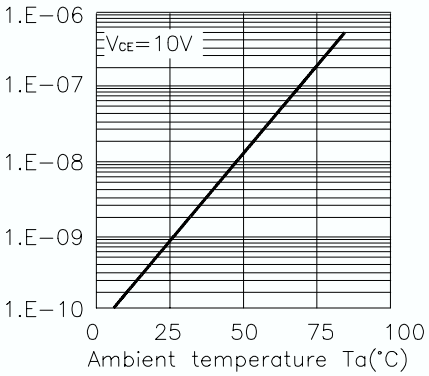


Fig.7 Relative Collector Current vs Distance between Sensor and Al Evaporation Glass

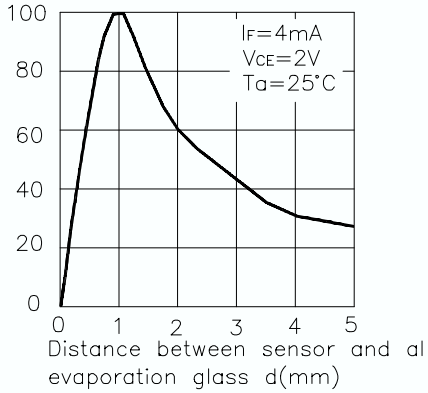


Fig.8 Relative Collector Current vs. Card Moving Distance (1)

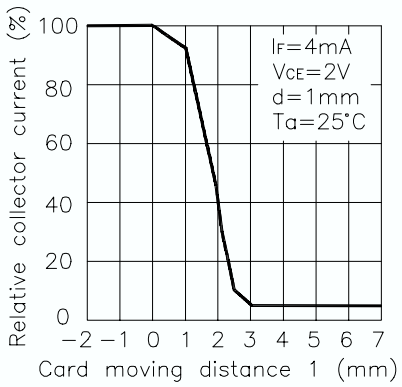
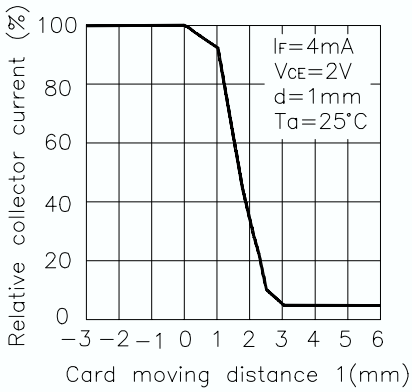
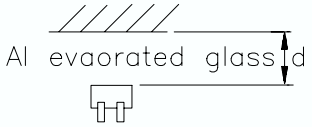


Fig.9 Relative Collector Current vs. Card Moving Distance (2)



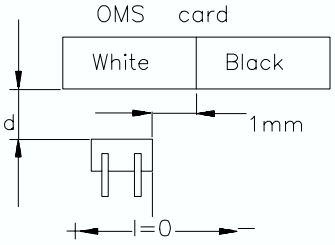
The Condition for Distance&Detecting Position Characteristics

Correpond to Fig.7



Correpond to Fig.8
Test condition

$I_F = 4mA$
$V_{CE} = 2V$
d=1mm



Correpond to Fig.9
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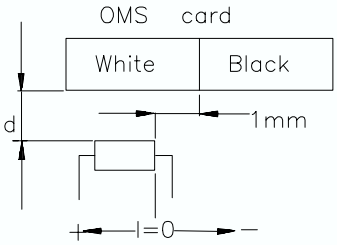

KTIR0821DS

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Applications

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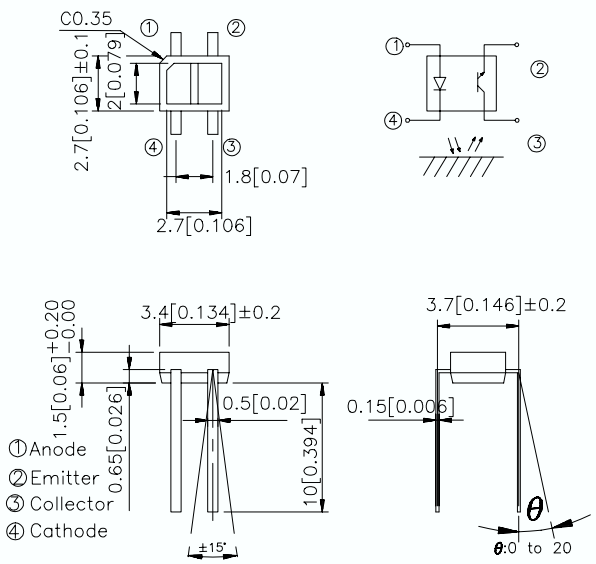
Package Dimensions



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Transfer charact-eristics	*1Collector current		I_C	V_{CE}=2V,I_F=4mA	_	3	_	mA
	*2Leak current		I_{LEAK}	V_{CE}=5V,I_F=4mA	_	_	5	μA
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω,d=1mm	_	80	400	μsec
		Fall time	t_f		_	70	400	μsec

*1 The condition and arrangement of the reflective object are shown below
*2 Without reflective object

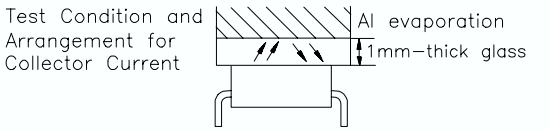


Fig.1 Forward Current vs. Forward Voltage

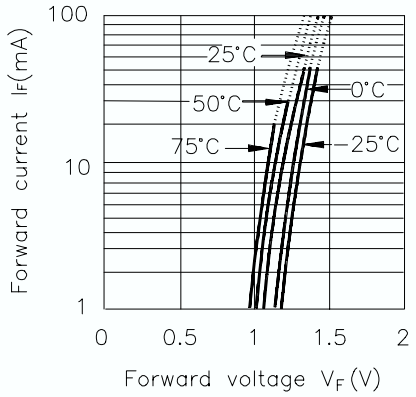


Fig.2 Collector Current vs. Forward Current

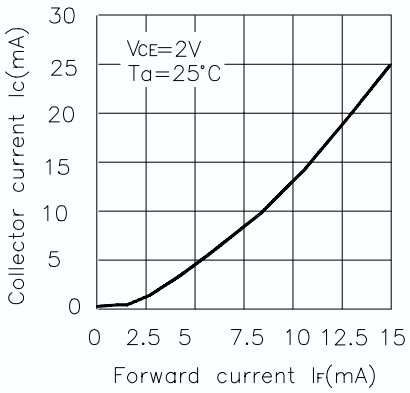


Fig.3 Collector Current vs. Collector-emitter Voltage

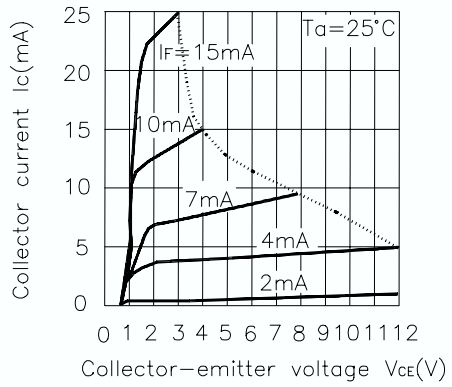


Fig.4 Relative Collector Current vs. Ambient Temperature

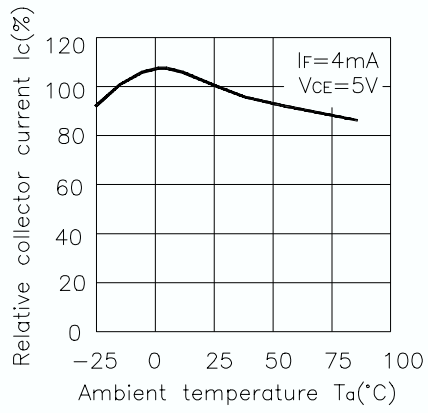
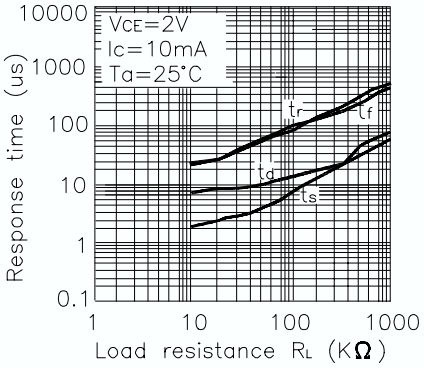


Fig.5 Response Time vs Load Resistance



Test Circuit for Response Time

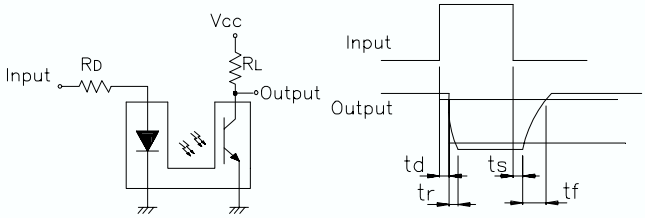


Fig.6 Collector Dark Current vs Ambient Temperature

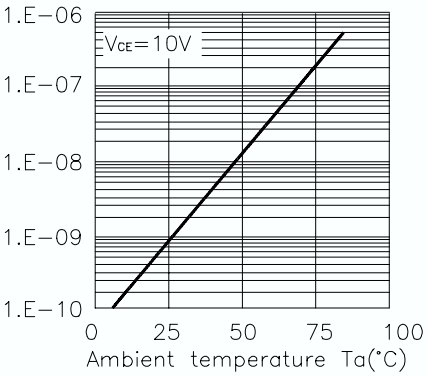


Fig.7 Relative Collector Current vs Distance between Sensor and Al Evaporation Glass

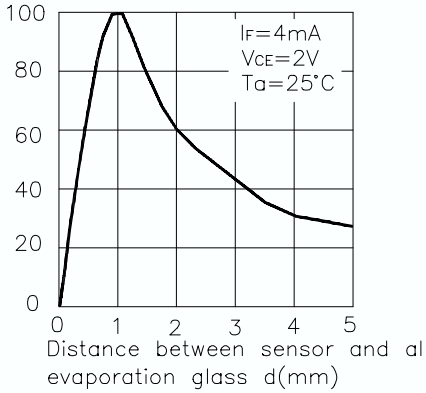


Fig.8 Relative Collector Current vs. Card Moving Distance (1)

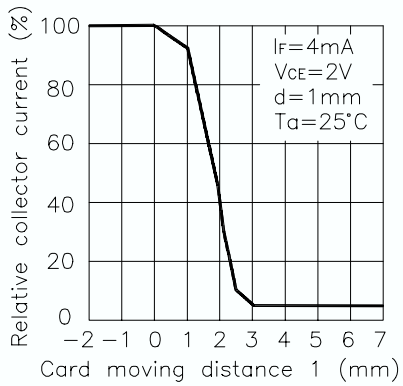
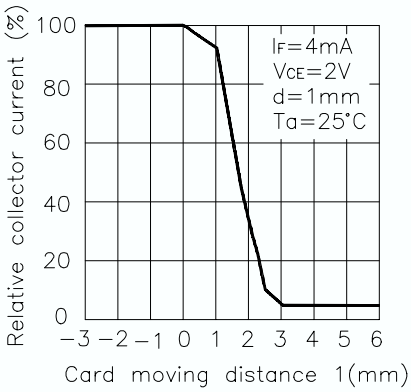
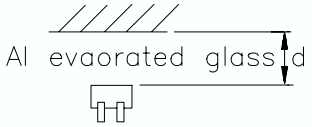


Fig.9 Relative Collector Current vs. Card Moving Distance (2)



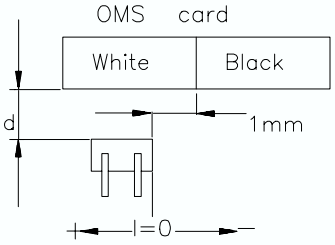
The Condition for Distance&Detecting Position Characteristics

Correpond to Fig.7



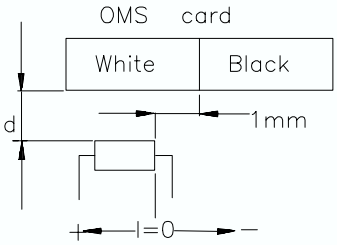
Correpond to Fig.8
Test condition

$I_F = 4mA$
$V_{CE} = 2V$
d=1mm



Correpond to Fig.9
Test condition

$I_F = 4mA$
$V_{CE} = 2V$
d=1mm



KTIR0921DS

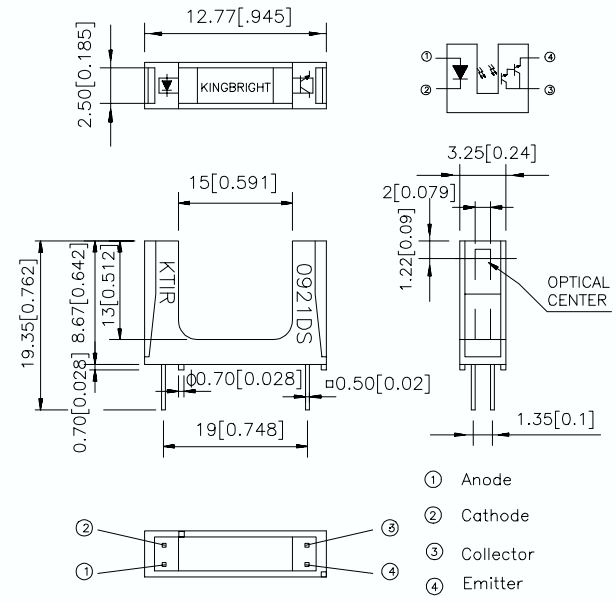
Features

- ●High sensing accuracy
- ●High current transfer ratio
- ●Both-sides mounting type

Applications

- ●OA equipment, such as floppy disk drives, printers, facsimiles, etc
- ●VCRs

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_a=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	75	mW
Output	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	5	V
	Collector current	I_C	40	mA
	Collector power dissipation	P_C	75	mW
Operating temperature		Topr	-25~+85	°C
Storage temperature		Tstg	-40~+100	°C
Soldering temperature (1/16 inch from body for 5 seconds)		Tsol	260	°C

Electro-optical Characteristics (T_a=25°C)

Parameter			Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage		V_F	I_F=20mA	_	1.2	1.5	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	_	2	4	V
	Reverse current		I_R	V_R=5V	_	_	10	μA
Output	Collector dark current		I_{CEO}	V_{CE}=10V,I_F=0mA	_	_	10^{-6}	A
Transfer charact-eristics	Current transfer ratio		CTR	V_{CE}=2V,I_F=1mA	_	120	_	%
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=2mA,I_C=1mA	_	_	1.0	V
	Response time	Rise time	t_r	V_{CE}=2V,I_C=10mA R_L=100Ω	_	90	400	μsec
		Fall time	t_f		_	80	300	μsec

Fig.1 Forward Current vs. Forward Voltage

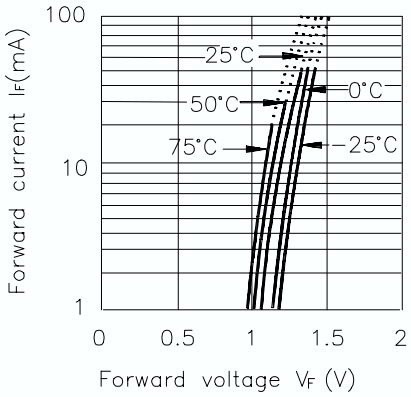


Fig.2 Collector Current vs. Forward Current

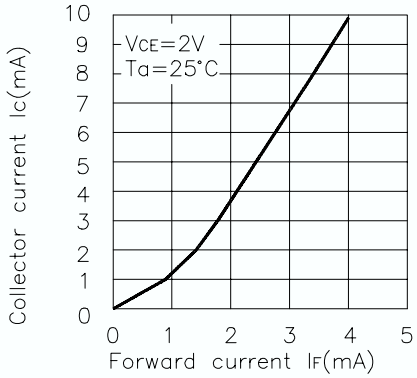


Fig.3 Collector Current vs. Collector-emitter Voltage

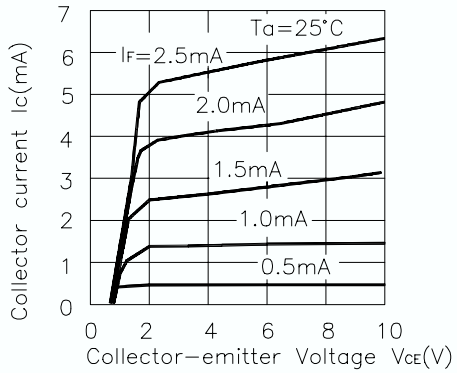


Fig.4 Collector Current vs. Ambient Temperature

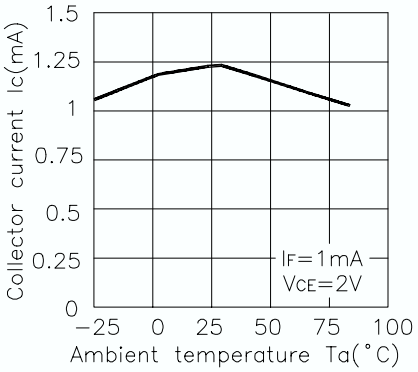


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

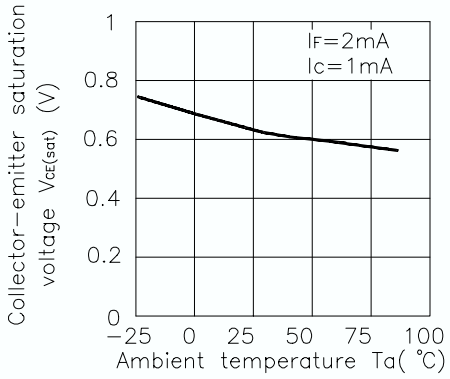


Fig.6 Relative Collector Current vs. Shield Distance(1)

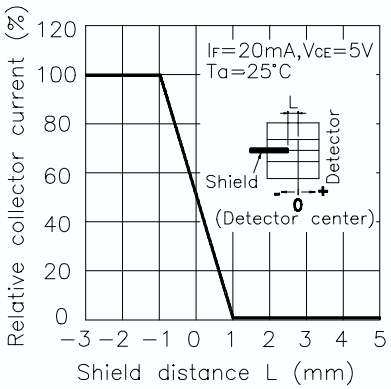


Fig.7 Relative Collector Current vs. Shield Distance(2)

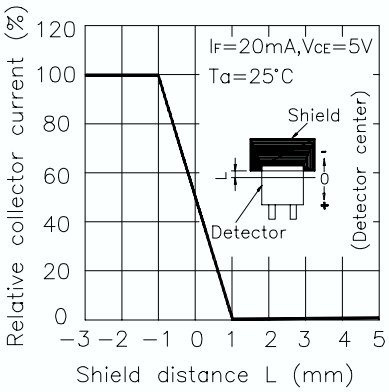
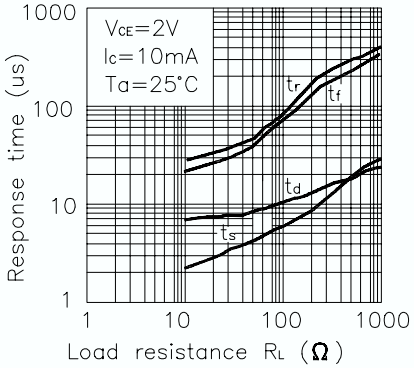


Fig.8 Response Time vs. Load Resistance



Test Circuit for Response Time