PC725V0NSZX/ PC725V0YSZX

High Sensitivity and High Collector-emitter Voltage Type Photocoupler

■ Features

1. TTL compatible output
2. High collector-emitter voltage (V_{CEO}:300V)
3. High sensitivity (CTR:MIN. 1 000%)
4. Isolation voltage (Viso (rms):5kV)
5. Recognized by UL, file No.E64380
   Approved by TÜV (VDE0884)(**PC725V0YSZX**)
6. 6-pin DIP package

■ Applications

1. Home appliances
2. Programmable controllers
3. Peripheral equipment of personal computers

■ Model Line-up

Model No.	* Safty Standard Approval		Package	Packing
	UL	TÜV (VDE0884)		
PC725V0NSZX	○	–	DIP	Sleeve
PC725V0YSZX	○	○	DIP	Sleeve

* Application Model No. PC725V

■ Absolute Maximum Ratings

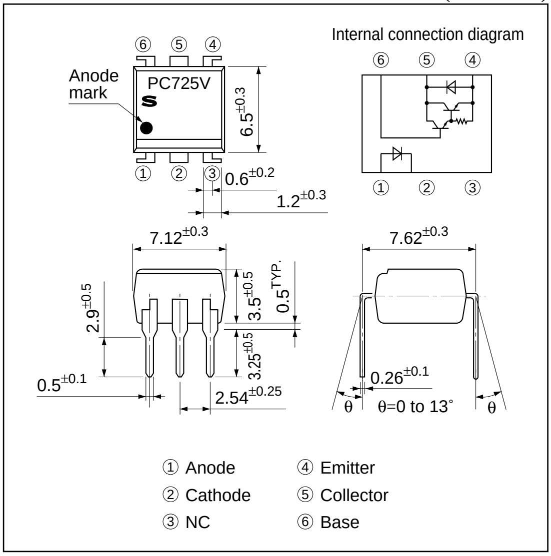
(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	300	V
	Collector-base voltage	V_{CBO}	300	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	150	mA
	Collector current (reverse)	$-I_C$	10	mA
	Collector power dissipation	P_C	300	mW
Total power dissipation		P_{tot}	350	mW
*2 Isolation voltage		$V_{iso\,(rms)}$	5	kV
Operating temperature		T_{opr}	–25 to +100	°C
Storage temperature		T_{stg}	–40 to +125	°C
*3 Soldering temperature		T_{sol}	260	°C

*1 Pulse width≤100μs, Duty ratio=0.001
*2 40 to 60%RH, AC for 1 min
*3 For 10 s

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

(Ta=25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F=10mA	–	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	–	–	3	V
	Reverse current		I_R	V_R=4V	–	–	10	μA
	Terminal capacitance		C_t	V=0, f=1kHz	–	30	250	pF
Output	Collector dark current		I_{CEO}	V_{CE}=200V, I_F=0, R_{BE}=∞	–	–	10^{-6}	A
Transfer charac-teristics	Collector current		I_C	I_F=1mA, V_{CE}=2V, R_{BE}=∞	10	40	150	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=100mA, R_{BE}=∞	–	–	1.2	V
	Isolation resistance		R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	–	Ω
	Floating capacitance		C_f	V=0, f=1MHz	–	0.6	1.0	pF
	Cut-off frequency		f_C	V_{CE}=2V, I_C=20mA, R_L=100Ω, R_{BE}=∞, -3dB	1	7	–	kHz
	Response time	Rise time	t_r	V_{CE}=2V, I_C=20mA R_L=100Ω, R_{BE}=∞	–	100	300	μs
		Fall time	t_f		–	20	100	μs

Fig.1 Forward Current vs. Ambient Temperature

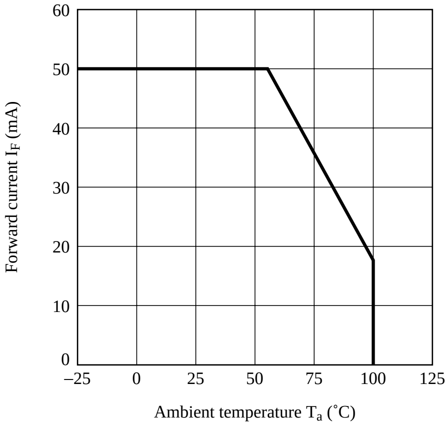


Fig.2 Collector Power Dissipation vs. Ambient Temperature

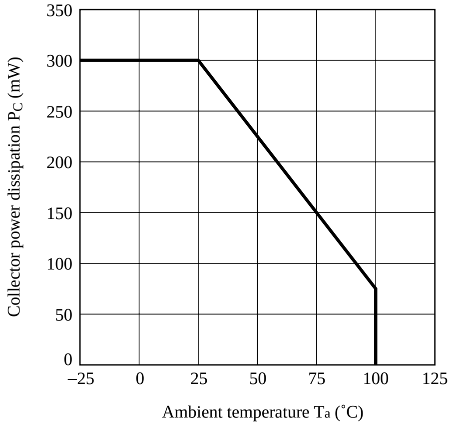


Fig.3 Peak Forward Current vs. Duty Ratio

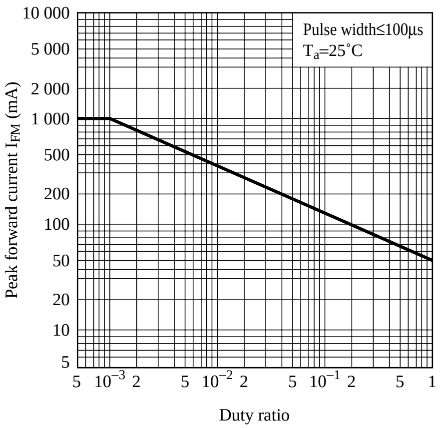


Fig.4 Forward Current vs. Forward Voltage

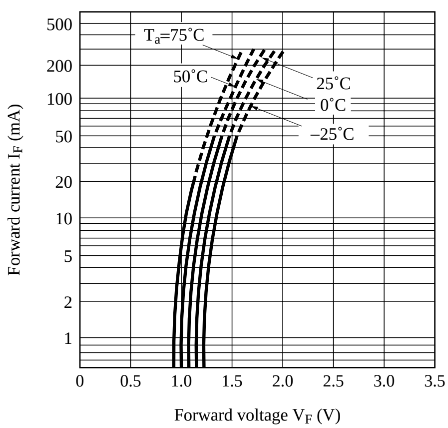


Fig.5 Current Transfer Ratio vs. Forward Current

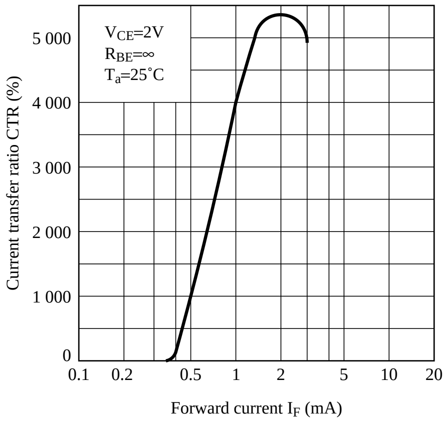


Fig.6 Collector Current vs. Collector-emitter Voltage

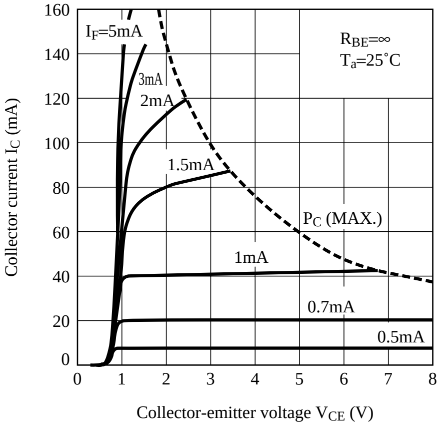


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

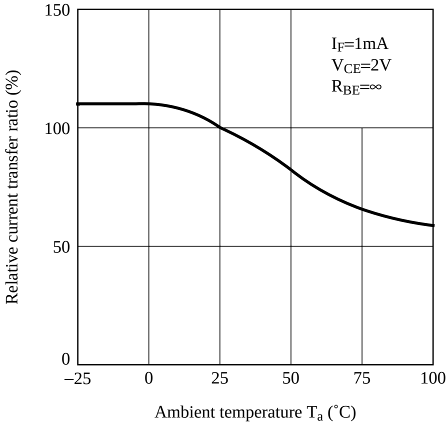


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

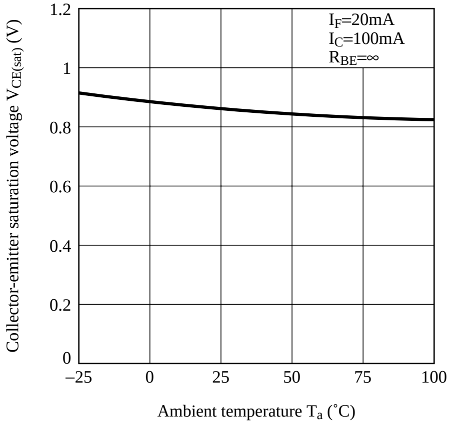


Fig.9 Collector Dark Current vs. Ambient Temperature

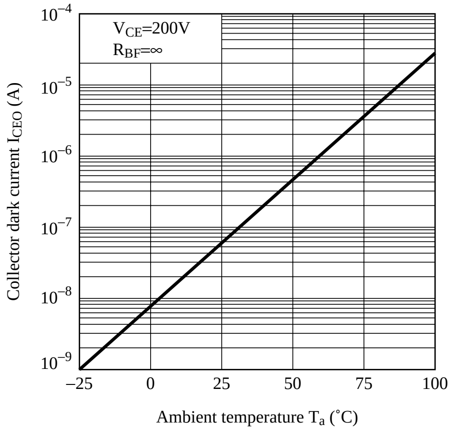


Fig.10 Response Time vs. Load Resistance

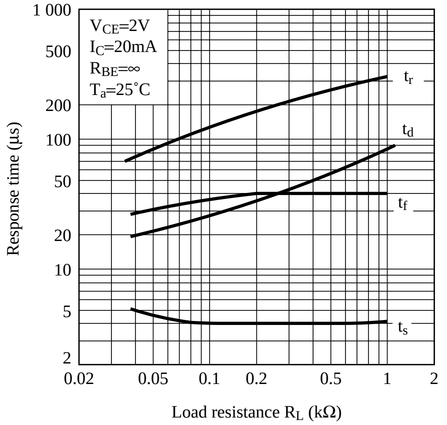


Fig.11 Test Circuit for Response Time

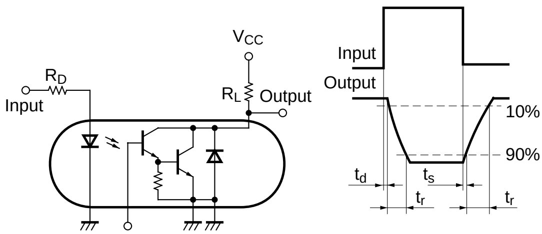


Fig.12 Frequency Response

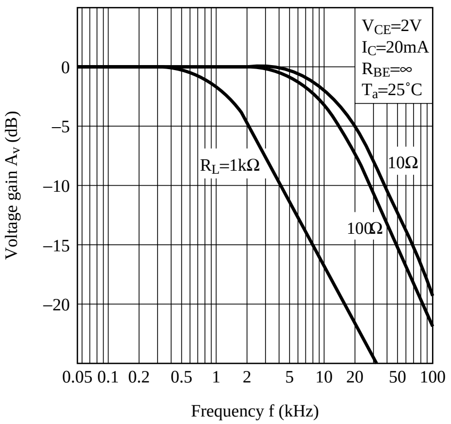
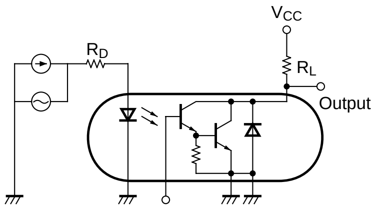


Fig.13 Test Circuit for Frequency Response



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- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

  (i) The devices in this publication are designed for use in general electronic equipment designs such as:
  - Personal computers
  - Office automation equipment
  - Telecommunication equipment [terminal]
  - Test and measurement equipment
  - Industrial control
  - Audio visual equipment
  - Consumer electronics

  (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
  - Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
  - Traffic signals
  - Gas leakage sensor breakers
  - Alarm equipment
  - Various safety devices, etc.

  (iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
  - Space applications
  - Telecommunication equipment [trunk lines]
  - Nuclear power control equipment
  - Medical and other life support equipment (e.g., scuba).
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-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.

PC725V0NIZX/ PC725V0NIPX

High Sensitivity and High Collector-emitter Voltage Type Photocoupler

■ Features

1. TTL compatible output
2. High collector-emitter voltage (V_{CEO}:300V)
3. High sensitivity (CTR:MIN. 1 000%)
4. Isolation voltage (Viso (rms):5kV)
5. Recognized by UL, file No.E64380
6. 6-pin DIP package (Lead forming type)

■ Applications

1. Home appliances
2. Programmable controllers
3. Peripheral equipment of personal computers

■ Model Line-up

Model No.	* Safty Standard Approval		Package	Packing
	UL	TÜV (VDE0884)		
PC725V0NIZX	○	−	Surface Mount	Sleeve
PC725V0NIPX	○	−		Taping

* Application Model No. PC725V

■ Absolute Maximum Ratings

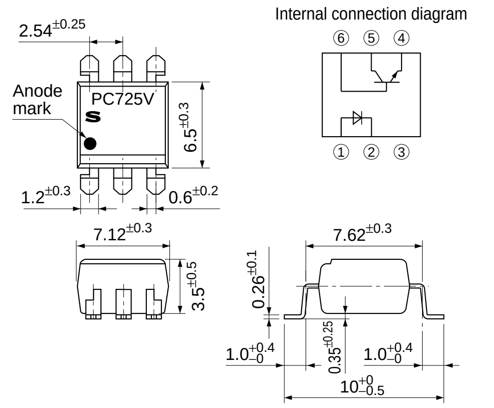
(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	300	V
	Collector-base voltage	V_{CBO}	300	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	150	mA
	Collector current (reverse)	$-I_C$	10	mA
	Collector power dissipation	P_C	300	mW
Total power dissipation		P_{tot}	350	mW
*2 Isolation voltage		$V_{iso\ (rms)}$	5	kV
Operating temperature		T_{opr}	−25 to +100	°C
Storage temperature		T_{stg}	−40 to +125	°C
*3 Soldering temperature		T_{sol}	260	°C

*1 Pulse width≤100μs, Duty ratio=0.001
*2 40 to 60%RH, AC for 1 min
*3 For 10 s

■ Outline Dimensions

(Unit : mm)



① Anode ④ Emitter
② Cathode ⑤ Collector
③ NC ⑥ Base

■ Electro-optical Characteristics

(Ta=25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F=10mA	–	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	–	–	3	V
	Reverse current		I_R	V_R=4V	–	–	10	μA
	Terminal capacitance		C_t	V=0, f=1kHz	–	30	250	pF
Output	Collector dark current		I_{CEO}	V_{CE}=200V, I_F=0, R_{BE}=∞	–	–	10^{-6}	A
Transfer charac-teristics	Collector current		I_C	I_F=1mA, V_{CE}=2V, R_{BE}=∞	10	40	150	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=100mA, R_{BE}=∞	–	–	1.2	V
	Isolation resistance		R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	–	Ω
	Floating capacitance		C_f	V=0, f=1MHz	–	0.6	1.0	pF
	Cut-off frequency		f_C	V_{CE}=2V, I_C=20mA, R_L=100Ω, R_{BE}=∞, -3dB	1	7	–	kHz
	Response time	Rise time	t_r	V_{CE}=2V, I_C=20mA R_L=100Ω, R_{BE}=∞	–	100	300	μs
		Fall time	t_f		–	20	100	μs

Fig.1 Forward Current vs. Ambient Temperature

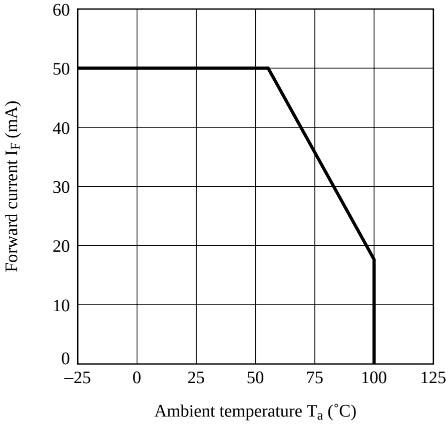


Fig.2 Collector Power Dissipation vs. Ambient Temperature

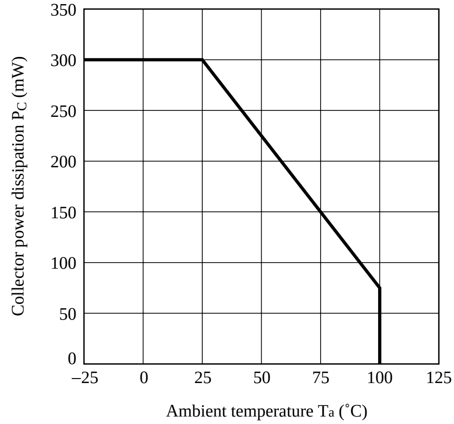


Fig.3 Peak Forward Current vs. Duty Ratio

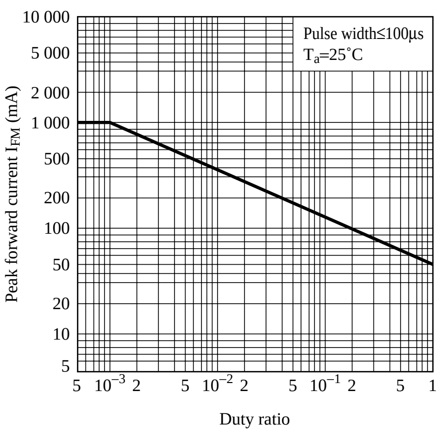


Fig.4 Forward Current vs. Forward Voltage

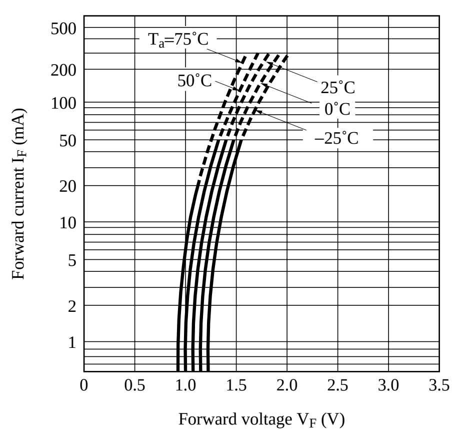


Fig.5 Current Transfer Ratio vs. Forward Current

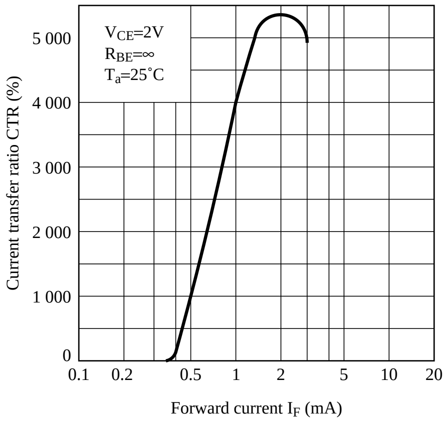


Fig.6 Collector Current vs. Collector-emitter Voltage

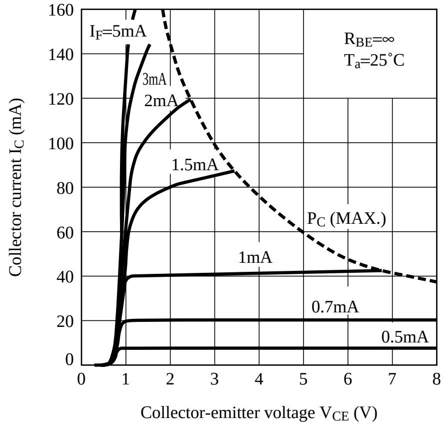


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

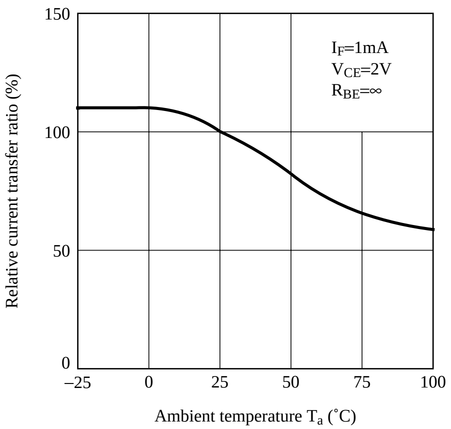


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

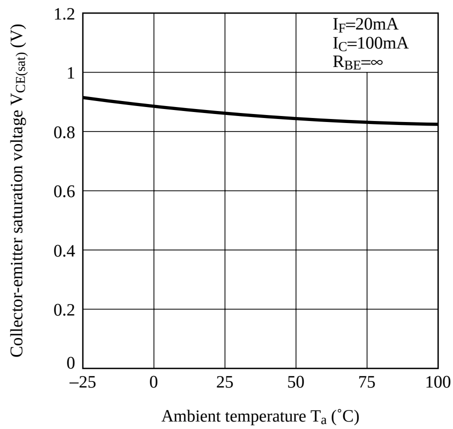


Fig.9 Collector Dark Current vs. Ambient Temperature

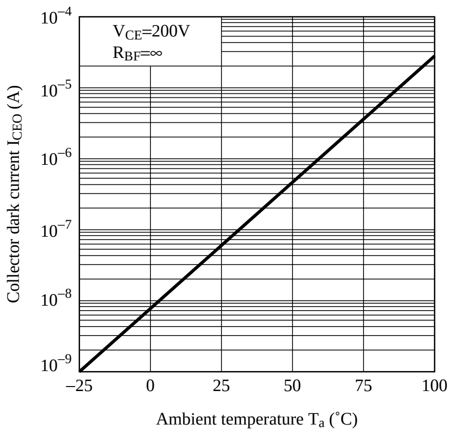


Fig.10 Response Time vs. Load Resistance

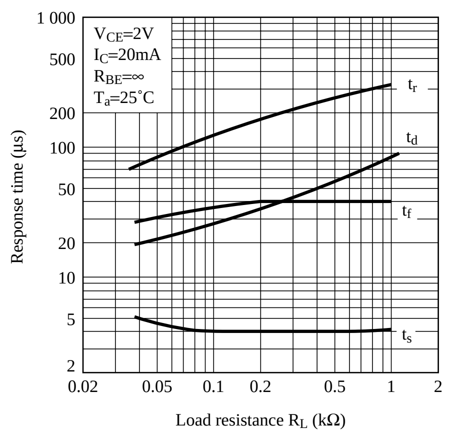


Fig.11 Test Circuit for Response Time

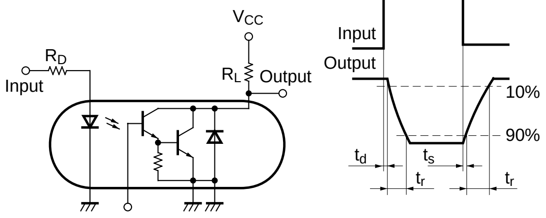


Fig.12 Frequency Response

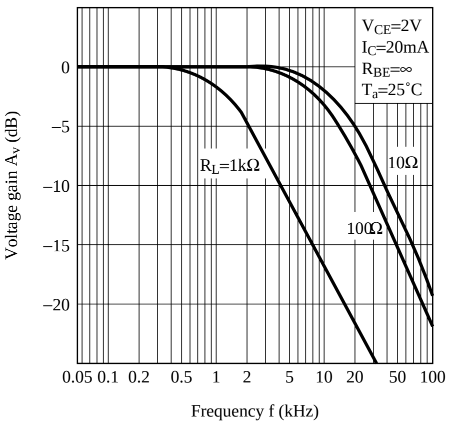
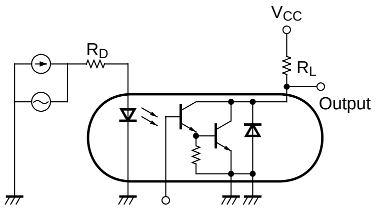


Fig.13 Test Circuit for Frequency Response



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PC725V0YUZX

High Sensitivity and High Collector-emitter Voltage Type Photocoupler

■ Features

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2. High collector-emitter voltage (V_{CEO}:300V)
3. High sensitivity (CTR:MIN. 1 000%)
4. Isolation voltage (Viso (rms):5kV)
5. Recognized by UL, file No.E64380
   Approved by TÜV (VDE0884)
6. 6-pin DIP package (Lead forming type)
7. Sleeve packing

■ Applications

1. Home appliances
2. Programmable controllers
3. Peripheral equipment of personal computers

■ Absolute Maximum Ratings

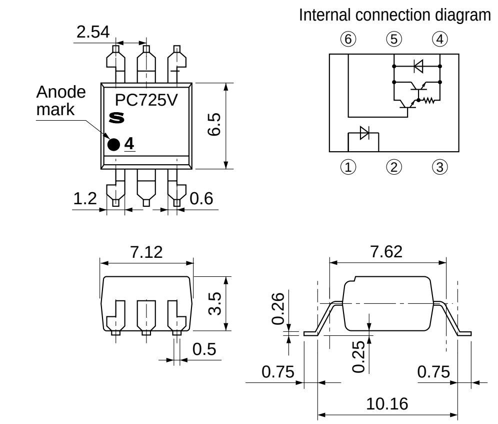
(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	*1 Peak forward current	I_{FM}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P	70	mW
Output	Collector-emitter voltage	V_{CEO}	300	V
	Collector-base voltage	V_{CBO}	300	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	150	mA
	Collector current (reverse)	$-I_C$	10	mA
	Collector power dissipation	P_C	300	mW
Total power dissipation		P_{tot}	350	mW
*2 Isolation voltage		$V_{iso\ (rms)}$	5	kV
Operating temperature		T_{opr}	−25 to +100	°C
Storage temperature		T_{stg}	−40 to +125	°C
*3 Soldering temperature		T_{sol}	260	°C

*1 Pulse width≤100μs, Duty ratio=0.001
*2 40 to 60%RH, AC for 1 min
*3 For 10 s

■ Outline Dimensions

(Unit : mm)



① Anode ④ Emitter
② Cathode ⑤ Collector
③ NC ⑥ Base

■ Electro-optical Characteristics

(Ta=25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
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Input	Peak forward voltage		V_{FM}	I_{FM}=0.5A	–	–	3	V
Input	Reverse current		I_R	V_R=4V	–	–	10	μA
Input	Terminal capacitance		C_t	V=0, f=1kHz	–	30	250	pF
Output	Collector dark current		I_{CEO}	V_{CE}=200V, I_F=0, $R_{BE}=\infty$	–	–	10^{-6}	A
Transfer charac-teristics	Collector current		I_C	I_F=1mA, V_{CE}=2V, $R_{BE}=\infty$	10	40	150	mA
Transfer charac-teristics	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=100mA, $R_{BE}=\infty$	–	–	1.2	V
Transfer charac-teristics	Isolation resistance		R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	–	Ω
Transfer charac-teristics	Floating capacitance		C_f	V=0, f=1MHz	–	0.6	1.0	pF
Transfer charac-teristics	Cut-off frequency		f_C	V_{CE}=2V, I_C=20mA, R_L=100Ω, $R_{BE}=\infty$, -3dB	1	7	–	kHz
Transfer charac-teristics	Response time	Rise time	t_r	V_{CE}=2V, I_C=20mA, R_L=100Ω, $R_{BE}=\infty$	–	100	300	μs
Transfer charac-teristics	Response time	Fall time	t_f	V_{CE}=2V, I_C=20mA, R_L=100Ω, $R_{BE}=\infty$	–	20	100	μs

Fig.1 Forward Current vs. Ambient Temperature

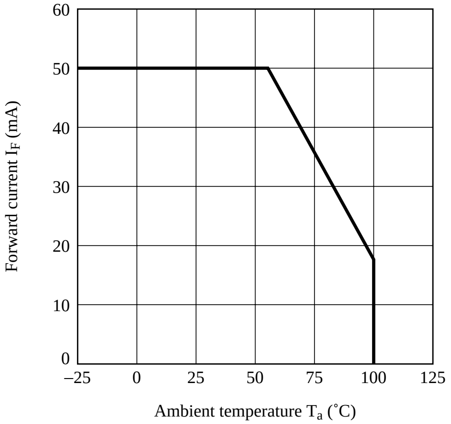


Fig.2 Collector Power Dissipation vs. Ambient Temperature

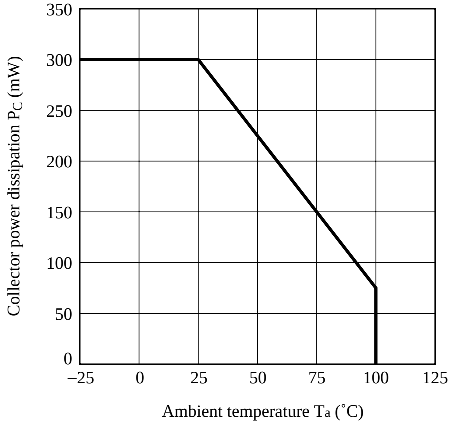


Fig.3 Peak Forward Current vs. Duty Ratio

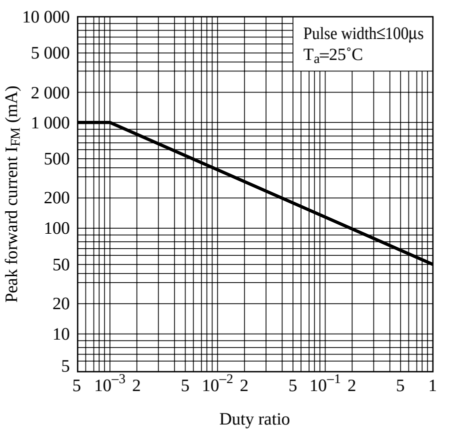


Fig.4 Forward Current vs. Forward Voltage

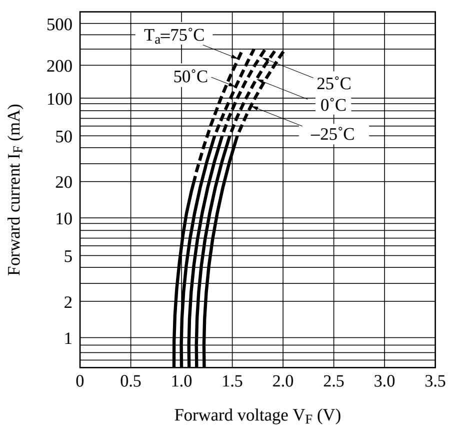


Fig.5 Current Transfer Ratio vs. Forward Current

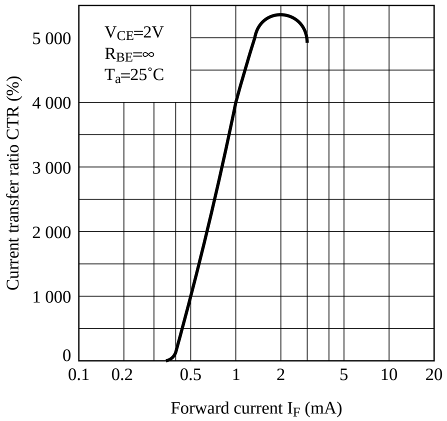


Fig.6 Collector Current vs. Collector-emitter Voltage

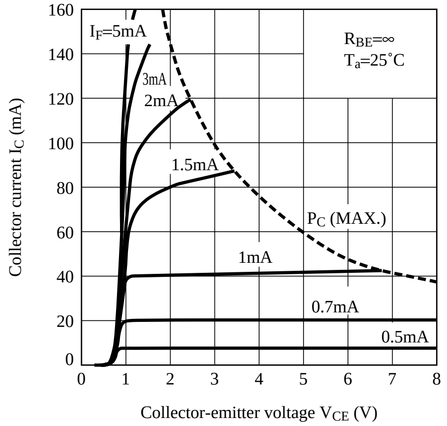


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

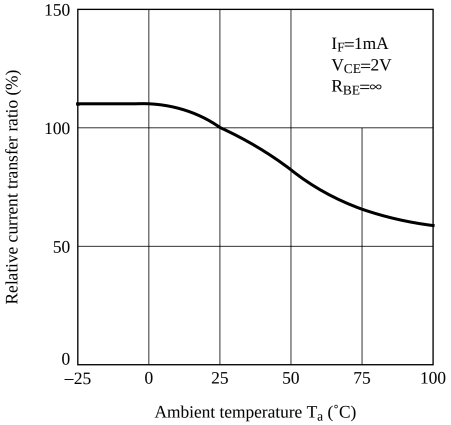


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

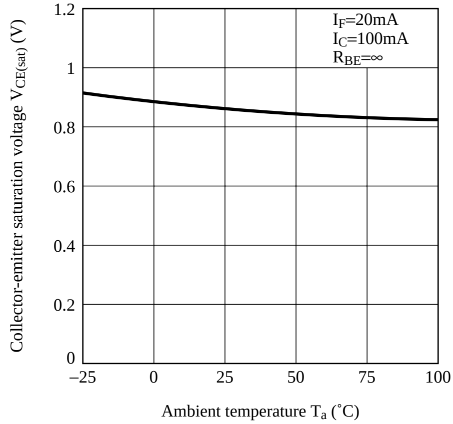


Fig.9 Collector Dark Current vs. Ambient Temperature

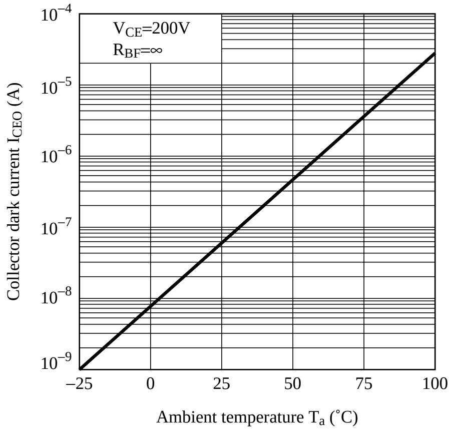


Fig.10 Response Time vs. Load Resistance

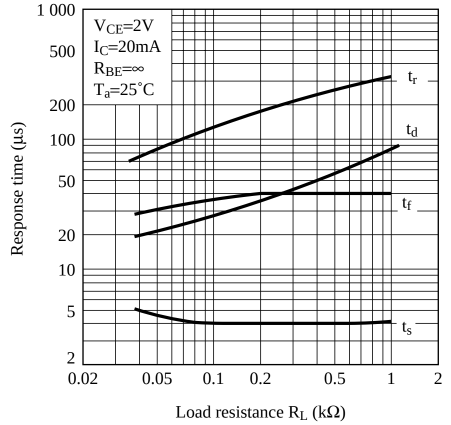


Fig.11 Test Circuit for Response Time

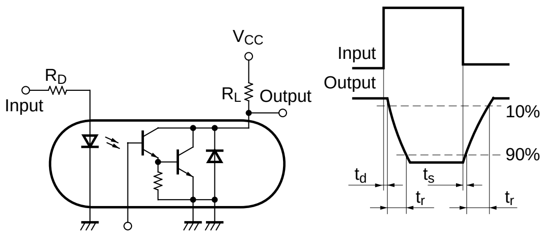


Fig.12 Frequency Response

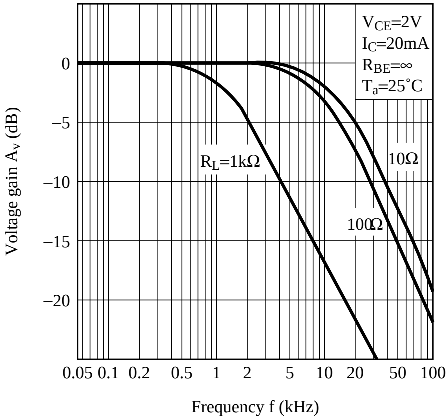
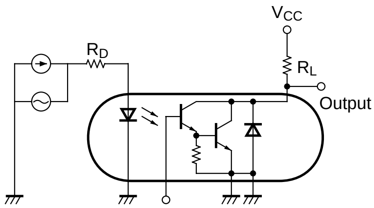


Fig.13 Test Circuit for Frequency Response



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