PC703VxNSZX Series/ PC703VxYSZX Series

High Collector-emitter Voltage Type Photocoupler

■ Features

1. TTL compatible output
2. High collector-emitter voltage (V_{CEO}:70V)
3. Isolation voltage (Viso (rms):5kV)
4. Recognized by UL, file No.E64380
   Approved by TÜV (VDE0884)(**PC703VxYSZX Series**)
5. 6-pin DIP package

■ Applications

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

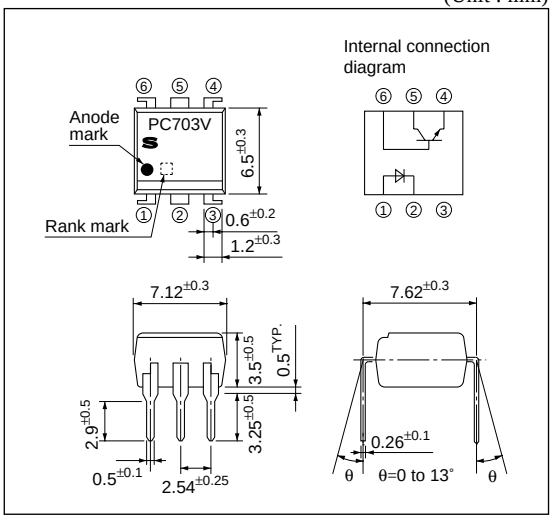
■ Model Line-up

Model No.	*Safty Standard Approval		Package
	UL	TÜV(VDE0884)	
PC703VxNSZX Series	○	–	DIP
PC703VxYSZX Series	○	○	

* Application Model No. PC703V

■ Outline Dimensions

(Unit : mm)



■ 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}	70	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector-base voltage	V_{CBO}	70	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	160	mW
Total power dissipation		P_{tot}	200	mW
*2 Isolation voltage		$V_{iso\ (rms)}$	5	kV
Operating temperature		T_{opr}	–30 to +100	°C
Storage temperature		T_{stg}	–55 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

■ Electro-optical Characteristics

(Ta=25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F=20mA	–	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	–	–	3.0	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}=20V, I_F=0	–	–	10^{-7}	A
Transfer characteristics	*4 Collector cullent		I_C	I_F=10mA, V_{CE}=5V	4.0	–	32.0	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=1mA	–	0.1	0.2	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}=5V, I_C=2mA, R_L=100Ω, −3dB	–	80	–	kHz
	Response time	Rise time	t_r	V_{CE}=2V, I_C=2mA	–	4	15	μs
		Fall time	t_f	R_L=100Ω	–	3	15	μs

*4 Classification table of collector current is shown below.

Model No. *5	Rank mark	I_C (mA)
PC703V1NSZX	A	4.0 to 8.0
PC703V2NSZX	B	6.3 to 12.5
PC703V3NSZX	C	10.0 to 20.0
PC703V4NSZX	D	16.0 to 32.0
PC703V5NSZX	A or B	4.0 to 12.5
PC703V6NSZX	B or C	6.3 to 20.0
PC703V7NSZX	C or D	10.0 to 32.0
PC703V0NSZX	A, B, C or D	4.0 to 32.0

Measuring Conditions
I_F=10mA
V_{CE}=5V
T_a=25°C

*5 **PC703V0YSZX** Series are equivalent.

Fig.1 Forward Current vs. Ambient Temperature

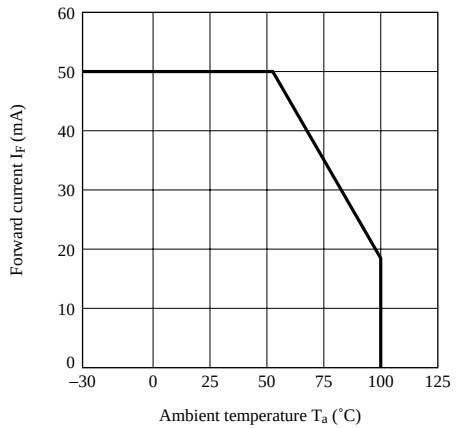


Fig.2 Collector Power Dissipation vs. Ambient Temperature

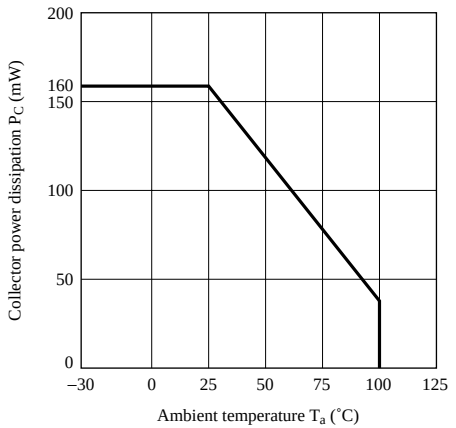


Fig.3 Peak Forward Current vs. Duty Ratio

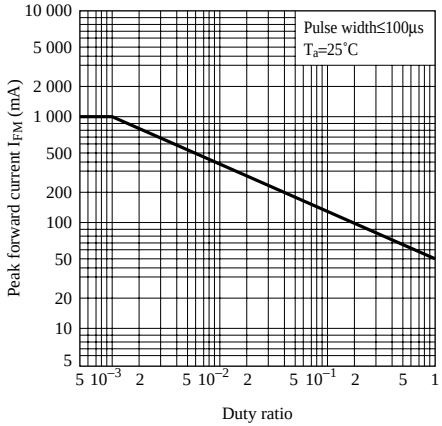


Fig.4 Forward Current vs. Forward Voltage

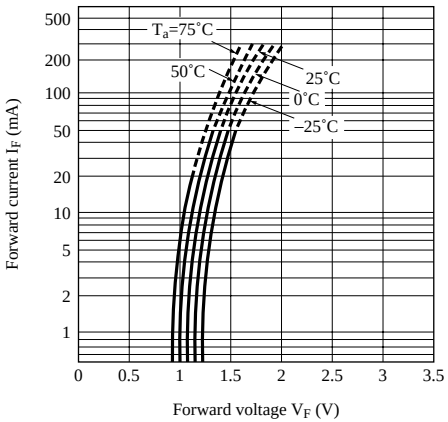


Fig.5 Current Transfer Ratio vs. Forward Current

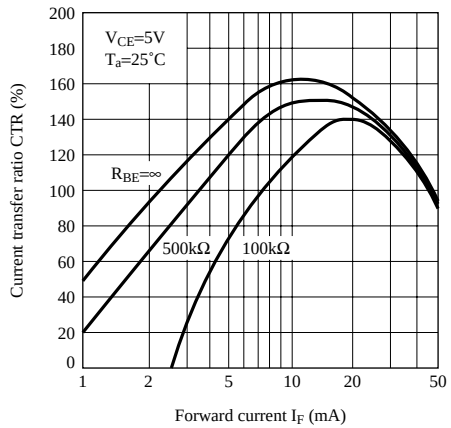


Fig.6 Collector Current vs. Collector-emitter Voltage

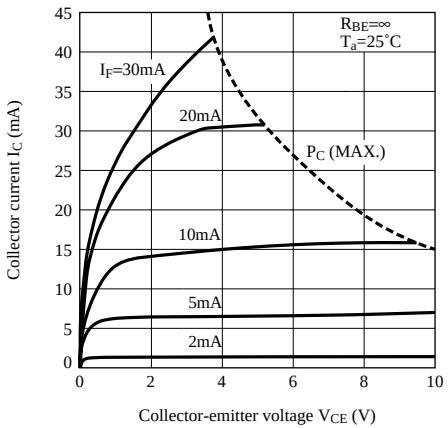


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

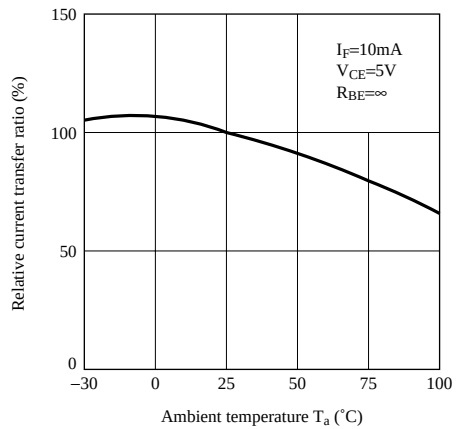


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

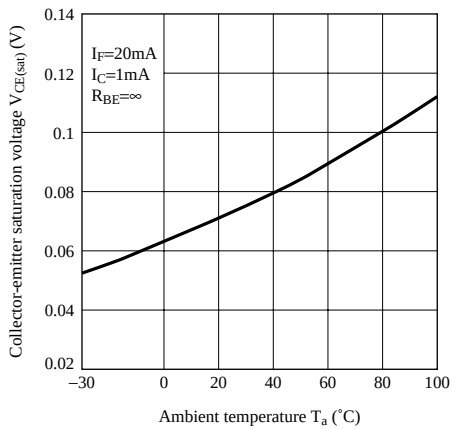


Fig.9 Collector Dark Current vs. Ambient Temperature

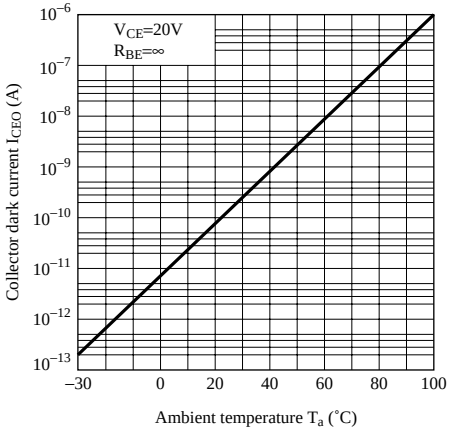


Fig.10 Collector-emitter Saturation Voltage vs. Forward Current

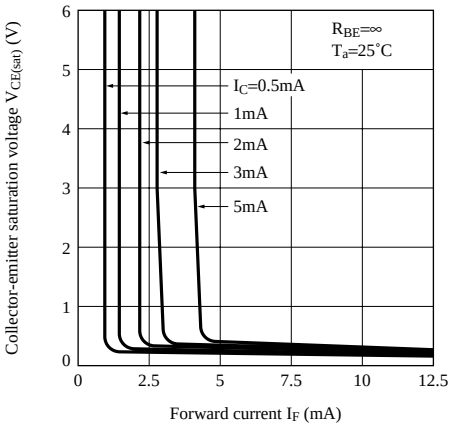


Fig.11 Response Time vs. Load Resistance

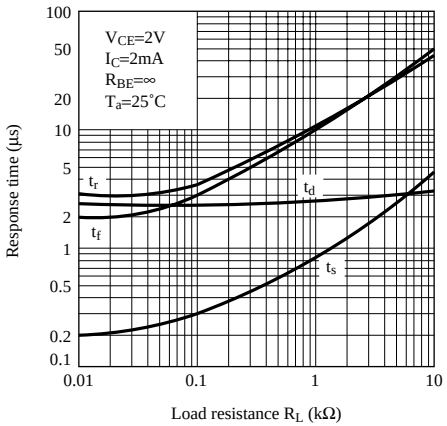


Fig.12 Test Circuit for Response Time

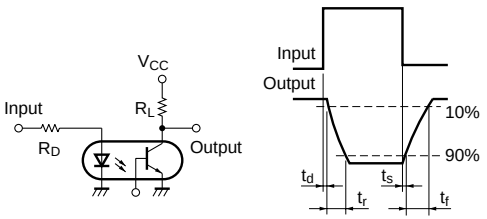


Fig.13 Frequency Response

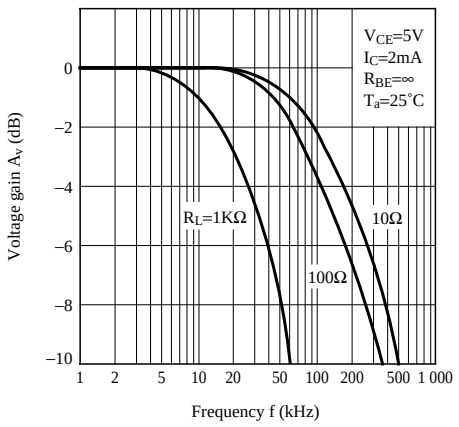
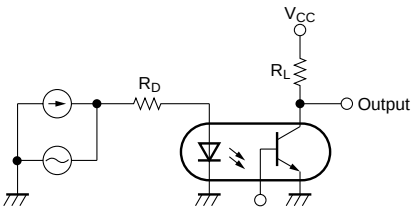


Fig.14 Test Circuit for Frequency Response



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- 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.

PC703VxNIZX Series

High Collector-emitter Voltage Type Photocoupler

■ Features

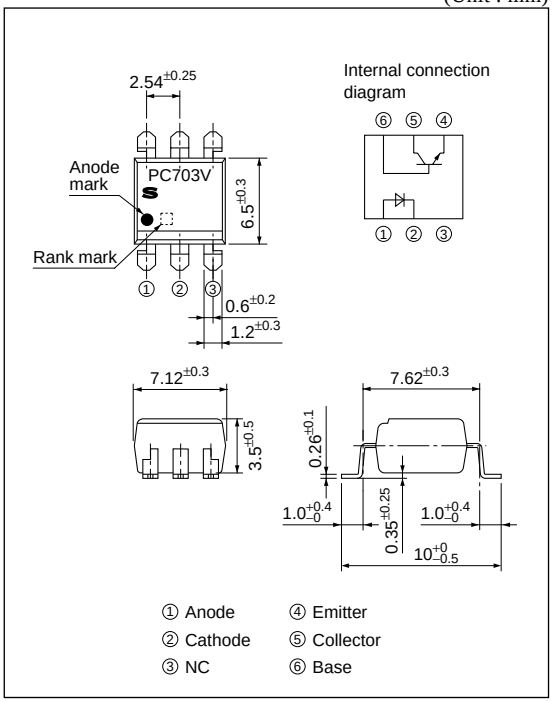
1. TTL compatible output
2. High collector-emitter voltage (V_{CEO}:70V)
3. Isolation voltage (Viso (rms):5kV)
4. Recognized by UL, file No.E64380
5. 6-pin DIP package (Lead forming type)

■ Applications

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

■ Outline Dimensions

(Unit : mm)



■ 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}	70	V
	Emitter-collector voltage	V_{ECO}	6	V
	Collector-base voltage	V_{CBO}	70	V
	Emitter-base voltage	V_{EBO}	6	V
	Collector current	I_C	50	mA
	Collector power dissipation	P_C	160	mW
Total power dissipation		P_{tot}	200	mW
*2 Isolation voltage		$V_{iso\ (rms)}$	5	kV
Operating temperature		T_{opr}	−30 to +100	°C
Storage temperature		T_{stg}	−55 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

■ Electro-optical Characteristics

(Ta=25˚C)

Parameter			Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V_F	I_F=20mA	–	1.2	1.4	V
	Peak forward voltage		V_{FM}	I_{FM}=0.5A	–	–	3.0	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}=20V, I_F=0	–	–	10^{-7}	A
Transfer characteristics	*4 Collector cullent		I_C	I_F=10mA, V_{CE}=5V	4.0	–	32.0	mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F=20mA, I_C=1mA	–	0.1	0.2	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}=5V, I_C=2mA, R_L=100Ω, −3dB	–	80	–	kHz
	Response time	Rise time	t_r	V_{CE}=2V, I_C=2mA	–	4	15	μs
		Fall time	t_f	R_L=100Ω	–	3	15	μs

*4 Classification table of collector current is shown below.

Model No.	Rank mark	I_C (mA)
PC703V1NIZX	A	4.0 to 8.0
PC703V2NIZX	B	6.3 to 12.5
PC703V3NIZX	C	10.0 to 20.0
PC703V4NIZX	D	16.0 to 32.0
PC703V5NIZX	A or B	4.0 to 12.5
PC703V6NIZX	B or C	6.3 to 20.0
PC703V7NIZX	C or D	10.0 to 32.0
PC703V0NIZX	A, B, C or D	4.0 to 32.0

Measuring Conditions
I_F=10mA
V_{CE}=5V
T_a=25°C

Fig.1 Forward Current vs. Ambient Temperature

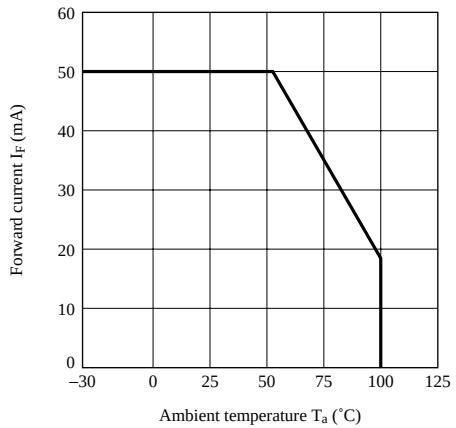


Fig.2 Collector Power Dissipation vs. Ambient Temperature

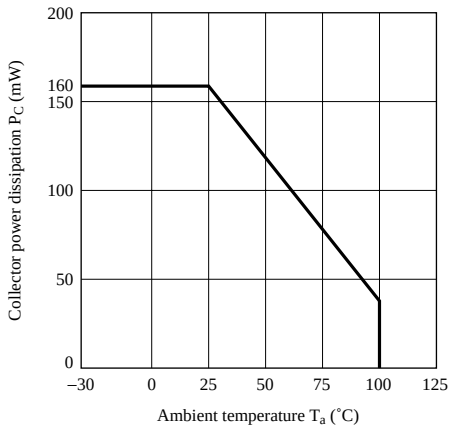


Fig.3 Peak Forward Current vs. Duty Ratio

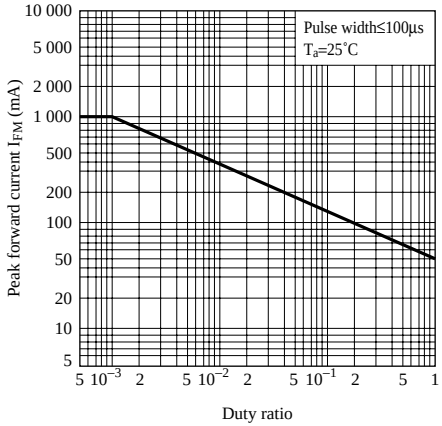


Fig.4 Forward Current vs. Forward Voltage

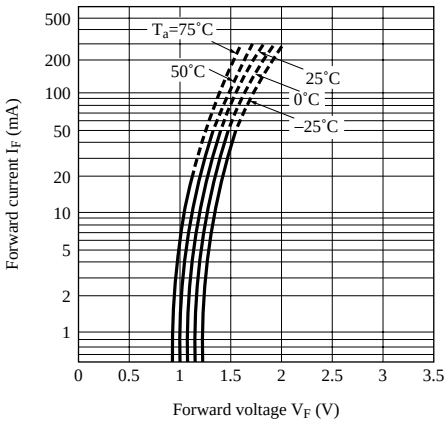


Fig.5 Current Transfer Ratio vs. Forward Current

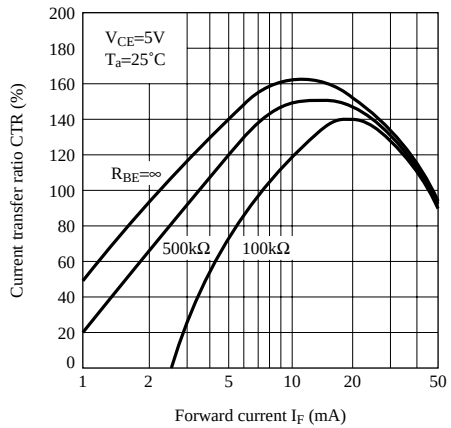


Fig.6 Collector Current vs. Collector-emitter Voltage

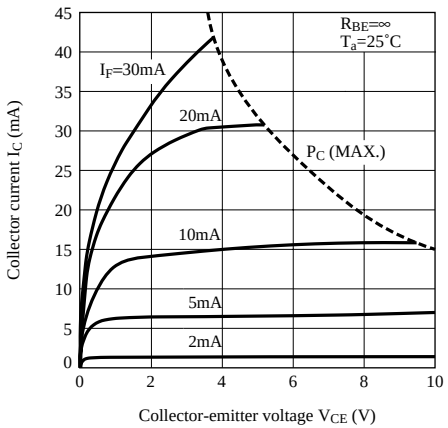


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

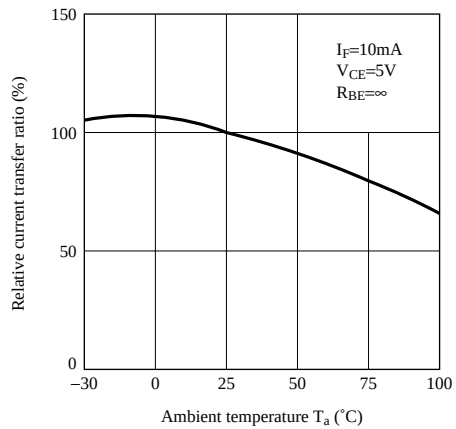


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

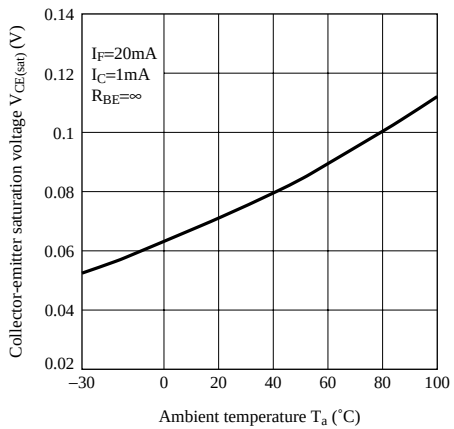


Fig.9 Collector Dark Current vs. Ambient Temperature

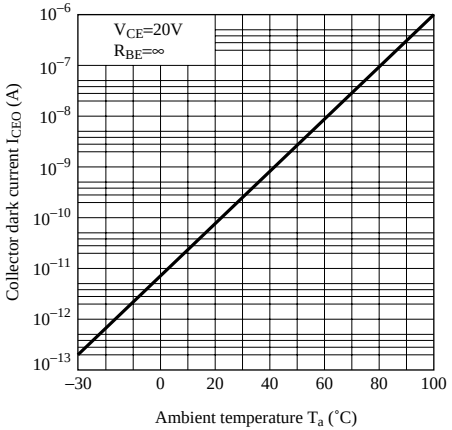


Fig.10 Collector-emitter Saturation Voltage vs. Forward Current

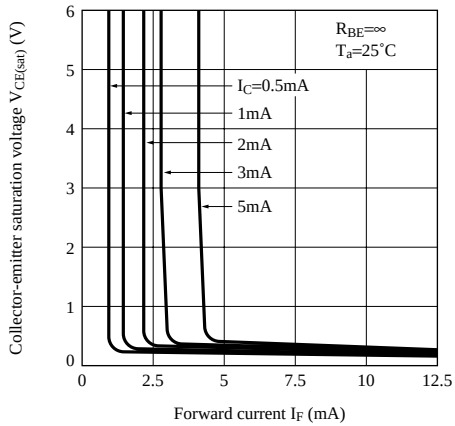


Fig.11 Response Time vs. Load Resistance

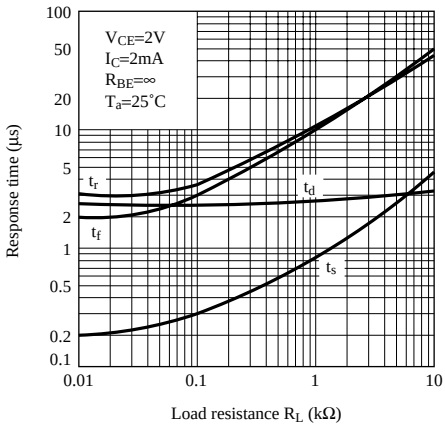


Fig.12 Test Circuit for Response Time

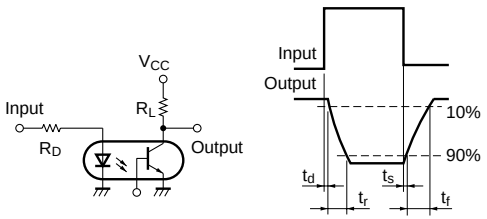


Fig.13 Frequency Response

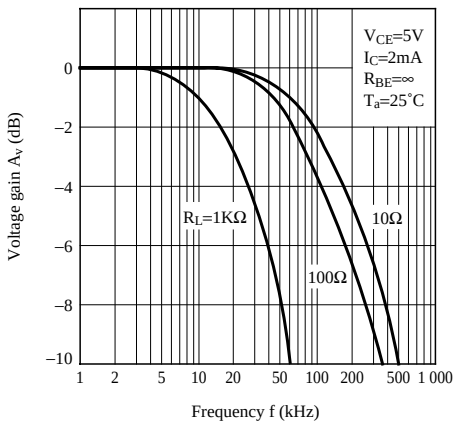
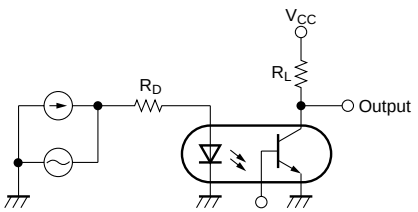


Fig.14 Test Circuit for Frequency Response



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