

PC703VxNSZX Series/ PC703VxYSZX Series

■ Features

1. TTL compatible output
2. High collector-emitter voltage (V_{CE0} :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

■ 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_{CE0}	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 \leq 100 μ s, Duty ratio=0.001

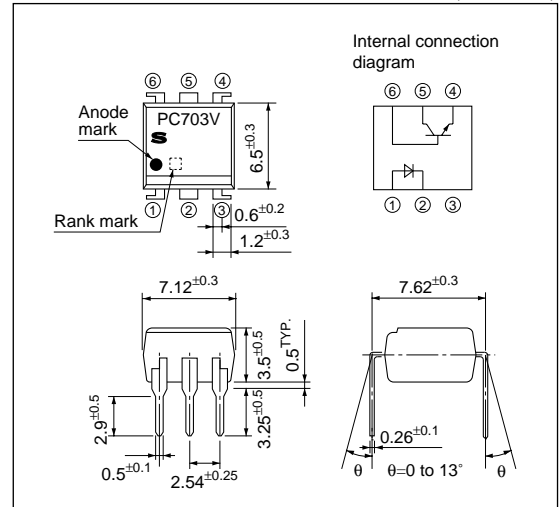
*2 40 to 60%RH, AC for 1 min

*3 For 10 s

High Collector-emitter Voltage Type Photocoupler

■ Outline Dimensions

(Unit : mm)



■ 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 current		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 R _L =100Ω	–	4	15	μs
Fall time		t _f	–		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

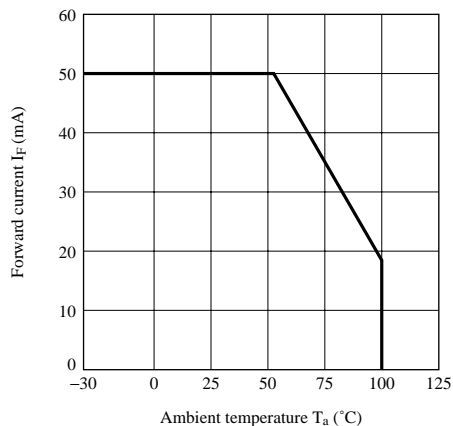


Fig.2 Collector Power Dissipation vs. Ambient Temperature

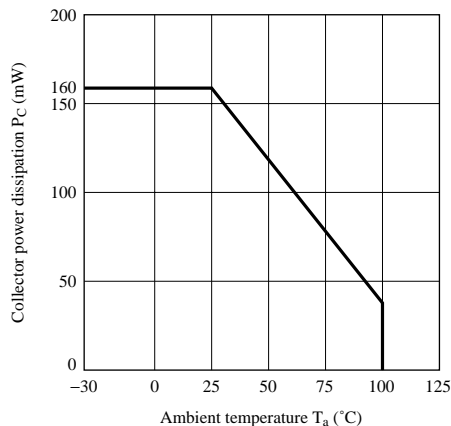


Fig.3 Peak Forward Current vs. Duty Ratio

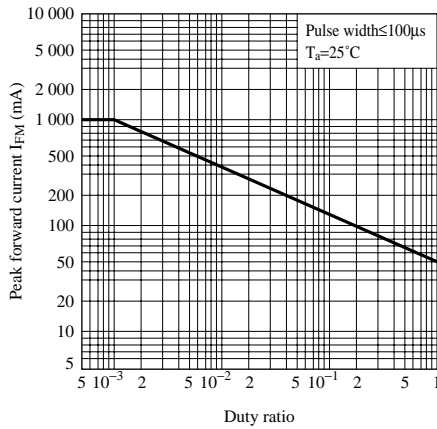


Fig.4 Forward Current vs. Forward Voltage

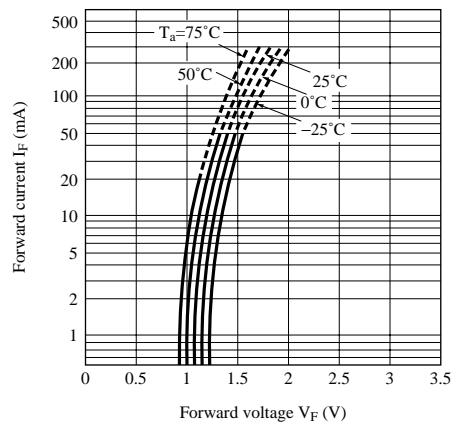


Fig.5 Current Transfer Ratio vs. Forward Current

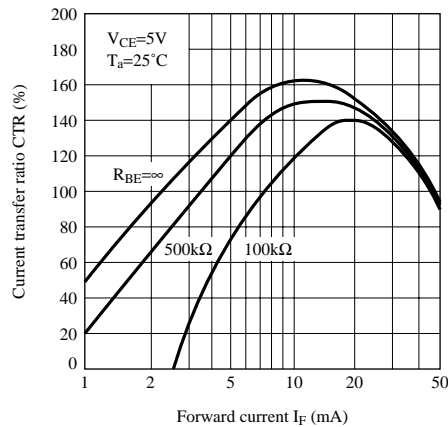


Fig.6 Collector Current vs. Collector-emitter Voltage

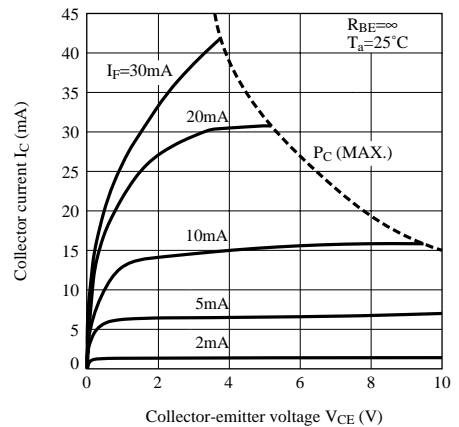


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

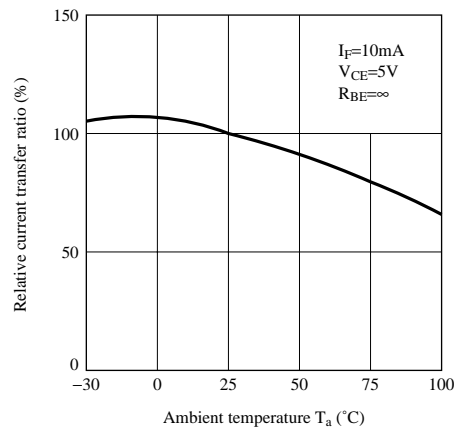


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

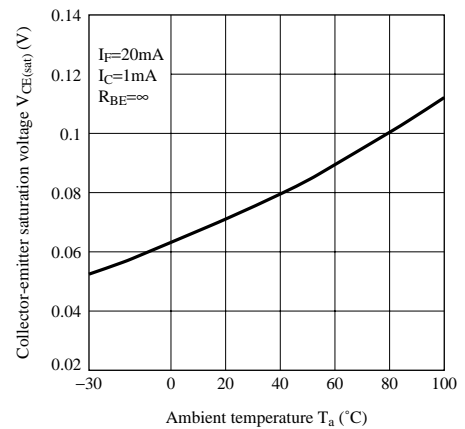


Fig.9 Collector Dark Current vs. Ambient Temperature

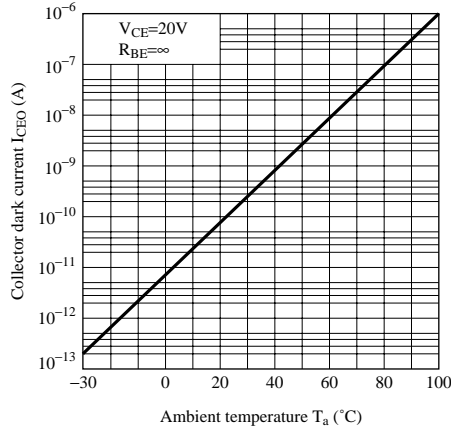


Fig.10 Collector-emitter Saturation Voltage vs. Forward Current

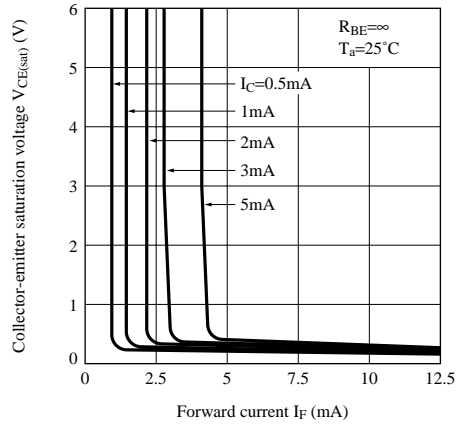


Fig.11 Response Time vs. Load Resistance

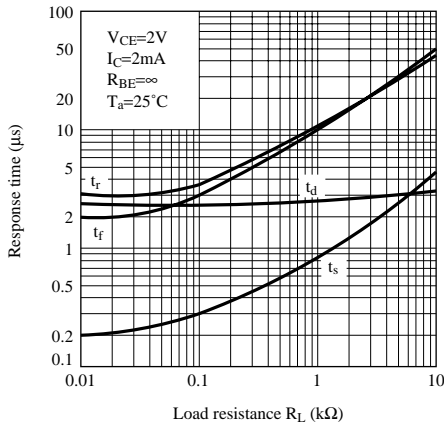


Fig.12 Test Circuit for Response Time

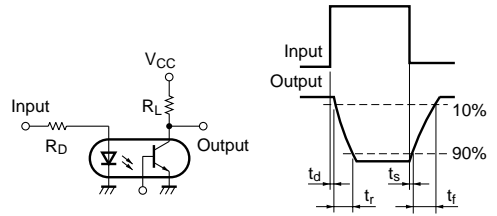


Fig.13 Frequency Response

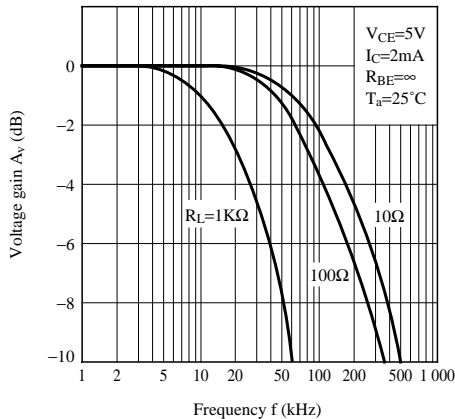
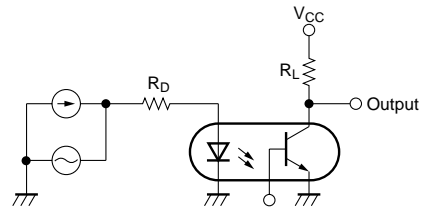


Fig.14 Test Circuit for Frequency Response



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 - 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.
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 - Telecommunication equipment [trunk lines]
 - Nuclear power control equipment
 - Medical and other life support equipment (e.g., scuba).
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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

■ 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

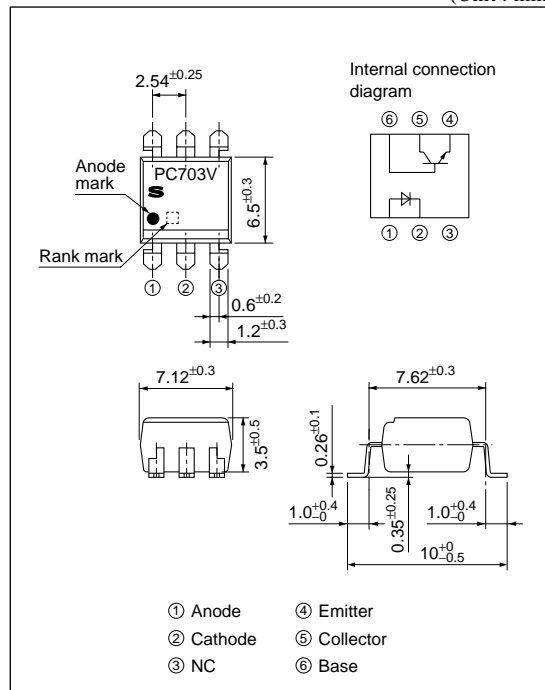
*2 40 to 60%RH, AC for 1 min

*3 For 10 s

High Collector-emitter Voltage Type Photocoupler

■ Outline Dimensions

(Unit : mm)



■ 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	1.4	V
	Peak forward voltage	V_{FM}	$I_{FM}=0.5\text{A}$	–	–	3.0	V
	Reverse current	I_R	$V_R=4\text{V}$	–	–	10	μA
	Terminal capacitance	C_t	$V=0, f=1\text{kHz}$	–	30	250	pF
Output	Collector dark current	I_{CEO}	$V_{CE}=20\text{V}, I_F=0$	–	–	10^{-7}	A
Transfer characteristics	*4 Collector current	I_C	$I_F=10\text{mA}, V_{CE}=5\text{V}$	4.0	–	32.0	mA
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$	–	0.1	0.2	V
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	–	Ω
	Floating capacitance	C_f	$V=0, f=1\text{MHz}$	–	0.6	1.0	pF
	Cut-off frequency	f_c	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$	–	80	–	kHz
	Response time	Rise time	t_r	$V_{CE}=2\text{V}, I_C=2\text{mA}$ $R_L=100\Omega$	–	4	15
Fall time		t_f	–		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

$I_F=10\text{mA}$
 $V_{CE}=5\text{V}$
 $T_a=25^\circ\text{C}$

Fig.1 Forward Current vs. Ambient Temperature

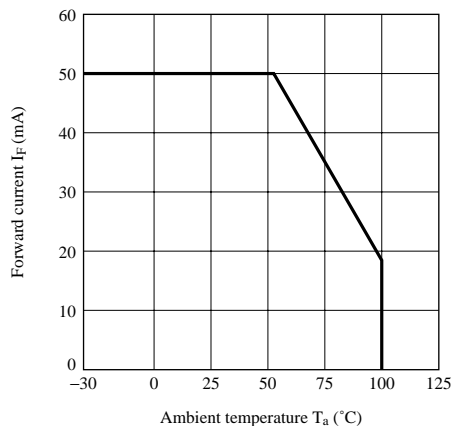


Fig.2 Collector Power Dissipation vs. Ambient Temperature

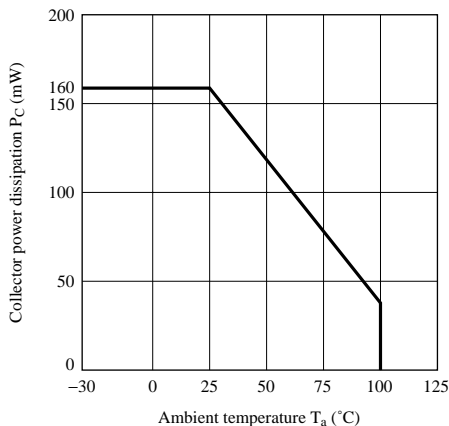


Fig.3 Peak Forward Current vs. Duty Ratio

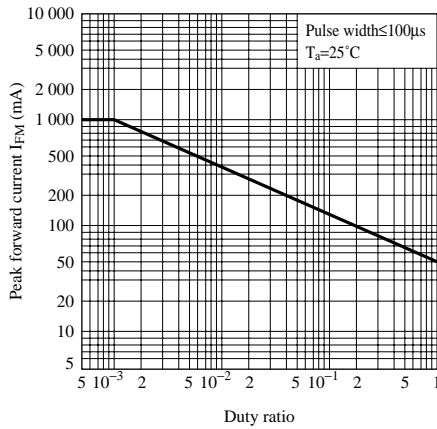


Fig.4 Forward Current vs. Forward Voltage

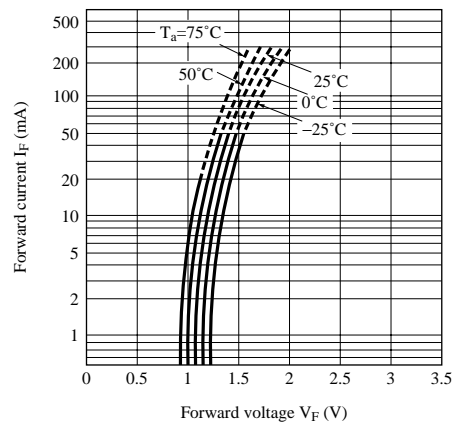


Fig.5 Current Transfer Ratio vs. Forward Current

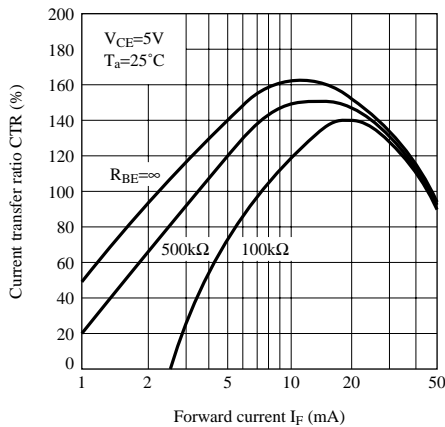


Fig.6 Collector Current vs. Collector-emitter Voltage

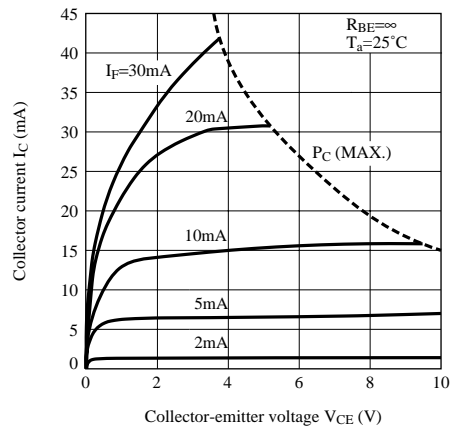


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

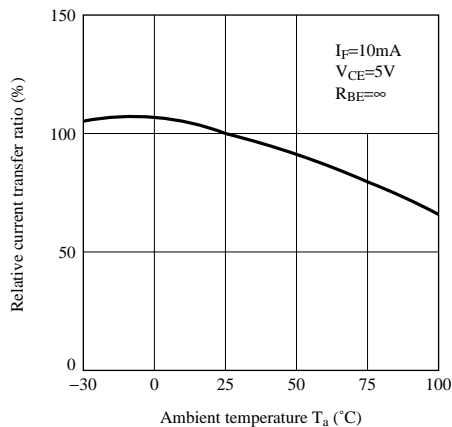


Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature

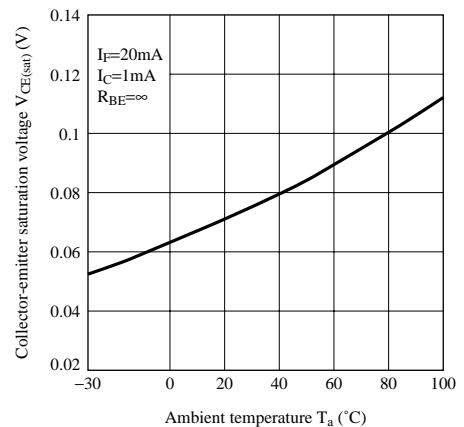


Fig.9 Collector Dark Current vs. Ambient Temperature

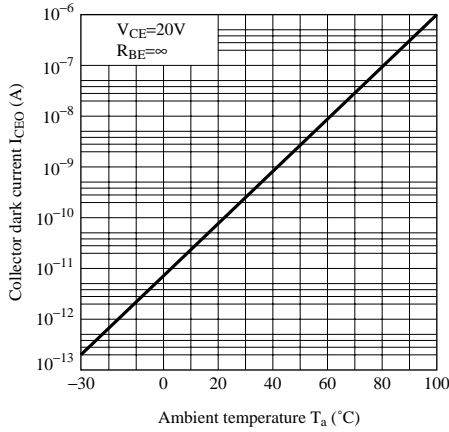


Fig.10 Collector-emitter Saturation Voltage vs. Forward Current

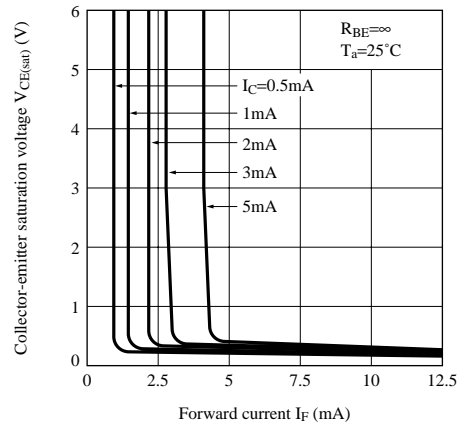


Fig.11 Response Time vs. Load Resistance

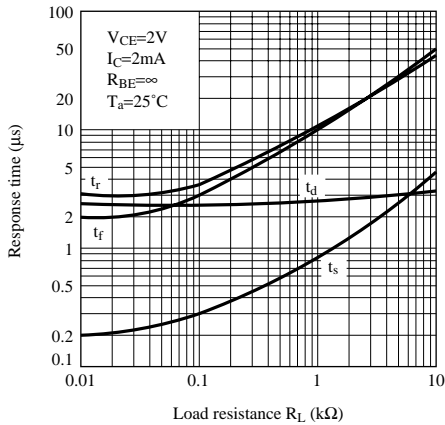


Fig.12 Test Circuit for Response Time

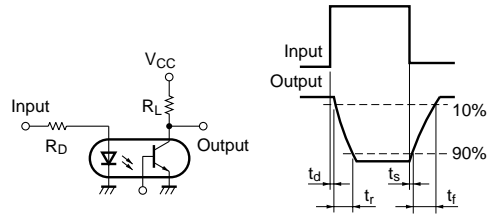


Fig.13 Frequency Response

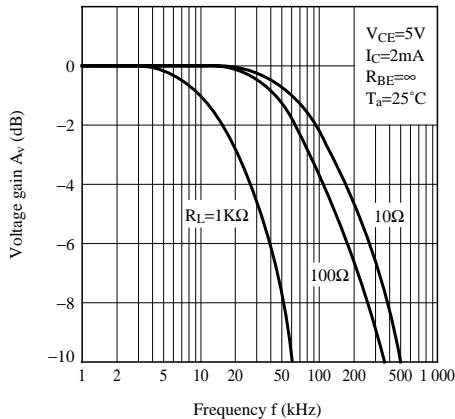
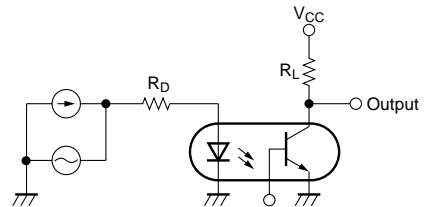


Fig.14 Test Circuit for Frequency Response



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