# PC702VxNSZX Series/ PC702VxYSZX Series

## High Collector-emitter Voltage Type Photocoupler

## ■ Features

1. High collector-emitter voltage ($V_{CEO}$:70V)
2. Isolation voltage (Viso (rms):5kV)
3. TTL compatible output
4. Recognized by UL, file No.E64380
   Approved by TÜV (VDE0884)(**PC702VxYSZX Series**)
5. 6-pin DIP package

## ■ Applications

1. Programmable controllers
2. Facsimiles
3. Telephones

## ■ Model Line-up

| Model No. | * Safty Standard Approval | |
|---|---|---|
| | UL | TÜV(VDE0884) |
| **PC702VxNSZX Series** | ○ | – |
| **PC702VxYSZX Series** | ○ | ○ |

* Application Model No. PC702V

## ■ Absolute Maximum Ratings

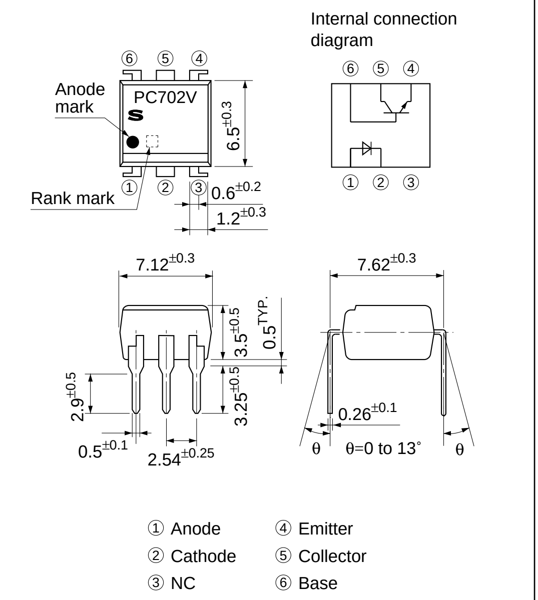
(Ta=25°C)

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward current | $I_F$ | 60 | mA |
| | *1 Peak forward current | $I_{FM}$ | 1.5 | A |
| | Reverse voltage | $V_R$ | 6 | V |
| | Power dissipation | P | 105 | 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 | | $T_{opr}$ | –55 to +100 | °C |
| Storage temperature | | $T_{stg}$ | –55 to +150 | °C |
| *3 Soldering temperature | | $T_{sol}$ | 260 | °C |

*1 Pulse width≤10μs, Duty ratio=0.004
*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 | | $V_F$ | $I_F$=60mA | – | 1.4 | 1.7 | V |
| | Reverse current | | $I_R$ | $V_R$=6V | – | – | 10 | μA |
| | Terminal capacitance | | $C_t$ | V=0, f=1kHz | – | 30 | 250 | pF |
| Output | Collector dark current | | $I_{CEO}$ | $V_{CE}$=10V, $I_F$=0 | – | – | $5\times10^{-8}$ | A |
| Transfer charac-teristics | *4 Collector current | | $I_C$ | $I_F$=10mA, $V_{CE}$=5V | 4.0 | – | 32.0 | mA |
| | Collector-emitter saturation voltage | | $V_{CE(sat)}$ | $I_F$=10mA, $I_C$=2.5mA | – | 0.25 | 0.4 | V |
| | Isolation resistance | | $R_{ISO}$ | DC500V, 40 to 60%RH | $5\times10^{10}$ | $10^{11}$ | – | Ω |
| | Floating capacitance | | $C_f$ | V=0, f=1MHz | – | 0.6 | 1.0 | pF |
| | Cut-off frequency | | $f_C$ | $I_F$=10mA, $V_{CC}$=5V, $R_L$=75Ω, $R_{BE}$=∞, −3dB | – | 150 | – | kHz |
| | Response time | Rise time | $t_r$ | $I_F$=10mA, $V_{CC}$=5V $R_L$=75Ω, $R_{BE}$=∞ | – | 2 | 7 | μs |
| | | Fall time | $t_f$ | | – | 2 | 8 | μs |

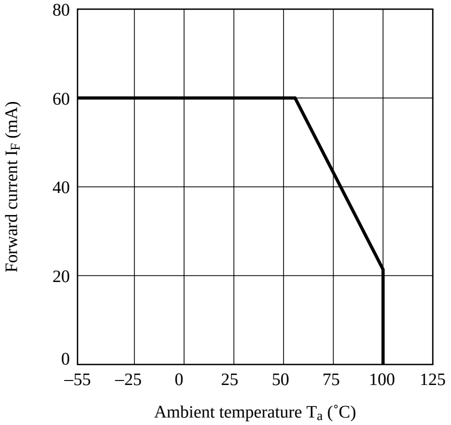
*4 Classification table of collector current is shown below.

| Model No. *5 | Rank mark | $I_C$ (mA) |
|---|---|---|
| **PC702V1NSZX** | A | 4.0 to 8.0 |
| **PC702V2NSZX** | B | 6.3 to 12.5 |
| **PC702V3NSZX** | C | 10.0 to 20.0 |
| **PC702V4NSZX** | D | 16.0 to 32.0 |
| **PC702V5NSZX** | A or B | 4.0 to 12.5 |
| **PC702V6NSZX** | B or C | 6.3 to 20.0 |
| **PC702V7NSZX** | C or D | 10.0 to 32.0 |
| **PC702V0NSZX** | A, B, C or D | 4.0 to 32.0 |

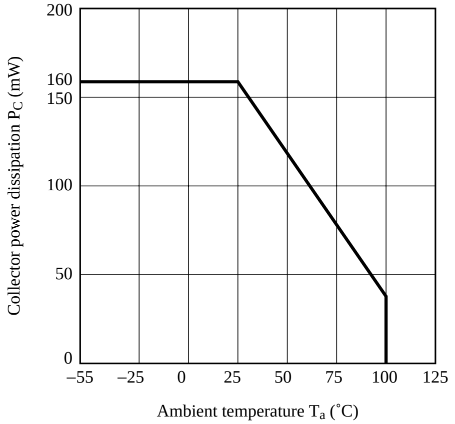
Measuring Conditions
$I_F$=10mA
$V_{CE}$=5V
$T_a$=25°C

*5 **PC702VxYSZX** Series are equivalent.

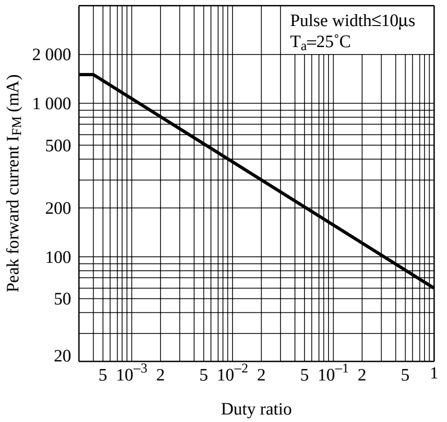
### Fig.1 Forward Current vs. Ambient Temperature



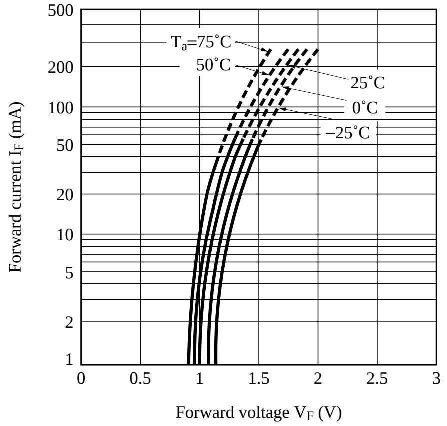

### Fig.2 Collector Power Dissipation vs. Ambient Temperature



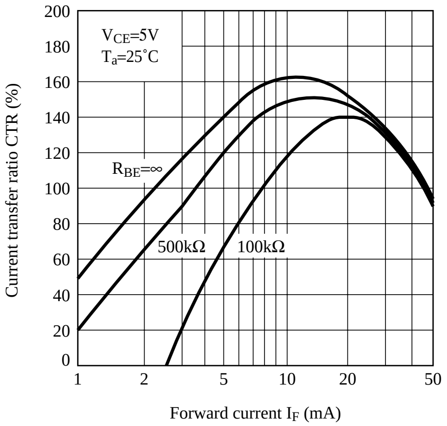
### Fig.3 Peak Forward Current vs. Duty Ratio



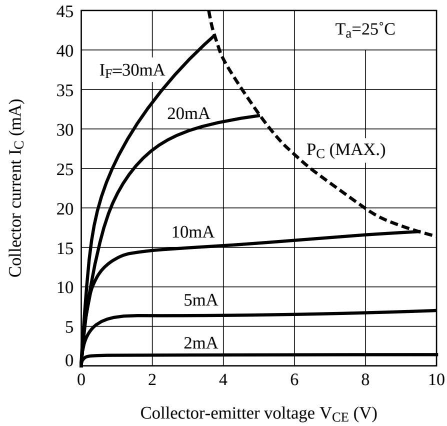

### Fig.4 Forward Current vs. Forward Voltage



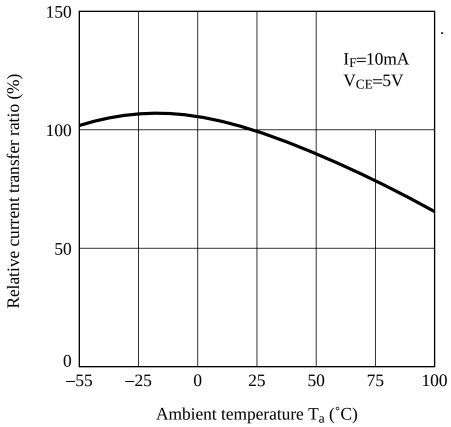

### Fig.5 Current Transfer Ratio vs. Forward Current



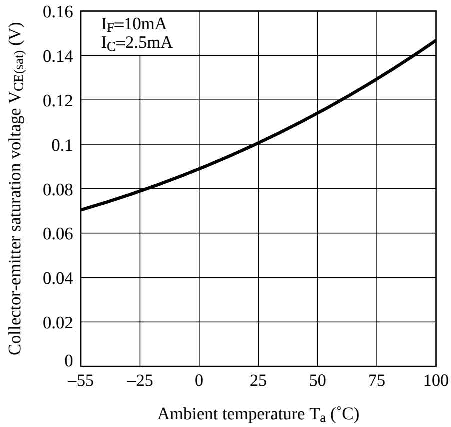

### Fig.6 Collector Current vs. Collector-emitter Voltage



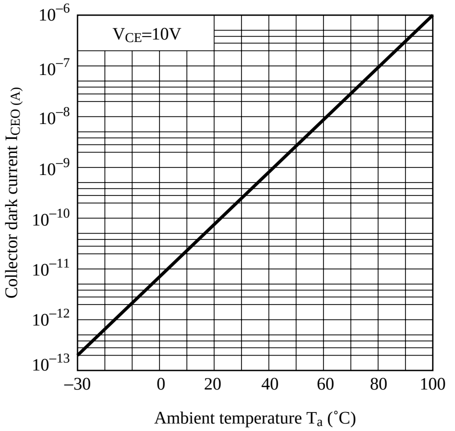

### Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature



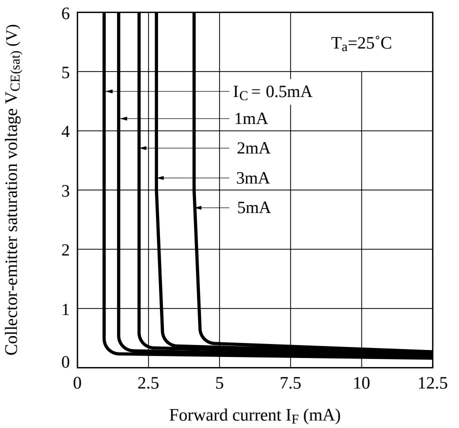

### Fig.8 Collector - emitter Saturation Voltage vs. Ambient Temperature



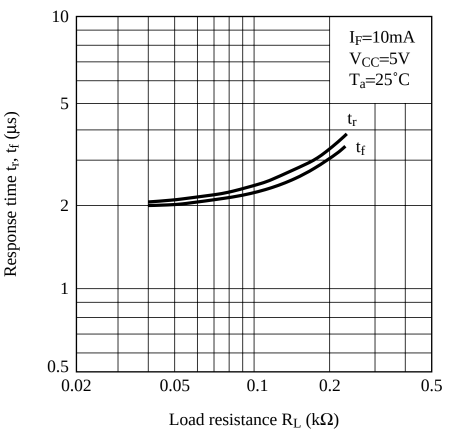
## Fig.9 Collector Dark Current vs. Ambient Temperature



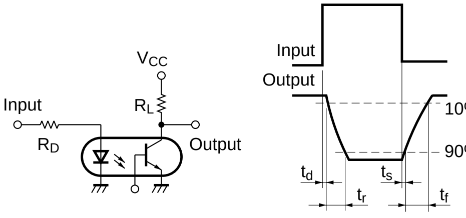

## Fig.10 Collector-emitter Saturation Voltage vs. Forward Current



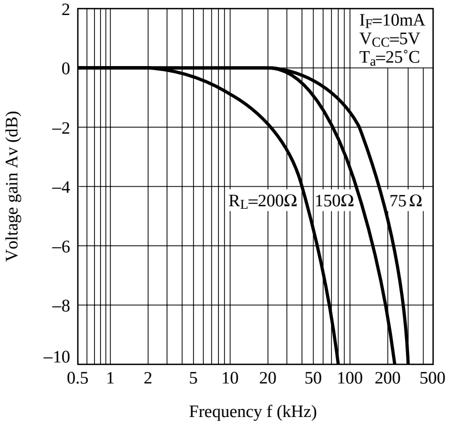

## Fig.11 Response Time vs. Load Resistance



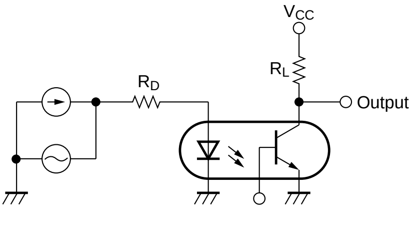

## Fig.12 Test Circuit for Response Time




## Fig.13 Frequency Response




## Fig.14 Test Circuit for Frequency Response



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