

# PC3SD21NTZB Series

## ■ Features

1. Low zero-cross voltage ( $V_{OX(MAX)}=20V$ )
  2. Isolation voltage between input and output ( $V_{iso(rms)}:5kV$ )
  3. High critical rate of rise of OFF-state voltage  
( $dV/dt$ :MIN. 1 000V/ $\mu s$ )
  4. Recognized by UL, file No. E64380
  5. VDE:Under application (optionally available)
- ※ **PC3SD21NTZB Series** are for 200V line

## ■ Applications

1. Home appliances
2. OA equipment, FA equipment
3. SSRs

## ■ Model Line-up

| Minimum trigger current ( $I_{FT(MAX)}$ ) | for AC 200V line   |
|-------------------------------------------|--------------------|
| 7mA                                       | <b>PC3SD21NTZB</b> |
| 5mA                                       | <b>PC3SD21NTZC</b> |
| 3mA                                       | <b>PC3SD21NTZD</b> |

## ■ Absolute Maximum Ratings (Ta=25°C)

|        | Parameter                         | Symbol         | Rating               | Unit |
|--------|-----------------------------------|----------------|----------------------|------|
| Input  | *1 Forward current                | $I_F$          | 50                   | mA   |
|        | Reverse voltage                   | $V_R$          | 6                    | V    |
| Output | *1 RMS ON-state current           | $I_T(rms)$     | 0.1                  | A    |
|        | Peak one cycle surge current      | $I_{surge}$    | 1.2 (50Hz sine wave) | A    |
|        | Repetitive peak OFF-state voltage | $V_{DRM}$      | 600                  | V    |
|        | Operating temperature             | $T_{opr}$      | -30 to +100          | °C   |
|        | Storage temperature               | $T_{stg}$      | -55 to +125          | °C   |
|        | *2 Isolation voltage              | $V_{iso(rms)}$ | 5                    | kV   |
|        | Soldering temperature             | $T_{sol}$      | 260 (For 10s)        | °C   |

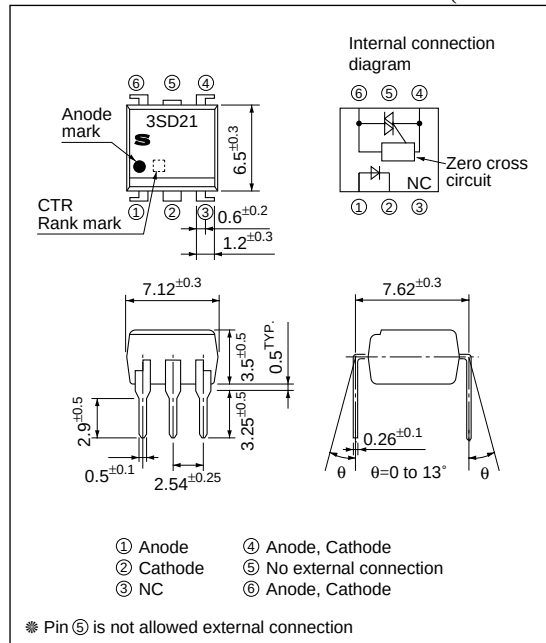
\*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig.1, 2

\*2 AC for 1 min, 40 to 60%RH, f=60Hz

## Phototriac Coupler for Triggering

## ■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

(Ta=25°C)

| Parameter                     |                                            |             | Symbol           | Conditions                                                     | MIN.               | TYP.               | MAX.             | Unit |
|-------------------------------|--------------------------------------------|-------------|------------------|----------------------------------------------------------------|--------------------|--------------------|------------------|------|
| Input                         | Forward voltage                            |             | V <sub>F</sub>   | I <sub>F</sub> =20mA                                           | —                  | 1.2                | 1.4              | V    |
|                               | Reverse current                            |             | I <sub>R</sub>   | V <sub>R</sub> =3V                                             | —                  | —                  | 10 <sup>-5</sup> | μA   |
| Output                        | Repetitive peak OFF-state current          |             | I <sub>DRM</sub> | V <sub>D</sub> =V <sub>DRM</sub>                               | —                  | —                  | 10 <sup>-6</sup> | μA   |
|                               | ON-state voltage                           |             | V <sub>T</sub>   | I <sub>T</sub> =0.1mA                                          | —                  | —                  | 2.5              | V    |
|                               | Holding current                            |             | I <sub>H</sub>   | V <sub>D</sub> =4V                                             | 0.1                | —                  | 3.5              | mA   |
|                               | Critical rate of rise of OFF-state voltage |             | dV/dt            | V <sub>D</sub> =(1/√2) • V <sub>DRM</sub>                      | 1 000              | 2 000              | —                | V/μs |
|                               | Zero-cross voltage                         | PC3SD21NTZB | V <sub>OX</sub>  | Resistance load, I <sub>F</sub> =15mA                          | —                  | —                  | 20               | V    |
|                               |                                            | PC3SD21NTZC |                  | Resistance load, I <sub>F</sub> =8mA                           |                    |                    |                  |      |
|                               |                                            | PC3SD21NTZD |                  |                                                                |                    |                    |                  |      |
| Transfer charac-<br>teristics | Minimum trigger current                    | PC3SD21NTZB | I <sub>FT</sub>  | V <sub>D</sub> =4V, R <sub>L</sub> =100Ω                       | —                  | —                  | 7                | mA   |
|                               |                                            | PC3SD21NTZC |                  |                                                                | —                  | —                  | 5                |      |
|                               |                                            | PC3SD21NTZD |                  |                                                                | —                  | —                  | 3                |      |
|                               | Isolation resistance                       |             | R <sub>ISO</sub> | DC=500V, 40 to 60%RH                                           | 5×10 <sup>10</sup> | 1×10 <sup>11</sup> | —                | Ω    |
|                               | Turn-on time                               |             | t <sub>on</sub>  | V <sub>D</sub> =4V, R <sub>L</sub> =100Ω, I <sub>F</sub> =20mA | —                  | —                  | 50               | μs   |

Fig.1 RMS ON-state Current vs. Ambient Temperature

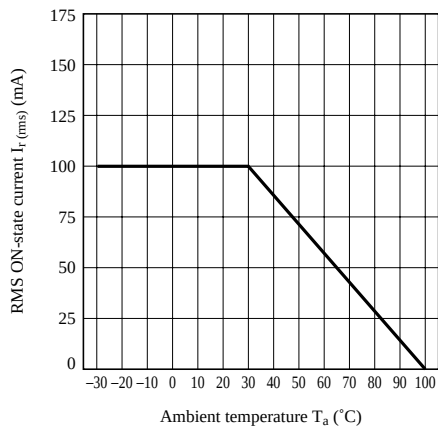
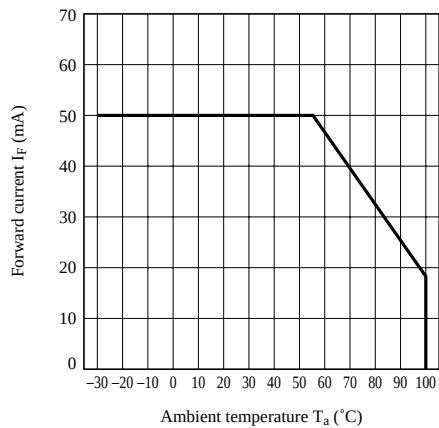
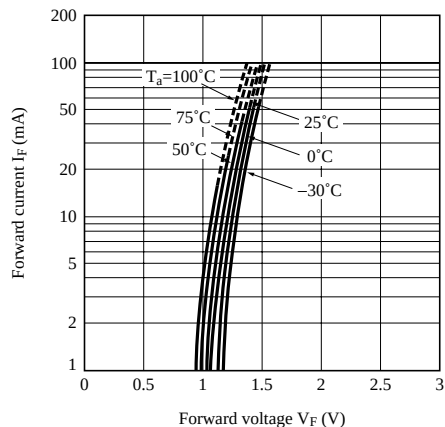


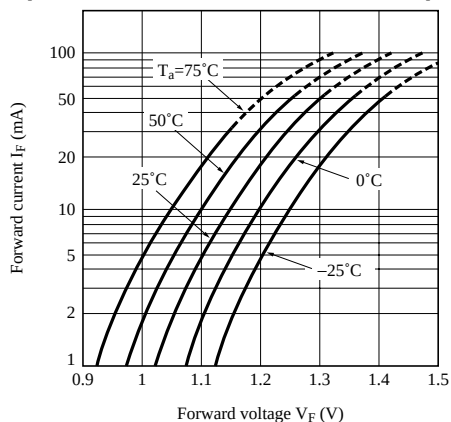
Fig.2 Forward Current vs. Ambient Temperature



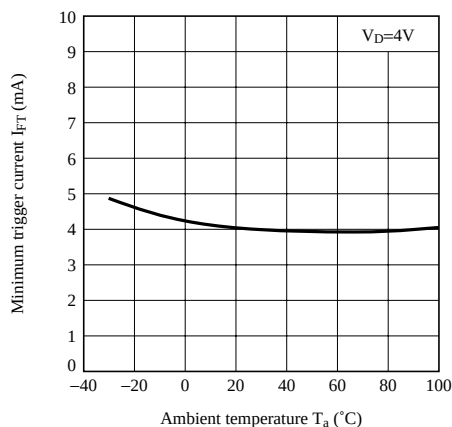
**Fig.3 Forward Current vs. Forward Voltage (PC3SD21NTZB)**



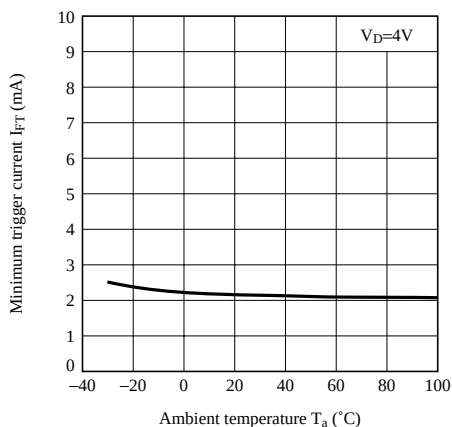
**Fig.4 Forward Current vs. Forward Voltage (PC3SD21NTZC, PC3SD21NTZD)**



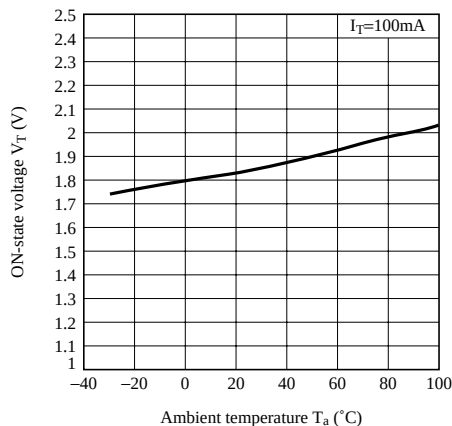
**Fig.5 Minimum Trigger Current vs. Ambient Temperature (PC3SD21NTZB)**



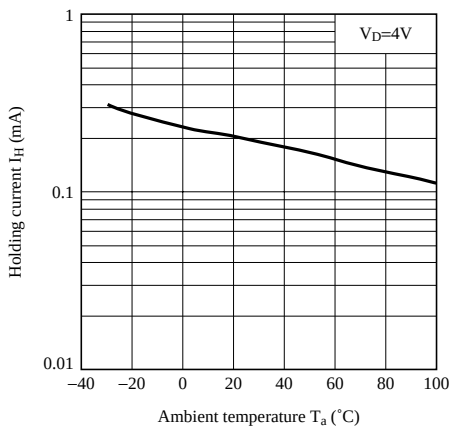
**Fig.6 Minimum Trigger Current vs. Ambient Temperature (PC3SD21NTZC, PC3SD21NTZD)**



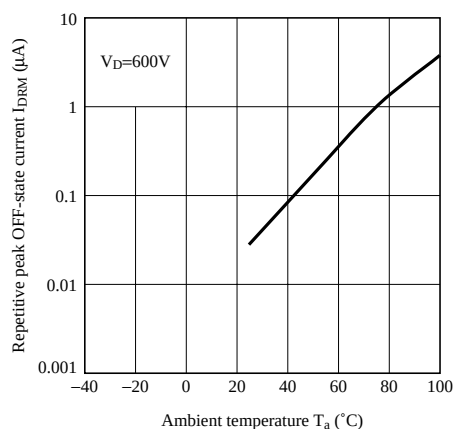
**Fig.7 ON-state Voltage vs. Ambient Temperature**



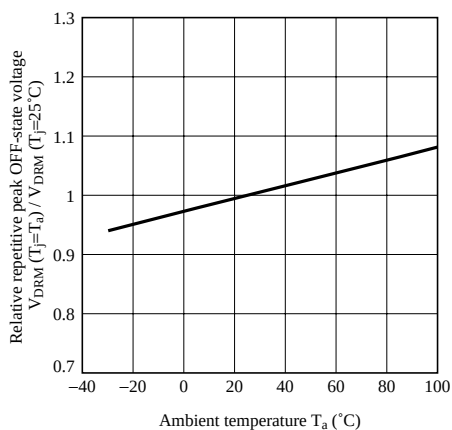
**Fig.8 Holding Current vs. Ambient Temperature**



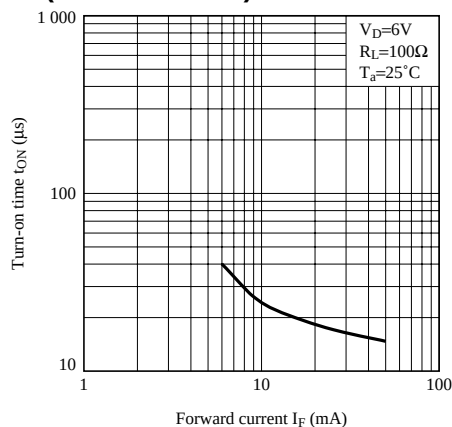
**Fig.9 Repetitive Peak OFF-state Current vs. Ambient Temperature**



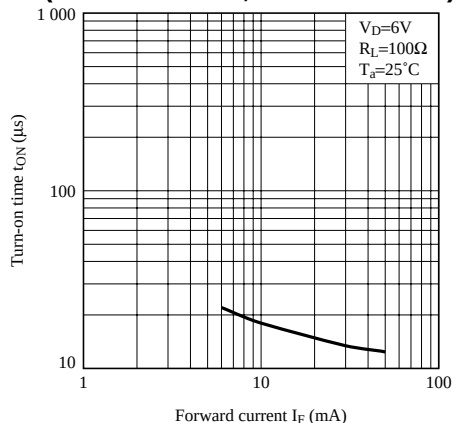
**Fig.10 Relative Repetitive Peak OFF-state Voltage vs. Ambient Temperature**



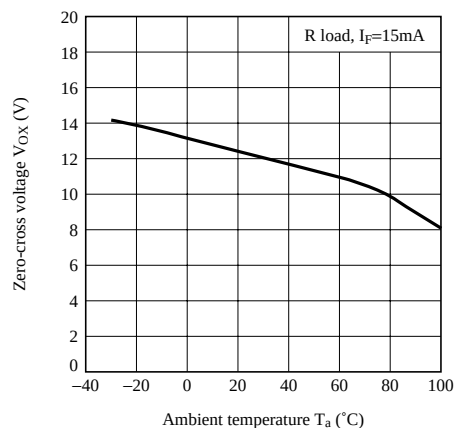
**Fig.11 Turn-on Time vs. Forward Current (PC3SD21NTZB)**



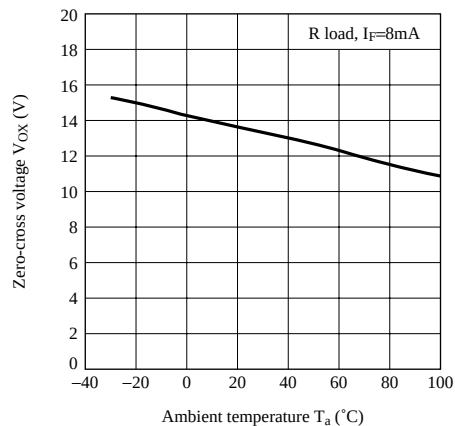
**Fig.12 Turn-on Time vs. Forward Current (PC3SD21NTZC, PC3SD21NTZD)**



**Fig.13 Zero-cross Voltage vs. Ambient Temperature (PC3SD21NTZB)**



**Fig.14 Zero-cross Voltage vs. Ambient Temperature (PC3SD21NTZC, PC3SD21NTZD)**



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