

PC8172xNSZ Series

Low Input Current Type Photocoupler

■ Features

1. Low input current type. ($I_F=0.1\text{mA}$)
2. High resistance to noise due to high common rejection voltage. (CMR:MIN. $10\text{kV}/\mu\text{s}$)
3. Compact dual-in line package.
4. Isolation voltage. ($V_{\text{iso (rms)}}:5\text{kV}$)

■ Applications

1. Programmable controllers.
2. Facsimiles.
3. Telephones.

■ Absolute Maximum Ratings ($T_a=25^\circ\text{C}$)

| Parameter | Symbol | Rating | Unit | |
|--------------------------|-----------------------------|-------------|------------------|----|
| Input | Forward current | I_F | 10 | mA |
| | *1 Peak forward current | I_{FM} | 200 | mA |
| | Reverse voltage | V_R | 6 | V |
| | Power dissipation | P | 15 | mW |
| Output | Collector-emitter voltage | V_{CEO} | 70 | V |
| | Emitter-collector voltage | V_{ECO} | 6 | V |
| | Collector current | I_C | 50 | mA |
| | Collector power dissipation | P_C | 150 | mW |
| Total power dissipation | P_{tot} | 170 | mW | |
| Operating temperature | T_{opr} | -30 to +100 | $^\circ\text{C}$ | |
| Storage temperature | T_{stg} | -55 to +125 | $^\circ\text{C}$ | |
| *2 Isolation voltage | $V_{\text{iso (rms)}}$ | 5 | kV | |
| *3 Soldering temperature | T_{sol} | 260 | $^\circ\text{C}$ | |

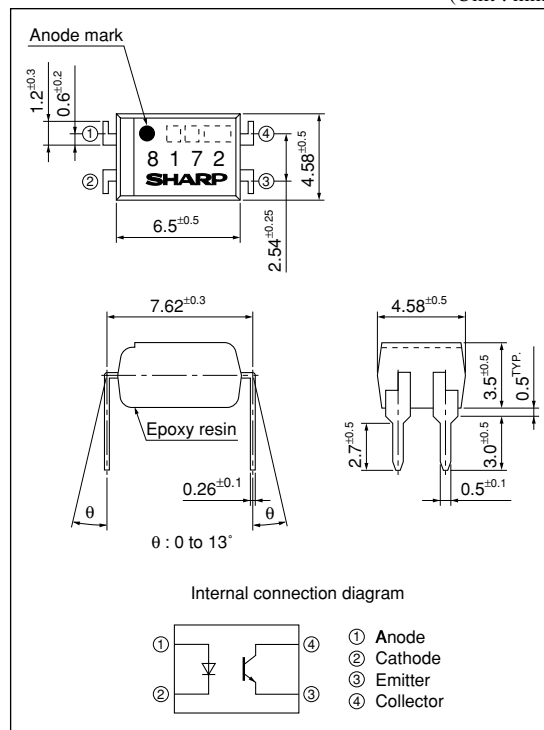
*1 Pulse width $\leq 100\mu\text{s}$, Duty ratio=0.001

*2 40 to 60%RH, AC for 1 minute, $f=60\text{Hz}$

*3 For 10s

■ Outline Dimensions

(Unit : mm)



■ Electro-optical Characteristics

(T_a=25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit | |
|--------------------------|--------------------------------------|----------------------|--|---|--------------------|------|------|-------|
| Input | Forward voltage | V _F | I _F =5mA | - | 1.2 | 1.4 | 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} =50V, I _F =0 | - | - | 100 | nA | |
| | Collector-emitter breakdown voltage | BV _{CEO} | I _C =0.1mA, I _F =0 | 70 | - | - | V | |
| | Emitter-collector breakdown voltage | BV _{EBO} | I _E =10μA, I _F =0 | 6 | - | - | V | |
| Transfer characteristics | Collector current | I _C | I _F =0.1mA, V _{CE} =5V | 0.1 | - | 0.5 | mA | |
| | Collector-emitter saturation voltage | V _{CE(sat)} | I _F =5mA, I _C =1mA | - | 0.1 | 0.3 | V | |
| | Isolation resistance | R _{ISO} | DC500V 40 to 60%RH | 5×10 ¹⁰ | 1×10 ¹¹ | - | Ω | |
| | Floating capacitance | C _f | V=0, f=1MHz | - | 0.6 | 1.0 | pF | |
| | Response time | Rise time | t _r | V _{CE} =2V, I _C =2mA, R _L =100Ω | - | 4 | 18 | μs |
| | | Fall time | t _f | | - | 3 | 18 | μs |
| | *4 Common mode rejection voltage | | CMR | T _a =25°C, R _L =470Ω, V _{CM} =1.5kV (peak), I _F =0mA, V _{CC} =9V, V _{np} =100mV | 10 | - | - | kV/μs |

*4 Refer to Fig.1.

Fig.1 Test Circuit for Common Mode Rejection Voltage

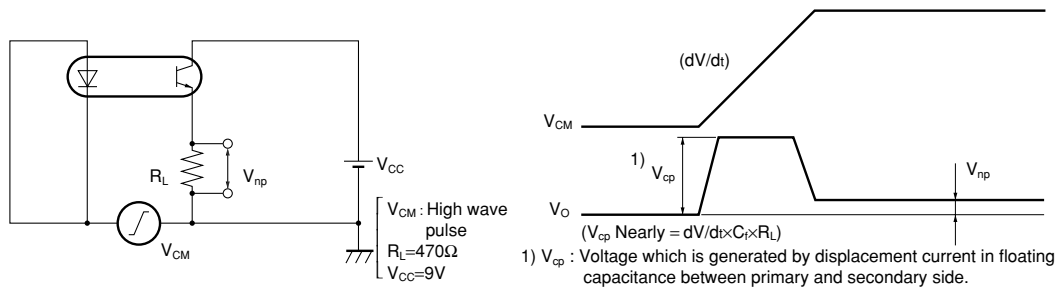


Fig.2 Forward Current vs. Ambient Temperature

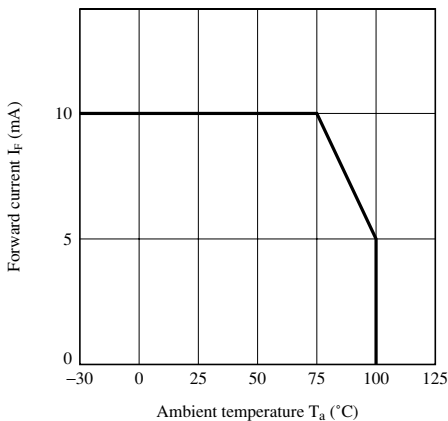


Fig.3 Diode Power Dissipation vs. Ambient Temperature

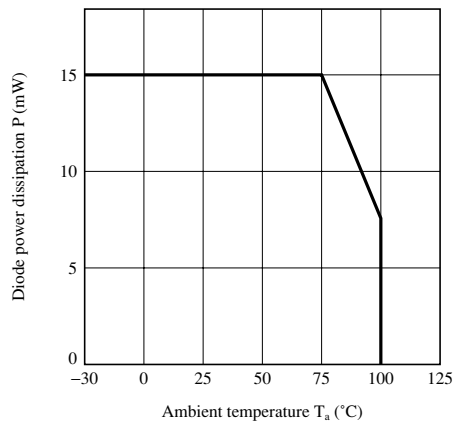


Fig.4 Collector Power Dissipation vs. Ambient Temperature

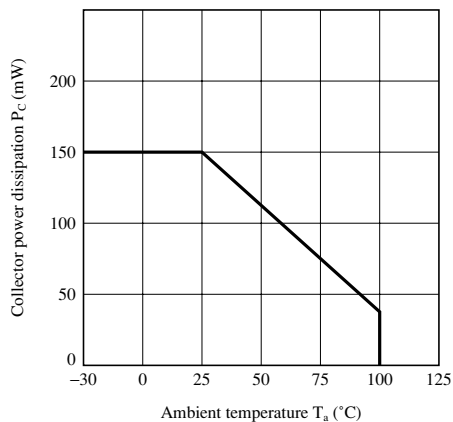


Fig.5 Total Power Dissipation P_{tot} vs. Ambient Temperature

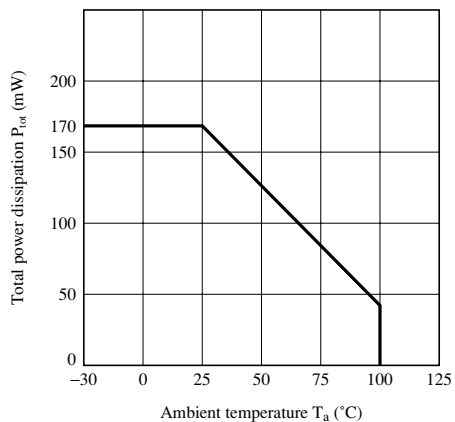
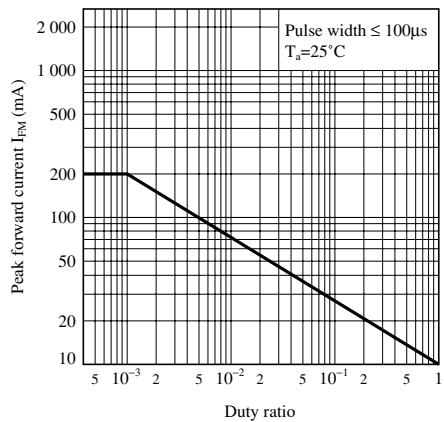


Fig.6 Peak Forward Current vs. Duty Ratio



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