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# OKI electronic components

# OCS32

**Optical PNPN Switches**

## GENERAL DESCRIPTION

The OCS32 is an optical PNPN switch, combining an infrared light emitting diode and PNPN elements (photothyristors) in a single 8-pin plastic package. The GaAs light emitting diode acts as the input element of the switch, activating the output photosensor when the light emitting diode is turned on. The device is capable of withstanding high voltages. Moreover, the connection method used in the output PNPN element permits bidirectional control.
The OCS32 is designed for extended life-time operation, making the device ideal for applications such as communications and telephone switching equipment.

## FEATURES

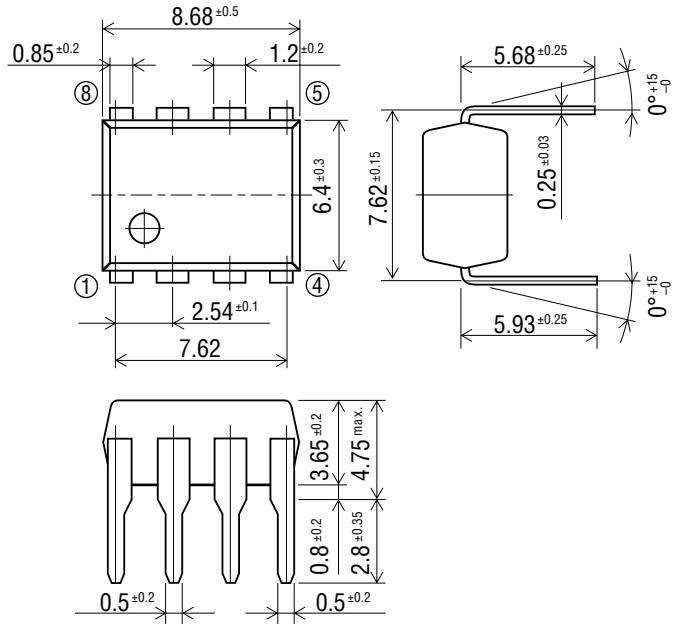
- Bidirectional control
- Protection function eliminating need for power outage countermeasures
- High blocking voltage ($V_{BO}$): 320 V (Min.)
- Trigger input current ($I_{GO}$): 30 mA (Max.)
- Bidirectional 2-line control

## APPLICATIONS

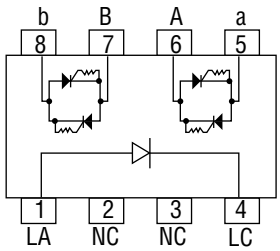
- Electronic automatic exchange
- Key telephone system
- Optically coupled circuits

## PIN CONFIGURATION

**(Unit: mm)**




• Pin Connection Diagram




1: Anode (LED)
2: NC (No connection)
3: NC (No connection)
4: Cathode (LED)
5: Output (PNPN)
6: Output (PNPN)
7: Output (PNPN)
8: Output (PNPN)

## ABSOLUTE MAXIMUM RATINGS

| Parameter | | Symbol | Test Condition | Rating | Unit |
|---|---|---|---|---|---|
| Input (LED) | Forward Current | $I_G$ | Ta=25°C | 60 | mA |
| | Reverse Voltage | $V_{RL}$ | | 5 | V |
| Output (PNPN) | Forward Blocking Voltage | $V_{BO}$ | | 350 | V |
| | Continuous ON-State Current | $I_F$ | | 100 | mA |
| | | | | 150*1 | |
| | Surge ON-State Current *2 | $I_{SUG}$ | | 1.4 | A |
| Isolation Breakdown Voltage | | $V_{I-O}$ | | 1500 | V |
| Operating Temperature | | $T_{opr}$ | — | +10 to +70 | °C |
| Storage Temperature | | $T_{stg}$ | — | –30 to +100 | °C |

*1 50 hour Max
*2 A single 1 ms pulse

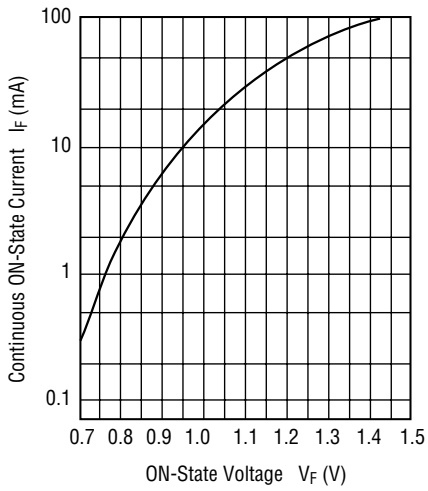
## ELECTRICAL CHARACTERISTICS

(Ambient Temperature Ta=25°C)

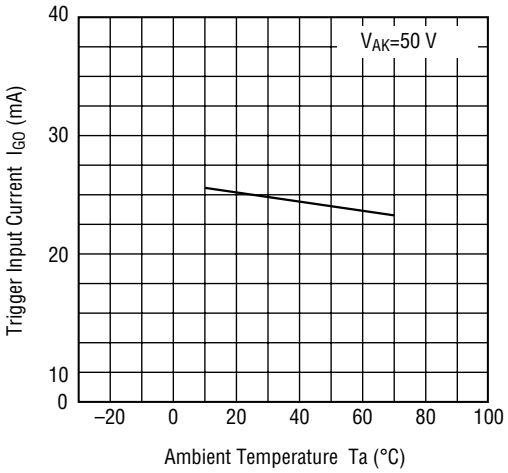
| Parameter | | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| Input Characteristics | Forward Voltage | $V_{FL}$ | $I_G$=32 mA | — | — | 1.33 | V |
| | Reverse Current | $I_{RL}$ | $V_{RL}$=5 V | — | — | 5 | μA |
| Output Characteristics | OFF-State Current | $I_{BO}$ | $V_{BO}$=320 V | — | — | 5 | μA |
| | ON-State Voltage | $V_F$ | $I_F$=20 mA, $I_G$=40 mA | — | — | 1.3 | V |
| | dV/dt Capability | dV/dt | dt=0.1 μs | 160 | — | — | V/0.1μs |
| | Holding Current | $I_H$ | ON to OFF | 0.12 | — | 1.1 | mA |
| Coupled Characteristics | Trigger Input Current | $I_{GO}$ | $V_{AK}$=50 VDC | — | — | 30 | mA |

## TYPICAL CHARACTERISTICS

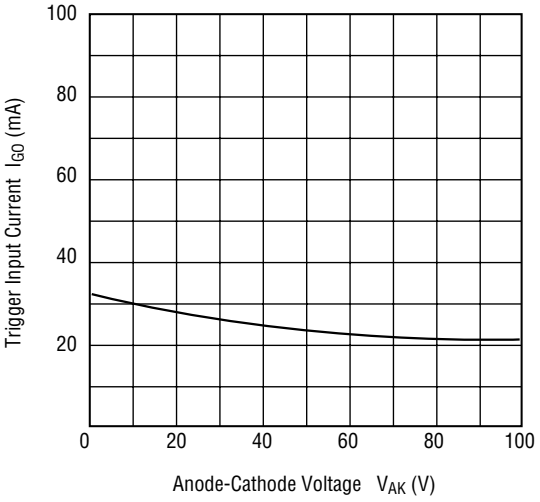
- **Continuous ON-State Current vs. ON State Voltage (Ta=25°C)**



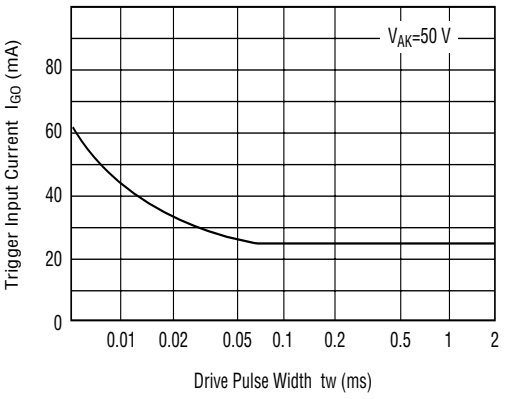

- **Trigger Input Current vs. Ambient Temperature**



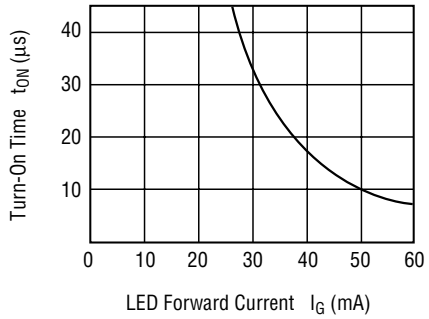

- **Trigger Input Current vs. Anode-Cathode Voltage (Ta=25°C)**

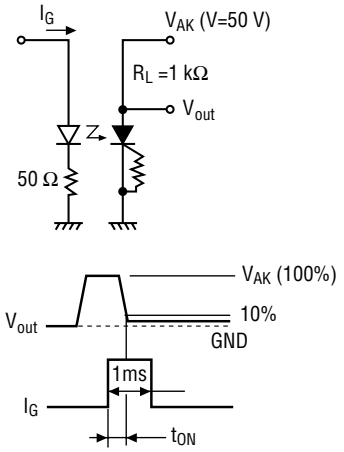



- **Trigger Input Current vs. Drive Pulse Width (Ta=25°C)**

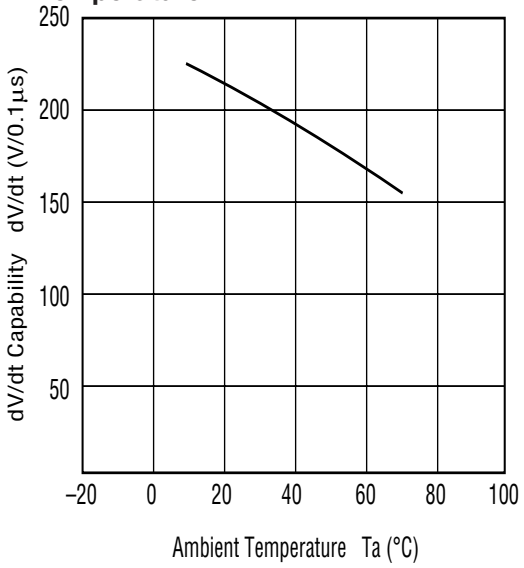


- **Turn-On Time vs. LED Forward Current (Ta=25°C)**




- **dV/Ft Capability vs. Ambient Temperature**




- **Input LED Foward Current vs. Voltage**