

OKI electronic components

OCS30

Optical PNPN Switches

GENERAL DESCRIPTION

The OCS30 is an optical switch formed by combining an infrared light emitting diode and a PNPN element (photothyristor) that can withstand high voltages. The device is encased in an 8-pin plastic package. The output PNPN element of the OCS30 forms a bridge configuration, giving the device rectification capabilities.

FEATURES

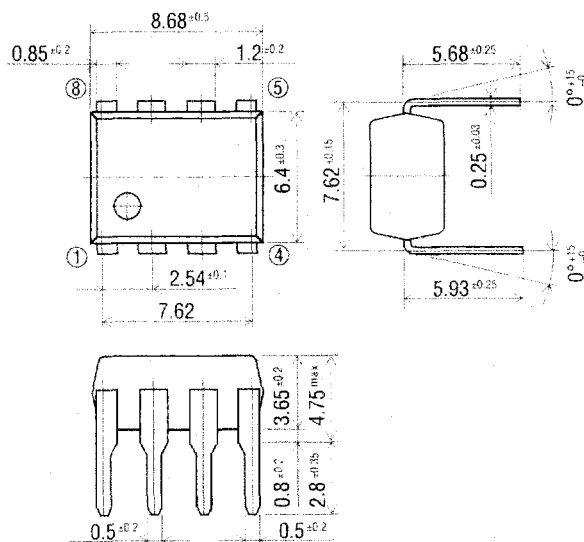
- Optical switch with photocoupler type $1 \times 1 \times 2$ W (single) bridge
- Available for direct connection to subscriber line
- Total electrical isolation of drive circuit and channel circuit
- Protection function eliminating need for power outage countermeasures
- Simple polarity agreement
- UL recognized — File number: E86831

APPLICATIONS

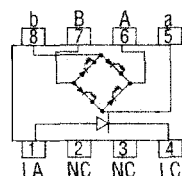
- Electronic automatic exchange
- Key telephone system
- Optically coupled circuits

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	$T_a=25^\circ\text{C}$	60	mA
	Reverse Voltage	V_{RL}		5	V
Output (PNPN)	Forward Blocking Voltage	V_{BO}		350	V
	Reverse Voltage	V_{BD}		350	V
	Continuous ON-State Current	I_F		100	mA
	Surge ON-State Current *	I_{SUG}		1.4	A
Isolation Voltage		V_{I-O}		1500	V
Operating Temperature		T_{opr}	—	-20 to +70	$^\circ\text{C}$
Storage Temperature		T_{stg}	—	-30 to +100	$^\circ\text{C}$

* A single 1 ms pulse

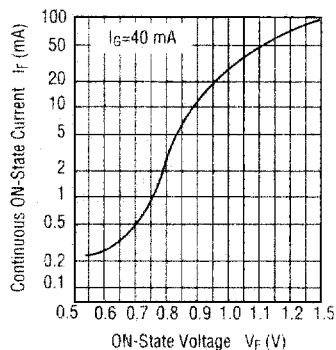
ELECTRICAL CHARACTERISTICS

(Ambient Temperature $T_a=25^\circ\text{C}$)

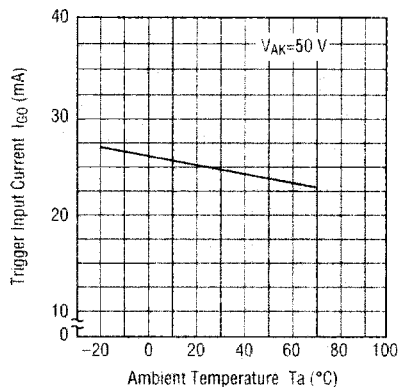
	Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Characteristics	Forward Voltage	V_{FL}	$I_G=40\text{ mA}$	—	—	1.4	V
	Reverse Current	I_{RL}	$V_{RL}=5\text{ V}$	—	—	5	μA
Output Characteristics	OFF-State Current	I_{BO}	$V_{BO}=320\text{ V}$	—	—	5	μA
	Reverse Current	I_{BD}	$V_{BD}=320\text{ V}$	—	—	5	μA
	ON-State Voltage	V_F	$I_F=20\text{ mA}, I_G=40\text{ mA}$	—	—	1.0	V
	ON Resistance	R_{ON}	$I_F=20\text{ mA}, \Delta I_F=1\text{ mA}, I_G=40\text{ mA}$	—	—	10	Ω
	dV/dt Capability	dV/dt	dt=0.1 μs	120	—	—	V/0.1 μs
	Holding Current	I_H	ON to OFF	—	—	1.3	mA
Coupled Characteristics	Trigger Input Current	I_{GO}	$V_{AK}=50\text{ VDC}$	—	—	25	mA
	Reverse Photo Current	I_L	$V_{KA}=50\text{ V}, I_G=40\text{ mA}$	—	—	650	μA

TYPICAL CHARACTERISTICS

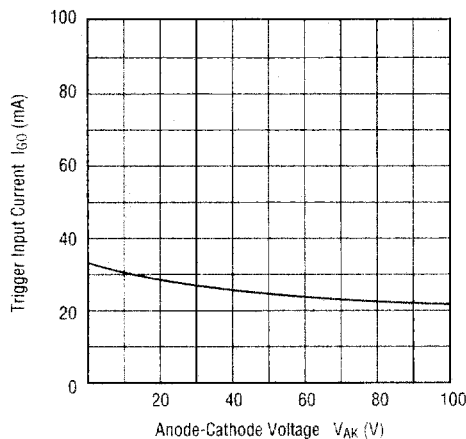
- Continuous ON-State Current vs. ON-State Voltage ($T_a=25^\circ\text{C}$)



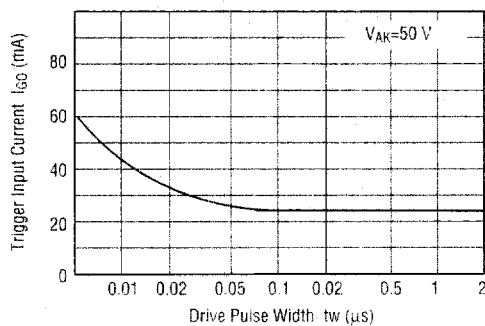
- Trigger Input Current vs. Ambient Temperature



- Trigger Input Current vs. Anode-Cathode Voltage ($T_a=25^\circ\text{C}$)



- Trigger Input Current vs. Drive Pulse Width



- Turn On Time vs. LED Forward Current (Ta=25°C)
- dV/dt Capability vs. Ambient Temperature

