OCS33

Optical PNPN Switches

GENERAL DESCRIPTION

The OCS33 is an optical PNPN switch, combining a GaAs infrared light emitting diode and a silicon PNPN photo sensor in a single 8-pin plastic package. The GaAs light emitting diode acts as the input element of the switch, activating the output photo sensor when the light emitting diode is turned on. The device is capable of withstanding high voltages.
The OCS33 is designed for extended life-time operation, making the device ideal for applications such as communications and telephone switching equipment.

FEATURES

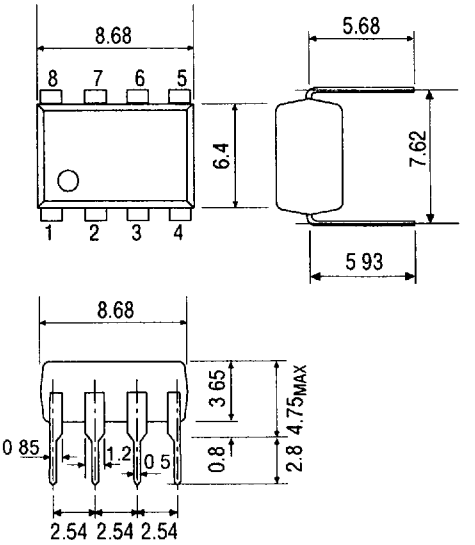
- Forward blocking voltage (V_{BO}, V_{BD}): 320 V (Min.)
- Trigger input current (I_{GO}): 15 mA (Max.)

APPLICATIONS

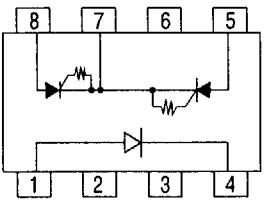
- Electronic automatic exchange
- Key telephone system
- Contactless switch
- Optically coupled transistor circuit.

PIN CONFIGURATION

(Unit: mm)



• Pin Connection Diagram



1: Anode (LED)
2: NC
3: NC
4: Cathode (LED)
5: Output PNPN
6: NC
7: Output PNPN
8. Output PNPN

ABSOLUTE MAXIMUM RATINGS

(Ambient Temperature Ta=25°C)

Parameter		Symbol	Rating	Unit
Input (LED)	Forward Current	I_G	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	°C
Storage Temperature		T_{stg}	−30 to +100	°C

* At pulse width 1 ms once

- **Wavelength at Peak Emission**
  Light source : 940 nm
  Photodetector: 940 nm

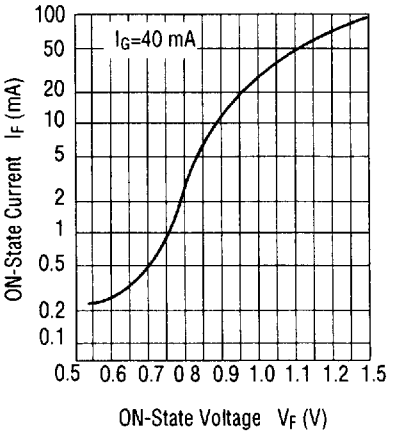
ELECTRICAL CHARACTERISTICS

(Ambient Temperature Ta=25°C)

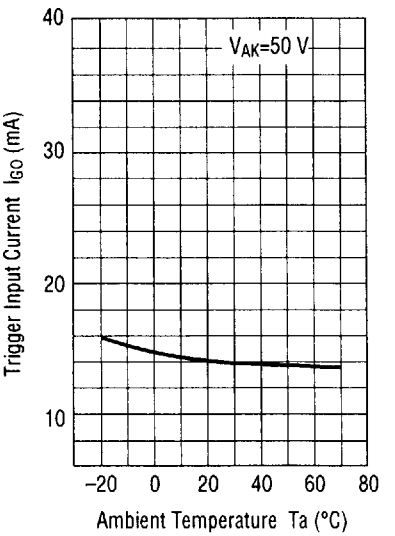
Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input Characteristics	Forward Voltage	V_{FL}	I_G=40 mA	—	—	1.4	V
	Reverse Current	I_{RL}	V_{RL}=5 V	—	—	5	μA
Output Characteristics	OFF-State Current	I_{BO}	V_{AK}=320 V	—	—	5	μA
	Reverse Voltage	I_{BD}	V_{AK}=320 V	—	—	5	μA
	ON-State Voltage	V_F	I_F=20 mA, I_G=40 mA	—	—	1.0	V
	dV/dt Capability	dV/dt	dt=0.1 μs	120	—	—	V/0 1μs
	Holding Current	I_H	ON to OFF	—	—	1.3	mA
Coupled Characteristics	Trigger Input Current	I_{GO}	V_{AK}=500 VDC	—	—	15	mA

TYPICAL CHARACTERISTICS

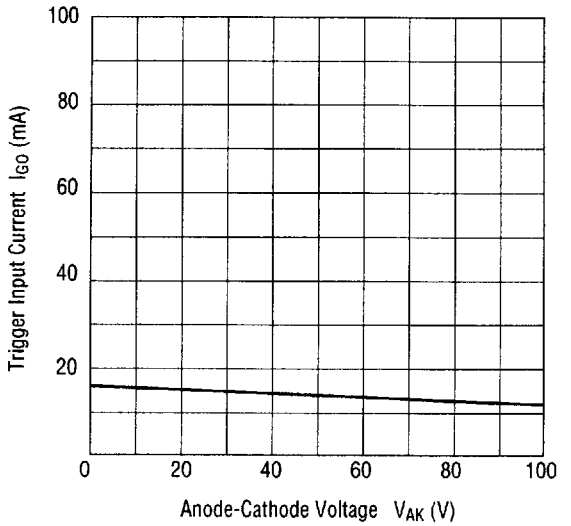
- **ON-State Current vs. ON-State Voltage (Ta=25°C)**



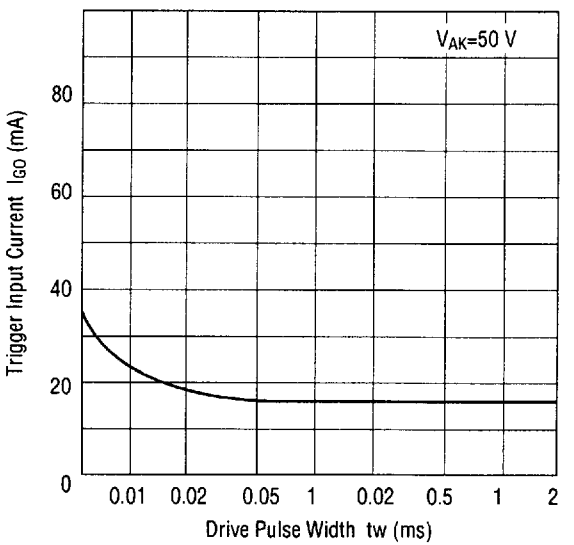
- **Trigger Input Current vs. Ambient Temperature**



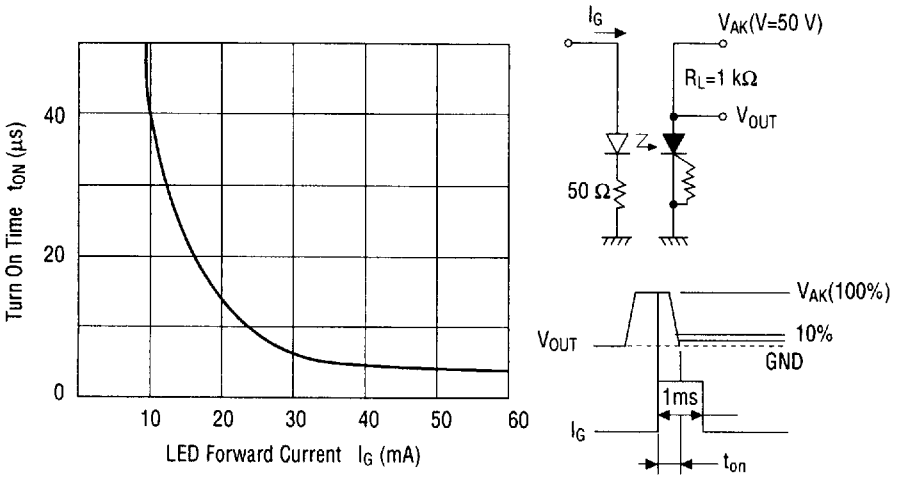
- **Trigger Input Current vs. Anode-Cathode Voltage (Ta=25°C)**



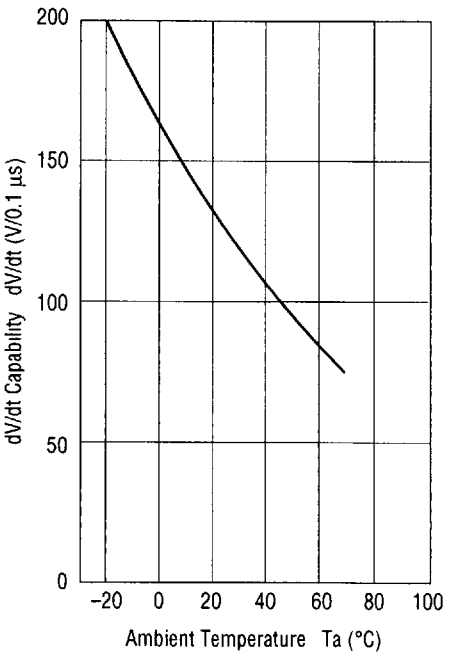
- **Trigger Input Current vs. Drive Pulse Width (Ta=25°C)**



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



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



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