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## 2N4987 Silicon Unilateral Switch (SUS) TO-98 Type Package

**Description:**

The 2N4987 is a planar monolithic silicon integrated circuit having thyristor electrical characteristics closely approximating those of an “ideal” four layer diode. The device is designed to switch at 8V with a 0.02%/°C temperature coefficient. A gate lead is provided to eliminate rat effect, obtain triggering information at lower voltages and to obtain transient free wave forms.

Silicon Unilateral Switches are specifically designed and characterized for use in monostable and bistable applications where low cost is of prime importance.

**Applications:**

- SCR Triggers
- Frequency Dividers
- Ring Counters
- Cross Point Switching
- Over-Voltage Sensors

**Absolute Maximum Ratings:**

Peak Reverse Voltage .....	30V
Peak Recurrent Forward Current (1% duty cycle, 10µs pulse width, T <sub>A</sub> = +100°C) .....	1A
Peak Non-Recurrent Forward Current (10µs pulse width) .....	5A
DC Forward Anode Current (Note 1) .....	175mA
DC Gate Current (Note 1, Note 2) .....	5mA
Power Dissipation (Note 1) .....	300mW
Operating Junction Temperature Range .....	-65° to +125°C
Storage Temperature Range .....	-65° to +150°C

Note 1. Derate linearly to zero at +125°C

Note 2. This rating applicable only in OFF state. Maximum gate current in conducting state limited by maximum power rating.

**Electrical Characteristics:** (T<sub>A</sub> = +25°C, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Voltage Drop (On-State)	V <sub>F</sub>	I <sub>F</sub> = 175mA	-	-	1.5	V
Forward Switching Voltage	V <sub>S</sub>		6	-	10	V
Forward Current (Off-State)	I <sub>B</sub>	V <sub>F</sub> = 5V, T <sub>A</sub> = +25°C	-	-	0.1	µA
		V <sub>F</sub> = 5V, T <sub>A</sub> = +100°C	-	-	10	µA

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$ , unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Switching Current	$I_S$		-	-	500	$\mu\text{A}$
Reverse Current	$I_R$	$V_R = -30\text{V}, T_A = +25^\circ\text{C}$	-	-	0.1	$\mu\text{A}$
		$V_R = -30\text{V}, T_A = +100^\circ\text{C}$	-	-	10	$\mu\text{A}$
Holding Current	$I_H$		-	-	1.55	$\text{mA}$
Temperature Coefficient of Switching Voltage	$T_C$	$T_A = -55^\circ$ to $+100^\circ\text{C}$	-	$\pm 0.02$	-	$\%/^\circ\text{C}$
Turn-On Time	$t_{on}$		-	-	1.0	$\mu\text{s}$
Turn-Off Time	$t_{off}$		-	-	25	$\mu\text{s}$
Peak Pulse Voltage	$V_O$		3.5	-	-	V
Capacitance	C	$0\text{V}, f = 1\text{MHz}$	-	2.5	-	$\text{pF}$

