## **SIEMENS**

# 4N39 PHOTO SCR OPTOCOUPLER

#### **FEATURES**

- Turn On Current (I<sub>FT</sub>), 5.0 mA Typical
- Gate Trigger Current (I<sub>GT</sub>), 20 mA
- Surge Anode Current, 10 Amp
- Blocking Voltage, 200 VAC<sub>PK</sub>
- Gate Trigger Voltage (VGT), 0.6 Volt
- Isolation Voltage, 5300 VAC<sub>RMS</sub>
- Solid State Reliability
- Standard DIP Package
- Underwriters Lab File #E52744

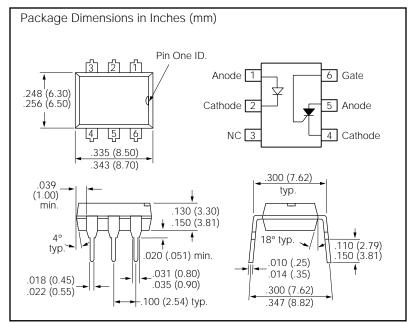
#### **DESCRIPTION**

The 4N39 is an optically coupled SCR with a Gallium Arsenide infrared emitter and a silicon photo SCR sensor. Switching can be achieved while maintaining a high degree of isolation between triggering and load circuits. The 4N39 can be used in SCR triac and solid state relay applications where high blocking voltages and low input current sensitivity are required.

### **Maximum Ratings**

#### **Emitter**

Lillittei	
Peak Reverse Voltage6.0	٧
Peak Forward Current	
(100 μs, 1% Duty Cycle)1.0	Α
Continuous Forward Current 60 m	Α
Power Dissipation at 25°C100 mV	N
Derate Linearly from 50°C2 mW/°	С
Detector	
Reverse Gate Voltage6.0	٧
Anode Peak Blocking Voltage200	
Peak Reverse Gate Voltage6	٧
Anode Current 300 m	
Surge Anode Current (100 µs duration) 10	Α
Surge Gate Current (5 ms duration) 100 m	Α
Power Dissipation, 25°C ambient400 mV	
Derate Linearly from 25°C8 mW/°	С
Package	
Isolation Test Voltage (1 sec.) 5300 VAC <sub>RM</sub>	IS
Isolation Resistance	
$V_{IO} = 500 \text{ V, } T_A = 25^{\circ}\text{C} \dots \ge 10^{12} \text{ s}$	Ω
V <sub>IO</sub> =500 V, T <sub>A</sub> =100°C≥10 <sup>11</sup> s	Ω
Total Package Dissipation450 m <sup>1</sup>	
Derate Linearly from 50°C9 mW/°	С
Operating Temperature55°C to +100°	С
Storage Temperature55°C to +150°	С
Soldering Temperature (10 s.)260°	



Characteristics (T<sub>△</sub>=25°C)

	Sym- bol	Min.	Typ	Max	Unit	Condition
Emitter			I.			1
Forward Voltage	٧ <sub>F</sub>		1.2	1.5	V	I <sub>F</sub> =20 mA
Reverse Current	I <sub>R</sub>			10	μА	V <sub>R</sub> =5 V
Detector	•		•	•		
Forward Blocking Voltage	V <sub>DM</sub>	200			V	R <sub>GK</sub> =10 KΩ T <sub>A</sub> =100°C I <sub>d</sub> =150 μA
Reverse Blocking Voltage	V <sub>RM</sub>	200			V	
On-state Voltage	V <sub>TM</sub>			1.2	V	I <sub>TM</sub> =300 mA
Holding Current	lH			200	μА	R <sub>GK</sub> =27 KΩ V <sub>FX</sub> =50 V
Gate Trigger Voltage	V <sub>GT</sub>		0.6	1.0	V	$V_{\text{FX}}=100 \text{ V}$ $R_{\text{GK}}=27 \text{ K}\Omega$ $R_{\text{L}}=10 \text{ K}\Omega$
Forward Leakage Current	IDM			50	μΑ	$R_{GK} = 10 \text{ K}\Omega$ $V_{RX} = 200 \text{ V}$ $I_{F} = 0$ , $T_{A} = 100 ^{\circ}\text{C}$
Reverse Leakage Current	RM			50	μА	$R_{GK}=27 \text{ K}\Omega$ $V_{RX}=200 \text{ V}$ $I_{F}=0$ , $T_{A}=100^{\circ}\text{C}$
Package	'		•	•		
Turn-0n Current	I <sub>FT</sub>		15	30	mA	V <sub>FX</sub> =50 V R <sub>GK</sub> =10 KΩ
			8	14		V <sub>FX</sub> =100 V R <sub>GK</sub> =27 KΩ
Isolation Capaci- tance			2		pF	f=1 MHz