4N39
Photo SCR Optocoupler

FEATURES
- **Turn On Current (I_{FT}), 5.0 mA Typical**
- **Gate Trigger Current (I_{GT}), 20 mA**
- **Surge Anode Current, 10 Amp**
- **Blocking Voltage, 200 V_{ACPK}**
- **Gate Trigger Voltage (V_{GT}), 0.6 Volt**
- **Isolation Voltage, 5300 V_{RMS}**
- **Solid State Reliability**
- **Standard DIP Package**
- **Underwriters Lab File #E52744**
- **VDE Approval #0884 Available with Option 1**

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

Peak Reverse Voltage ..... 6.0 V
Peak Forward Current
(100 µs, 1% Duty Cycle)..... 1.0 A
Continuous Forward Current ..... 60 mA
Power Dissipation at 25°C..... 100 mW
Derate Linearly from 50°C ..... 2.0 mW/°C

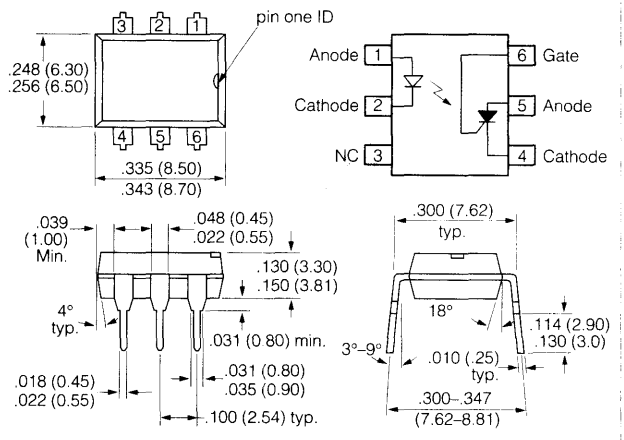
Detector

Reverse Gate Voltage..... 6.0 V
Anode Peak Blocking Voltage ..... 200 V
Peak Reverse Gate Voltage..... 6.0 V
Anode Current..... 300 mA
Surge Anode Current (100 µs duration)..... 10 A
Surge Gate Current (5.0 ms duration)..... 100 mA
Power Dissipation, 25°C ambient..... 400 mW
Derate Linearly from 25°C..... 8.0 mW/°C

Package

Isolation Test Voltage (1.0 sec.)..... 5300 V_{RMS}
Isolation Resistance
V_{IO}=500 V, T_A=25°C.....≥10^{12} Ω
V_{IO}=500 V, T_A=100°C.....≥10^{11} Ω
Total Package Dissipation ..... 450 mW
Derate Linearly from 50°C ..... 9.0 mW/°C
Operating Temperature ..... –55°C to +100°C
Storage Temperature..... –55°C to +150°C
Soldering Temperature (10 s.).....260°C

Dimensions in Inches (mm)



Characteristics T_A=25°C

Parameters	Sym.	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V_F	—	1.2	1.5	V	I_F=20 mA
Reverse Current	I_R	—	—	10	µA	V_R=5.0 V
Detector						
Forward Blocking Voltage	V_{DM}	200	—	—	V	R_{GK}=10 kΩ T_A=100°C I_d=150 µA
Reverse Blocking Voltage	V_{RM}	200	—	—	V	
On-state Voltage	V_{TM}	—	—	1.2	V	I_{TM}=300 mA
Holding Current	I_H	—	—	200	µA	R_{GK}=27 kΩ V_{FX}=50 V
Gate Trigger Voltage	V_{GT}	—	0.6	1.0	V	V_{FX}=100 V R_{GK}=27 kΩ R_L=10 KΩ
Forward Leakage Current	I_{DM}	—	—	50	µA	R_{GK}=10 kΩ V_{RX}=200 V I_F=0, T_A=100°C
Reverse Leakage Current	I_{RM}	—	—	50	µA	R_{GK}=27 kΩ V_{RX}=200 V I_F=0, T_A=100°C
Package						
Turn-On Current	I_{FT}	—	15	30	mA	V_{FX}=50 V R_{GK}=10 kΩ
		—	8.0	14	—	V_{FX}=100 V R_{GK}=27 kΩ
Isolation Capacitance	—	—	2.0	—	pF	f=1.0 MHz