

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 VAC_{PK}
- Gate Trigger Voltage (V_{GT}), 0.6 Volt
- Isolation Voltage, 5300 VAC_{RMS}
- 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

Peak Reverse Voltage6.0 V
Peak Forward Current

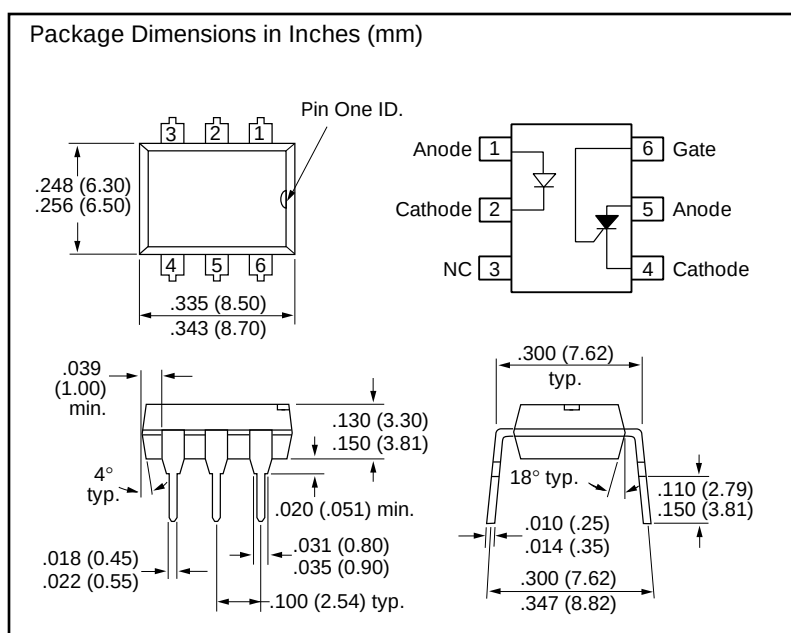
(100 μ s, 1% Duty Cycle).....	1.0 A
Continuous Forward Current	60 mA
Power Dissipation at 25°C.....	100 mW
Derate Linearly from 50°C	2 mW/°C

Detector

Reverse Gate Voltage	6.0 V
Anode Peak Blocking Voltage	200 V
Peak Reverse Gate Voltage	6 V
Anode Current	300 mA
Surge Anode Current (100 μ s duration)	10 A
Surge Gate Current (5 ms duration)	100 mA
Power Dissipation, 25°C ambient	400 mW
Derate Linearly from 25°C	8 mW/°C

Package

Isolation Test Voltage (1 sec.)	5300 VAC _{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 mW/°C
Operating Temperature	-55°C to +100°C
Storage Temperature	-55°C to +150°C
Soldering Temperature (10 s.)	260°C



Characteristics ($T_A=25^{\circ}\text{C}$)

	Sym- bol	Min.	Typ	Max	Unit	Condition
Emitter						
Forward Voltage	V_F		1.2	1.5	V	$I_F=20\text{ mA}$
Reverse Current	I_R			10	μA	$V_R=5\text{ V}$
Detector						
Forward Blocking Voltage	V_{DM}	200			V	$R_{GK}=10\text{ K}\Omega$ $T_A=100^\circ\text{C}$ $I_d=150\text{ }\mu\text{A}$
Reverse Blocking Voltage	V_{RM}	200			V	
On-state Voltage	V_{TM}			1.2	V	$I_{TM}=300\text{ mA}$
Holding Current	I_H			200	μA	$R_{GK}=27\text{ K}\Omega$ $V_{FX}=50\text{ V}$
Gate Trigger Voltage	V_{GT}		0.6	1.0	V	$V_{FX}=100\text{ V}$ $R_{GK}=27\text{ K}\Omega$ $R_L=10\text{ K}\Omega$
Forward Leakage Current	I_{DM}			50	μA	$R_{GK}=10\text{ K}\Omega$ $V_{RX}=200\text{ V}$ $I_F=0$, $T_A=100^\circ\text{C}$
Reverse Leakage Current	I_{RM}			50	μA	$R_{GK}=27\text{ K}\Omega$ $V_{RX}=200\text{ V}$ $I_F=0$, $T_A=100^\circ\text{C}$
Package						
Turn-On Current	I_{FT}		15	30	mA	$V_{FX}=50\text{ V}$ $R_{GK}=10\text{ K}\Omega$
			8	14		$V_{FX}=100\text{ V}$ $R_{GK}=27\text{ K}\Omega$
Isolation Capacitance			2		pF	f=1 MHz