

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

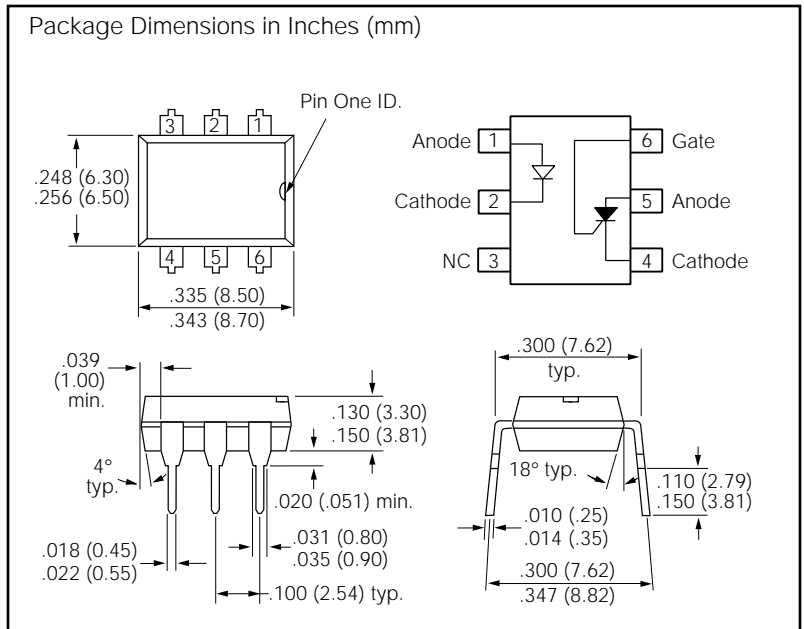
Peak Reverse Voltage6.0 V
 Peak Forward Current
 (100 μ s, 1% Duty Cycle) 1.0 A
 Continuous Forward Current 60 mA
 Power Dissipation at 25°C 100 mW
 Derate Linearly from 50°C 2 mW/°C

Detector

Reverse Gate Voltage6.0 V
 Anode Peak Blocking Voltage200 V
 Peak Reverse Gate Voltage6 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, $T_A=25^\circ$ C $\geq 10^{12}$ Ω
 $V_{IO}=500$ V, $T_A=100^\circ$ C $\geq 10^{11}$ 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 ($T_A=25^\circ$ C)

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