

## Product Overview

### FAN4149: Ground Fault Interrupter

For complete documentation, see the data sheet.

The FAN4149 is a low-power controller for detecting hazardous current paths to ground and ground-to-neutral faults. The FAN4149 application circuit opens the load contacts before a harmful shock occurs. The FAN4149, in combination with the FAN41501 auto-monitoring digital controller, meets the 2015 UL943 self-test requirements for permanently connected GFCI products. The FAN4149 detects and protects against a hot-wire-to-ground fault and a neutral-to-line/load short. The FAN41501 periodically monitors the FAN4149 and critical GFI components to comply with the 2015 UL943 requirements. The minimum number of components and the small 6-pin package allow for a dense, flexible, application solution. The FAN4149 contains a precision bandgap 14 V shunt regulator, precision low- $V_{OS}$  sense amplifier, time-delay noise filter, window-detection comparators, and an SCR driver. The shunt regulator operates with a low quiescent current, which allows for a high value, low-wattage series supply resistor. The internal temperature compensated shunt regulator, sense amplifier, and bias circuitry provide for precision ground-fault detection. This enables the use of larger component variations so that binning or trimming external components is not required. The typical  $\pm 50 \mu\text{V}$  VOS sense amplifier offset allows for direct DC coupling of the sense coil. This eliminates the large AC-coupling capacitor. The internal delay filter rejects high-frequency noise spikes common with inductive loads. This decreases false nuisance tripping. The SCR driver provides increased current and temperature compensation to allow for a wider selection of external SCRs. The minimum number of external components and the 6-pin SOT23 package allow a low-cost, compact design and layout.

### Features

- Meets 2015 UL943 self-test requirements (in combination with FAN41501)
- Precision sense amplifier and bandgap reference
- Low- $V_{OS}$  offset for direct DC coupling of sense coil
- Built-in noise filter
- High-current SCR gate driver
- Adjustable sensitivity
- 500 $\mu\text{A}$  quiescent current
- Minimum external components
- Ideal for 120 V or 220 V systems

### Applications

- Building & home control
- Consumer appliances

### Part Electrical Specifications

Product	Compliance	Status	Channels	$V_{CC}$ Min (V)	$V_{CC}$ Max (V)	$I_T$ Max (mA)	$V_i$ Typ (V)	$T_A$ Min (°C)	$T_A$ Max (°C)	Package Type
FAN4149M6X	Pb-free Halide free	Active		-0.8	16	15	14	-35	85	SOT-23-6

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