



Snubberless TRIAC Drive Optocouplers

Fairchild's Offering

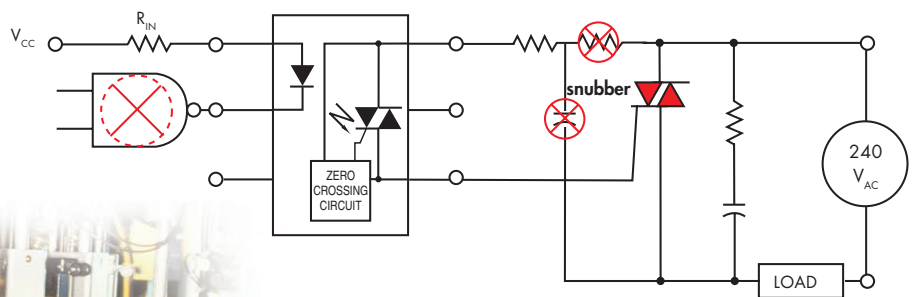
The Snubberless TRIAC Drive Optocouplers feature a built-in active dv/dt clamp providing best-in-class noise immunity (dv/dt) of 10,000V/ μ s, which is superior to the average dv/dt rating (1,500V/ μ s) of monolithic TRIAC drivers. This superior performance eliminates the RC snubber network required for lower dv/dt-rated monolithic opto TRIAC drivers. This saves valuable design time and reduces bill of materials (BOMs). High noise immunity makes these products ideal for noisy industrial environments as they offer a more robust solution for isolating solid-state relays, AC motor controls and lighting ballasts. The FOD41XX family features an integrated zero-cross inhibit circuit which prevents the device from switching near the peak of the AC mains. The FOD42XX are random phase drivers which allow the device to switch at any AC mains voltage level.

Features

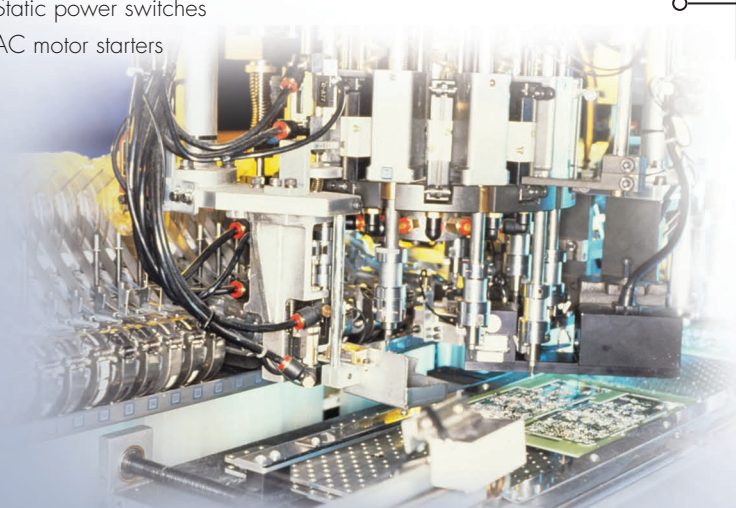
- High static and commutating dv/dt immunity (10kV/ μ s minimum) eliminates the need for a snubber circuit
- High blocking voltage of 800V minimum (FOD4108, FOD4118, FOD4208, FOD4218)
- Low input current of 1.2mA maximum (FOD4116, FOD4118, FOD4216, FOD4218) and 2mA maximum (FOD410, FOD4108, FOD420, FOD4208) reduces power consumption
- Elimination of the snubber circuit significantly reduces standby power
- High isolation voltage of 5000V_{AC(RMS)} minimum, 1 minute duration
- High maximum on-state current rating of 300mA
- Lead-free and RoHS compliant
- UL, C-UL and IEC60747-5-2 approved

Applications

- Solid state relays
- Industrial controls
- Lighting controls
- Static power switches
- AC motor starters



Hot-Line Switching Application Circuit



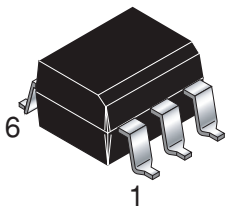


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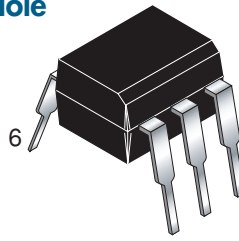
TRIAC Drive Optocoupler Advantage

Discrete TRIACs are often used to control motors, solenoids, relays and other power devices that are driven by the AC mains (120VAC or 240VAC). The control signal that turns these loads on and off comes from low voltage logic circuitry that needs to be isolated from the mains. This is best achieved by use of an optocoupler. The TRIAC drive optocoupler consists of an infrared LED on the input side and a silicon detector chip incorporating two inverse parallel silicon-controlled rectifiers (SCRs). The logic signal drives the optocoupler's LED. Light is transmitted across the isolation barrier and activates the forward biased SCRs on the output side of the optocoupler. Each SCR conducts one half cycle of the AC mains signal. Current from the mains is then transmitted across the forward biased SCR which activates the gate of the power TRIAC. The power TRIAC then drives the load for a majority of the duty cycle. The FOD42XX devices are considered "random phase" because they allow the output to be triggered at any point of the AC sinusoid. The FOD41XX zero crossing versions inhibit switching until the mains voltage is close to the zero crossing.

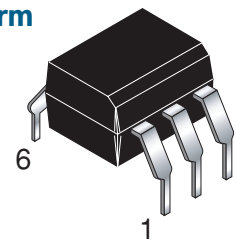
Surface Mount DIP



Through Hole



0.4" Lead-Form



Selection Table

Product Number	Type	I_{FT} Max (mA)	V_{TM} Max (V)	I_H Max. (μ A)	V_{DRM} Min. (V)	dv/dt Min. (V/ μ s)	V_{ISO} Min. $V_{AC(RMS)}$	Package
FOD410	Zero Crossing	2	3	500	600	10000	5000	6-Pin DIP
FOD420	Random Phase							
FOD4108	Zero Crossing	2	3	500	800	10000	5000	6-Pin DIP
FOD4208	Random Phase							
FOD4116	Zero Crossing	1.3	3	500	600	10000	5000	6-Pin DIP
FOD4216	Random Phase							
FOD4118	Zero Crossing	1.3	3	500	800	10000	5000	6-Pin DIP
FOD4218	Random Phase							

Fairchild has a full line of TRIAC drive optocouplers in 6-pin DIP (MOC3XXXM, FOD4XXX) and 5-pin mini flat package (FODM3XXX). Visit www.fairchildsemi.com/opto for a complete list of Fairchild's optoelectronic products.