

FAIRCHILD
SEMICONDUCTOR®



Optocoupler Solutions

Our broad range of optocoupler solutions combine numerous input and output configurations to reduce power consumption and provide best-in-class noise immunity for your design.

Optocoupler

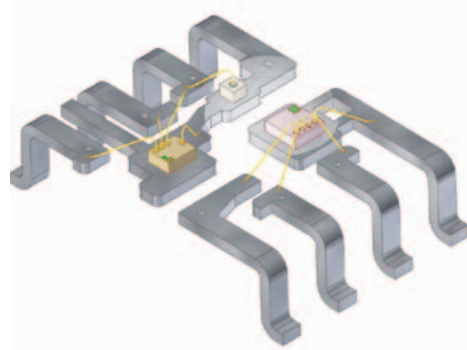
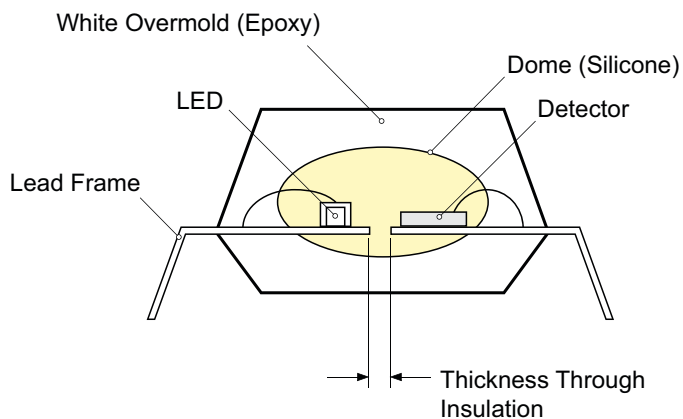


INTRODUCTION

Fairchild Semiconductor is a leader in the design and production of optocouplers. We offer a broad range of package platforms and incorporate various combinations of input and output configurations. Our offerings include simple function optocouplers for low bandwidth/general switching applications, high performance optocouplers for high bandwidth/high gain applications, high voltage optocouplers for AC load switching applications and other specific functions that provide unique performance characteristics.

The Optoplanar® Advantage

Fairchild's comprehensive portfolio of high performance optocouplers offers best-in-class noise immunity as a result from its proprietary coplanar packaging technology, Optoplanar®. The Optoplanar® technology ensures a safe insulation thickness of more than 0.4 millimeters to attain reliable high voltage isolation, certified by UL1577 and DIN EN/IEC60747-5-2 standards.



The new IGBT/MOSFET gate drive optocouplers complement Fairchild's leading discrete power IGBT/MOSFET products. Fairchild customers now have a complete offering from the logic control portion of the circuit to the isolated gate driver to the power MOSFET.

GATE DRIVER OPTOCOUPLER	5
HIGH-SPEED LOGIC GATE OPTOCOUPLER	6–8
HIGH PERFORMANCE TRANSISTORS	9
SNUBBERLESS TRIAC DRIVER OPTOCOUPLER.....	10
RANDOM PHASE TRIAC DRIVER OPTOCOUPLER.....	11
ZERO CROSSING TRIAC DRIVER OPTOCOUPLER	12
PHOTOTRANSISTOR OUTPUT, DC SENSING INPUT	13–15
PHOTOTRANSISTOR OUTPUT, AC SENSING INPUT	16
PHOTODARLINGTON OUTPUT	17
SPECIAL FUNCTIONS	18
PACKAGE INFORMATION.....	19–22

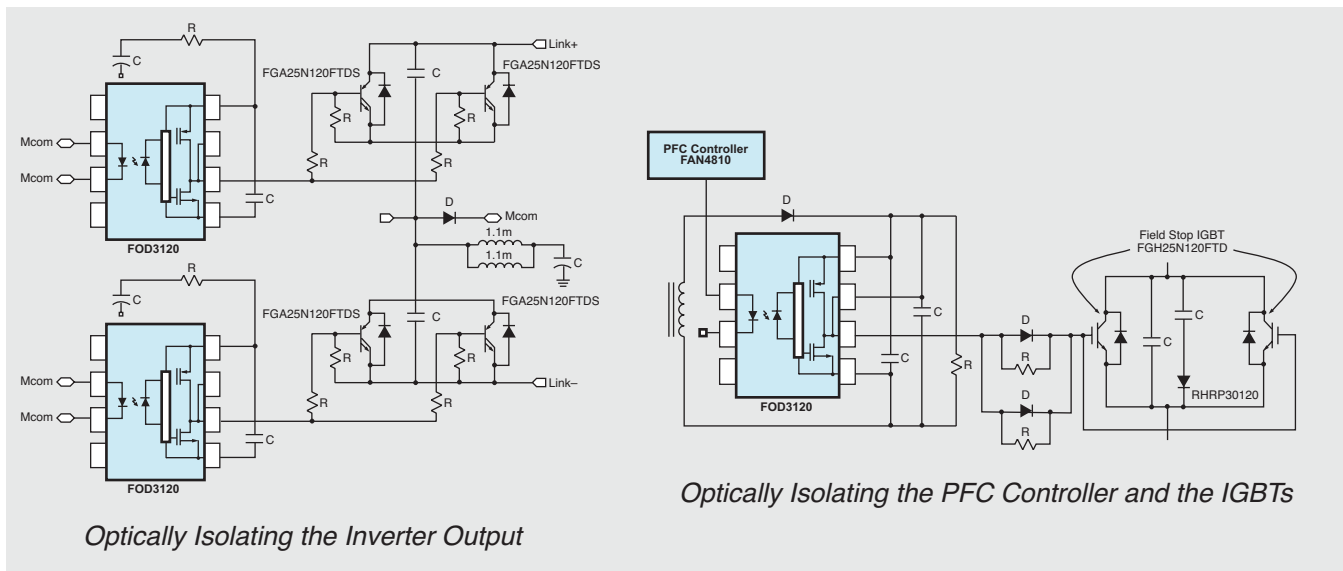
GATE DRIVER OPTOCOUPLER

The FOD31xx IGBT/MOSFET Gate Drive Optocoupler Series provides fast switching specifications allowing designers to use smaller filters, thus reducing overall system power consumption. These high-powered devices can be found in solar inverters, motor drives and induction heating applications. Fairchild's optocouplers offer best-in-class common mode rejection (CMR) making the application more immune to noise. With tight pulse width distortion (65ns) and improved power efficiency, these devices also offer a 1,414V peak working voltage to accommodate switching of 1200V IGBTs. The gate driver output stage comprises of a PMOS and NMOS pair, which facilitates close to rail-to-rail output swing. This feature allows a tight control of the gate voltage during on-state and short-circuit conditions.

These IGBT/MOSFET gate drive optocouplers complement Fairchild's strong, well-established offering in the discrete power IGBT/MOSFET line of products. Fairchild now offers customers one-stop shopping from the logic control portion of the circuit, to the isolated gate driver, to the power IGBT/MOSFET. This combined solution converts the mW to kW providing electrical isolation between the primary and secondary circuits.

Features & Benefits

- Wide operating voltage range of 15V to 30V, high output current capability up to 3.0A
- Use of P-Channel MOSFETs at output stage enables output voltage swing close to the supply rail (rail-to-rail output)
- High common mode transient immunity up to 35kV/ μ s min.
- 5kV isolation voltage rating with >8mm creepage and clearance distance to attain 1,414V (peak) working voltage (UIORM)



Product Number	Package Type	I _{OH} Min. (A)	I _{OL} Min. (A)	V _{CC} Max. (V)	I _{CC} Max. (mA)	t _{PLH} /t _{PHL} Max. (ns)	PWD Max. (ns)	V _{UVLO+} Max. (V)	V _{UVLO-} Max. (V)	CMR (kV/ μ s) @ V _{cm} Min. (V)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
FOD3120	DIP-8	2.0	2.0	30	3.8	400	100	11.5~13.5	10.0~12.0	35 @ 1,500	5000	-40 to +100
FOD3150	DIP-8	1.0	1.0	30	5.0	500	300	11.0~13.5	9.5~12.0	20 @ 1,500	5000	-40 to +100
FOD3182	DIP-8	2.0	2.0	30	5.0	210	65	7.5~9.0	7.0~8.5	35 @ 1,500	5000	-40 to +100
FOD3184	DIP-8	3.0	3.0	30	3.3	210	65	11.5~13.5	10.0~12.0	35 @ 1,500	5000	-40 to +100

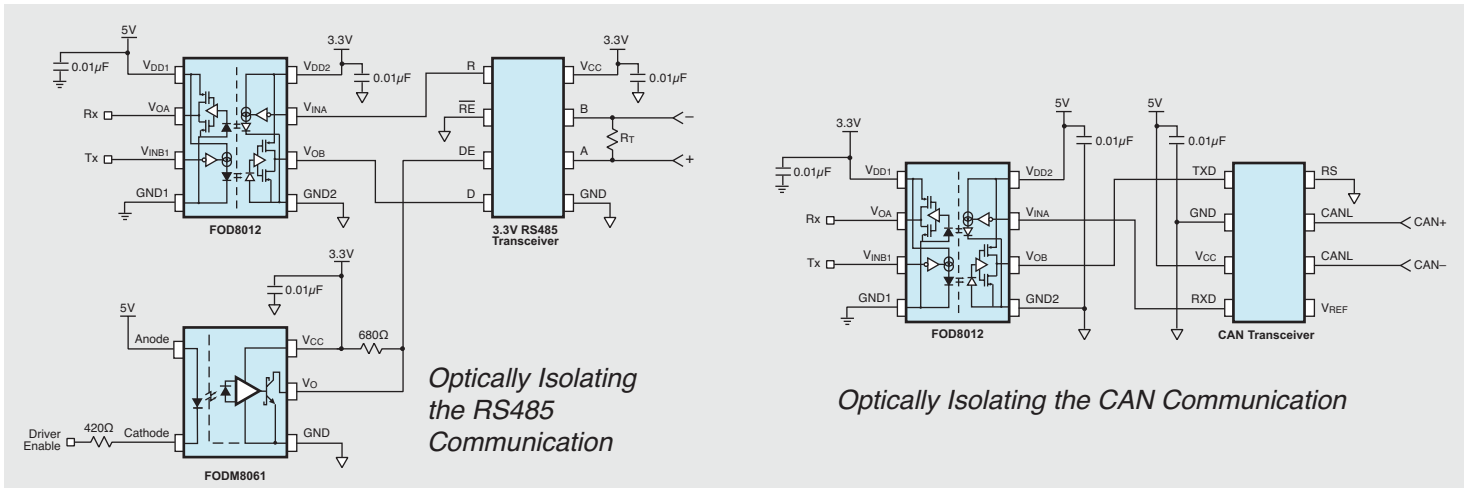
HIGH-SPEED LOGIC GATE OPTOCOUPLERS

The 3.3V/5V high-speed logic gate optocouplers support isolated communications between systems without conducting ground loops or hazardous voltages. Each high-speed optocoupler utilizes Fairchild's patented coplanar packaging technology, Optoplanar® and optimized design. This achieves excellent noise immunity, characterized by high common mode transient immunity and power supply rejection specifications, and allows these devices to operate in noisy industrial environments (100% better than our closest competitors).

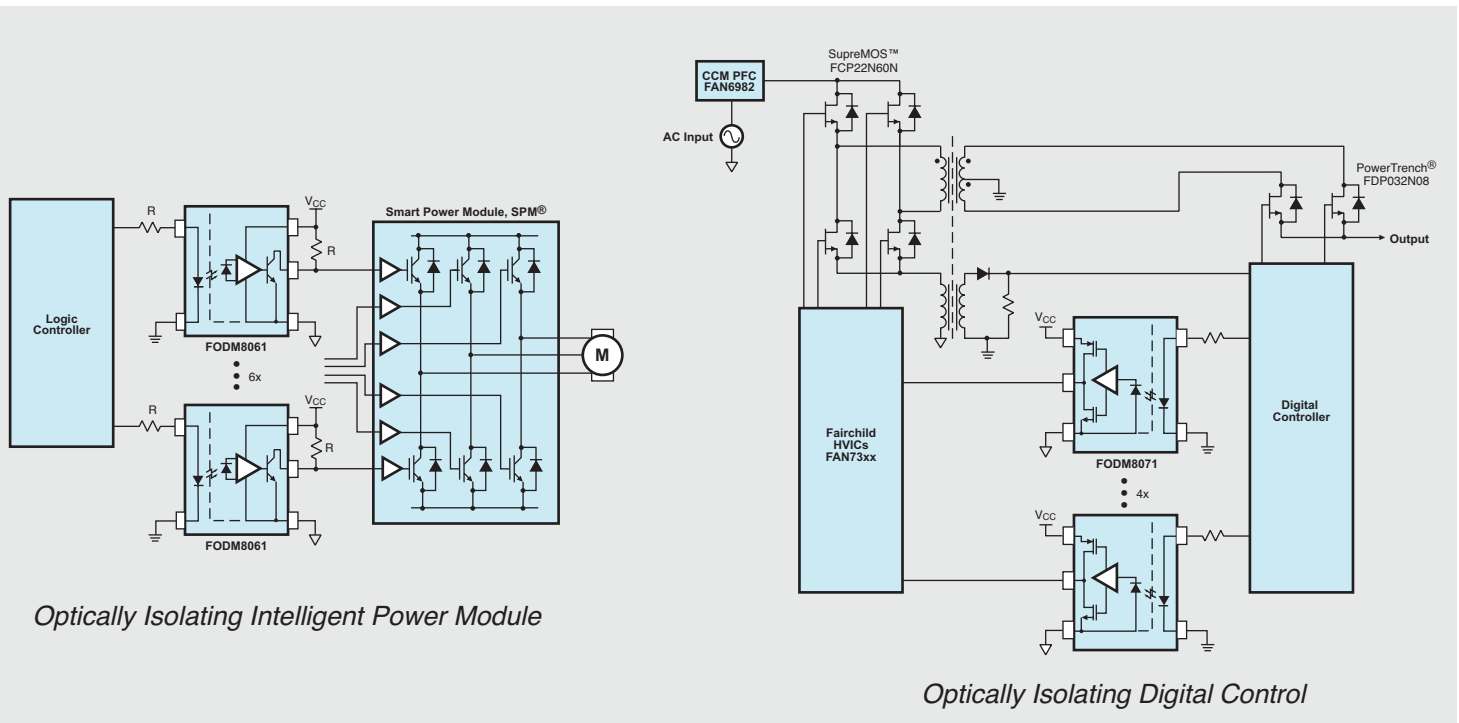
By combining the reliable isolation, high integration of 2 optocoupler channels in bi-directional configuration, the newly released FOD8012 allows system engineers to design a robust system, with low transmission error rate and low system failure rate. This solution provides a proven reliability over extended periods of time required for industrial systems, at a low cost of design and component.

Features & Benefits

- Excellent noise immunity characterized by common mode transient immunity (CMTI) and power supply rejection (PSR) specifications
- High bandwidth up to 25Mbps and 6ns pulse width distortion
- Dual supply voltages, 3.3V and 5V, enabling CMOS and level translation capabilities
- Electrical characteristics guaranteed beyond the full industrial temperature range (-40°C to +110°C)
- UL1577 (3,750 VACRMS for 1 min) and DIN EN/IEC60747-5-2 certified for increased reliability
-



HIGH-SPEED LOGIC GATE OPTOCOUPPLERS

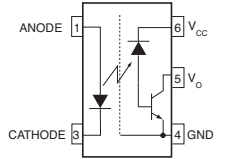
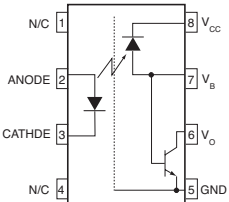
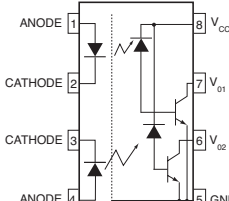
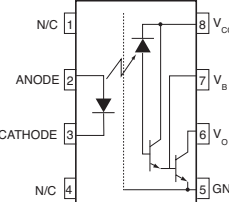
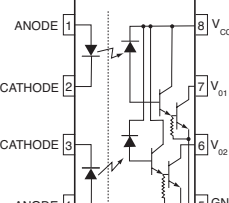


Pin Connections	Product Number	Package Type	Data Rate (Mbps)	V _{DD} (V)	V _{OL} Max. (V)	I _{CCL} Max. (mA)	t _{PLH} /t _{PHL} Max. (ns)	PWD Max. (ns)	CMR Typ. (kV/μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
	FOD8012	SO-8	15	3.0-5.5	0.1	8	60	15	40	3750	-40 to +110
	FOD8001	SO-8	25	3.0-5.5	0.1	9	40	6	40	3750	-40 to +105
	FOD0721	SO-8	25	4.5-5.5	0.1	9	40	6	40	3750	-40 to +100
	FOD0720	SO-8	25	4.5-5.5	0.1	9	40	8	40	3750	-40 to +100
	FOD0710	SO-8	12.5	4.5-5.5	0.1	9	40	8	40	3750	-40 to +100

HIGH-SPEED LOGIC GATE OPTOCOUPPLERS

Pin Connections	Product Number	Package Type	Data Rate (Mbps)	V _{CC} (V)	I _{FT} Max. (V)	V _{OL} Max. (V)	I _{CC1} Max. (mA)	f _{PLH} /f _{PHL} Max. (ns)	PWD Max. (ns)	CMR Typ. (kV/μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
	FODM8071	MFP (SO-5)	20	3.0–5.5	5	0.1	4.8	55	20	40	3750	–40 to +110
	FODM8061	MFP (SO-5)	10	3.0–5.5	5	0.6	8.5	85	25	40	3750	–40 to +110
	FODM611	MFP (SO-5)	10	4.5–5.5	5	0.6	10	100	35	40	3750	–40 to +85
	FOD060L	SO-8	10	3.0–5.5	5	0.6	10	90	25	50	3750	–40 to +85
	HCPL0600	SO-8	10	4.5–5.5	5	0.6	13	100	35	–	3750	–40 to +85
	HCPL0601	SO-8	10	4.5–5.5	5	0.6	13	100	35	10	3750	–40 to +85
	HCPL0611	SO-8	10	4.5–5.5	5	0.6	13	100	35	20	3750	–40 to +85
	FOD260L	DIP-8	10	3.0–5.5	5	0.6	10	90	25	50	5000	–40 to +85
	6N137M	DIP-8	10	4.5–5.5	5	0.6	13	100	35	10	5000	–40 to +85
	HCPL2601M	DIP-8	10	4.5–5.5	5	0.6	13	100	35	10	5000	–40 to +85
	HCPL2611M	DIP-8	10	4.5–5.5	5	0.6	13	100	35	15	5000	–40 to +85
	HCPL062N	SO-8	10	3.0–5.5	5	0.6	15	90	25	50	3750	–40 to +85
	HCPL0637	SO-8	10	4.5–5.5	5	0.6	21	100	35	–	3750	–40 to +85
	HCPL0638	SO-8	10	4.5–5.5	5	0.6	21	100	35	15	3750	–40 to +85
	HCPL0639	SO-8	10	4.5–5.5	5	0.6	21	100	35	30	3750	–40 to +85
	HCPL2630M	DIP-8	10	4.5–5.5	5	0.6	21	100	35	10	5000	–40 to +85
	HCPL2631M	DIP-8	10	4.5–5.5	5	0.6	21	100	35	10	5000	–40 to +85
	H11N1M	DIP-6	5	4.0–15.0	3.2	0.5	10	330	–	–	4200	–40 to +85
	H11N2M	DIP-6	5	4.0–15.0	5	0.5	10	330	–	–	4200	–40 to +85
	H11L1M	DIP-6	1	3.0–15.0	1.6	0.4	5	4000	–	–	4200	–40 to +85
	H11L2M	DIP-6	1	3.0–15.0	10	0.4	5	4000	–	–	4200	–40 to +85
	H11L3M	DIP-6	1	3.0–15.0	5	0.4	5	4000	–	–	4200	–40 to +85
	FOD2200	DIP-8	2.5	4.5–20.0	1.6	0.5	6	300	–	10	5000	–40 to +85

HIGH PERFORMANCE TRANSISTORS

Pin Connections	Product Number	Package	Data Rate (Mbps)	V _{CC} Typ. (V)	Current Transfer Ratio		V _{OL} Max. (V)	I _{CC} Max. (mA)	t _{PHL} Max. (μs)	t _{PLH} Max. (μs)	CMR (kV/μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
					Min.	Max.							
	FODM452	MFP-5 (SO-5)	1	4.5 to 5.5	20	50	0.4	0.2	0.8	0.8	15	3750	-40 to +85
	FODM453 ⁽¹⁾	MFP-5 (SO-5)	1	4.5 to 5.5	20	50	0.4	0.2	0.8	0.8	40	3750	-40 to +85
	FOD050L	SO-8	1	3.0 to 5.5	15	50	0.3	0.2	2.0	2.0	35	2500	-40 to +85
	HCPL0500	SO-8	1	4.5 to 5.5	7	50	0.4	0.2	1.5	1.5	10	2500	-40 to +85
	HCPL0501	SO-8	1	4.5 to 5.5	19	50	0.4	0.2	0.8	0.8	10	2500	-40 to +85
	HCPL0453 ^(1,2)	SO-8	1	4.5 to 5.5	19	50	0.4	0.2	0.8	0.8	40	2500	-40 to +85
	FOD250L	DIP-8	1	3.0 to 5.5	15	50	0.3	0.2	2.0	2.0	35	5000	-40 to +85
	6N135M	DIP-8	1	4.5 to 5.5	7	50	0.4	0.2	1.5	1.5	10	5000	-40 to +100
	6N136M	DIP-8	1	4.5 to 5.5	19	50	0.4	0.2	0.8	0.8	10	5000	-40 to +100
HCPL4503M ^(1,2)	DIP-8	1	4.5 to 5.5	19	50	0.5	0.2	0.8	0.8	30	5000	-40 to +100	
	FOD053L	SO-8	1	3.0 to 5.5	15	50	0.3	0.4	2.0	2.0	35	2500	-40 to +85
	HCPL0530	SO-8	1	4.5 to 5.5	7	50	0.5	0.4	1.5	1.5	10	2500	-40 to +85
	HCPL0531	SO-8	1	4.5 to 5.5	19	50	0.4	0.4	0.8	0.8	10	2500	-40 to +85
	HCPL0534 ⁽¹⁾	SO-8	1	4.5 to 5.5	19	50	0.4	0.4	0.8	0.8	40	2500	-40 to +85
	HCPL2530M	DIP-8	1	4.5 to 5.5	7	50	0.5	0.4	1.5	1.5	10	5000	-40 to +100
	HCPL0700	SO-8	0.1	4.5 to 5.5	300	2600	0.4	1.5	10	35	10	2500	-40 to +85
	HCPL0701	SO-8	0.1	4.5 to 15.0	500	2600	0.4	1.5	10	35	10	2500	-40 to +85
	6N138M	DIP-8	0.1	4.5 to 5.5	300	-	0.4	1.5	10	35	10	5000	-40 to +100
	6N139M	DIP-8	0.1	4.5 to 15.0	500	-	0.4	1.5	10	35	10	5000	-40 to +100
	HCPL2531M	DIP-8	1	4.5 to 5.5	19	50	0.5	0.4	0.8	0.8	10	5000	-40 to +100
	FOD073L	SO-8	0.1	3.0 to 5.5	400	7000	0.3	3	30	90	10	2500	-40 to +85
	HCPL0730	SO-8	0.1	4.5 to 5.5	300	5000	0.4	3	20	35	10	2500	-40 to +85
	HCPL0731	SO-8	0.1	4.5 to 15.0	500	5000	0.4	3	20	35	10	2500	-40 to +85
	HCPL2730M	DIP-8	0.1	4.5 to 5.5	300	-	0.4	3	20	35	10	5000	-40 to +100
	HCPL2731M	DIP-8	0.1	4.5 to 15.0	500	-	0.4	3	20	35	10	5000	-40 to +100

¹ Recommended for IPM Driver

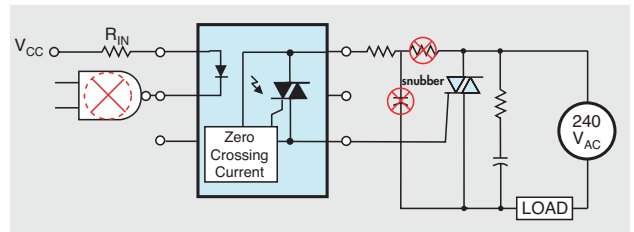
² Base not connected

SNUBBERLESS TRIAC DRIVE OPTOCOUPLER

The Snubberless TRIAC Drive Optocouplers feature a built-in active dv/dt clamp providing best-in-class noise immunity (dv/dt) of 10,000V/μs, which is superior to the average dv/dt rating (1,500V/μs) 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 & Benefits

- High static and commutating dv/dt immunity (10kV/μs minimum) eliminates the need for a snubber circuit
- High blocking voltage of 800V minimum
- Low input current of 1.3mA maximum reduces power consumption
- Elimination of the snubber circuit significantly reduces standby power
- High isolation voltage of 5000VAC_{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



Zero Crossing Triac Driver Optocouplers

Pin Connections & Package Type	Product Number	V _{DRM} Min. (V)	I _{FT} Max. (mA)	V _{TM} Max. (V)	dv/dt Min. (V/μs)	I _H Typ. (μA)	V _{INH} Max. (V)	I _{DRM} Max. (nA)	V _{ISO AC} RMS (V)	T _{OPR} (°C)
	FOD410	600	2	3	10000	200	25	100	5000	-55 to +100
	FOD4116	600	1.3	3	10000	200	25	100	5000	-55 to +100
	FOD4108	800	2	3	10000	200	25	100	5000	-55 to +100
	FOD4118	800	1.3	3	10000	200	25	100	5000	-55 to +100

Random Phase Triac Driver Optocouplers

Pin Connections & Package Type	Product Number	V _{DRM} Min. (V)	I _{FT} Max. (mA)	V _{TM} Max. (V)	dv/dt Min. (V/μs)	I _H Typ. (μA)	I _{DRM} Max. (nA)	V _{ISO AC} RMS (V)	T _{OPR} (°C)
	FOD420	600	2	3	10000	200	100	5000	-55 to +100
	FOD4216	600	1.3	3	10000	200	100	5000	-55 to +100
	FOD4208	800	2	3	10000	200	100	5000	-55 to +100
	FOD4218	800	1.3	3	10000	200	100	5000	-55 to +100

RANDOM PHASE TRIAC DRIVER OPTOCOUPLERS

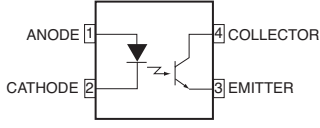
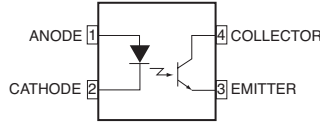
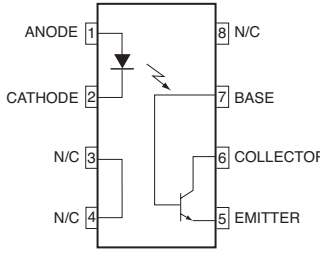
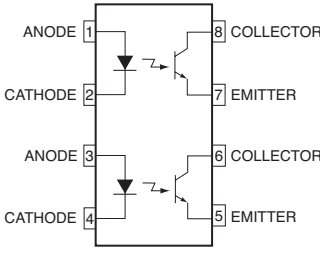
Pin Connections	Product Number	V_{DRM} Min. (V)	I_{FT} Max. (V)	V_{TM} Max. (V)	dv/dt Min. (V/ μ s)	I_H Typ. (μ s)	I_{DRM} Typ. (nA)	$V_{ISO AC_{RMS}}$ (V)	T_{OPR} ($^{\circ}$ C)
Triac Driver in DIP-6 Package									
	MOC3010M	250	15	3	–	100	100	4200	–40 to +85
	MOC3011M	250	10	3	–	100	100	4200	–40 to +85
	MOC3012M	250	5	3	–	100	100	4200	–40 to +85
	MOC3020M	400	30	3	–	100	100	4200	–40 to +85
	MOC3021M	400	15	3	–	100	100	4200	–40 to +85
	MOC3022M	400	10	3	–	100	100	4200	–40 to +85
	MOC3023M	400	5	3	–	100	100	4200	–40 to +85
	MOC3051M	600	15	2.5	1000	280	100	4200	–40 to +85
	MOC3052M	600	10	2.5	1000	280	100	4200	–40 to +85
Triac Driver in Full-Pitch MFP (SO-4) Package									
	FODM3011	250	10	3	–	300	100	3750	–40 to +110
	FODM3012	250	5	3	–	300	100	3750	–40 to +110
	FODM3022	400	10	3	–	300	100	3750	–40 to +110
	FODM3023	400	5	3	–	300	100	3750	–40 to +110
	FODM3052	600	10	3	1000	300	100	3750	–40 to +110
	FODM3053	600	5	3	1000	300	100	3750	–40 to +110

ZERO CROSSING TRIAC DRIVER OPTOCOUPLEDERS

Pin Connections	Product Number	V_{DRM} Min. (V)	I_{FT} Max. (V)	V_{TM} Max. (V)	dv/dt Min. (V/ μ s)	I_H Typ. (μ s)	V_{INH} Max. (V)	I_{DRM} Typ. (nA)	V_{ISO} AC_{RMS} (V)	T_{OPR} ($^{\circ}$ C)
Triac Driver in DIP-6 Package										
	MOC3031M	250	15	3	1000	400	20	100	4200	-40 to +85
	MOC3032M	250	10	3	1000	400	20	100	4200	-40 to +85
	MOC3033M	250	5	3	1000	400	20	100	4200	-40 to +85
	MOC3041M	400	15	3	1000	400	20	100	4200	-40 to +85
	MOC3042M	400	10	3	1000	400	20	100	4200	-40 to +85
	MOC3043M	400	5	3	1000	400	20	100	4200	-40 to +85
	MOC3061M	600	15	3	600	500	20	500	4200	-40 to +85
	MOC3062M	600	10	3	600	500	20	500	4200	-40 to +85
	MOC3063M	600	5	3	600	500	20	500	4200	-40 to +85
	MOC3162M	600	10	3	1000	500	15	100	4200	-40 to +85
	MOC3163M	600	5	3	1000	500	15	100	4200	-40 to +85
	MOC3081M	800	15	3	600	500	20	500	4200	-40 to +85
	MOC3082M	800	10	3	600	500	20	500	4200	-40 to +85
	MOC3083M	800	5	3	600	500	20	500	4200	-40 to +85
Triac Driver in Full-Pitch MFP (SO-4) Package										
	FODM3062	600	10	3	600	300	20	500	3750	-40 to +110
	FODM3063	600	5	3	600	300	20	500	3750	-40 to +110
	FODM3082	800	10	3	600	300	20	500	3750	-40 to +110
	FODM3083	800	5	3	600	300	20	500	3750	-40 to +110

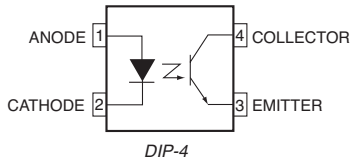
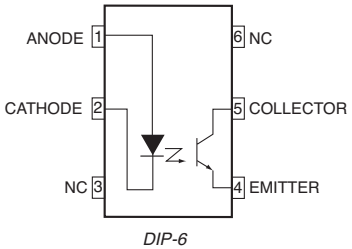
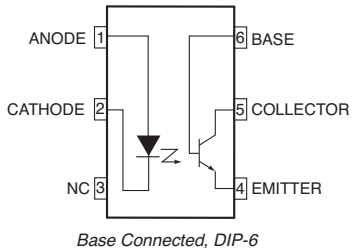
PHOTOTRANSISTORS

Phototransistor Output, DC Sensing Input

Pin Connections & Package Type	Product Number	CTR (%)			BV_{CEO} Min. (V)	t_{ON} Typ. (μ s)	t_{OFF} Typ. (μ s)	V_{ISO} AC _{RMS} (V)	T_{OPR} (°C)
		Min.	Max.	I_F (mA), V_{CE} (V)					
 <p>Half-Pitch MFP (SO-4)</p>	HMHA2801*	80	600	5, 5	80	–	–	3750	–55 to +100
	HMHA281	50	600	5, 5	80	–	–	3750	–55 to +100
 <p>Full-Pitch MFP (SO-4)</p>	FODM121*	50	600	5, 5	80	–	–	3750	–40 to +110
	FODM124	100	1200	1, 0.5	80	–	–	3750	–40 to +110
	FODM2701*	50	300	5, 5	40	–	–	3750	–40 to +110
 <p>Base Connected, SO-8</p>	MOC205M	40	80	10, 10	70	7.5	5.7	2500	–40 to +100
	MOC206M	63	125	10, 10	70	7.5	5.7	2500	–40 to +100
	MOC207M	100	200	10, 10	70	7.5	5.7	2500	–40 to +100
	MOC211M	20	–	10, 10	30	7.5	5.7	2500	–40 to +100
	MOC212M	50	–	10, 10	30	7.5	5.7	2500	–40 to +100
	MOC213M	100	–	10, 10	30	7.5	5.7	2500	–40 to +100
	MOC216M	50	–	1, 5	30	4	4	2500	–40 to +100
	MOC217M	100	–	1, 5	30	4	4	2500	–40 to +100
 <p>Dual-Channel, SO-8</p>	MOCD207M	100	200	10, 5	70	3	2.8	2500	–40 to +100
	MOCD208M	40	125	10, 5	70	3	2.8	2500	–40 to +100
	MOCD211M	20	–	10, 10	30	7.5	5.7	2500	–40 to +100
	MOCD213M	100	–	10, 10	70	3	2.8	2500	–40 to +100
	MOCD217M	100	–	1, 5	30	7.5	5.7	2500	–40 to +100

* CTR option available

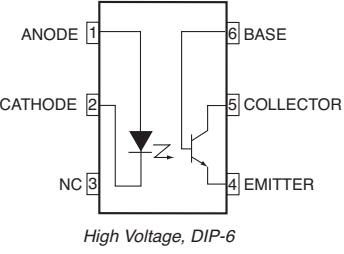
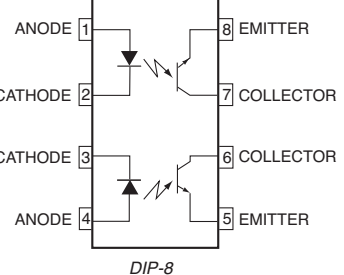
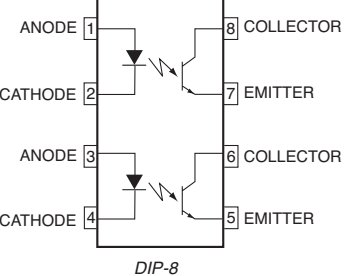
Phototransistor Output, DC Sensing Input (Continued)

Pin Connections & Package Types	Product Number	CTR (%)			BV _{CEO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
		Min.	Max.	I _F (mA), V _{CE} (V)					
 <p>DIP-4</p>	FOD817*	50	600	5, 5	70	–	–	5000	–55 to +110
 <p>DIP-6</p>	CNY17F1M	40	80	10, 5	70	2	3	4200	–40 to +100
	CNY17F2M	63	125	10, 5	70	2	3	4200	–40 to +100
	CNY17F3M	100	200	10, 5	70	2	3	4200	–40 to +100
	CNY17F4M	160	320	10, 5	70	2	3	4200	–40 to +100
	MOC8106M	50	150	10, 10	70	2	3	4200	–40 to +100
 <p>Base Connected, DIP-6</p>	MCT5201M	120	–	–	30	3	12	4200	–40 to +100
	MCT5210M	70	–	3, 5	30	7	8	4200	–40 to +100
	MCT5211M	150	–	1.6, 5	30	15	11	4200	–40 to +100
	4N25M	20	–	10, 10	30	2	2	4200	–40 to +100
	4N26M	20	–	10, 10	30	2	2	4200	–40 to +100
	4N27M	10	–	10, 10	30	2	2	4200	–40 to +100
	4N28M	10	–	10, 10	30	2	2	4200	–40 to +100
	4N35M	100	–	10, 10	30	2	2	4200	–40 to +100
	4N36M	100	–	10, 10	30	2	2	4200	–40 to +100
	4N37M	100	–	10, 10	30	2	2	4200	–40 to +100
	H11A1M	50	–	–	30	2	2	4200	–40 to +100
	H11A2M	20	–	10, 10	30	2	2	4200	–40 to +100
	H11A3M	20	–	10, 10	30	2	2	4200	–40 to +100
	H11A4M	10	–	10, 10	30	2	2	4200	–40 to +100
	H11A5M	30	–	10, 10	30	2	2	4200	–40 to +100
	MCT2EM	20	–	10, 10	30	2	2	4200	–40 to +100
	MOC8100M	50	–	1, 5	30	20*	20*	4200	–40 to +100
	TIL111M	–	–	–	30	–	–	4200	–40 to +100
	TIL117M	50	–	10, 10	30	10*	10*	4200	–40 to +100
	H11AG1M	300	–	1, 5	30	5	5	4200	–40 to +100
	CNY171M	40	80	10, 5	70	2	3	4200	–40 to +100
	CNY172M	63	125	10, 5	70	2	3	4200	–40 to +100
	CNY173M	100	200	10, 5	70	2	3	4200	–40 to +100
	CNY174M	160	320	10, 5	70	2	3	4200	–40 to +100
	H11AV1M	100	300	10, 10	70	15*	15*	4200	–40 to +100

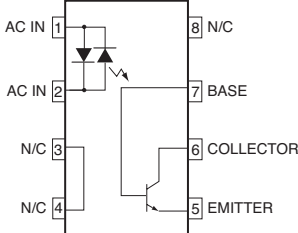
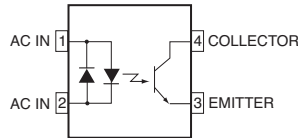
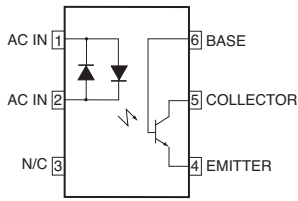
* Maximum value

PHOTOTRANSISTORS

Phototransistor Output, DC Sensing Input (Continued)

Pin Connections & Package Type	Product Number	CTR (%)			BV _{CEO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
		Min.	Max.	I _F (mA), V _{CE} (V)					
 <p>High Voltage, DIP-6</p>	4N38M	20	–	10, 10	80	5	5	4200	–40 to +100
	H11D1M	20	–	10, 10	300	5	5	4200	–40 to +100
	H11D3M	20	–	10, 10	200	5	5	4200	–40 to +100
	MOC8204M	20	–	10, 10	400	5	5	4200	–40 to +100
 <p>DIP-8</p>	MCT6	20	–	10, 10	30	2.4	2.4	5300	–55 to +100
	MCT61	50	–	5, 5	30	2.4	2.4	5300	–55 to +100
	MCT62	100	–	5, 5	30	2.4	2.4	5300	–55 to +100
 <p>DIP-8</p>	MCT9001	50	600	5, 5	55	3	3	5300	–55 to +100

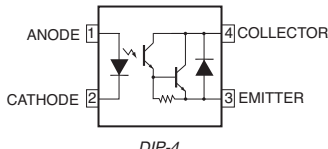
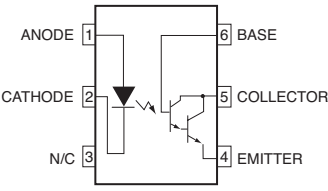
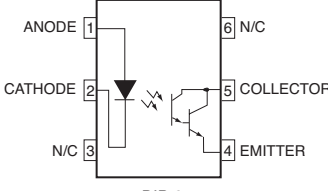
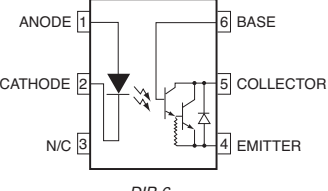
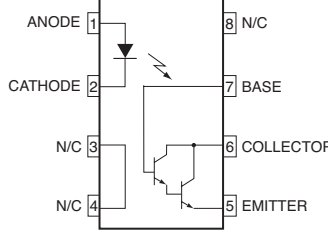
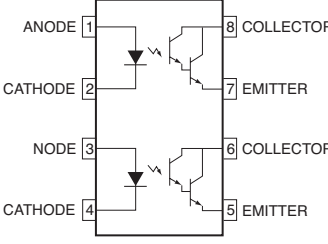
Phototransistor Output, AC Sensing Input

Pin Connections & Package Type	Product Number	Package Type	CTR (%)			BV _{CEO} Min. (V)	t _R Typ. (μs)	t _F Typ. (μs)	V _{ISO AC RMS} (V)	T _{OPR} (°C)
			Min.	Max.	I _F (mA), V _{CE} (V)					
	MOC256M	SO-8	20	-	±10, 10	30	-	-	2500	-40 to +100
	HMHAA280	Half-Pitch MFP (SO4)	50	600	±5, 5	80	3	3	3750	-55 to +100
	FODM2705	Full-Pitch MFP (SO4)	50	300	±5, 5	40	3	3	3750	-40 to +110
	FOD814*	DIP-4	20	300	±1, 5	70	4	3	5000	-55 to +105
	H11AA1M	DIP-6	20	-	±10, 10	30	-	-	4200	-40 to +100
	H11AA2M	DIP-6	10	-	±10, 10	30	-	-	4200	-40 to +100
	H11AA3M	DIP-6	50	-	±10, 10	30	-	-	4200	-40 to +100
	H11AA4M	DIP-6	100	-	±10, 10	30	-	-	4200	-40 to +100

*CTR Option Available

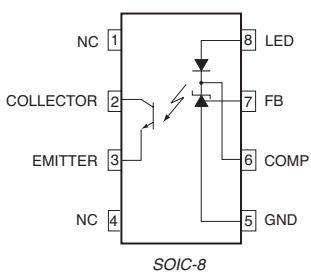
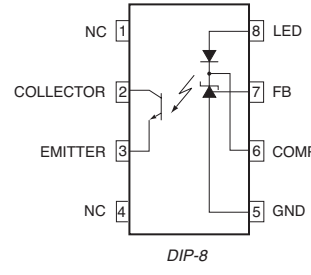
PHOTOTRANSISTORS

Photodarlington Output

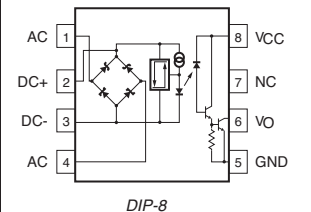
Pin Connections & Package Type	Product Number	CTR (%)			BV _{CEO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
		Min.	Max.	I _F (mA), V _{CE} (V)					
 <p>DIP-4</p>	FOD852	1000	15000	1, 2	300	–	–	5000	–30 to +100
 <p>Base Connected, DIP-6</p>	4N29M	100	–	10, 10	30	5*	40*	5300	–40 to +100
	4N30M	100	–	10, 10	30	5*	40*	5300	–40 to +100
	4N32M	500	–	10, 10	30	5*	100*	5300	–40 to +100
	4N33M	500	–	10, 10	30	5*	100*	5300	–40 to +100
	H11B1M	500	–	1, 5	25	25	18	5300	–40 to +100
	TIL113M	300	–	10, 1	30	5*	100*	5300	–40 to +100
 <p>DIP-6</p>	MOC8021M	1000	–	10, 5	50	8.5	95	5300	–40 to +110
	MOC8050M	500	–	10, 1.5	80	8.5	95	5300	–40 to +110
 <p>DIP-6</p>	H11G1M	500	–	1, 5	100	5	100	5300	–40 to +100
	H11G2M	500	–	1, 5	80	5	100	5300	–40 to +100
 <p>SOIC-8</p>	MOC223M	500	–	1, 5	30	10	0.125	2500	–40 to +100
 <p>SOIC-8</p>	MOC223M	500	–	1, 5	30	8	55	2500	–40 to +100

* Max. value

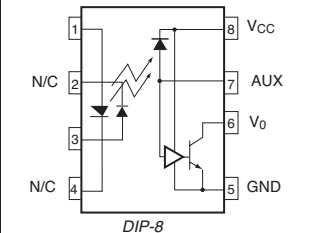
Isolated Error Amplifiers, DC Sensing Input with Voltage Reference

Pin Connections & Package Type	Product Number	V_{REF} Tolerance (%)	V_{REF} (V)			CTR @ $I_F = 10\text{mA}$ (%)		BV_{CEO} (V)	V_{ISO} AC _{RMS} (V)	T_{OPR} (°C)
			Min.	Typ.	Max.	Min.	Max.	Min.		
	FOD2712A	1.0	1.221	1.240	1.259	100	200	70	2500	-40 to +85
	FOD2742A	0.5	2.482	2.495	2.508	100	200	70	2500	-25 to +85
	FOD2742B	1.0	2.470	2.495	2.520	100	200	70	2500	-25 to +85
	FOD2711A	1.0	1.221	1.240	1.259	100	200	70	5000	-40 to +85
	FOD2741A	0.5	2.482	2.495	2.508	100	200	70	5000	-25 to +85
	FOD2741B	1.0	2.470	2.495	2.520	100	200	70	5000	-25 to +85
	FOD2743B	1.0	2.470	2.495	2.520	50	100	70	5000	-25 to +85

AC-DC to Logic Interface

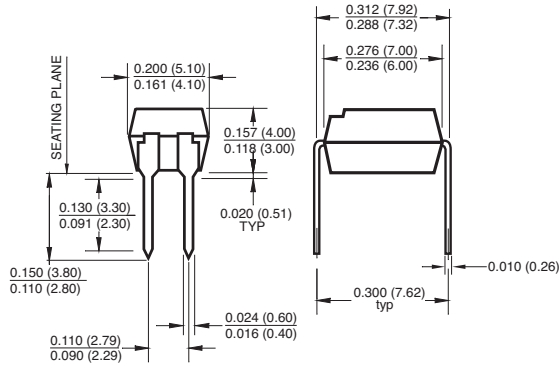
Pin Connections & Package Type	Product Number	V_{CC} Max. (V)	I_{CCL} Max. (mA)	V_{OL} Max. (V)	I_{TH+} Max. (mA)	I_{TH-} Max. (mA)	t_{PHL} Typ. (μs)	t_{PLH} Typ. (μs)	V_{ISO} AC _{RMS} (V)	T_{OPR} (°C)
	HCPL3700	18	4	0.4	3.11	1.62	15	40	2500	-40 to +85

AC Line Monitor Logic Output

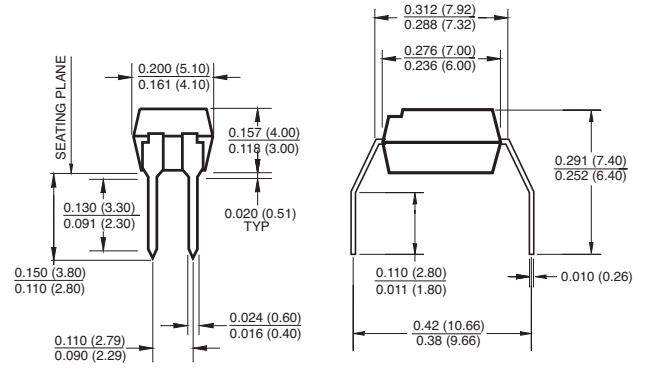
Pin Connections & Package Type	Product Number	V_{CC} Max. (V)	I_{CCL} Max. (mA)	V_{OL} Max. (V)	$V_{I(ON)}$ RMS Min. (V)	$V_{I(OFF)}$ RMS Max. (V)	$I_{(ON)}$ RMS Min. (mA)	$I_{(OFF)}$ RMS Max. (mA)	V_{ISO} AC _{RMS} (V)	T_{OPR} (°C)
	MID400	7	3	0.4	90	5.5	4	0.15	2500	-40 to +85

PACKAGE INFORMATION

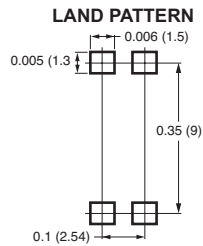
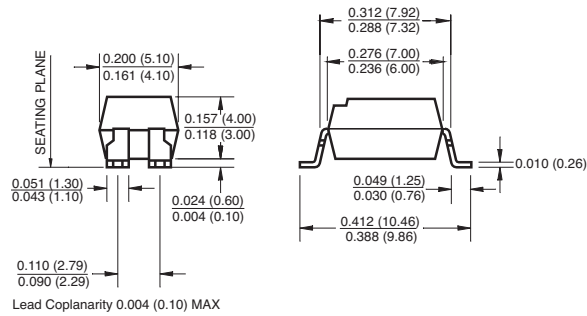
Through Hole



0.4" Lead Spacing (Option T)



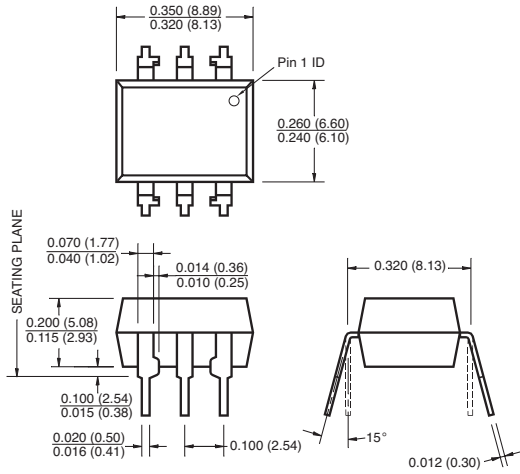
Surface Mount (Option S)



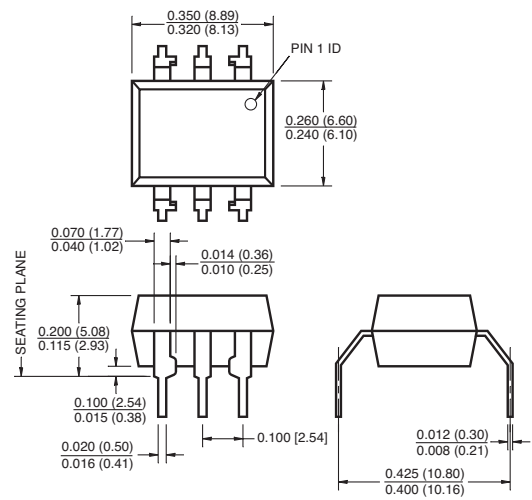
4-pin DIP

Note:
All dimensions are in inches (millimeters)

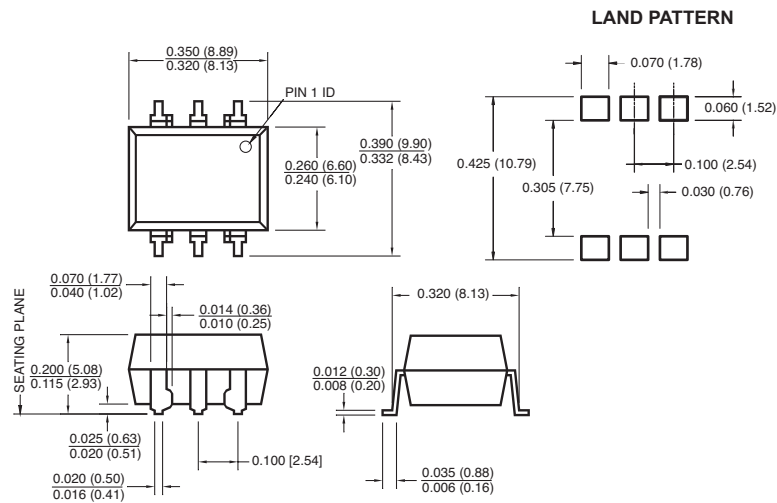
Through Hole



0.4" Lead Spacing (Option T)



Surface Mount (Option S)



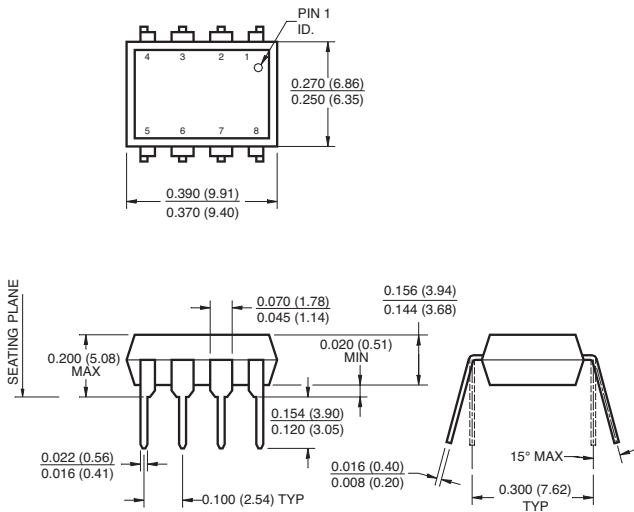
6-pin DIP

Note:

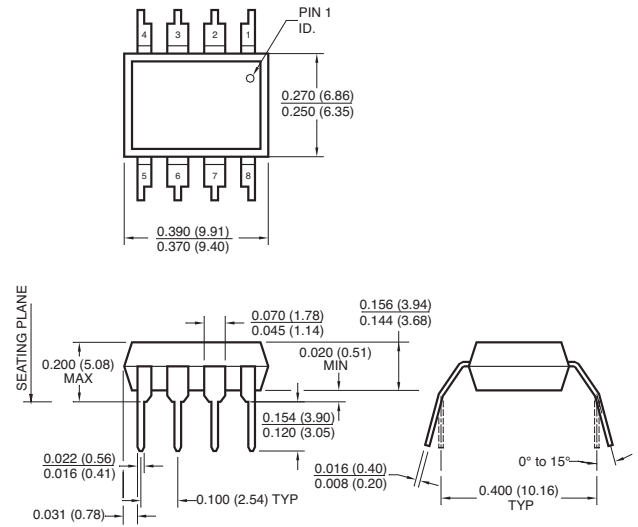
All dimensions are in inches (millimeters)

PACKAGE INFORMATION

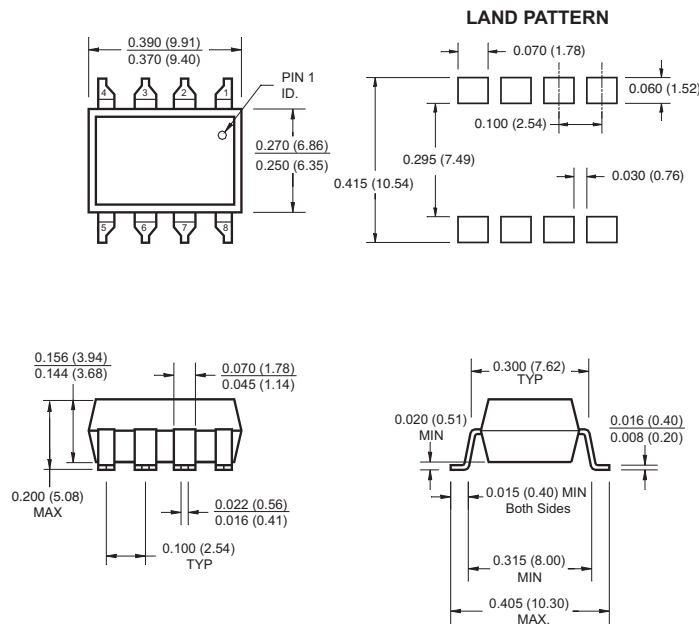
Through Hole



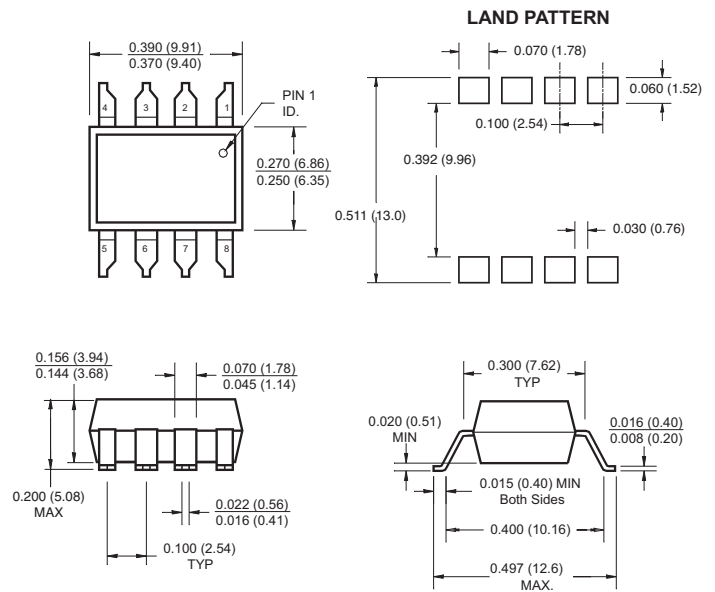
0.4" Lead Spacing (Option T)



Surface Mount – 0.3" Lead Spacing (Option S)



Surface Mount – 0.4" Lead Spacing (Option TS)

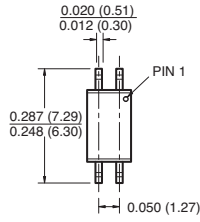


8-pin DIP

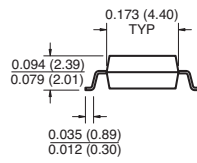
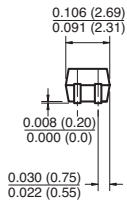
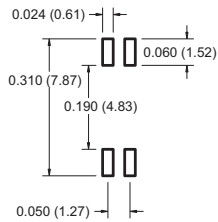
Note:

All dimensions are in inches (millimeters)

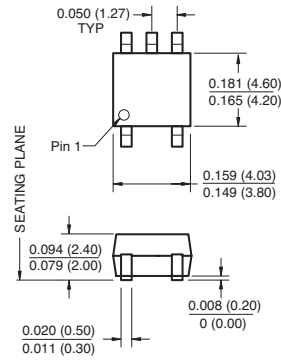
SO4



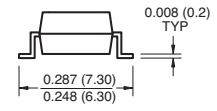
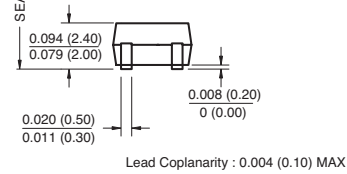
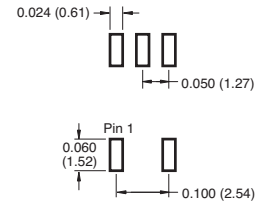
LAND PATTERN



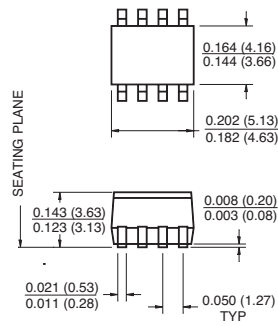
SO4/SO5



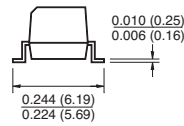
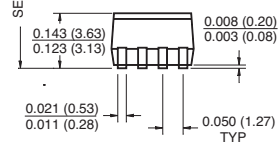
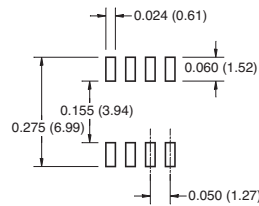
LAND PATTERN



SO8



LAND PATTERN



Lead Coplanarity : 0.004 (0.10) MAX

Small Outline

Note:

All dimensions are in inches (millimeters)

For datasheets, application notes, samples and more, please visit: www.fairchildsemi.com

PRODUCTS & SAMPLES

APPLICATIONS

DESIGN SUPPORT

COMPANY

POWER MANAGEMENT ICs

AC-DC: Power Factor Correction

- Continuous Conduction Mode (CCM) PFC Controllers
- Critical (CrCM) / Boundary Conduction Mode (BCM) PFC Controllers
- PFC + PWM Combination (Combo) Controllers
- Interleaved PFC Controllers

Isolated DC-DC

- Green-mode PWM Controllers
- Integrated Green-mode PWM Regulators (Green FPS™)
- Integrated PWM Regulators (FPS™)
- Primary-side only CV/CC Controllers
- Standard SMPS PWM Controllers
- Synchronous Rectifier Controllers

Non-Isolated DC-DC

- Charge-pump Converters
- Multi-phase Controllers
- Step-down Controllers (External Switch)
- Step-down Regulators (Integrated Switch)
- Step-up Regulators (Integrated Switch)

Power Drivers

- High Voltage Gate Drivers (HVIC)
- Low-side Gate Drivers
- Synchronous Rectifier Controllers/Drivers
- Synchronous-Buck/Multi-phase Drivers

Supervisory/Monitor ICs

- Ground Fault Interrupt (GFI) Controllers
- Supervisors + PWM
- Temperature Sensors
- Voltage Supervisors/Detectors/Stabilizers

Voltage Regulators

- LDOs
- Positive Voltage Linear Regulators
- Negative Voltage Linear Regulators
- Shunt Regulators

POWER SEMICONDUCTORS

Diodes & Rectifiers

- Bridge Rectifiers
- Rectifiers
- Schottky Diodes and Rectifiers
- Small Signal Diodes
- Transient Voltage Suppressors
- Zener Diodes

IGBTs

- Discrete IGBTs
- Ignition IGBTs

Integrated Power Solutions

- DrMOS FET Plus Driver Multi-chip Modules
- Full Function Load Switches (IntelliMAX™)
- MOSFET/Schottky Combos
- Motion-(SPM®) Smart Power Modules
- PDP-(SPM®) Smart Power Modules
- PFC-(SPM®) Smart Power Modules
- Power-(SPM®) Smart Power Modules
- Smart Switches

MOSFETs

- Discrete MOSFETs
- Full Function Load Switches (IntelliMAX™)
- MOSFET/Schottky Combos

Transistors

- BJTs
- Discrete IGBTs
- JFETs
- Load Switches
- Discrete MOSFETs
- MOSFET/Schottky Combos
- Small Signal Transistors

LIGHTING AND DISPLAY

- CCFL Ballast ICs
- CFL/Lighting Ballast Control ICs
- Critical (CrCM)/Boundary Conduction Mode (BCM) PFC Controllers for Lighting
- High Voltage Gate Drivers (HVICs)
- LED Drivers
- PDP Smart Power Modules (PDP-SPM™)

SIGNAL PATH ICs

Amplifiers & Comparators

- Comparators
- Current Sense Amplifiers
- High Performance Amplifiers (>15MHz)
- Operational Amplifiers

Battery Protection ICs

- Battery Protection ICs

Interface

- LVDS
- Serializers/Deserializers (µSerDes™)
- USB Transceivers

Signal Conditioning

- Triple Video DACs
- Video Filter Drivers
- Video Switch Matrix/Multiplexers

Switches

- Analog/Audio Switches
- Bus Switches
- Camera Switches
- Multimedia Switches
- USB Switches
- Video Switches

AUTOMOTIVE PRODUCTS

- Automotive Power Modules
- Discrete Power
- Intelligent Power

LOGIC | TINYLOGIC®

- Buffers, Drivers, Transceivers
- Flip Flops, Latches, Registers
- Gates
- MSI Functions
- Multiplexer/Demultiplexer Encoders/Decoders
- Specialty Logic
- TinyLogic
- Voltage Level Translators

OPTOELECTRONICS

- Infrared
- High Performance Optocouplers
- TRIAC Driver Optocouplers
- Phototransistor Optocouplers
- Solid State Relay Optocouplers

Trademarks, service marks, and registered trademarks are the property of Fairchild Semiconductor or their respective owners.

For a listing of Fairchild Semiconductor trademarks and related information, please see: www.fairchildsemi.com/legal

Lit. No. 250001-006 © 2010 Fairchild Semiconductor. All Rights Reserved.

Printed with vegetable-based inks on recycled paper containing 25% post-consumer content.