

OPTOCOUPLER SELECTION GUIDE



Saving our world, 1mW at a time™

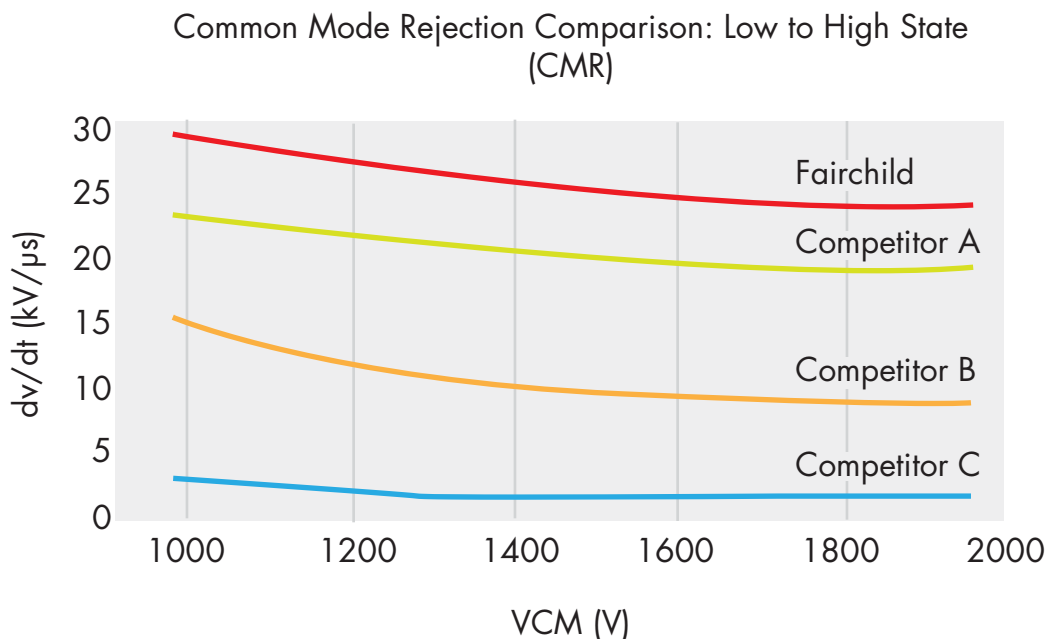
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INTRODUCTION

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 recently introduced 1.0A and 2.5A IGBT/MOSFET gate drive optocouplers complement Fairchild's leading discrete power 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. All of our optocouplers are lead (Pb) free and RoHS compliant. In addition, they are certified by major safety regulatory agencies.

To meet the increasing demands of today's designs, Fairchild offers optocouplers capable of withstanding operating temperatures up to +125°C. Our Microcoupler™ devices are the only plastic package optocouplers capable of meeting this elevated temperature limit to allow for improved Current Transfer Ratio (CTR) stability. Our 4-pin full pitch Mini-Flat package (MFP) and 4-pin DIP package, phototransistor output optocouplers are rated with a maximum operation temperature of +110°C.

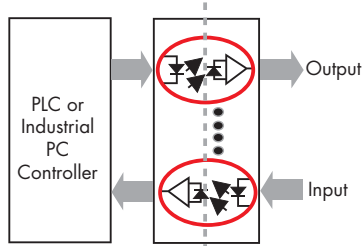
Fairchild's new high performance optocouplers have a superior common mode transient immunity advantage, which is 30% better than the competition. This improvement has been achieved through Optoplanar®, Fairchild's coplanar packaging technology, and proprietary shielding of the silicon detector chip. This solution results in a >30% reduction in capacitance vs. the over-under package construction utilized by the competition. CMR is a measure of the device's ability to reject noise.



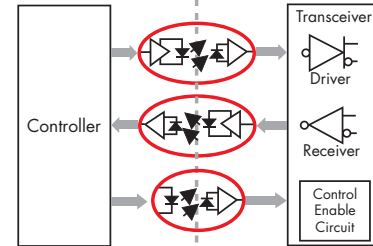
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OPTICALLY ISOLATING HIGH SPEED INTERFACE

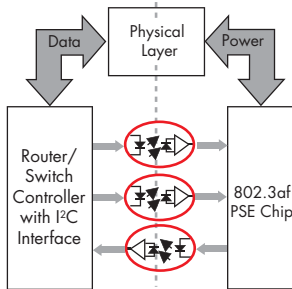
Fairchild's high performance optocouplers have a superior common mode transient immunity advantage (>30% over competition). With their high speed data rates, these optocouplers are ideal to meet the needs of high speed data communications. Portable and compact electronic devices require optocouplers that reduce power consumption and save space. The 3.3V supply voltage specification reduces power consumption by 33%, while the 5-pin MFP and dual channel 8-pin SOP packaging optimize mounting density.



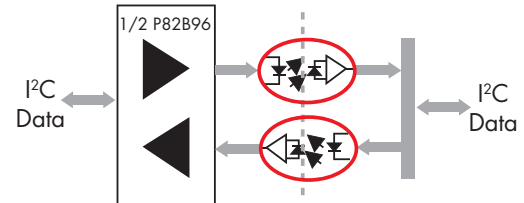
Isolating Digital Input/Output Module



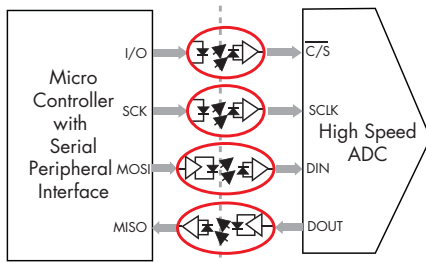
Isolating FieldBus Interface
(Profibus, DeviceNet, CAN, RS485/RS232)



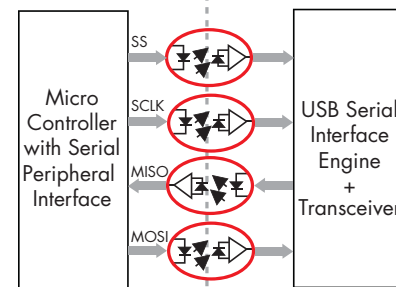
Power Over Ethernet



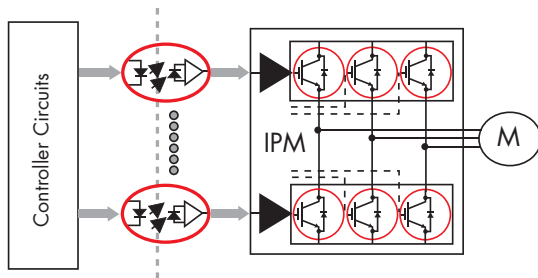
Isolating Bi-Dir I2C Interface



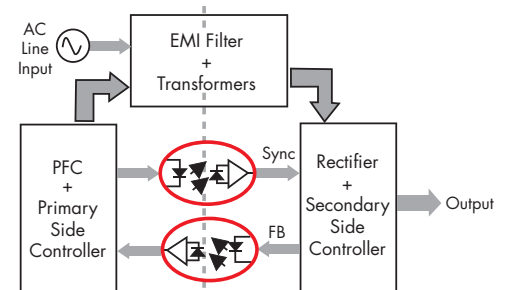
Isolating Data Acquisition System



Isolating Universal Serial Bus



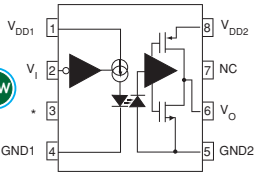
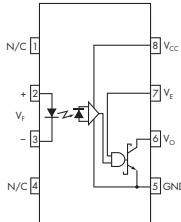
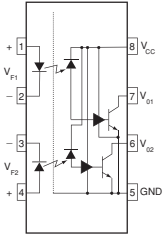
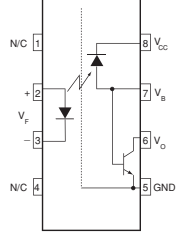
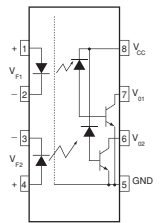
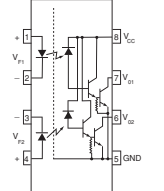
Motor Drive Control (Optically Isolating Intelligent Power Module (IPM))



Digital Power Control

HIGH PERFORMANCE OPTOCOUPPLERS

Low Voltage (3.3V/5V), High Performance

Product Number	Pin Connections	Package	Data Rate (Mbps)	I _{FT} Max. (mA)	CTR @ I _F =16mA (%)		V _{OL} Max. (V)	I _{CCL} Max. (mA)	t _{PHL} Max. (ns)	t _{PLH} Max. (ns)	PWD Max. (ns)	CMR Typ. (kV/μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
					Min.	Max.								
FOD8001 NEW		8-Pin SOIC	25	-	-	-	0.1	9	40	40	6	40	3750	-40 to +105
FOD060L		8-Pin SOIC	10	5	-	-	0.6	10	75	90	25	50	3750	-40 to +85
FOD260L		8-Pin DIP	10	5	-	-	0.6	10	75	90	25	50	5000	-40 to +85
HCPL062N		8-Pin SOIC	10	5	-	-	0.6	15	75	90	25	50	2500	-40 to +85
FOD050L		8-Pin SOIC	1	-	15	50	0.3	0.2	1000	1000	-	35	2500	-40 to +85
FOD250L		8-Pin DIP	1	-	15	50	0.3	0.2	1000	1000	-	35	5000	-40 to +85
FOD053L		8-Pin SOIC	1	-	15	50	0.3	0.4	1000	1000	-	35	2500	-40 to +85
FOD073L		8-Pin SOIC	0.1	-	400*	7000	0.3	3	30	90	-	10	2500	-40 to +85

* CTR @ I_F = 1.6mA (%)

HIGH PERFORMANCE OPTOCOUPPLERS

High Speed Logic Gate												
Product Number	Pin Connections	Package	Data Rate (Mbps)	I_{FT} Max. (mA)	V_{OL} Max. (V)	I_{CCL} Max. (mA)	t_{PHL} Max. (ns)	t_{PLH} Max. (ns)	PWD Max. (ns)	CMR Typ. (kV/ μ s)	V_{ISO} $A_{C_{RMS}}$ (V)	T_{OPR} ($^{\circ}$ C)
FOD0721		8-Pin SOIC	25	-	0.1	9	40	40	6	40	3750	-40 to +100
FOD0720		8-Pin SOIC	25	-	0.1	9	40	40	8	40	3750	-40 to +100
FOD0710		8-Pin SOIC	12.5	-	0.1	9	40	40	8	40	3750	-40 to +100
FOD0708		8-Pin SOIC	15	8.2	0.1	14	60	60	30	50	2500	-40 to +100
FOD0738		8-Pin SOIC	15	8.2	0.1	18	60	60	30	50	2500	-40 to +100
HCPL0600		8-Pin SOIC	10	5	0.6	13	100	100	35	-	3750	-40 to +85
HCPL0601		8-Pin SOIC	10	5	0.6	13	100	100	35	10	3750	-40 to +85
HCPL0611		8-Pin SOIC	10	5	0.6	13	100	100	35	20	3750	-40 to +85
6N137		8-Pin DIP	10	5	0.6	13	100	100	35	10	2500	-40 to +85
HCPL2601		8-Pin DIP	10	5	0.6	13	100	100	35	10	2500	-40 to +85
HCPL2611		8-Pin DIP	10	5	0.6	13	100	100	35	15	2500	-40 to +85
HCPL0637		8-Pin SOIC	10	5	0.6	21	100	100	35	-	3750	-40 to +85
HCPL0638		8-Pin SOIC	10	5	0.6	21	100	100	35	15	3750	-40 to +85
HCPL0639		8-Pin SOIC	10	5	0.6	21	100	100	35	30	3750	-40 to +85
HCPL2630		8-Pin DIP	10	5	0.6	21	100	100	35	10	2500	-40 to +85
HCPL2631		8-Pin DIP	10	5	0.6	21	100	100	35	10	2500	-40 to +85
FOD2200		8-Pin DIP	2.5	1.6	0.5	6	300	300	-	10	5000	-40 to +85
H11N1M		6-Pin DIP	5	3.2	0.5	10	330	330	-	-	4200	-40 to +85
H11N2M		6-Pin DIP	5	5	0.5	10	330	330	-	-	4200	-40 to +85
H11N3M		6-Pin DIP	5	10	0.5	10	330	330	-	-	4200	-40 to +85
H11L1M		6-Pin DIP	1	1.6	0.4	5	4000	4000	-	-	4200	-40 to +85
H11L2M		6-Pin DIP	1	10	0.4	5	4000	4000	-	-	4200	-40 to +85
H11L3M		6-Pin DIP	1	5	0.4	5	4000	4000	-	-	4200	-40 to +85

HIGH PERFORMANCE OPTOCOUPPLERS

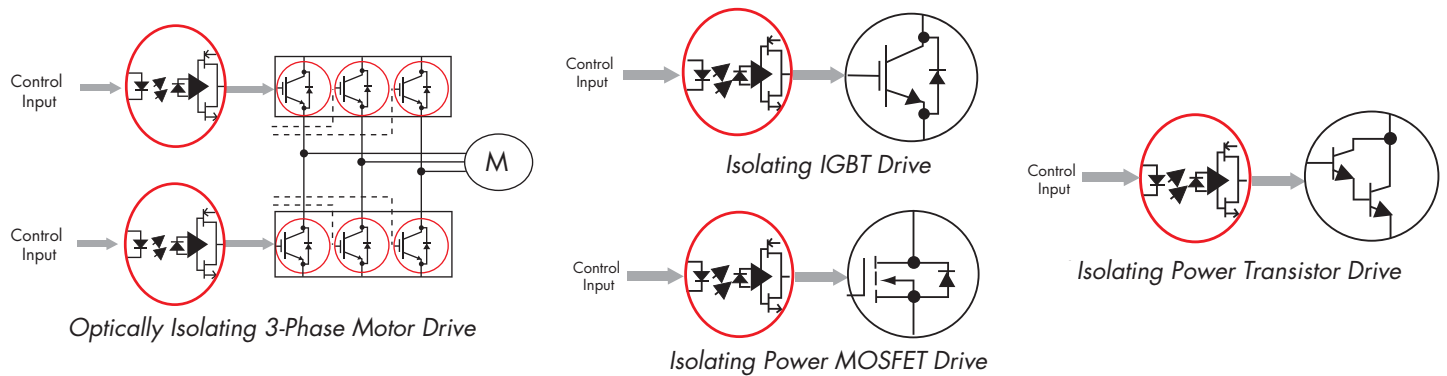
High Performance Transistors												
Product Number	Pin Connections	Package	Data Rate (Mbps)	Current Transfer Ratio		V _{OL} Max. (V)	I _{CC} Max. (mA)	t _{PHL} Max. (μs)	t _{PLH} Max. (μs)	CMR Typ. (kV/μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
				Min.	Max.							
FODM452 ²		5-Pin MFP	1	20	50	0.4	0.2	0.8	0.8	15	3750	-40 to +85
FODM453 ^{1,2}		5-Pin MFP	1	20	50	0.4	0.2	0.8	0.8	40	3750	-40 to +85
HCPL0500		8-Pin SOIC	1	7	50	0.4	0.2	1.5	1.5	10	2500	-40 to +85
HCPL0501		8-Pin SOIC	1	19	50	0.4	0.2	0.8	0.8	10	2500	-40 to +85
HCPL0452 ²		8-Pin SOIC	1	19	50	0.4	0.2	0.8	0.8	10	2500	-40 to +85
HCPL0453 ^{1,2}		8-Pin SOIC	1	19	50	0.4	0.2	0.8	0.8	40	2500	-40 to +85
6N135		8-Pin DIP	1	7	50	0.4	0.2	1.5	1.5	10	2500	-55 to +100
6N136		8-Pin DIP	1	19	50	0.4	0.2	0.8	0.8	10	2500	-55 to +100
HCPL2503		8-Pin DIP	1	12	-	0.4	0.2	0.8	0.8	10	2500	-55 to +100
HCPL4502		8-Pin DIP	1	19	50	0.4	0.2	0.8	0.8	10	2500	-55 to +100
HCPL4503M ^{1,2}		8-Pin DIP	1	19	50	0.5	0.2	0.8	0.8	30	5000	-40 to +100
HCPL0530			8-Pin SOIC	1	7	50	0.5	0.4	1.5	1.5	10	2500
HCPL0531	8-Pin SOIC		1	19	50	0.4	0.4	0.8	0.8	10	2500	-40 to +85
HCPL0534 ¹	8-Pin SOIC		1	19	50	0.4	0.4	0.8	0.8	40	2500	-40 to +85
HCPL2530	8-Pin DIP		1	7	50	0.5	0.4	1.5	1.5	10	2500	-55 to +100
HCPL2531	8-Pin DIP		1	19	50	0.5	0.4	0.8	0.8	10	2500	-55 to +100
HCPL0700		8-Pin SOIC	0.1	300	2600	0.4	1.5	10	35	10	2500	-40 to +85
HCPL0701		8-Pin SOIC	0.1	500	2600	0.4	1.5	10	35	10	2500	-40 to +85
6N138		8-Pin DIP	0.1	300	-	0.4	1.5	10	35	10	2500	-40 to +85
6N139		8-Pin DIP	0.1	500	-	0.4	1.5	10	35	10	2500	-40 to +85
HCPL0730		8-Pin SOIC	0.1	300	5000	0.4	3	20	35	10	2500	-40 to +85
HCPL0731		8-Pin SOIC	0.1	500	5000	0.4	3	20	35	10	2500	-40 to +85
HCPL2730		8-Pin DIP	0.1	300	-	0.4	3	20	35	10	2500	-40 to +85
HCPL2731		8-Pin DIP	0.1	500	-	0.4	3	20	35	10	2500	-40 to +85
			0.1	500	-	0.4	3	20	35	10	2500	-40 to +85

¹ Recommended for IPM Driver

² Base not connected

HIGH PERFORMANCE OPTOCOUPLERS

A new addition to Fairchild's broad optocoupler portfolio, 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.



Gate Drivers														
Product Number	Pin Connections	I_{OH} Min. (A)	I_{OL} Min. (A)	V_{OH} Min. (V)	V_{OL} Max. (V)	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} $A_{C_{RMS}}$ (V)	T_{OPR} ($^{\circ}$ C)
FOD3120	<p>8-Pin DIP</p>	1.0 @ $V_O=V_{CC}$ -3.0V, 2.0 @ $V_O=V_{CC}-6V$	1.0 @ $V_O=V_{EE}$ +3V, 2.0 @ $V_O=V_{EE}+6V$	V_{CC} -0.3	V_{EE} +0.3	30	3.8	400	100	11.5 ~13.5	10.0 ~12.0	35 @ 2000	5000	-40 to 100
FOD3150		0.2 @ $V_O=V_{CC}$ -0.75V, 1.0 @ $V_O=V_{CC}-4V$	0.2 @ $V_O=V_{EE}$ +0.75V, 1.0 @ $V_O=V_{EE}+4V$	V_{CC} -0.5	V_{EE} +0.5	30	5	500	300	11.0 ~13.5	9.5 ~12.0	20 @ 2000	5000	-40 to 100
FOD3180		0.5 @ $V_O=V_{CC}$ -1V, 2.0 @ $V_O=V_{CC}-3V$	0.5 @ $V_O=V_{EE}$ +1V, 2.0 @ $V_O=V_{CC}+3V$	V_{CC} -0.5	V_{EE} +0.5	20	6	200	65	8.3*	7.7*	15 @ 1500	5000	-40 to 100
FOD3181		0.5 @ $V_O=V_{CC}$ -1V	0.5 @ $V_O=V_{EE}$ +1V	V_{CC} -0.5	V_{EE} +0.5	20	6	500	-	-	-	10 @ 1500	5000	-40 to 100

* Typical value

HIGH PERFORMANCE OPTOCOUPLERS

AC-DC to Logic Interface

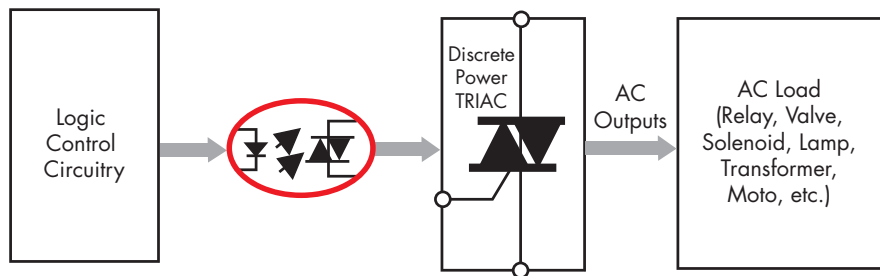
Product Number	Pin Connections	V _{CC} Max. (V)	I _{CC1} Max. (mA)	VOL Max. (V)	I _{TH+} Max. (mA)	I _{TH-} Max. (mA)	t _{PHL} Typ. (μs)	t _{PLH} Typ. (μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
HCPL3700	<p>8-Pin DIP</p>	18	4	0.4	3.11	1.62	15	40	2500	-40 to +85

AC Line Monitor Logic Output

Product Number	Pin Connections	V _{CC} Max. (V)	I _{CC1} Max. (mA)	VOL 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	<p>8-Pin DIP</p>	7	3	0.4	90	5.5	4	0.15	2500	-40 to +85

TRIAC DRIVER OPTOCOUPLERS

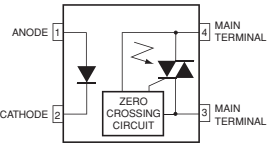
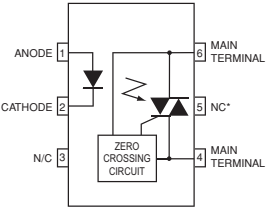
Fairchild Semiconductor is a market leader for optically isolated TRIAC drivers. Our diverse portfolio includes packages ranging from the Mini Flat Package for compact applications to the 6-pin DIP package with wide lead spacing options for applications requiring greater isolation distances. Performance ranges from basic monolithic devices for low cost applications to high performance snubberless devices for applications requiring high dv/dt immunity and low power consumption. Fairchild offers both zero crossing and random phase output switching configurations.



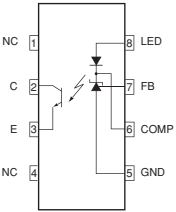
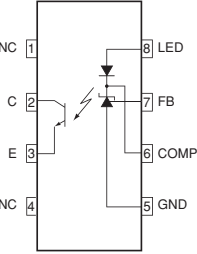
Isolating AC Load Control

Random Phase Triac Driver Optocouplers									
Product Number	Pin Connections	V_{DRM} Min. (V)	I_{FT} Max. (mA)	V_{TM} Max. (V)	dv/dt Min. (V/ μ s)	I_H Typ. (μ A)	I_{DRM} Max. (nA)	V_{ISO} AC _{RMS} (V)	T_{OPR} ($^{\circ}$ C)
FODM3011	<p>4-Pin, Full Pitch MFP</p>	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
MOC3010M	<p>6-Pin DIP</p>	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
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	

TRIAC DRIVER OPTOCOUPLERS

Zero Crossing Triac Driver Optocouplers											
Product Number	Pin Connections	V_{DRM} Min. (V)	I_{FT} Max. (mA)	V_{TM} Max. (V)	dv/dt Min. (V/ μ s)	I_H Typ. (μ A)	V_{INH} Max. (V)	I_{DRM} Max. (nA)	V_{ISO} AC _{RMS} (V)	T_{OPR} ($^{\circ}$ C)	
FODM3062	 <p>4-Pin, Full Pitch MFP</p>	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	
MOC3031M	 <p>6-Pin DIP</p>	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	
FOD410		NEW	600	2	3	10000	200	25	100	5000	-55 to +100
FOD4116		NEW	600	1.3	3	10000	200	25	100	5000	-55 to +100
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	
FOD4108	NEW	800	2	3	10000	200	25	100	5000	-55 to +100	
FOD4118	NEW	800	1.3	3	10000	200	25	100	5000	-55 to +100	

PHOTOTRANSISTORS

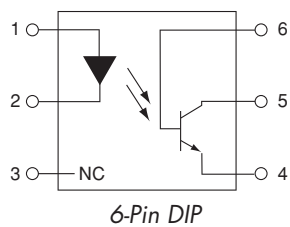
Isolated Error Amplifiers, DC Sensing Input with Voltage Reference										
Product Number	Pin Connections	V_{REF} Tolerance (%)	V_{REF} (V)			CTR @ $I_F = 10\text{mA}$ (%)		BV_{CEO} (V)	V_{ISO} AC _{RMS} (V)	T_{OPR} (°C)
			Typ.	Min.	Max.	Min.	Max.	Min.		
FOD2712	 <p>8-Pin SOIC</p>	1.0	1.240	1.221	1.259	100	200	70	2500	-40 to +85
FOD2742A		0.5	2.495	2.482	2.508	100	200	70	2500	-25 to +85
FOD2742B		1.0	2.495	2.470	2.520	100	200	70	2500	-25 to +85
FOD2742C		2.0	2.495	2.450	2.550	100	200	70	2500	-25 to +85
FOD2711	 <p>8-Pin DIP</p>	1.0	1.240	1.221	1.259	100	200	70	5000	-40 to +85
FOD2741A		0.5	2.495	2.482	2.508	100	200	70	5000	-25 to +85
FOD2741B		1.0	2.495	2.470	2.520	100	200	70	5000	-25 to +85
FOD2741C		2.0	2.495	2.450	2.550	100	200	70	5000	-25 to +85
FOD2743A		0.5	2.495	2.482	2.508	50	100	70	5000	-25 to +85
FOD2743B		1.0	2.495	2.470	2.520	50	100	70	5000	-25 to +85
FOD2743C	2.0	2.495	2.450	2.550	50	100	70	5000	-25 to +85	

Phototransistor Output-DC Sensing Input											
Product Number	Pin Connections	Package	CTR (%)		BV _{CEO} Min. (V)	BV _{CBO} Min. (V)	BV _{ECO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO} AC _{RMS} (V)	T _{OPR} (°C)
			Min.	Max.							
FOD817*		4-Pin DIP	50	600	70	-	6	-	-	5000	-55 to +110
FODB100		4-Pin BGA	100	-	75	-	7	3	5	2500	-40 to +125
FODB101		4-Pin BGA	100	200	75	-	7	3	5	2500	-40 to +125
FODB102		4-Pin BGA	150	300	75	-	7	3	5	2500	-40 to +125
HMHA2801*		4-Pin Half-Pitch MFP	80	600	80	-	7	-	-	2500	-55 to +100
HMHA281		4-Pin Half-Pitch MFP	50	600	80	-	7	-	-	2500	-55 to +100
FODM121*		4-Pin Full-Pitch MFP	50	600	80	-	7	-	-	3750	-40 to +110
FODM124		4-Pin Full-Pitch MFP	100	1200	80	-	7	-	-	3750	-40 to +110
FODM2701*		4-Pin Full-Pitch MFP	50	300	40	-	7	-	-	3750	-40 to +110
MCT4		4-Pin TO-18	15	-	30	-	7	-	-	1000	-55 to +125
MCT4R		4-Pin TO-18	15	-	30	-	7	-	-	1000	-55 to +125

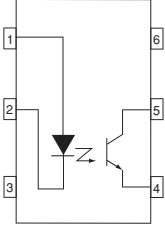
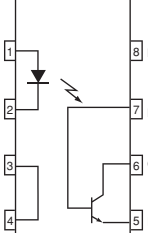
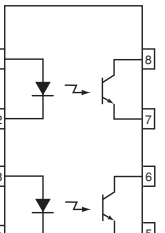
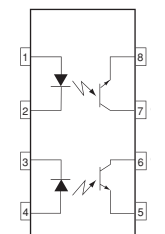
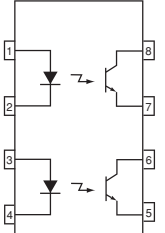
* CTR option available

PHOTOTRANSISTORS

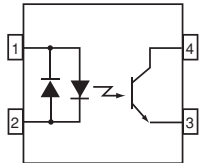
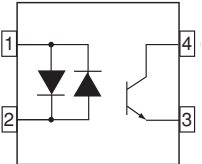
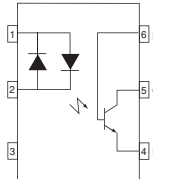
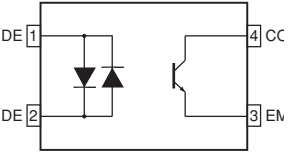
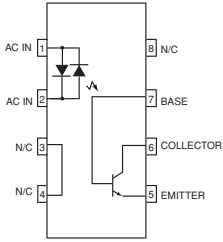
Phototransistor Output-DC Sensing Input										
Product Number	Pin Connections	CTR (%)		BV _{CEO} Min. (V)	BV _{CBO} Min. (V)	BV _{ECO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO AC RMS} (V)	T _{OPR} (°C)
		Min.	Max.							
4N25M		20	-	30	70	7	2	2	4200	-55 to +100
4N26M		20	-	30	70	7	2	2	4200	-55 to +100
4N27M		10	-	30	70	7	2	2	4200	-55 to +100
4N28M		10	-	30	70	7	2	2	4200	-55 to +100
4N35M		100	-	30	70	7	2	2	4200	-55 to +100
4N36M		100	-	30	70	7	2	2	4200	-55 to +100
4N37M		100	-	30	70	7	2	2	4200	-55 to +100
H11A1M		50	-	30	70	7	2	2	4200	-55 to +100
H11A2M		20	-	30	70	7	2	2	4200	-55 to +100
H11A3M		20	-	30	70	7	2	2	4200	-55 to +100
H11A4M		10	-	30	70	7	2	2	4200	-55 to +100
H11A5M		30	-	30	70	7	2	2	4200	-55 to +100
H11AV1M		100	300	70	70	7	15*	15*	4200	-40 to +100
H11AV2M		50	-	70	70	7	15*	15*	4200	-40 to +100
MCT2M		20	-	30	70	7	2	2	4200	-40 to +100
MCT2EM		20	-	30	70	7	2	2	4200	-40 to +100
MCT271M		45	90	30	70	7	2	2	4200	-40 to +100
MCT210M		150	-	30	70	7	1	50	4200	-40 to +100
MOC8100M		50	-	30	70	7	20*	20*	4200	-55 to +100
TIL111M		-	-	30	70	7	-	-	4200	-55 to +100
TIL117M		50	-	30	70	7	10*	10*	4200	-55 to +100
CNY171M		40	80	70	70	7	2	3	4200	-40 to +100
CNY172M		63	125	70	70	7	2	3	4200	-40 to +100
CNY173M		100	200	70	70	7	2	3	4200	-40 to +100
CNY174M		160	320	70	70	7	2	3	4200	-40 to +100
H11AG1M		300	-	30	70	7	5	5	4200	-40 to +100
MCT5201M		120	-	30	30	5	3	12	4200	-40 to +100
MCT5210M		70	-	30	30	5	7	8	4200	-40 to +100
MCT5211M		150	-	30	30	5	15	11	4200	-40 to +100
4N38M		20	-	80	80	7	5	5	4200	-40 to +100
H11D1M		20	-	300	300	7	5	5	4200	-40 to +100
H11D2M		20	-	300	300	7	5	5	4200	-40 to +100
H11D3M		20	-	200	200	7	5	5	4200	-40 to +100
MOC8204M		20	-	400	400	7	5	5	4200	-40 to +100



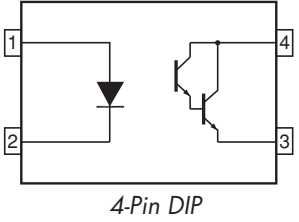
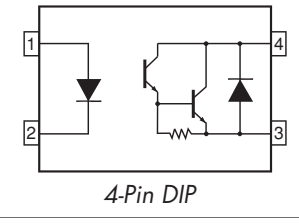
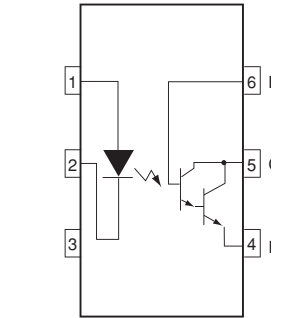
* Maximum value

Phototransistor Output-DC Sensing Input										
Product Number	Pin Connections	CTR (%)		V_{CEO}	V_{CBO}	V_{ECO}	t_{ON}	t_{OFF}	V_{ISO}	T_{OPR}
		Min.	Max.	Min. (V)	Min. (V)	Min. (V)	Typ. (μs)	Typ. (μs)	AC_{RMS} (V)	($^{\circ}C$)
CNY17F1M	 <p>6-Pin DIP</p>	40	80	70	-	7	2	3	4200	-40 to +100
CNY17F2M		63	125	70	-	7	2	3	4200	-40 to +100
CNY17F3M		100	200	70	-	7	2	3	4200	-40 to +100
CNY17F4M		160	320	70	-	7	2	3	4200	-40 to +100
MOC8106M		50	150	70	-	7	2	3	4200	-40 to +100
MOC8111M		20	-	70	-	7	6	5.5	4200	-40 to +100
MOC8112M		50	-	70	-	7	6	5.5	4200	-40 to +100
MOC8113M		100	-	70	-	7	6	5.5	4200	-40 to +100
MOC205M		 <p>8-Pin SOIC</p>	40	80	70	70	7	7.5	5.7	2500
MOC206M	63		125	70	70	7	7.5	5.7	2500	-40 to +100
MOC207M	100		200	70	70	7	7.5	5.7	2500	-40 to +100
MOC208M	40		125	70	70	7	7.5	5.7	2500	-40 to +100
MOC211M	20		-	30	70	7	7.5	5.7	2500	-40 to +100
MOC212M	50		-	30	70	7	7.5	5.7	2500	-40 to +100
MOC213M	100		-	30	70	7	7.5	5.7	2500	-40 to +100
MOC215M	20		-	30	70	7	4	4	2500	-40 to +100
MOC216M	50		-	30	70	7	4	4	2500	-40 to +100
MOC217M	100	-	30	70	7	4	4	2500	-40 to +100	
MOCD207M	 <p>8-Pin SOIC</p>	100	200	70	70	7	3	2.8	2500	-40 to +100
MOCD208M		40	125	70	70	7	3	2.8	2500	-40 to +100
MOCD211M		20	-	30	-	7	7.5	5.7	2500	-40 to +100
MOCD213M		100	-	70	-	7	3	2.8	2500	-40 to +100
MOCD217M		100	-	30	-	7	7.5	5.7	2500	-40 to +100
MCT6	 <p>8-Pin DIP</p>	20	-	30	-	6	2.4	2.4	5300	-55 to +100
MCT61		50	-	30	-	6	2.4	2.4	5300	-55 to +100
MCT62		100	-	30	-	6	2.4	2.4	5300	-55 to +100
MCT9001	 <p>8-Pin DIP</p>	50	600	55	-	7	3	3	5300	-55 to +100

PHOTOTRANSISTORS

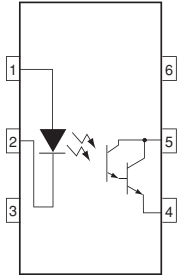
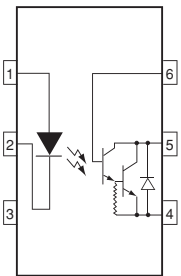
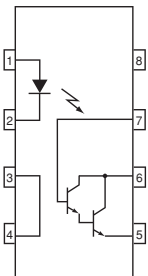
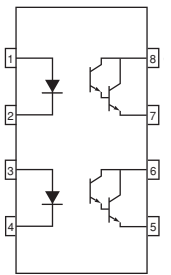
Phototransistor Output-AC Sensing Input											
Product Number	Pin Connections	CTR (%)		BV _{CEO} Min. (V)	BV _{CBO} Min. (V)	BV _{ECO} Min. (V)	t _r Typ. (μs)	t _f Typ. (μs)	V _{ISO AC RMS} (V)	T _{OPR} (°C)	
		Min.	Max.								
HMHAA280	 4-Pin Half-Pitch MFP	50	600	80	-	7	3	3	2500	-55 to +100	
FODM2705	 4-Pin Half-Pitch MFP	50	300	40	-	7	3	3	3750	-40 to +110	
FOD814	 4-Pin DIP	20*	300	70	-	6	4	3	5000	-55 to +105	
H11AA1M, H11AA2M, H11AA3M, H11AA4M	 6-Pin DIP	20, 10, 50, 100	-	30	70	7	-	-	4200	-40 to +100	
MOC256M	 8-Pin SOIC	20	-	30	70	5	-	-	2500	-40 to +100	

* Max. value

Photodarlington Output										
Product Number	Pin Connections	CTR (%)		BV _{CEO} Min. (V)	BV _{CBO} Min. (V)	BV _{ECO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO} A _{CRMS} (V)	T _{OPR} (°C)
		Min.	Max.							
FOD815	 4-Pin DIP	600	7500	35	-	6	-	-	5000	-30 to +105
FOD852	 4-Pin DIP	1000	15000	300	-	0.1	-	-	5000	-30 to +100
4N29M	 6-Pin DIP	100	-	30	30	5	5*	40*	5300	-40 to +100
4N30M		100	-	30	30	5	5*	40*	5300	-40 to +100
4N32M		500	-	30	30	5	5*	100*	5300	-40 to +100
4N33M		500	-	30	30	5	5*	100*	5300	-40 to +100
H11B1M		500	-	25	30	7	25	18	5300	-40 to +100
TIL113M		300	-	30	30	7	5*	100*	5300	-40 to +100

*Max. value

PHOTOTRANSISTORS

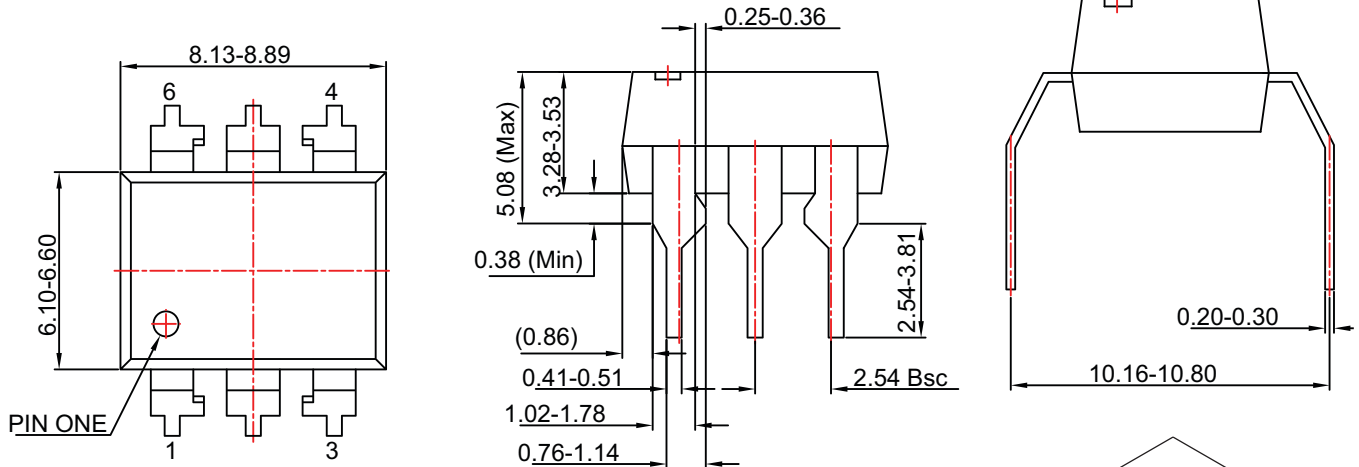
Photodarlington Output										
Product Number	Pin Connections	CTR (%)		BV _{CEO} Min. (V)	BV _{CBO} Min. (V)	BV _{ECO} Min. (V)	t _{ON} Typ. (μs)	t _{OFF} Typ. (μs)	V _{ISO} A _{CRMS} (V)	T _{OPR} (°C)
		Min.	Max.							
MOC119M	 <p>6-Pin DIP</p>	300	-	30	-	7	3.5	95	5300	-40 to +100
MOC8050M		500	-	80	-	5	8.5	95	5300	-40 to +110
MOC8021M		1000	-	50	-	5	8.5	95	5300	-40 to +110
H11G1M	 <p>6-Pin DIP</p>	500	-	100	100	7	5	100	5300	-40 to +100
H11G2M		500	-	80	80	7	5	100	5300	-40 to +100
H11G3M		200	-	55	55	7	5	100	5300	-40 to +100
MOC223M	 <p>8-Pin SOIC</p>	500	-	30	-	7	10	0.125	2500	-40 to +100
MOC223M	 <p>8-Pin SOIC</p>	500	-	30	-	7	8	55	2500	-40 to +100

SOLID STATE RELAY OPTOCOUPLERS

Optically Coupled Solid State Relays, DC Threshold Sensing Input										
Product Number	Pin Connections	Connection	$I_{F(ON)}$ Max. (mA)	V_{OPR} Max. (VDC)	I_L Max. (mA)	$R_{(ON)}$ Max. (Ω)	I_{LMT} (mA) Max.	$V_{ISO AC_{RMS}}$ (V)	T_{OPR} ($^{\circ}C$)	
HSR312	<p>6-Pin DIP</p>	Series	2	250	190	10	-	4000	-40 to +85	
		Parallel			320	3				
HSR312L			Series	2	250	170	15	300	4000	-40 to +85
		Parallel	300			4.25	560			
HSR412			Series	3	400	140	27	-	4000	-40 to +85
		Parallel	210			7				
HSR412L		Series	3	400	120	35	220	4000	-40 to +85	
	Parallel	200			9	440				
H11F1M	<p>6-Pin DIP</p>	-	-	30	-	200	-	5300	-55 to +100	
H11F2M		-	-	30	-	330	-	5300	-55 to +100	
H11F3M		-	-	15	-	470	-	5300	-55 to +100	

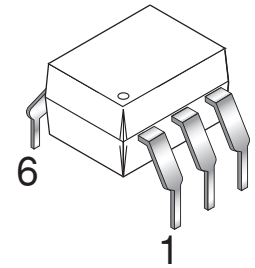
PACKAGE INFORMATION

6 Lead, MDIP, White 0.4" Lead Spacing

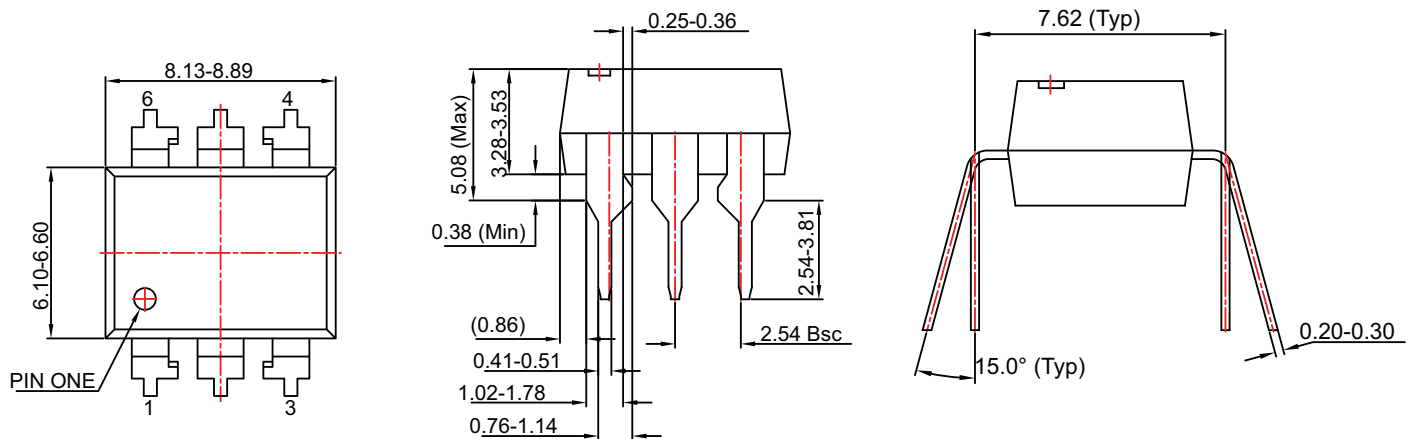


NOTES:

- A) NO STANDARD APPLIES TO THIS PACKAGE.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION.
- D) DRAWING FILENAME AND REVISION: MKT-N06DREV3.

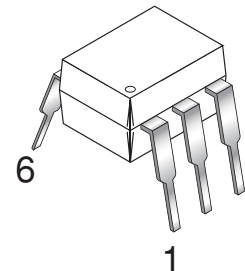


6 Lead, MDIP, White, .300" Wide



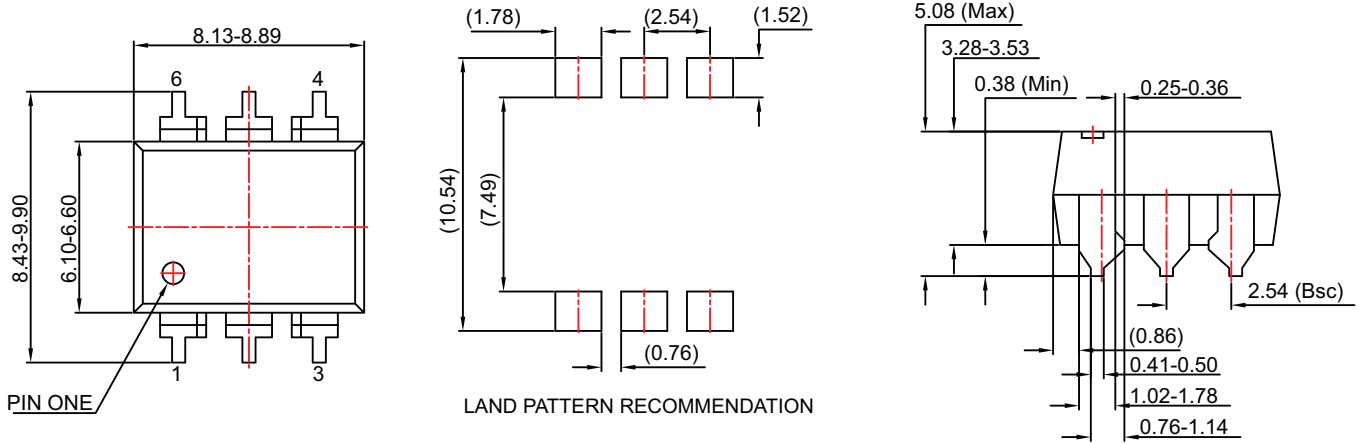
NOTES:

- A) NO STANDARD APPLIES TO THIS PACKAGE.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION.
- D) DRAWING FILENAME AND REVISION: MKT-NA06BREV3.

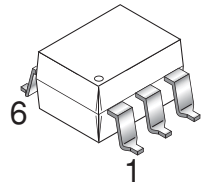


Refer to datasheet for package dimensions for a specific product.

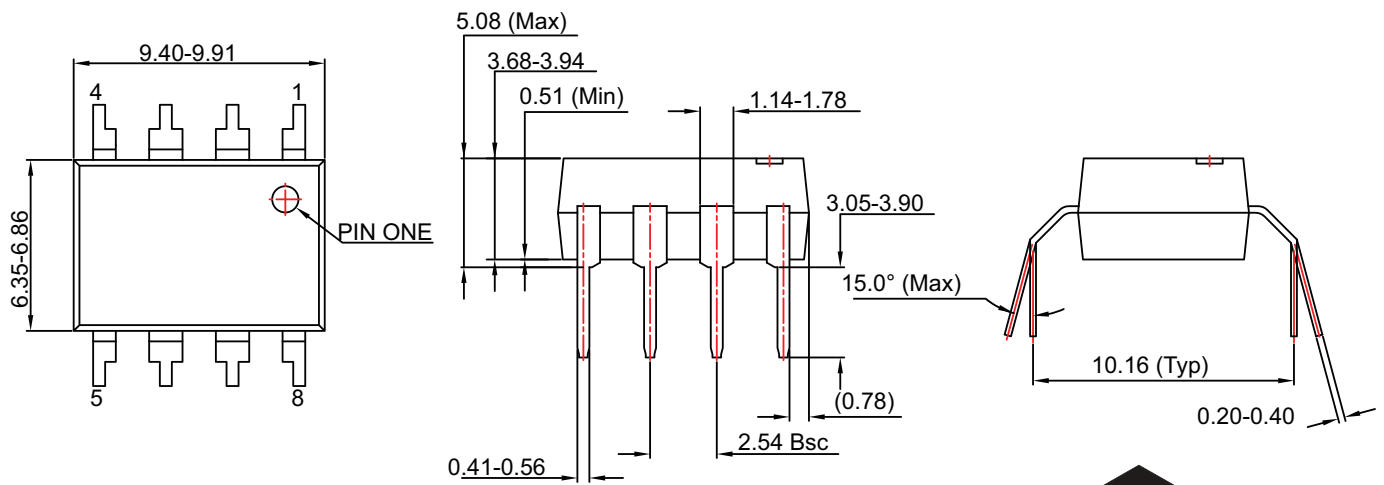
6 Lead, MDIP, Surface Mount Lead Form



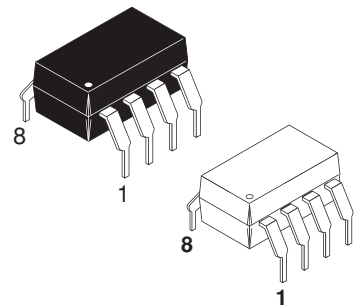
- LAND PATTERN RECOMMENDATION
- NOTES:
 A) NO STANDARD APPLIES TO THIS PACKAGE.
 B) ALL DIMENSIONS ARE IN MILLIMETERS.
 C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION.
 D) DRAWING FILENAME AND REVISION : MKT-N06CREV3.



8 Lead, MDIP, .4" Lead Spacing, Black and White



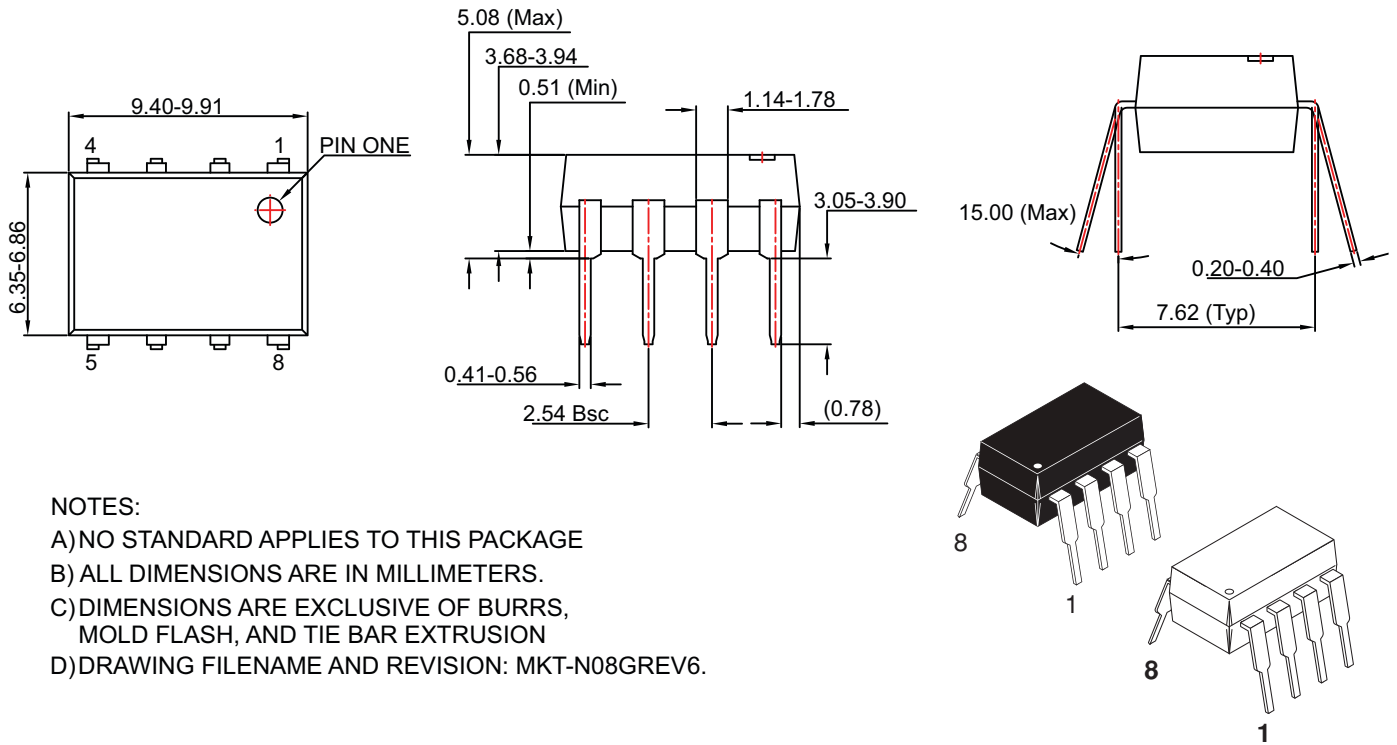
- NOTES:
 A) NO STANDARD APPLIES TO THIS PACKAGE.
 B) ALL DIMENSIONS ARE IN MILLIMETERS.
 C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION.
 D) DRAWING FILENAME AND REVISION: MKT-N08AREV6.



Refer to datasheet for package dimensions for a specific product.

PACKAGE INFORMATION

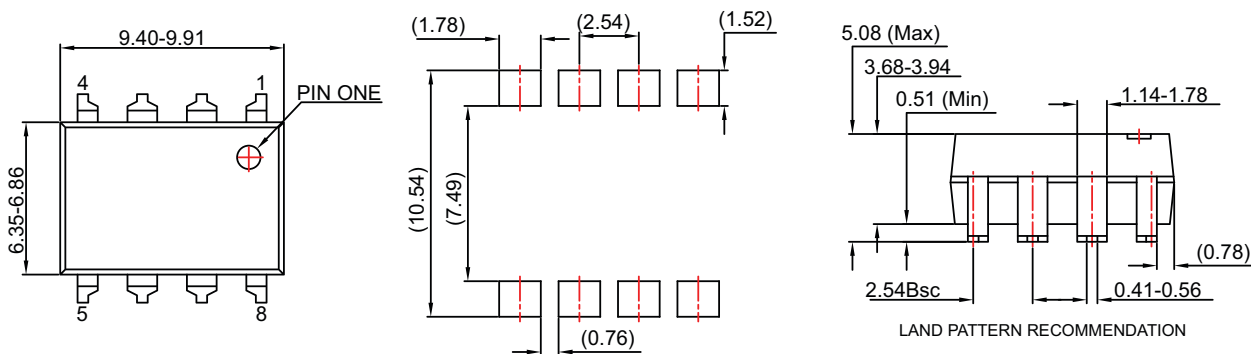
8 Lead, MDIP, .300" Wide, Black and White



NOTES:

- A) NO STANDARD APPLIES TO THIS PACKAGE
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION
- D) DRAWING FILENAME AND REVISION: MKT-N08GREV6.

8 Lead, MDIP, Black and White, Surface Mount Lead Form

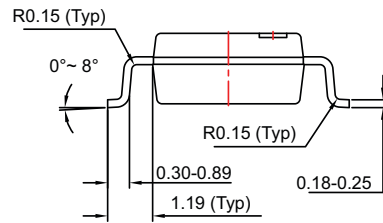
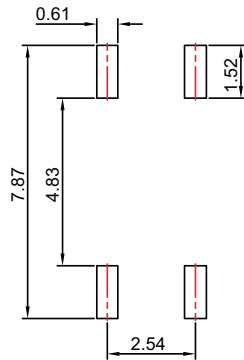
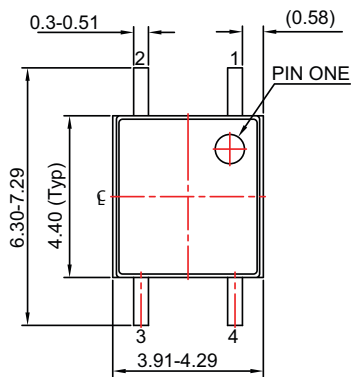


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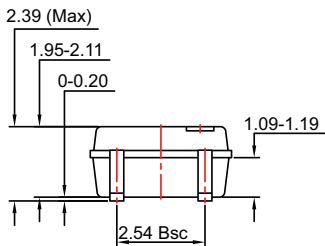
- A) NO STANDARD APPLIES TO THIS PACKAGE
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION
- D) DRAWING FILENAME AND REVISION: MKT-N08HREV6.

Refer to datasheet for package dimensions for a specific product.

4 Lead, MFP (Mini Flat Package), Full-Pitch

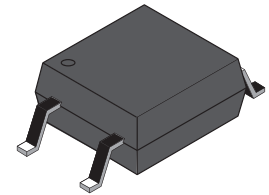


LAND PATTERN RECOMMENDATION

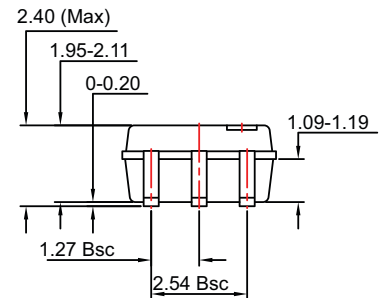
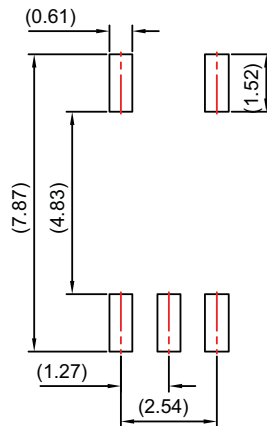
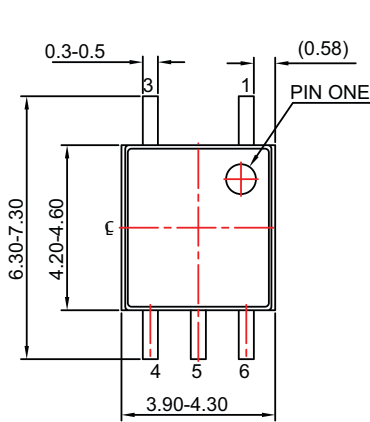


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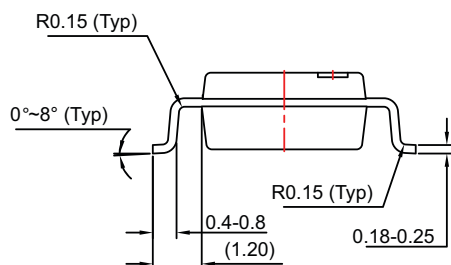
- A) NO STANDARD APPLIES TO THIS PACKAGE
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION
- D) DRAWING FILENAME AND REVISION : MKT-MFP04BREV2.



5 Lead, MFP (Mini-Flat Package), Full-Pitch, White

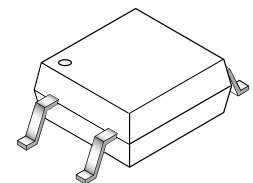


LAND PATTERN RECOMMENDATION



NOTES:

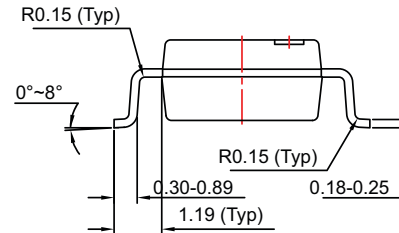
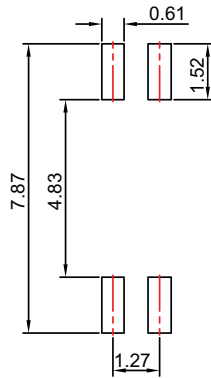
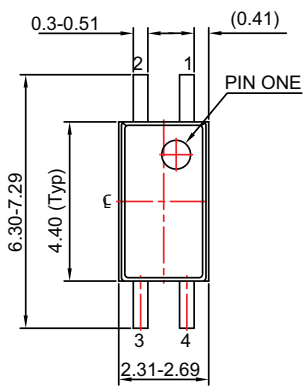
- A) NO STANDARD APPLIES TO THIS PACKAGE
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION
- D) DRAWING FILENAME AND REVISION : MKT-MFP05AREV2.



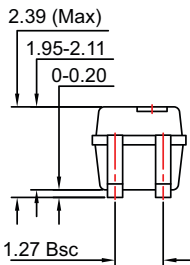
Refer to datasheet for package dimensions for a specific product.

PACKAGE INFORMATION

4 Lead, MFP (Mini Flat Package), Half-Pitch, White

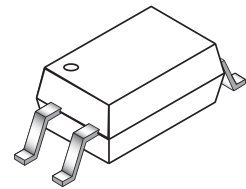


LAND PATTERN RECOMMENDATION

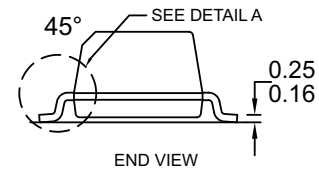
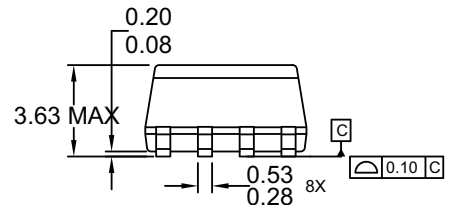
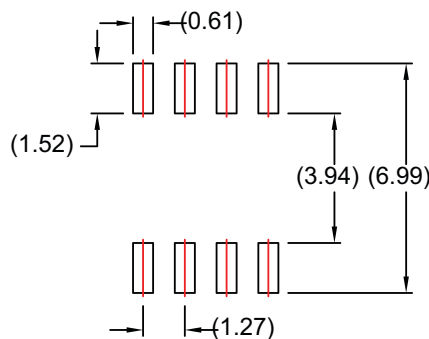
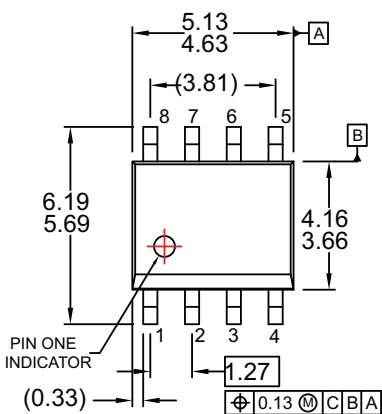


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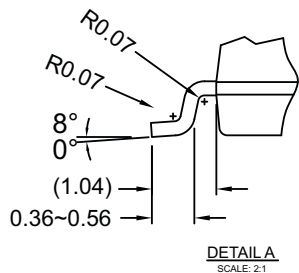
- A) NO STANDARD APPLIES TO THIS PACKAGE
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSION
- D) DRAWING FILENAME AND REVISON : MKT-MFP04AREV2.



8 Lead, SOIC, .150" Body, Opto, White

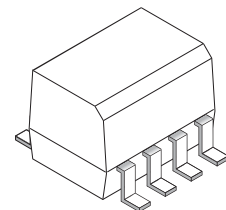


LAND PATTERN RECOMMENDATION



NOTES:

- A) NO STANDARD APPLIES TO THIS PACKAGE
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS DO NOT INCLUDE MOLD FLASH OR BURRS.
- D) LANDPATTERN STANDARD: SOIC127P600X175-8M.
- E) DRAWING FILENAME: MKT-M08EREV4



Refer to datasheet for package dimensions for a specific product.