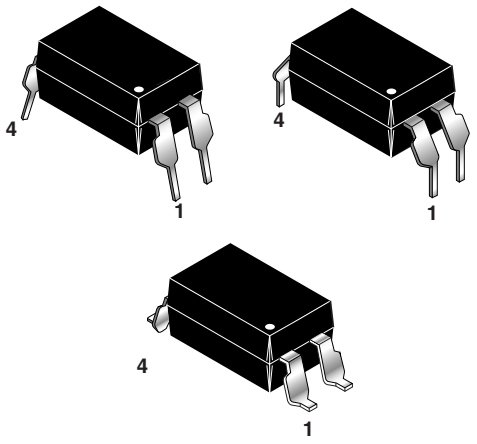
FAIRCHILD
SEMICONDUCTOR®

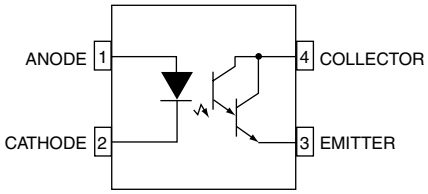
4-PIN PHOTODARLINGTON OPTOCOUPLER

H11B815

PACKAGE



SCHEMATIC



DESCRIPTION

The H11B815 consists of a gallium arsenide infrared emitting diode driving a silicon Darlington phototransistor in a 4-pin dual in-line package.

FEATURES

- Compact 4-pin package
- Current Transfer Ratio: 600% minimum (at I_F = 1 mA)
- High isolation voltage between input and output (5300 VRMS)
- UL recognized (File # E90700)

APPLICATIONS

- Power Supply Monitors
- Relay Contact Monitor
- Telephone/Telegraph Line Receiver
- Twisted Pair Line Receiver
- Digital Logic/Digital Logic

ABSOLUTE MAXIMUM RATINGS (No derating required up to 85°C)

Parameter	Symbol	Value	Units
TOTAL DEVICE			
Storage Temperature	T_{STG}	-55 to +150	°C
Operating Temperature	T_{OPR}	-55 to +100	°C
Lead Solder Temperature	T_{SOL}	260 for 10 sec	°C
Total Device Power Dissipation @ T_A = 25°C	P_D	250	mW
EMITTER			
DC/Average Forward Input Current	I_F	80	mA
Reverse Input Voltage	V_R	6	V
Forward Current - Peak (1µs pulse, 300pps)	I_F(pk)	1	A
LED Power Dissipation @ T_A = 25°C	P_D	140	mW
Derate above 25°C		1.33	mW/°C
DETECTOR			
Collector-Emitter Voltage	V_{CEO}	35	V
Emitter-Collector Voltage	V_{ECO}	6	V
Continuous Collector Current	I_C	200	mA
Detector Power Dissipation @ T_A = 25°C	P_D	200	mW
Derate above 25°C		2.0	mW/°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise specified.)

INDIVIDUAL COMPONENT CHARACTERISTICS

Parameter	Test Conditions	Symbol	Min	Typ**	Max	Unit
EMITTER						
Input Forward Voltage	(I_F = 20 mA)	V_F		1.2	1.50	V
Reverse Leakage Current	(V_R = 6.0 V)	I_R		0.001	10	µA
DETECTOR						
Collector-Emitter Breakdown Voltage	(I_C = 1.0 mA, I_F = 0)	BV_{CEO}	35	60		V
Emitter-Collector Breakdown Voltage	(I_E = 100 µA, I_F = 0)	BV_{ECO}	6	8		V
Collector-Emitter Dark Current	(V_{CE} = 10 V, I_F = 0)	I_{CEO}		0.005	1	µA
Capacitance	(V_{CE} = 0 V, f = 1 MHz)	C_{CE}		8		pF

TRANSFER CHARACTERISTICS

DC Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	(I_F = 1 mA, V_{CE} = 2 V)	CTR	600		7,500	%
Saturation Voltage	(I_F = 20 mA, I_C = 5 mA)	$V_{CE(sat)}$		0.8	1.0	V
Rise Time (non saturated)	(I_C = 10 mA, V_{CE} = 2 V, R_L = 100V)	t_r			300	µs
Fall Time (non saturated)	(I_C = 10 mA, V_{CE} = 2 V, R_L = 100V)	t_f			250	µs

ISOLATION CHARACTERISTICS

Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Input-Output Isolation Voltage	(I_{I-O} [1 µA, 1 min.)	V_{ISO}	5300			Vac(rms)
Isolation Resistance	(V_{I-O} = 500 VDC)	R_{ISO}	10^{11}			Ω
Isolation Capacitance	(V_{I-O} = &, f = 1 MHz)	C_{ISO}		0.5		pf

** All typicals at TA = 25°C

Typical Performance Curves

Fig. 1 Normalized Current Transfer Ratio vs. Forward Current

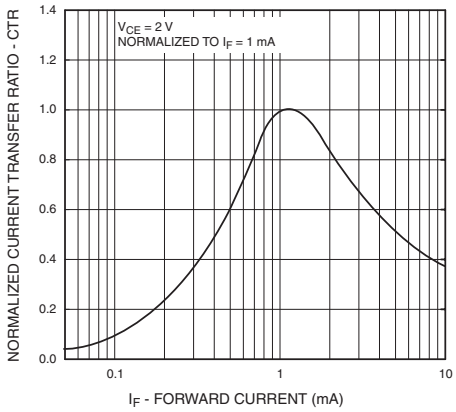


Fig. 2 Normalized Current Transfer Ratio vs. Ambient Temperature

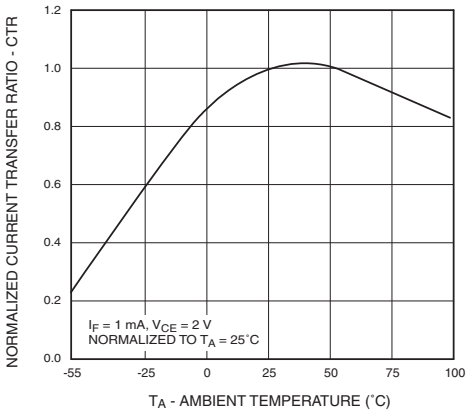


Fig. 3 Normalized Collector Current vs. Collector Emitter Voltage

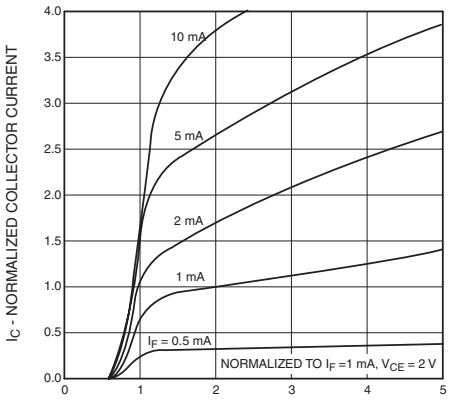


Fig. 4 Collector-Emitter Dark Current vs. Ambient Temperature

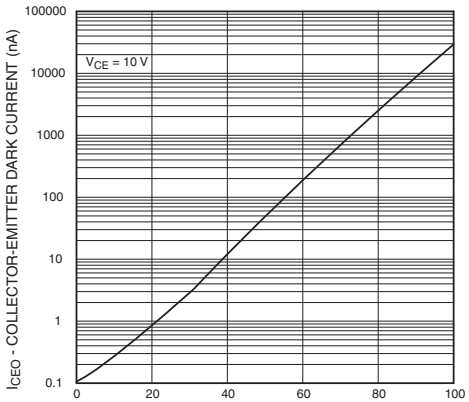
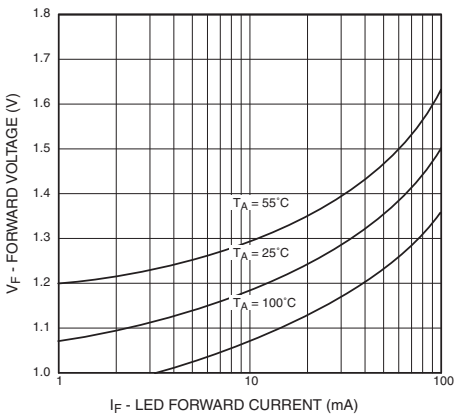
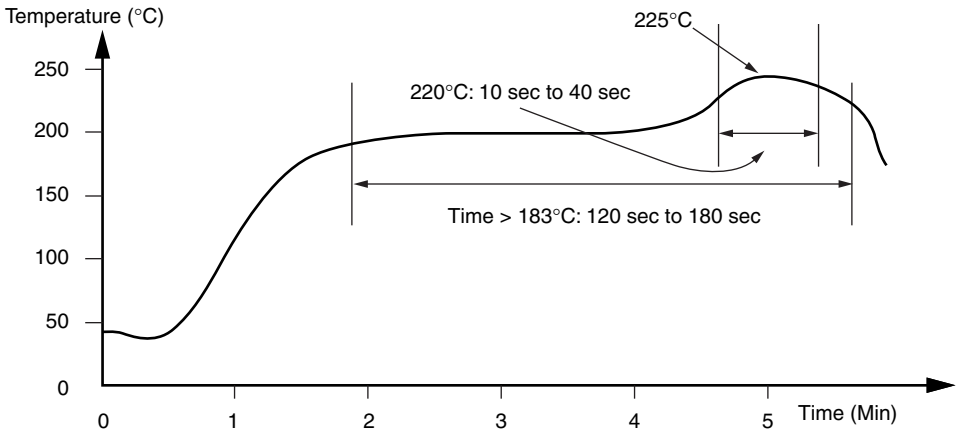


Fig. 5 LED Forward Voltage vs. Forward Current



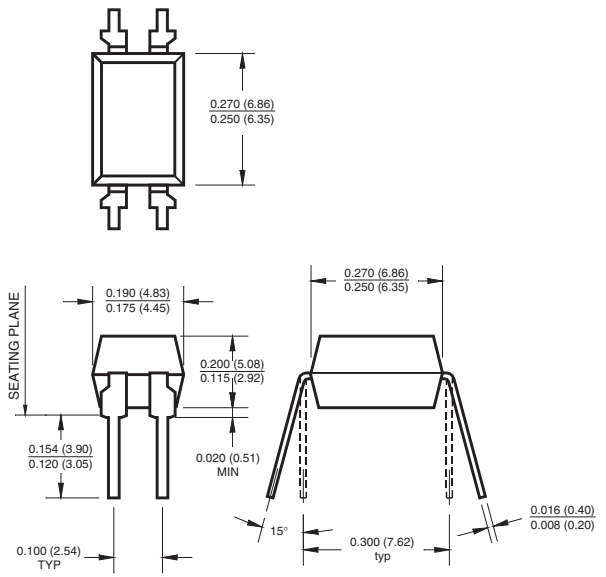
Recommended Thermal Reflow Profile for Surface Mount DIP Package



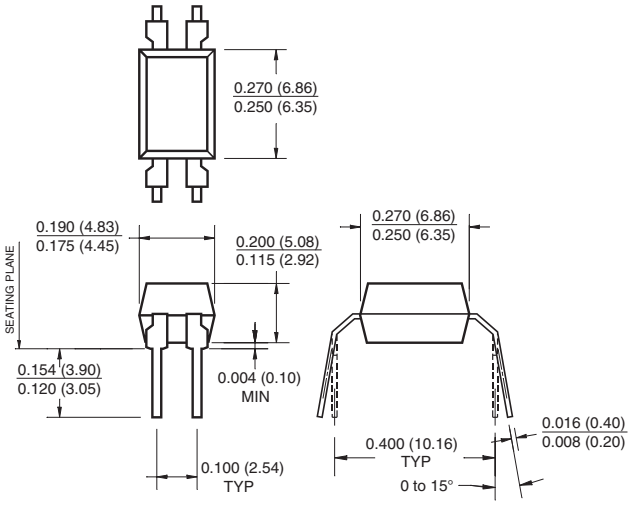
4-PIN PHOTODARLINGTON OPTOCOUPLER

H11B815

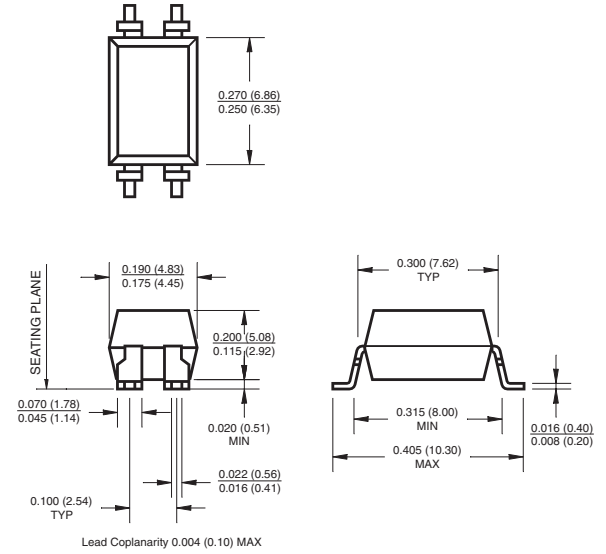
Package Dimensions (Through Hole)



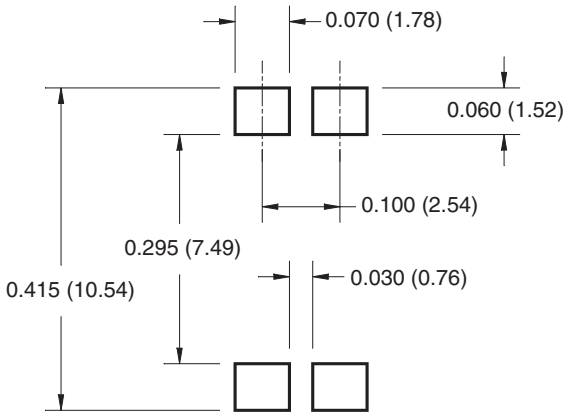
Package Dimensions (Surface Mount)



Package Dimensions (0.4” Lead Spacing)



4-Pin Dip

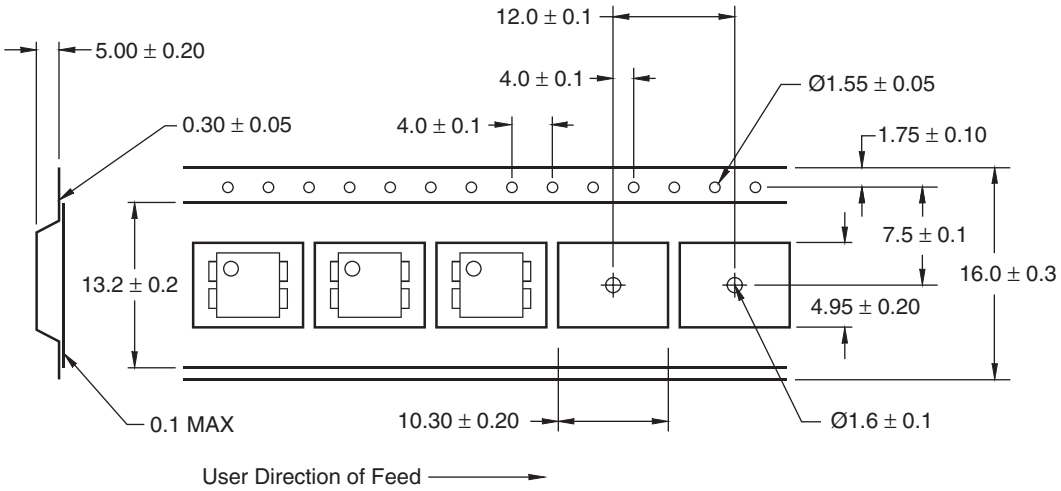


NOTE
All dimensions are in inches (millimeters)

ORDERING INFORMATION

Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and reel
W	.W	0.4" Lead Spacing
300	.300	VDE 0884
300W	.300W	VDE 0884, 0.4" Lead Spacing
3S	.3S	VDE 0884, Surface Mount
3SD	.3SD	VDE 0884, Surface Mount, Tape & Reel

Carrier Tape Specifications ("D" Taping Orientation)



NOTE
All dimensions are in millimeters

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