FAIRCHILD
SEMICONDUCTOR™

6-PIN PHOTOTRANSISTOR OPTOCOUPLERS

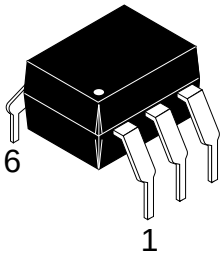
CNX82A.W, CNX83A.W, SL5582.W & SL5583.W

DESCRIPTION

The CNX82A.W, CNX83A.W, SL5582.W AND SL5583.W, consist of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 6-pin dual in-line package.

FEATURES

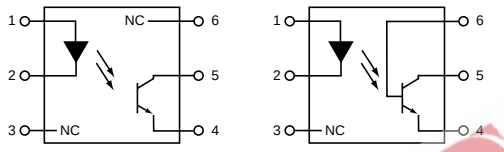
- Input/Output pin distance 10.16 mm
- UL recognized (File # E90700)



APPLICATIONS

- Power supply regulators
- Digital logic inputs
- Microprocessor inputs

SCHEMATIC



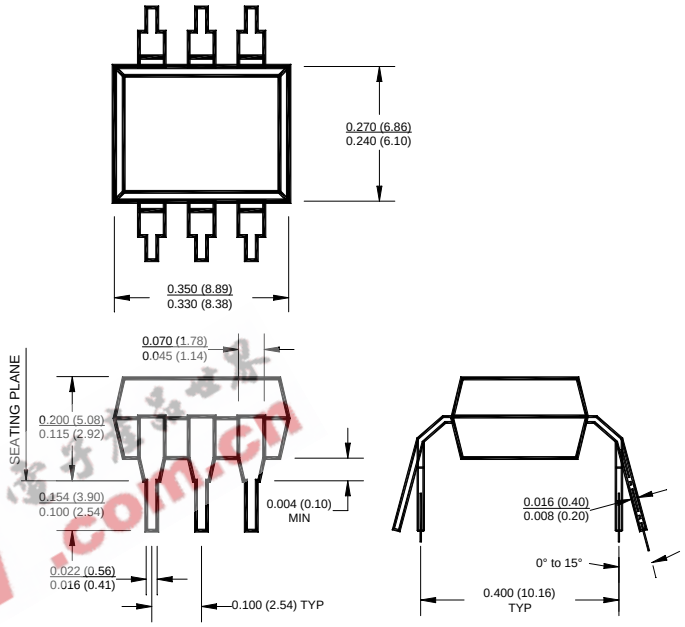
CNX82A.W
SL5582.W

PIN 1. ANODE
2. CATHODE
3. NO CONNECTION
4. EMITTER
5. COLLECTOR
6. NO CONNECTION

CNX83A.W
SL5583.W

PIN 1. ANODE
2. CATHODE
3. NO CONNECTION
4. EMITTER
5. COLLECTOR
6. BASE

PACKAGE DIMENSIONS



NOTE
All dimensions are in inches (millimeters)

ABSOLUTE MAXIMUM RATINGS

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
Junction Temperature	T_J	125	°C
Total Device Power Dissipation @ T_A = 25°C	P_D	250	mW
EMITTER DC/Average Forward Input Current	I_F	100	mA
Reverse Input Voltage	V_R	5.0	V
Forward Current - Peak (1µs pulse, 300pps)	I_F(pk)	3.0	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}	50	V
Collector-Base Voltage (CNX83A)	V_{CBO}	70	V
Emitter-Collector Voltage	V_{ECO}	7	V
Continuous Collector Current	I_C	100	mA
Detector Power Dissipation @ T_A = 25°C	P_D	150	mW
Derate above 25°C		2.0	mW/°C

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

INDIVIDUAL COMPONENT CHARACTERISTICS

Parameter	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
EMITTER							
Input Forward Voltage	(I_F = 10 mA)	V_F	ALL		1.2	1.50	V
Reverse Leakage Current	(V_R = 5.0 V)	I_R	ALL		0.001	10	µA
DETECTOR							
Collector-Emitter Breakdown Voltage	(I_C = 1.0 mA, I_F = 0)	BV_{CEO}	ALL	50	100		V
Collector-Base Breakdown Voltage	(I_C = 100 µA, I_F = 0)	BV_{CBO}	CNX83A.W SL5583.W	70	120		V
Emitter-Collector Breakdown Voltage	(I_E = 100 µA, I_F = 0)	BV_{ECO}	ALL	7	10		V
Collector-Emitter Dark Current	(V_{CE} = 10 V, I_F = 0)	I_{CEO}	ALL		0.001	0.050	µA
	(V_{CE} = 10 V, I_F = 0) (T_A = 70°C)		CNX82A.W CNX83A.W		0.5	10	
			SL5582.W SL5583.W			0.5	
	(V_{CE} = 10 V, I_F = 0) (T_A = 100°C)		SL5582.W SL5583.W			50	
Collector-Base Dark Current	(V_{CB} = 10 V)	I_{CBO}	CNX83A.W SL5583.W			20	nA
Capacitance	(V_{CE} = 0 V, f = 1 MHz)	C_{CE}	ALL		8		pF

Note
** Typical values at T_A = 25°C

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

DC Characteristic	Test Conditions	Symbol	Device	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	(I_F = 10 mA, V_{CE} = 0.4 V)	CTR	ALL	40			%
	(I_F = 10 mA, V_{CE} = 5 V)		CNX82A.W CNX83A.W	40		250	
			SL5582.W SL5583.W	40		320	
	(I_F = 10 mA, V_{CE} = 5 V) (T_A = 100°C)		SL5582.W SL5583.W	25		320	
	(I_F = 1 mA, V_{CE} = 5 V)		CNX82A.W CNX83A.W	10		100	
	(I_F = 2 mA, V_{CE} = 5 V)		SL5582.W SL5583.W	20			
	(I_F = 2 mA, V_{CE} = 5 V) (T_A = 100°C)		SL5582.W SL5583.W	15			
Saturation Voltage	(I_F = 10 mA, I_C = 4 mA)	$V_{CE(sat)}$	ALL		0.19	0.4	V
Turn-on Time	(I_C = 2 mA, V_{CC} = 5 V, R_L = 100 Ω)	t_{on}	ALL		3		µs
	(I_C = 2 mA, V_{CC} = 5 V, R_L = 1 kΩ)		ALL		12		
	(I_F = 16 mA, V_{CC} = 5 V, R_L = 1 kΩ)		SL5582.W SL5583.W			20	
Turn-off Time	(I_C = 2 mA, V_{CC} = 5 V, R_L = 100 Ω)	t_{off}	ALL		3		µs
	(I_C = 2 mA, V_{CC} = 5 V, R_L = 1 kΩ)		ALL		12		
	(I_F = 16 mA, V_{CC} = 5 V, R_L = 1 kΩ)		SL5582.W SL5583.W			50	

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
External air gap (clearance)			9.6			mm
External tracking path (creepage)			8.0			mm
Internal plastic gap (clearance)			1.0			mm

Note
** Typical values at T_A = 25°C

ORDERING INFORMATION

Option	Order Entry Identifier	Description
300	.300W	VDE 0884

TYPICAL CHARACTERISTICS

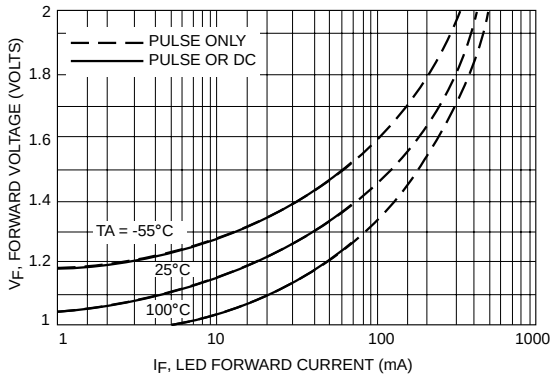

Figure 1. LED Forward Voltage versus Forward Current

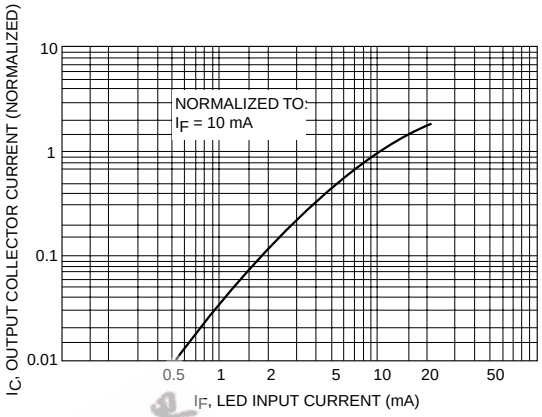

Figure 2. Output Current versus Input Current

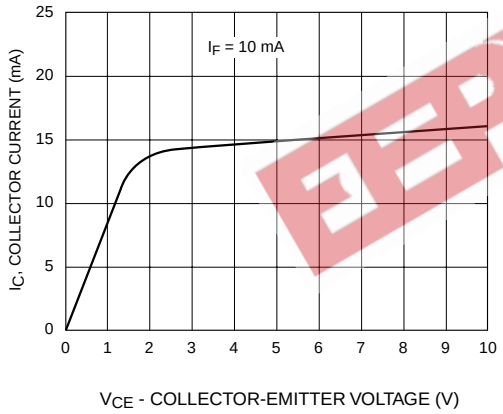

Figure 3. Collector Current versus Collector-Emitter Voltage

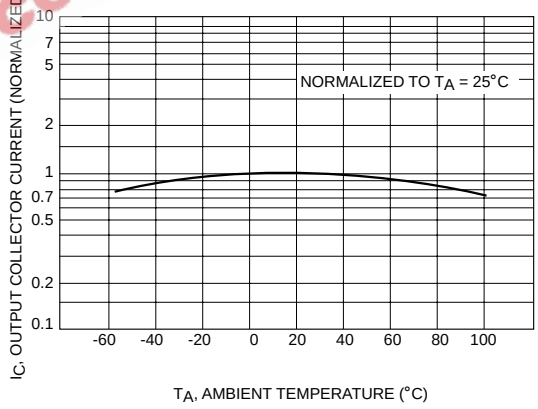

Figure 4. Output Current versus Ambient Temperature

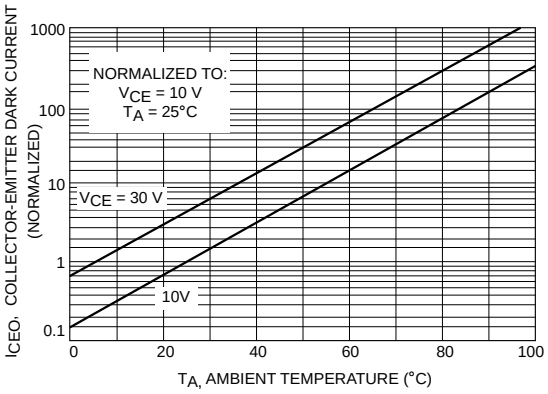

Figure 5. Dark Current versus Ambient Temperature

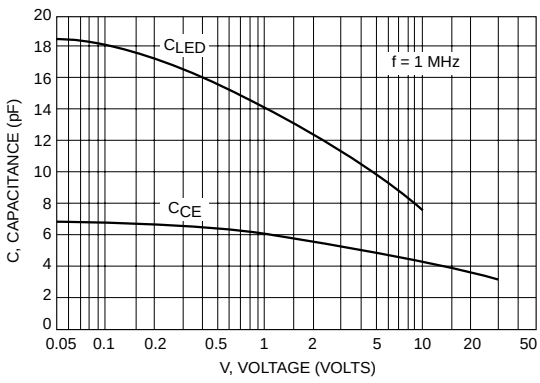

Figure 6. Capacitance versus Voltage

SURFACE MOUNT LED LAMP

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.