

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

### DESCRIPTION

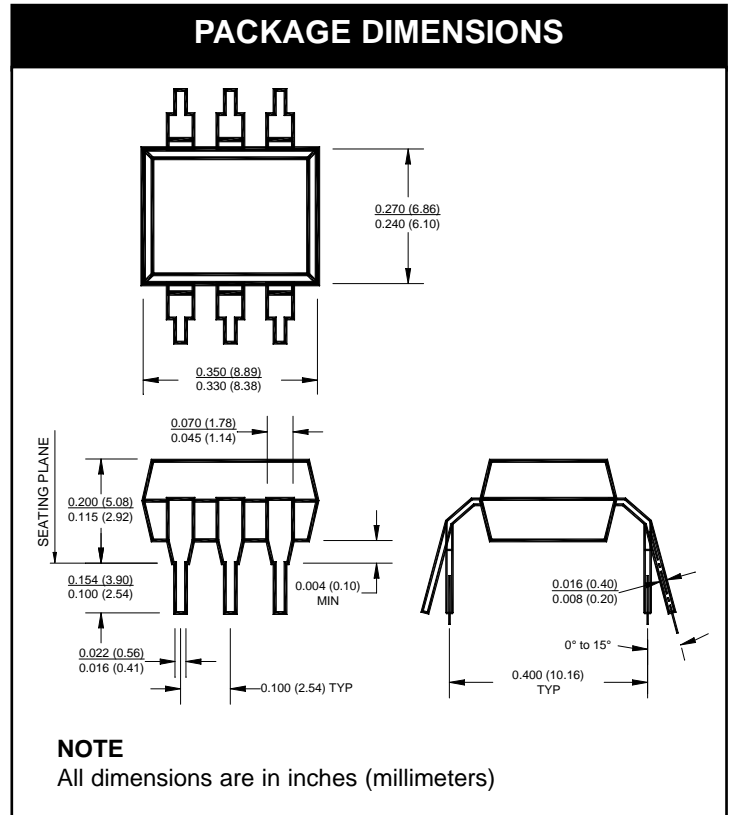
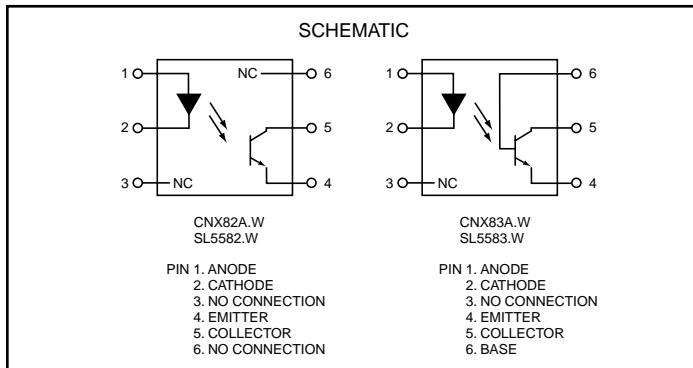
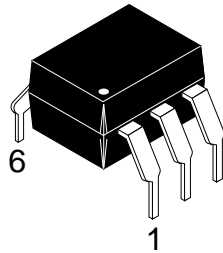
The CNX82A.W, CNX83A.W, SL5582.W AND SL5583.W, consist of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 6-pin dual in-line package.

### FEATURES

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

### APPLICATIONS

- Power supply regulators
- Digital logic inputs
- Microprocessor inputs



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Units
<b>TOTAL DEVICE</b>			
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 @ $T_A = 25^\circ\text{C}$	$P_D$	250	mW
<b>EMITTER</b>			
DC/Average Forward Input Current	$I_F$	100	mA
Reverse Input Voltage	$V_R$	5.0	V
Forward Current - Peak (1 $\mu$ s pulse, 300pps)	$I_F(pk)$	3.0	A
LED Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	140	mW
Derate above 25°C		1.33	mW/°C
<b>DETECTOR</b>			
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 @ $T_A = 25^\circ\text{C}$	$P_D$	150	mW
Derate above 25°C		2.0	mW/°C

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

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C Unless otherwise specified.)

#### INDIVIDUAL COMPONENT CHARACTERISTICS

Parameter	Test Conditions	Symbol	Device	Min	Typ**	Max	Unit
<b>EMITTER</b>							
Input Forward Voltage	(I <sub>F</sub> = 10 mA)	V <sub>F</sub>	ALL		1.2	1.50	V
Reverse Leakage Current	(V <sub>R</sub> = 5.0 V)	I <sub>R</sub>	ALL		0.001	10	μA
<b>DETECTOR</b>							
Collector-Emitter Breakdown Voltage	(I <sub>C</sub> = 1.0 mA, I <sub>F</sub> = 0)	BV <sub>CEO</sub>	ALL	50	100		V
Collector-Base Breakdown Voltage	(I <sub>C</sub> = 100 μA, I <sub>F</sub> = 0)	BV <sub>CBO</sub>	CNX83A.W SL5583.W	70	120		V
Emitter-Collector Breakdown Voltage	(I <sub>E</sub> = 100 μA, I <sub>F</sub> = 0)	BV <sub>ECO</sub>	ALL	7	10		V
Collector-Emitter Dark Current	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0)	I <sub>CEO</sub>	ALL		0.001	0.050	μA
	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0) (T <sub>A</sub> = 70°C)		CNX82A.W CNX83A.W		0.5	10	
	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0) (T <sub>A</sub> = 100°C)		SL5582.W SL5583.W			0.5	
	(V <sub>CE</sub> = 10 V, I <sub>F</sub> = 0) (T <sub>A</sub> = 100°C)		SL5582.W SL5583.W			50	
Collector-Base Dark Current	(V <sub>CB</sub> = 10 V)	I <sub>CBO</sub>	CNX83A.W SL5583.W			20	nA
Capacitance	(V <sub>CE</sub> = 0 V, f = 1 MHz)	C <sub>CE</sub>	ALL		8		pF

Note

\*\* Typical values at T<sub>A</sub> = 25°C

Call QT Optoelectronics for more information or the phone number of your nearest distributor.

United States 800-533-6786 • France 33 [0] 1.45.18.78.78 • Germany 49 [0] 89/96.30.51 • United Kingdom 44 [0] 1296 394499 • Asia/Pacific 603-7352417

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

TRANSFER CHARACTERISTICS (T <sub>A</sub> = 25°C Unless otherwise specified.)							
DC Characteristic	Test Conditions	Symbol	Device	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 0.4 V)	CTR	ALL	40			%
	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5 V)		CNX82A.W	40		250	
			CNX83A.W	40		320	
	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 5 V) (T <sub>A</sub> = 100°C)		SL5582.W	25		320	
			SL5583.W	25		320	
	(I <sub>F</sub> = 1 mA, V <sub>CE</sub> = 5 V)		CNX82A.W	10		100	
	(I <sub>F</sub> = 2 mA, V <sub>CE</sub> = 5 V)		CNX83A.W	10		100	
(I <sub>F</sub> = 2 mA, V <sub>CE</sub> = 5 V) (T <sub>A</sub> = 100°C)	SL5582.W	20					
(I <sub>F</sub> = 2 mA, V <sub>CE</sub> = 5 V) (T <sub>A</sub> = 100°C)	SL5583.W	15					
Saturation Voltage	(I <sub>F</sub> = 10 mA, I <sub>C</sub> = 4 mA)	V <sub>CE(sat)</sub>	ALL		0.19	0.4	V
Turn-on Time	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω)	t <sub>on</sub>	ALL		3		μs
	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		ALL		12		
	(I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		SL5582.W			20	
Turn-off Time	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 100 Ω)	t <sub>off</sub>	ALL		3		μs
	(I <sub>C</sub> = 2 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		ALL		12		
	(I <sub>F</sub> = 16 mA, V <sub>CC</sub> = 5 V, R <sub>L</sub> = 1 kΩ)		SL5582.W			50	
SL5583.W				50			

ISOLATION CHARACTERISTICS							
Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units	
Input-Output Isolation Voltage	(I <sub>I-O</sub> ≤ 1 μA, 1 min.)	V <sub>ISO</sub>	5300			Vac(rms)	
Isolation Resistance	(V <sub>I-O</sub> = 500 VDC)	R <sub>ISO</sub>	10 <sup>11</sup>			Ω	
Isolation Capacitance	(V <sub>I-O</sub> = ∅, f = 1 MHz)	C <sub>ISO</sub>		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<sub>A</sub> = 25°C

### ORDERING INFORMATION

Option	Order Entry Identifier	Description
300	.300W	VDE 0884

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

### TYPICAL CHARACTERISTICS

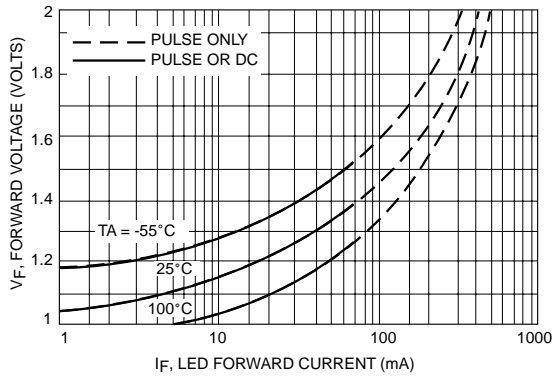


Figure 1. LED Forward Voltage versus Forward Current

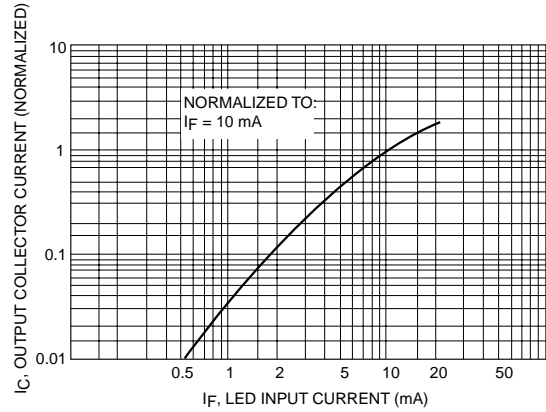


Figure 2. Output Current versus Input Current

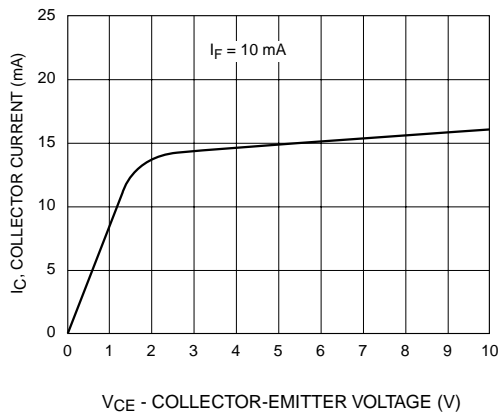


Figure 3. Collector Current versus Collector-Emitter Voltage

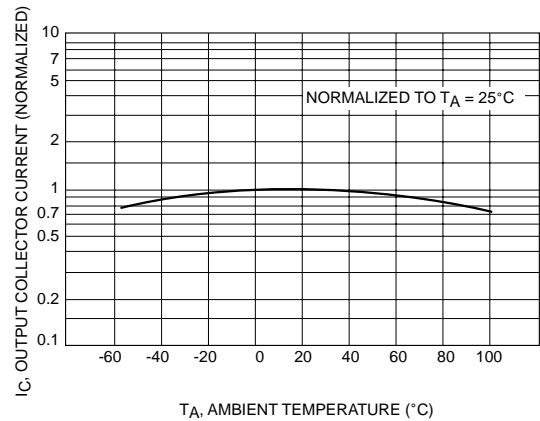


Figure 4. Output Current versus Ambient Temperature

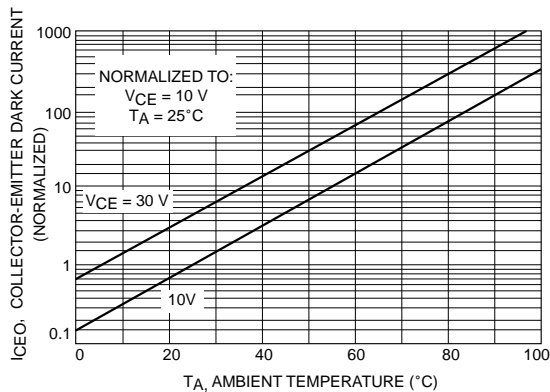


Figure 5. Dark Current versus Ambient Temperature

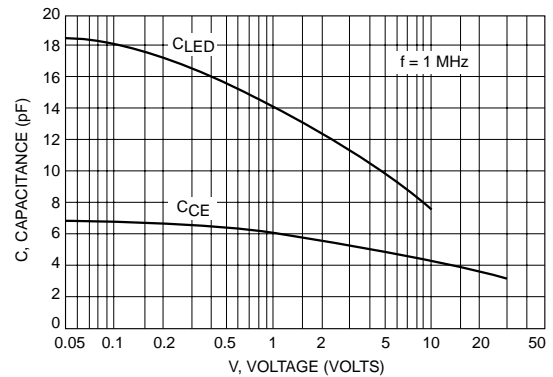
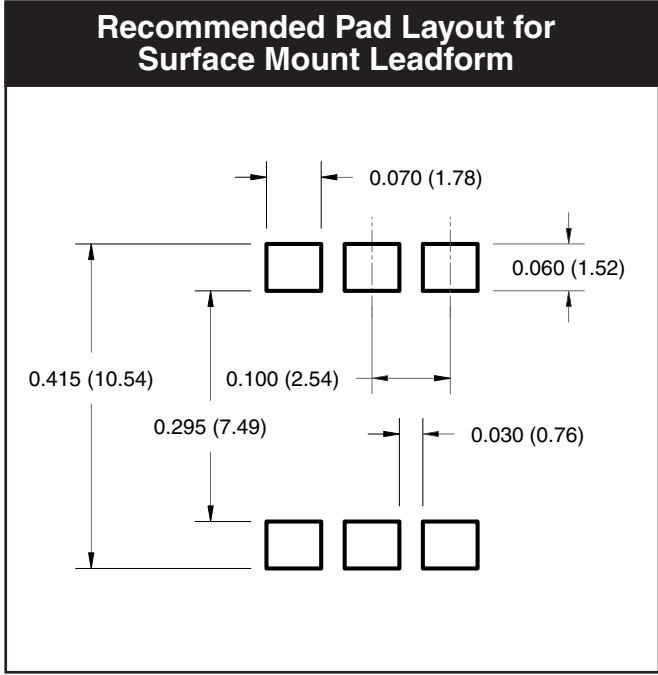
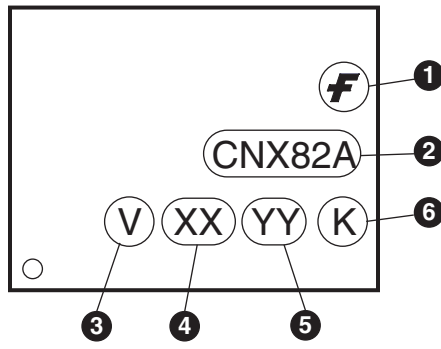


Figure 6. Capacitance versus Voltage



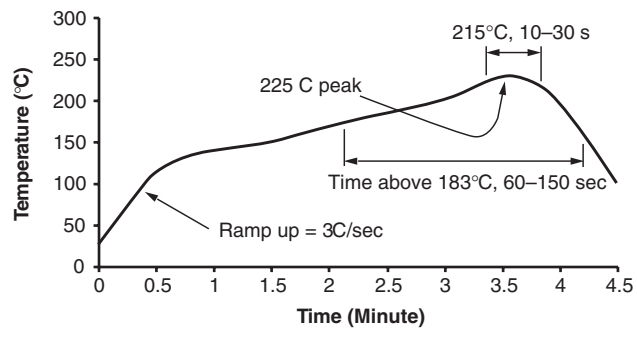
**Note**  
All dimensions are in inches (millimeters)

**MARKING INFORMATION**



Definitions	
1	Fairchild logo
2	Device number
3	VDE mark (Note: Only appears on parts ordered with VDE option – See order entry table)
4	Two digit year code, e.g., '03'
5	Two digit work week ranging from '01' to '53'
6	Assembly package code

**Reflow Profile (Black Package, No Suffix)**



- Peak reflow temperature: 225°C (package surface temperature)
- Time of temperature higher than 183°C for 60–150 seconds
- One time soldering reflow is recommended

## TRADEMARKS

The following are registered and unregistered trademarks Fairchild Semiconductor owns or is authorized to use and is not intended to be an exhaustive list of all such trademarks.

ACEx™	FAST®	ISOPLANAR™	Power247™	Stealth™
ActiveArray™	FASTr™	LittleFET™	PowerEdge™	SuperFET™
Bottomless™	FPST™	MICROCOUPLER™	PowerSaver™	SuperSOT™-3
CoolFET™	FRFET™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	GlobalOptoisolator™	MicroPak™	QFET®	SuperSOT™-8
DOMET™	GTO™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	HiSeC™	MSX™	QT Optoelectronics™	TinyLogic®
E <sup>2</sup> CMOS™	μC™	MSXPro™	Quiet Series™	TINYOPTO™
EnSigna™	i-Lo™	OCX™	RapidConfigure™	TruTranslation™
FACT™	ImpliedDisconnect™	OCXPro™	RapidConnect™	UHC™
FACT Quiet Series™		OPTOLOGIC®	μSerDes™	UltraFET®
Across the board. Around the world.™		OPTOPLANAR™	SILENT SWITCHER®	VCX™
The Power Franchise®		PACMAN™	SMART START™	
Programmable Active Droop™		POP™	SPM™	

## DISCLAIMER

FAIRCHILD SEMICONDUCTOR RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. FAIRCHILD DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENSE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

## LIFE SUPPORT POLICY

FAIRCHILD'S PRODUCTS ARE NOT AUTHORIZED FOR USE AS CRITICAL COMPONENTS IN LIFE SUPPORT DEVICES OR SYSTEMS WITHOUT THE EXPRESS WRITTEN APPROVAL OF FAIRCHILD SEMICONDUCTOR CORPORATION. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, or (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.
2. A critical component is 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.

## PRODUCT STATUS DEFINITIONS

### Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
Preliminary	First Production	This datasheet contains preliminary data, and supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
Obsolete	Not In Production	This datasheet contains specifications on a product that has been discontinued by Fairchild semiconductor. The datasheet is printed for reference information only.