

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

DESCRIPTION

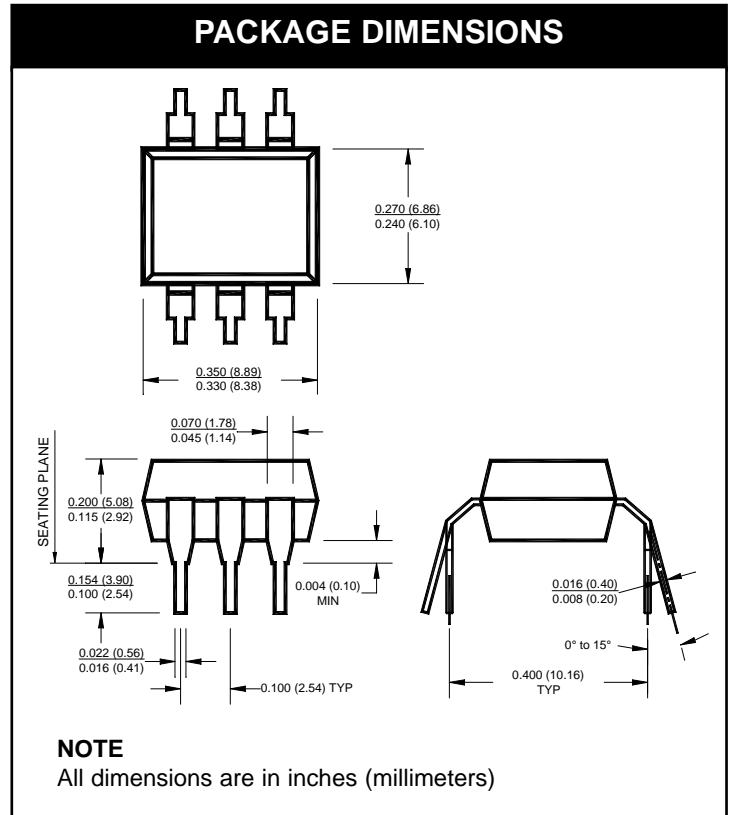
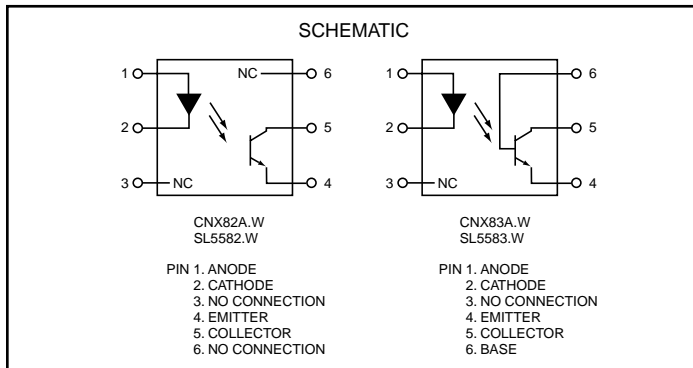
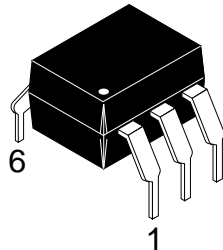
The CNX82A.W, CNX83A.W, SL5582.W AND SL5583.W, consist of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 6-pin dual in-line package.

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
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 @ $T_A = 25^\circ\text{C}$	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 (1 μs 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
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 @ $T_A = 25^\circ\text{C}$	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	
	(V _{CE} = 10 V, I _F = 0) (T _A = 100°C)		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	40		250	
			CNX83A.W	40		320	
	(I _F = 10 mA, V _{CE} = 5 V) (T _A = 100°C)		SL5582.W	25		320	
			SL5583.W	25		320	
	(I _F = 1 mA, V _{CE} = 5 V)		CNX82A.W	10		100	
	(I _F = 2 mA, V _{CE} = 5 V)		SL5582.W	20			
	(I _F = 2 mA, V _{CE} = 5 V) (T _A = 100°C)		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			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			50	
SL5583.W							

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

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

TYPICAL CHARACTERISTICS

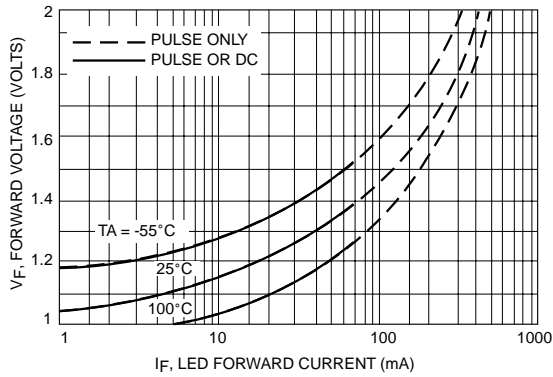


Figure 1. LED Forward Voltage versus Forward Current

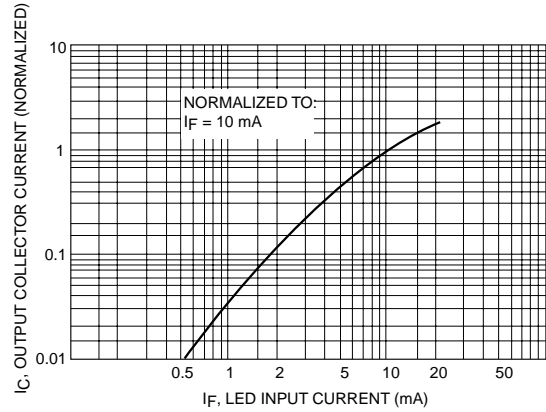


Figure 2. Output Current versus Input Current

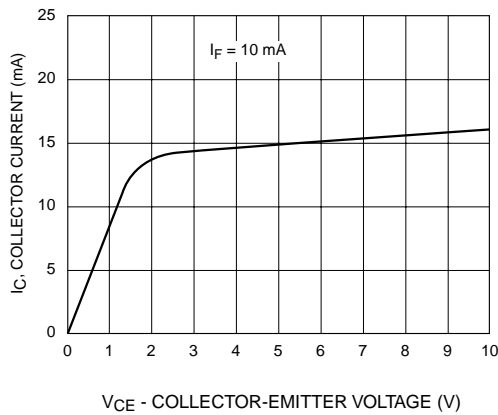


Figure 3. Collector Current versus Collector-Emitter Voltage

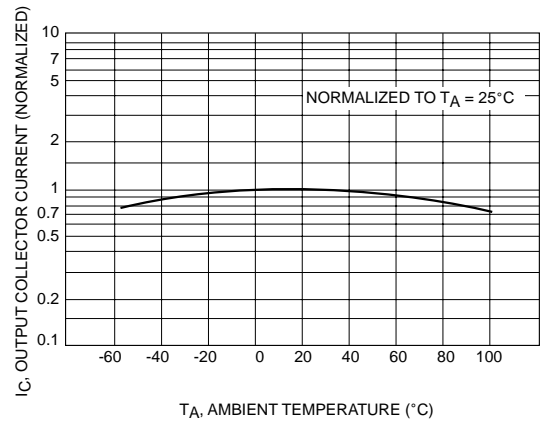


Figure 4. Output Current versus Ambient Temperature

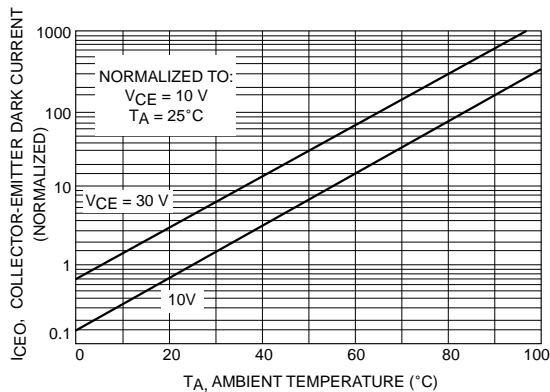


Figure 5. Dark Current versus Ambient Temperature

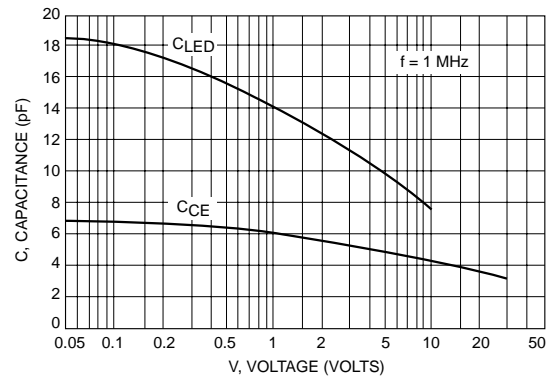
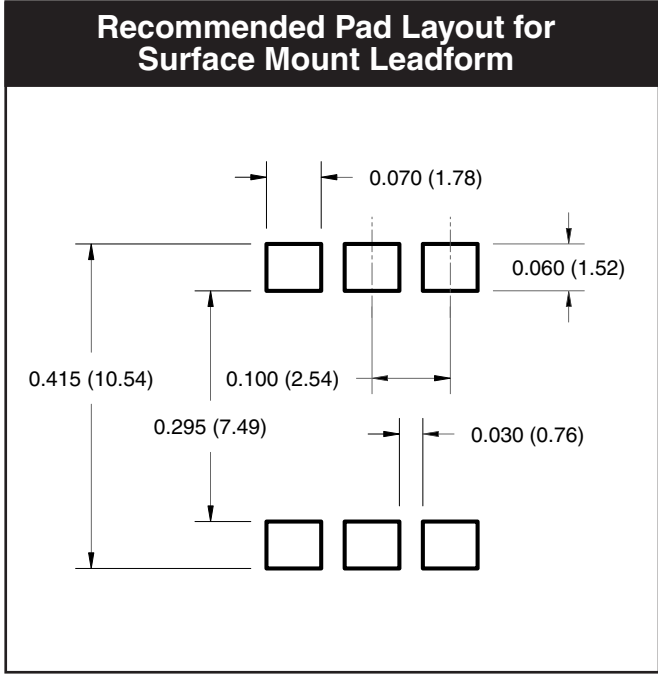
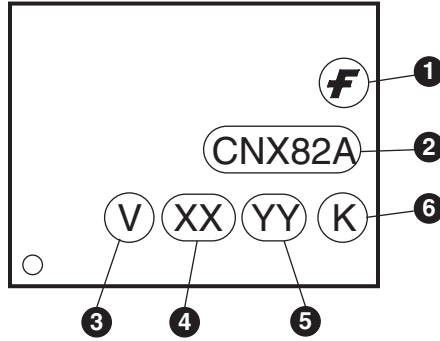


Figure 6. Capacitance versus Voltage



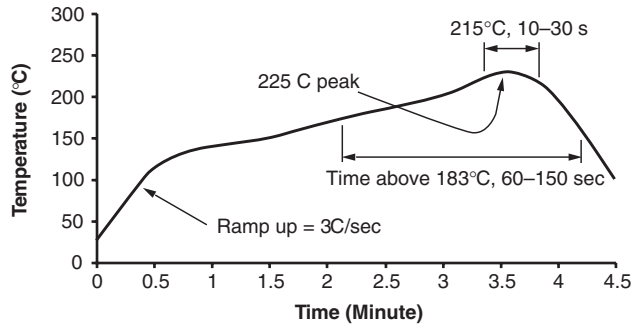
Note
All dimensions are in inches (millimeters)

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

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