

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

DESCRIPTION

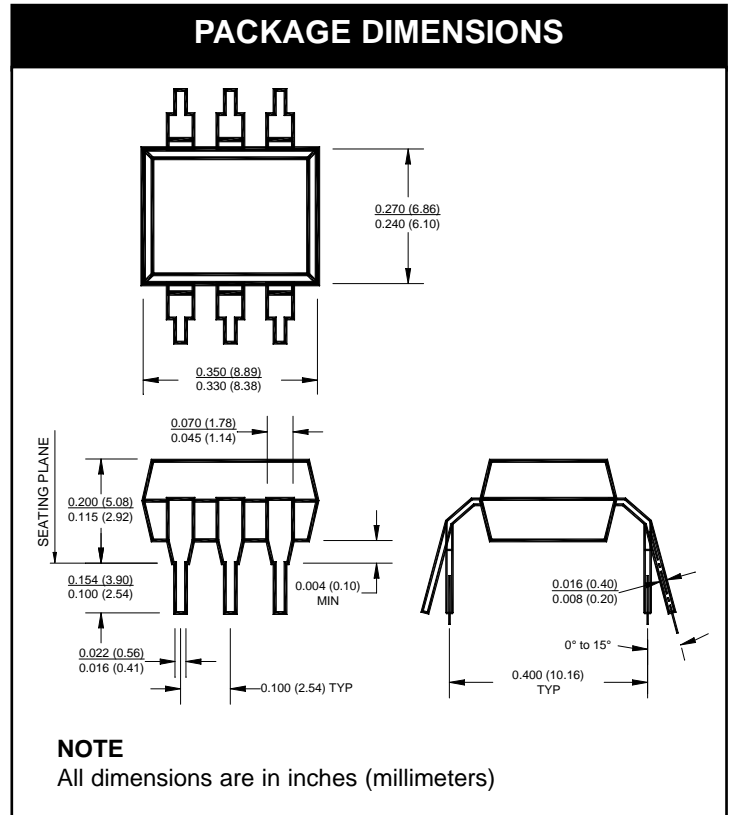
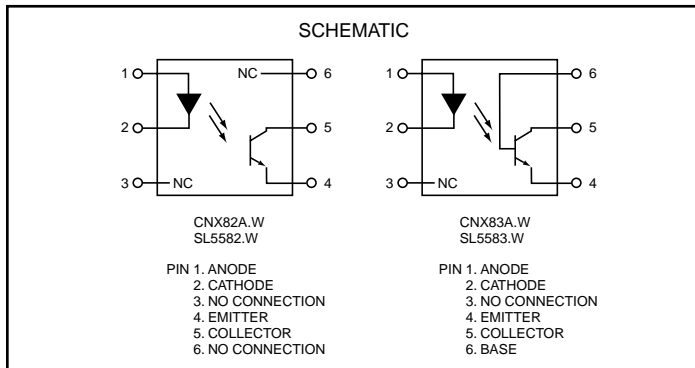
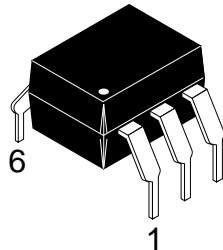
The CNX82A.W, CNX83A.W, SL5582.W AND SL5583.W, consist of a gallium arsenide infrared emitting diode driving a silicon phototransistor in a 6-pin dual in-line package.

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 (1µs 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

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

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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) | | CNX83A.W | 10 | | 100 | |
| | | | SL5582.W | 20 | | | |
| SL5583.W | 20 | | | | | | |
| (I _F = 2 mA, V _{CE} = 5 V) (T _A = 100°C) | SL5582.W | 15 | | | | | |
| 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 | 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 |

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TYPICAL CHARACTERISTICS

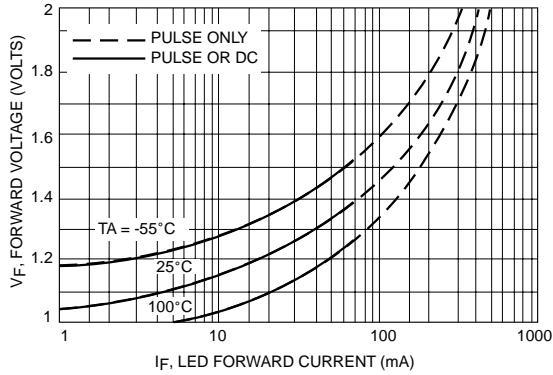


Figure 1. LED Forward Voltage versus Forward Current

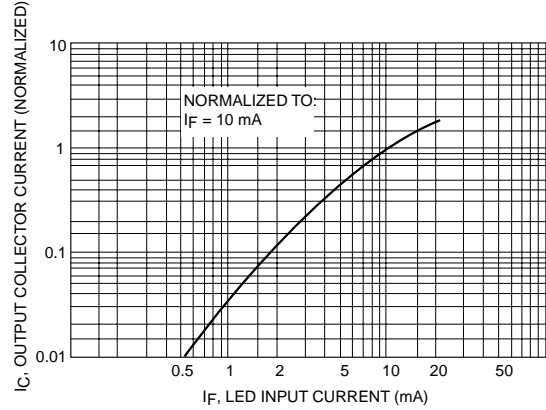


Figure 2. Output Current versus Input Current

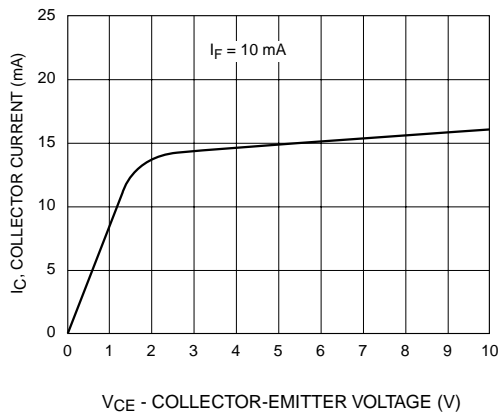


Figure 3. Collector Current versus Collector-Emitter Voltage

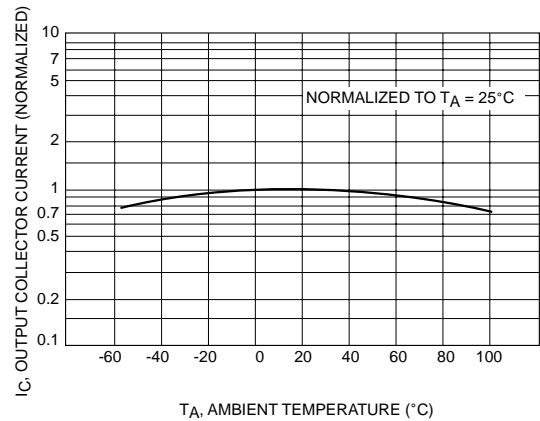


Figure 4. Output Current versus Ambient Temperature

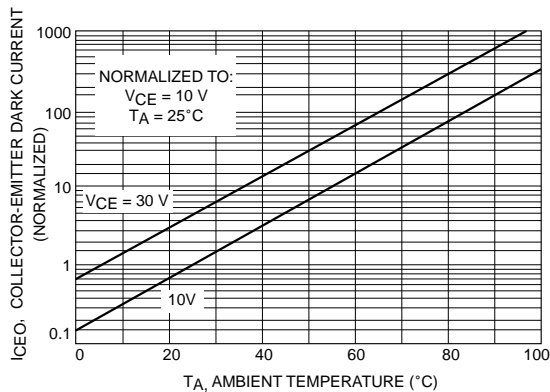


Figure 5. Dark Current versus Ambient Temperature

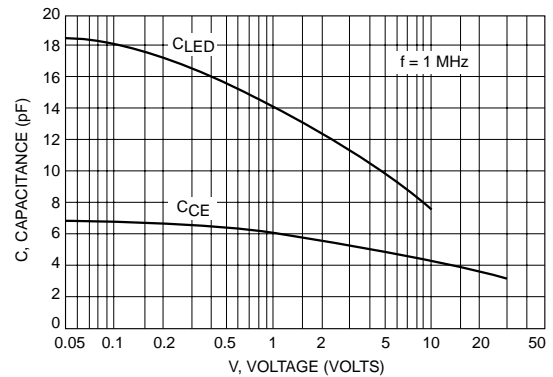
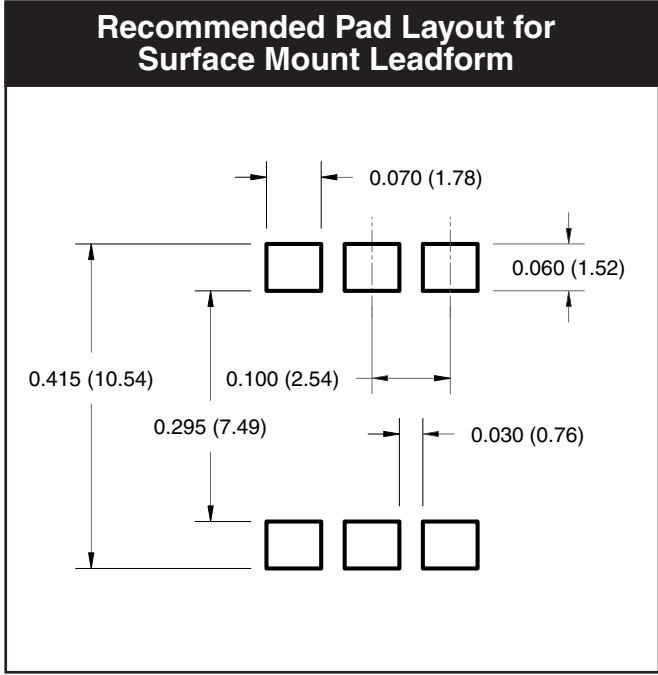
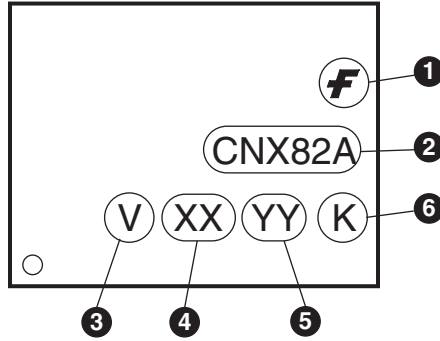


Figure 6. Capacitance versus Voltage



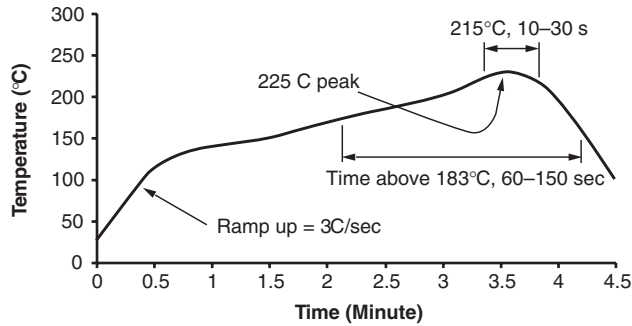
Note
All dimensions are in inches (millimeters)

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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| | | | | |
|--------------------------------------|---------------------|---------------|---------------------|-----------------|
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PRODUCT STATUS DEFINITIONS

Definition of Terms

| Datasheet Identification | Product Status | Definition |
|--------------------------|------------------------|---|
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