

| | LCA182 | Units |
|-----------------------|--------|-------|
| Load Voltage | 350 | V |
| Load Current | 120 | mA |
| Max R _{ON} | 35 | Ω |
| Input Control Current | 0.25 | mA |

Features

- Lowest available input control current (0.25mA)
- Small 6 Pin DIP Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 3750V_{RMS} Input/Output Isolation
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Surface Mount and Tape & Reel Versions Available

Applications

- Telecommunications
 - Telecom Switching
 - Tip/Ring Circuits
- Modem Switching (Laptop, Notebook, Pocket Size)
 - Hookswitch
 - Dial Pulsing
 - Ground Start
 - Ringer Injection
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

Description

The LCA182 is a 1-Form-A solid state relay which uses optically coupled MOSFET technology to provide 3750V_{RMS} of input to output isolation. It features an extremely low input control current of only 0.25mA, the lowest available in the Clare Solid State Relay Family. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS architecture. The optically-coupled input is controlled by a highly efficient GaAlAs infrared LED. The LCA182 can be used to replace mechanical relays and offers the superior reliability associated with semiconductor devices. Because they have no moving parts, they offer faster, bounce-free switching in a more compact surface mount or through hole package.

Regulatory Information

- UL Recognized: E76270
- CSA Certified: LR43639-10
- Certified to:
 - EN 60950
 - EN 41003

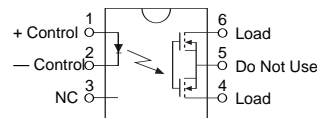
Ordering Information

| Part # | Description |
|-----------|---------------------------------|
| LCA182 | 6 Pin DIP (50/Tube) |
| LCA182S | 6 Pin Surface Mount (50/Tube) |
| LCA182STR | 6 Pin Surface Mount (1000/Reel) |

Pin Configuration

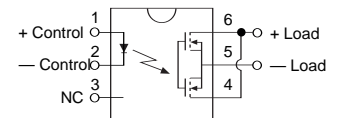
LCA182 Pinout

AC/DC Configuration

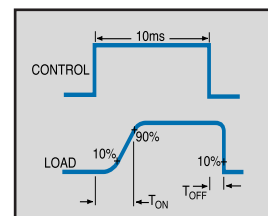


LCA182 Pinout

DC Only Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings (@ 25° C)

| Parameter | Ratings | Units |
|--|------------------|------------------|
| Input Power Dissipation | 150 ¹ | mW |
| Input Control Current | 50 | mA |
| Peak (10ms) | 1 | A |
| Reverse Input Voltage | 5 | V |
| Blocking Voltage | 350 | V |
| Total Power Dissipation | 800 ² | mW |
| Isolation Voltage Input to Output | 3750 | V _{RMS} |
| Operational Temperature | -40 to +85 | °C |
| Storage Temperature | -40 to +125 | °C |
| Soldering Temperature DIP Package | +260 | °C |
| Surface Mount Package (10 Seconds Max.) | +220 | °C |

¹ Derate Linearly 1.33 mW/°C

² Derate Linearly 6.67 mW/°C

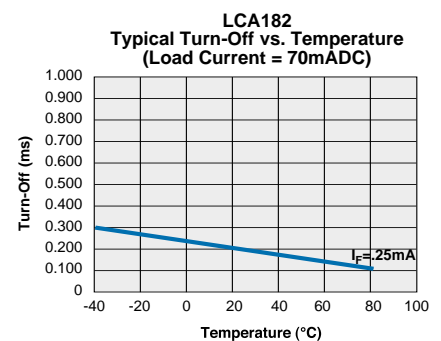
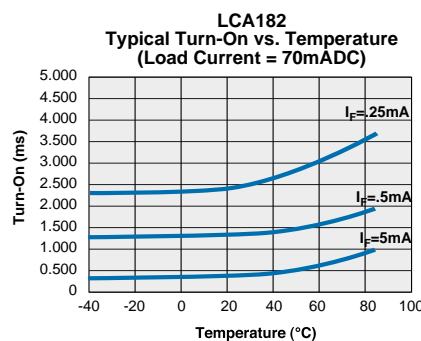
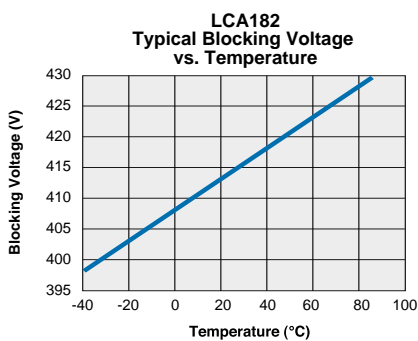
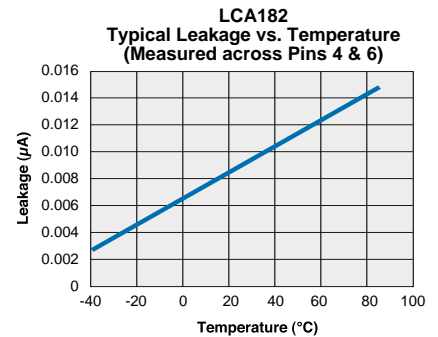
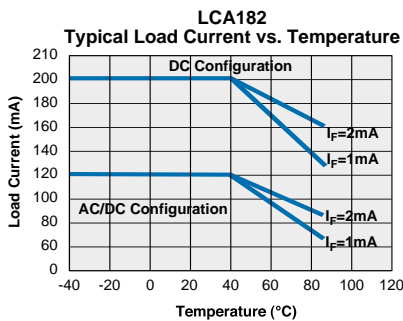
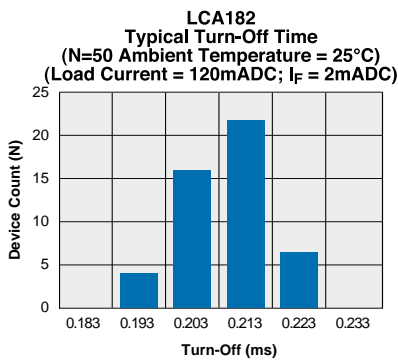
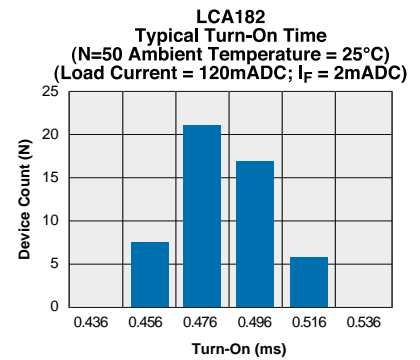
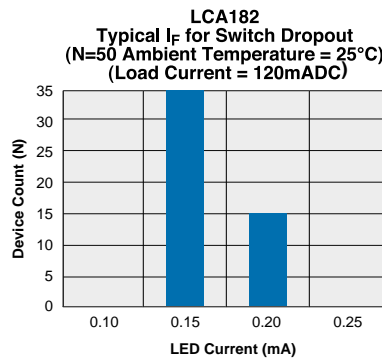
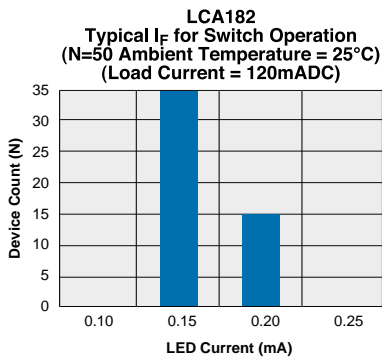
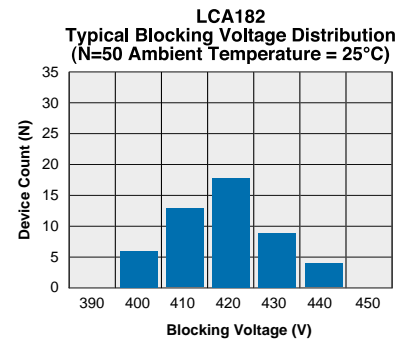
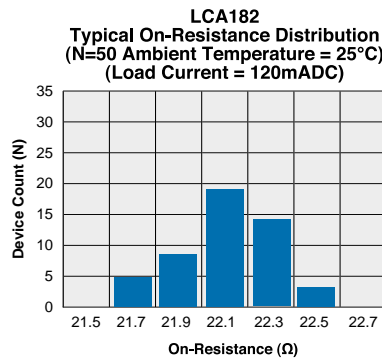
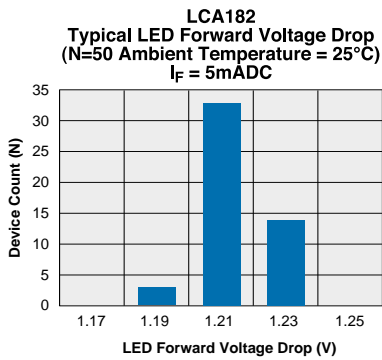
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical Characteristics

| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|--------------------------------------|--|-------------------|------|-----|-----|-------|
| Output Characteristics @ 25°C | | | | | | |
| Load Current (Continuous) | | | | | | |
| AC/DC Configuration | - | I _L | - | - | 120 | mA |
| DC Configuration | - | I _L | - | - | 200 | mA |
| Peak Load Current | 10ms | I _{LPK} | - | - | 350 | mA |
| On-Resistance | | | | | | |
| AC/DC Configuration | I _L =120mA | R _{ON} | - | 23 | 35 | Ω |
| DC Configuration | I _L =200mA | R _{ON} | - | 7 | 10 | Ω |
| Off-State Leakage Current | V _L =350V | I _{LEAK} | - | - | 1 | μA |
| Switching Speeds | | | | | | |
| Turn-On | I _F =1mA, V _L =10V | T _{ON} | - | - | 3 | ms |
| Turn-Off | I _F =1mA, V _L =10V | T _{OFF} | - | - | 3 | ms |
| Output Capacitance | 50V; f=1MHz | C _{OUT} | - | 25 | - | pF |
| Input Characteristics @ 25°C | | | | | | |
| Input Control Current ¹ | I _L =120mA | I _F | 0.25 | - | - | mA |
| Input Dropout Current | - | I _F | 0.05 | - | - | mA |
| Input Voltage Drop | I _F =1mA | V _F | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Current | V _R =5V | I _R | - | - | 10 | μA |
| Common Characteristics @ 25°C | | | | | | |
| Input to Output Capacitance | - | C _{I/O} | - | 3 | - | pF |

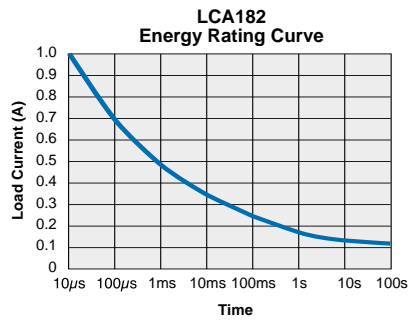
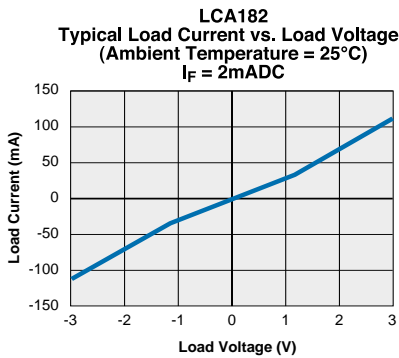
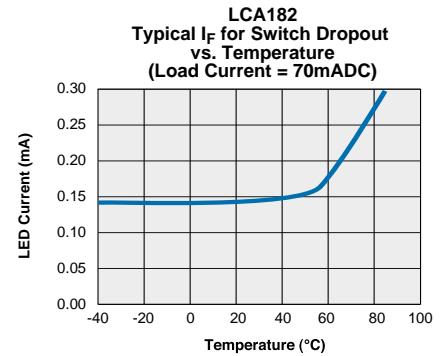
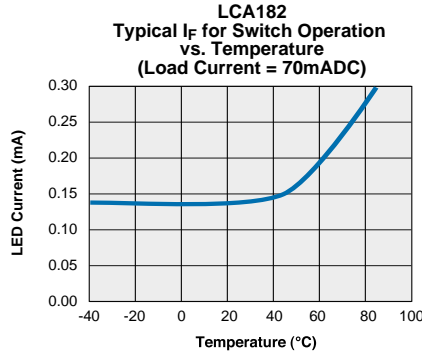
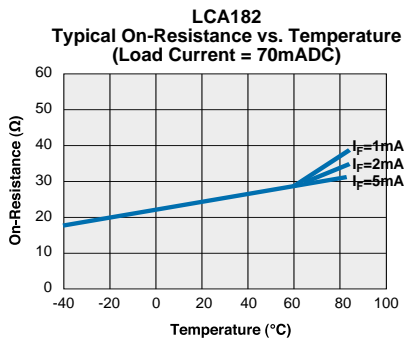
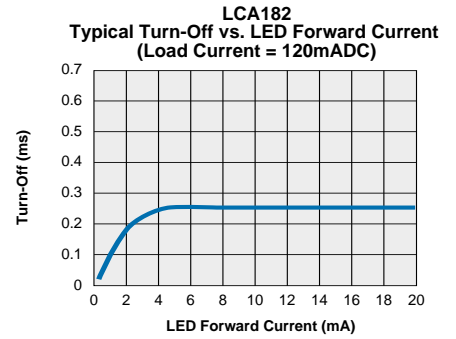
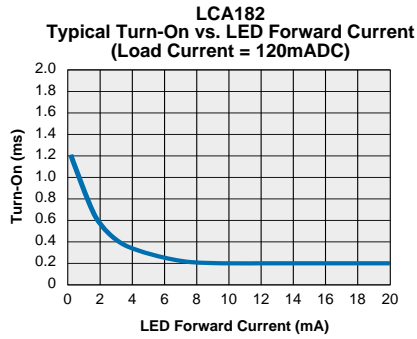
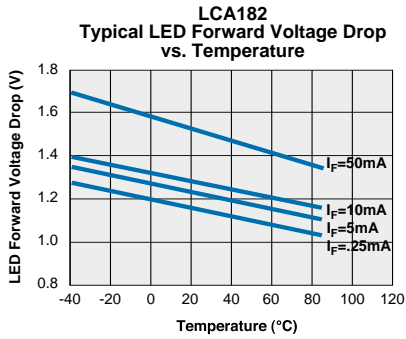
¹ It is recommended that the input control current be increased to 1mA in high temperature (over+55°C) operation.

PERFORMANCE DATA*



*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

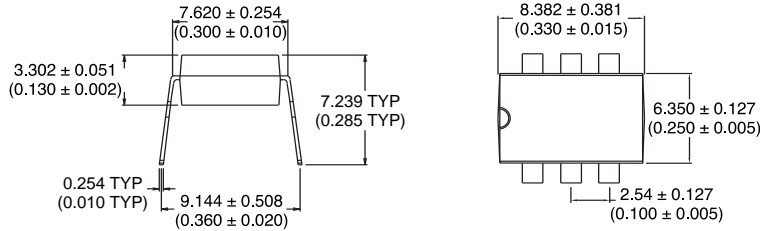
PERFORMANCE DATA*



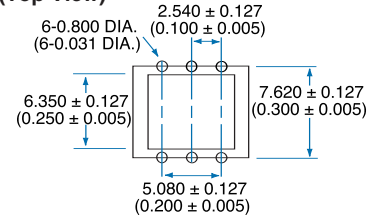
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MECHANICAL DIMENSIONS

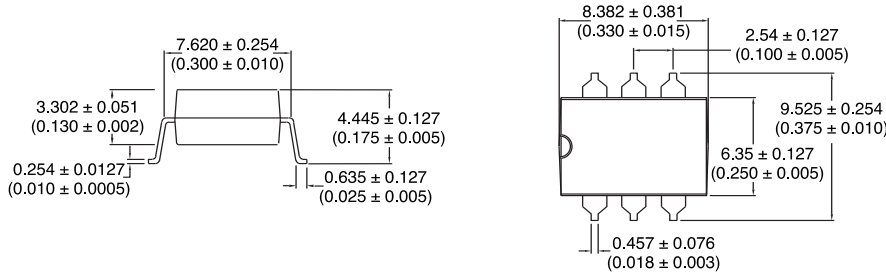
6Pin DIP Through Hole (Standard)



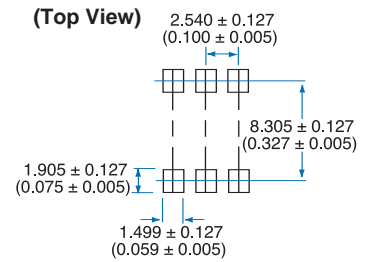
PC Board Pattern (Top View)



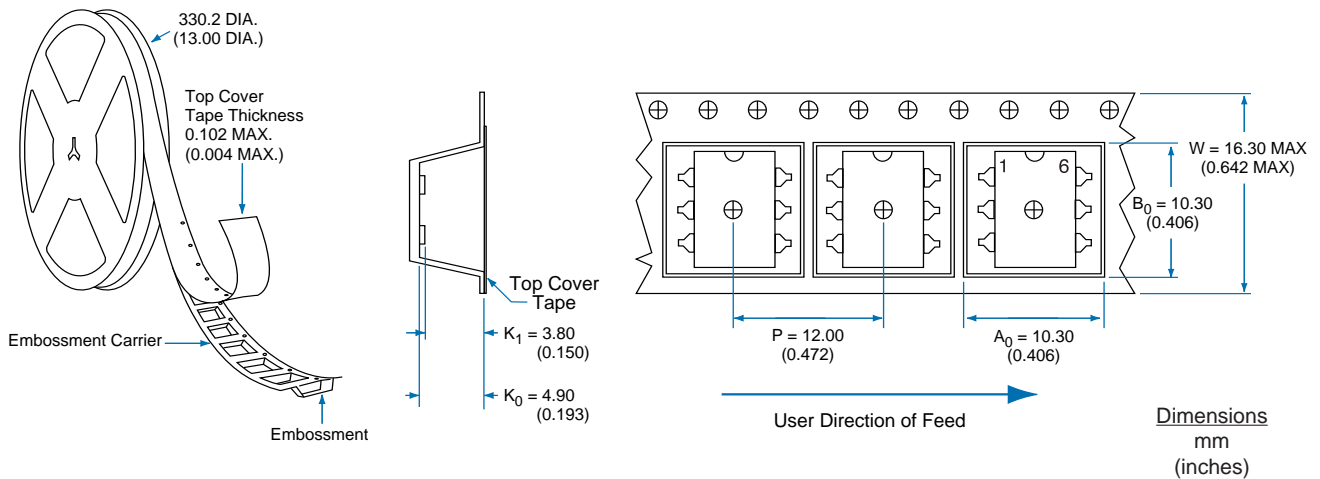
6Pin Surface Mount ("S" Suffix)



PC Board Pattern (Top View)



Tape and Reel Packaging for 6 Pin DIP Surface Mount Package



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