CLARE
MICRO CHIPS.
MACRO SOLUTIONS.

# LCA127

## SINGLE POLE OptoMOS Relay

| | LCA127 | Units |
|---|---|---|
| Load Voltage | 250 | V |
| Load Current | 200 | mA |
| Max $R_{ON}$ | 10 | Ω |

### Description

LCA127 is a 250V, 200mA, 10Ω 1-Form-A relay. It features low on-resistance.

### Features

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

### Approvals

- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- BSI Certified:
  - BS EN 60950:1992 (BS7002:1992) Certificate #:7344
  - BS EN 41003:1993 Certificate #:7344

### 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

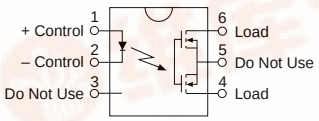
### Ordering Information

| Part # | Description |
|---|---|
| LCA127 | 6 Pin DIP (50/Tube) |
| LCA127S | 6 Pin Surface Mount (50/Tube) |
| LCA127STR | 6 Pin Surface Mount (1000/Reel) |

### Pin Configuration

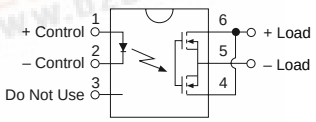
**LCA127/L127L Pinout**

AC/DC Configuration

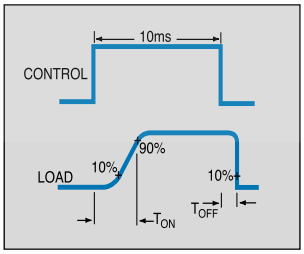



**LCA127/LCA127L Pinout**

DC Only Configuration




**Switching Characteristics of Normally Open (Form A) Devices**



## Absolute Maximum Ratings (@ 25º C)

| Parameter | Min | Typ | Max | Units |
|---|---|---|---|---|
| Input Power Dissipation | - | - | 150[1] | mW |
| Input Control Current | - | - | 50 | mA |
| Peak (10ms) | - | - | 1 | A |
| Reverse Input Voltage | - | - | 5 | V |
| Total Power Dissipation | - | - | 800[2] | mW |
| Capacitance | | | | |
| Input to Output | - | 3 | - | pF |
| Isolation Voltage | | | | |
| Input to Output | 3750 | - | - | $V_{RMS}$ |
| Operational Temperature | -40 | - | +85 | ˚C |
| Storage Temperature | -40 | - | +125 | ˚C |
| Soldering Temperature | - | - | - | - |
| DIP Package | - | - | +260 | ˚C |
| Flatpack/Surface Mount Pkg (10 Seconds Max.) | - | - | +220 | ˚C |

[1] Derate Linearly 1.33 mw/ºC

[2] Derate Linearly 6.67 mw/ºC

*Absolute Maximum Ratings are stress ratings. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.*

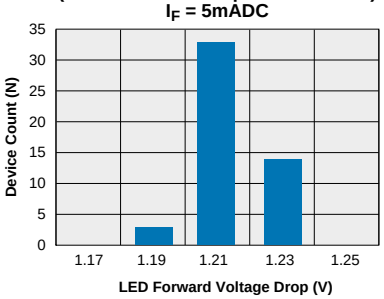
## Electrical Characteristics

| PARAMETER | CONDITIONS | SYMBOL | MIN | TYP | MAX | UNITS |
|---|---|---|---|---|---|---|
| **Output Characteristics @ 25°C** | | | | | | |
| Load Voltage (Peak) | - | $V_L$ | - | - | 250 | V |
| Load Current* (Continuous) | | | | | | |
| AC/DC Configuration | - | $I_L$ | - | - | 200 | mA |
| DC Configuration | - | $I_L$ | - | - | 350 | mA |
| Peak Load Current | 10ms | $I_{LPK}$ | - | - | 400 | mA |
| On-Resistance | | | | | | |
| AC/DC Configuration | $I_L$=200mA | $R_{ON}$ | - | 8 | 10 | Ω |
| DC Configuration | $I_L$=200mA | $R_{ON}$ | - | 2 | 3 | Ω |
| Off-State Leakage Current | $V_L$=250V | $I_{LEAK}$ | - | - | 1 | µA |
| Switching Speeds | | | | | | |
| Turn-On | $I_F$=5mA, $V_L$=10V | $T_{ON}$ | - | - | 5 | ms |
| Turn-Off | $I_F$=5mA, $V_L$=10V | $T_{OFF}$ | - | - | 5 | ms |
| Output Capacitance | 50V; f=1MHz | $C_{OUT}$ | - | 50 | - | pF |
| **Input Characteristics @ 25°C** | | | | | | |
| Input Control Current | $I_L$= 200mA | $I_F$ | 5 | - | 50 | mA |
| Input Dropout Current | - | $I_F$ | 0.4 | 0.7 | - | mA |
| Input Voltage Drop | $I_F$= 5mA | $V_F$ | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Voltage | - | $V_R$ | - | - | 5 | V |
| Reverse Input Current | $V_R$=5V | $I_R$ | - | - | 10 | µA |
| Input to Output Capacitance | - | $C_{I/O}$ | - | 3 | - | pF |
| Input to Output Isolation | - | $V_{I/O}$ | 3750 | - | - | $V_{RMS}$ |

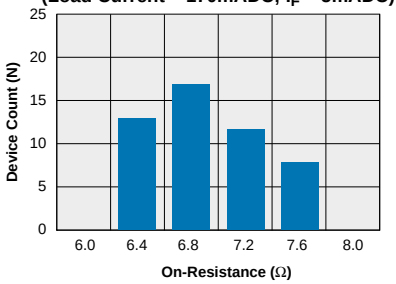
*NOTE: If both poles operate simultaneously load current must be derated so as not to exceed the package power dissipation value.

## Performance Data

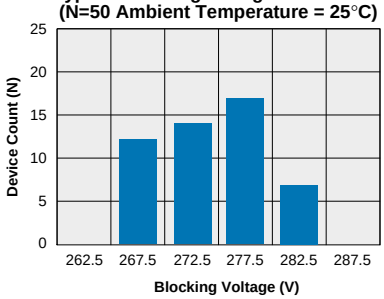
**LCA127**
**Typical LED Forward Voltage Drop**
**(N=50 Ambient Temperature = 25°C)**
**$I_F$ = 5mADC**



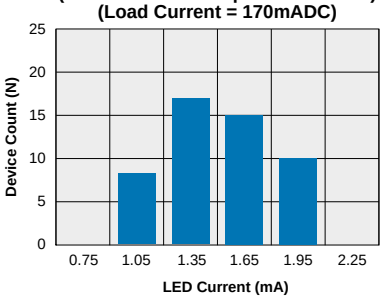

**LCA127**
**Typical On-Resistance Distribution**
**(N=50 Ambient Temperature = 25°C)**
**(Load Current = 170mADC; $I_F$ = 5mADC)**



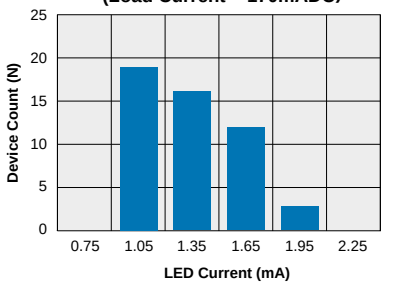

**LCA127**
**Typical Blocking Voltage Distribution**
**(N=50 Ambient Temperature = 25°C)**



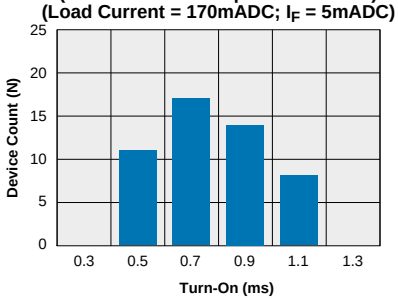

**LCA127**
**Typical $I_F$ for Switch Operation**
**(N=50 Ambient Temperature = 25°C)**
**(Load Current = 170mADC)**



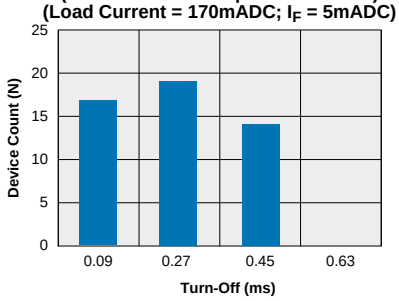

**LCA127**
**Typical $I_F$ for Switch Dropout**
**(N=50 Ambient Temperature = 25°C)**
**(Load Current = 170mADC)**



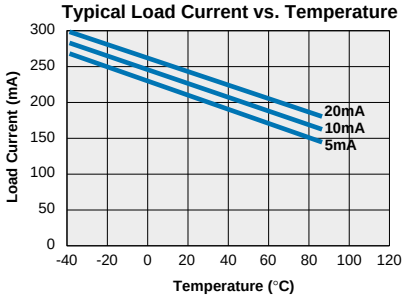

**LCA127**
**Typical Turn-On Time**
**(N=50 Ambient Temperature = 25°C)**
**(Load Current = 170mADC; $I_F$ = 5mADC)**



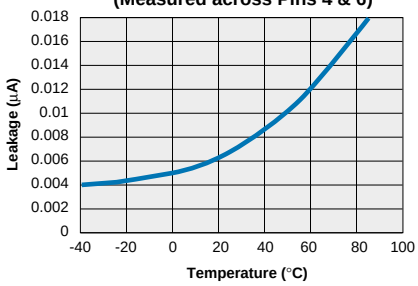

**LCA127**
**Typical Turn-Off Time**
**(N=50 Ambient Temperature = 25°C)**
**(Load Current = 170mADC; $I_F$ = 5mADC)**



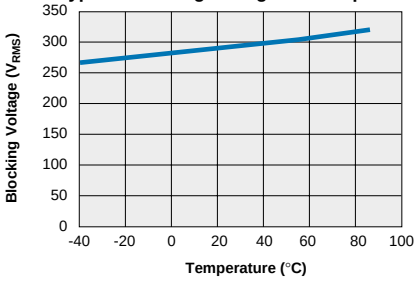

**LCA127**
**Typical Load Current vs. Temperature**



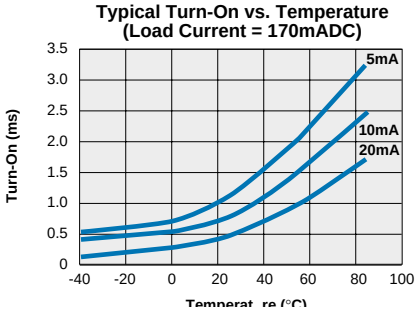

**LCA127**
**Typical Leakage vs. Temperature**
**(Measured across Pins 4 & 6)**



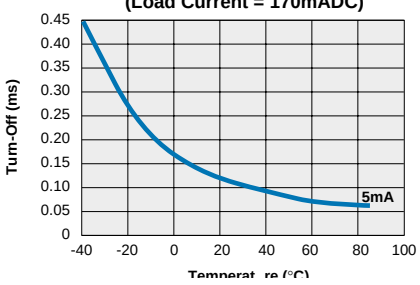

**LCA127**
**Typical Blocking Voltage vs. Temperature**




**LCA127**
**Typical Turn-On vs. Temperature**
**(Load Current = 170mADC)**



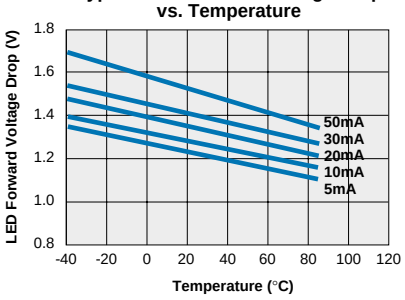

**LCA127**
**Typical Turn-Off vs. Temperature**
**(Load Current = 170mADC)**



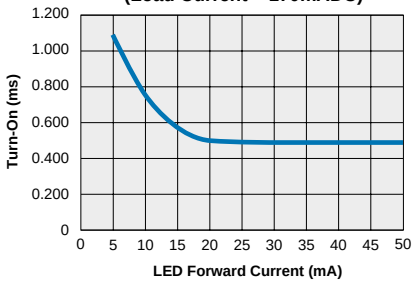

*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

## Performance Data

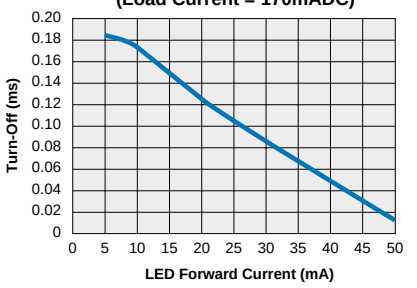
**LCA127**
**Typical LED Forward Voltage Drop vs. Temperature**



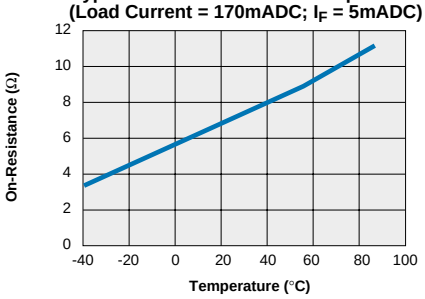

**LCA127**
**Typical Turn-On vs. LED Forward Current (Load Current = 170mADC)**



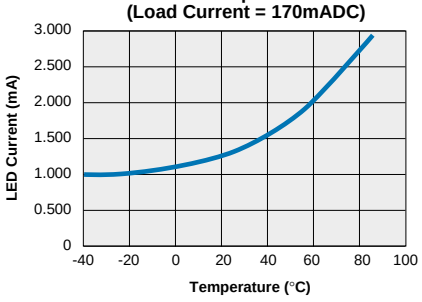

**LCA127**
**Typical Turn-Off vs. LED Forward Current (Load Current = 170mADC)**



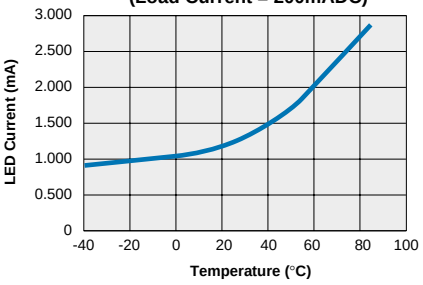

**LCA127**
**Typical On-Resistance vs. Temperature (Load Current = 170mADC; $I_F$ = 5mADC)**



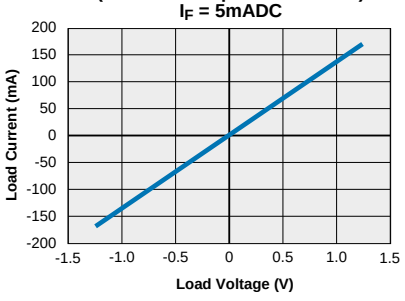

**LCA127**
**Typical $I_F$ for Switch Operation vs. Temperature (Load Current = 170mADC)**



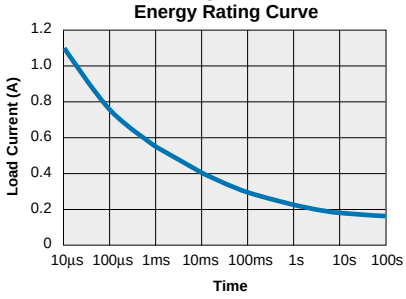

**LCA127**
**Typical $I_F$ for Switch Dropout vs. Temperature (Load Current = 200mADC)**




**LCA127**
**Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) $I_F$ = 5mADC**



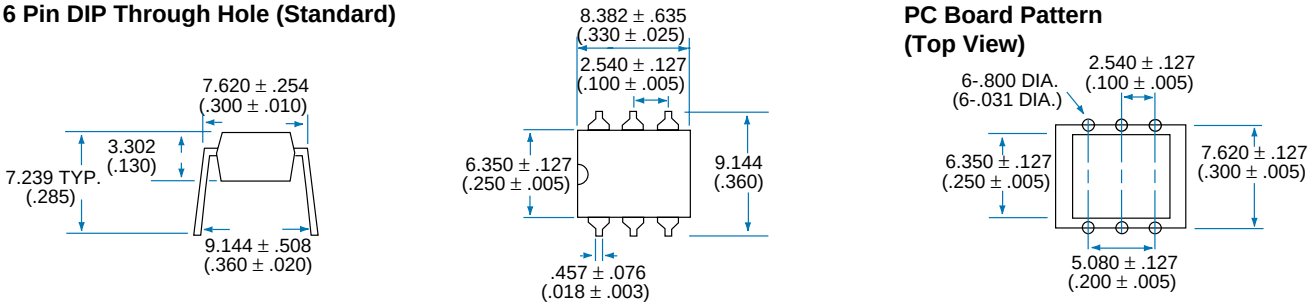

**LCA127**
**Energy Rating Curve**



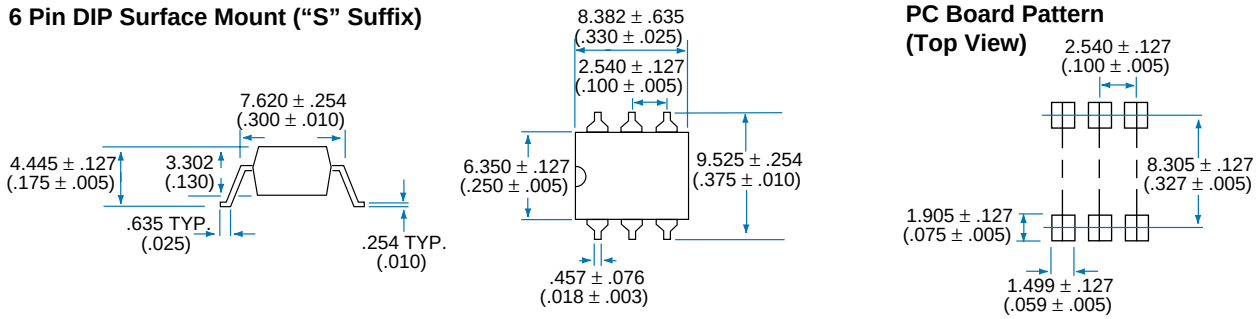

*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

## Mechanical Dimensions

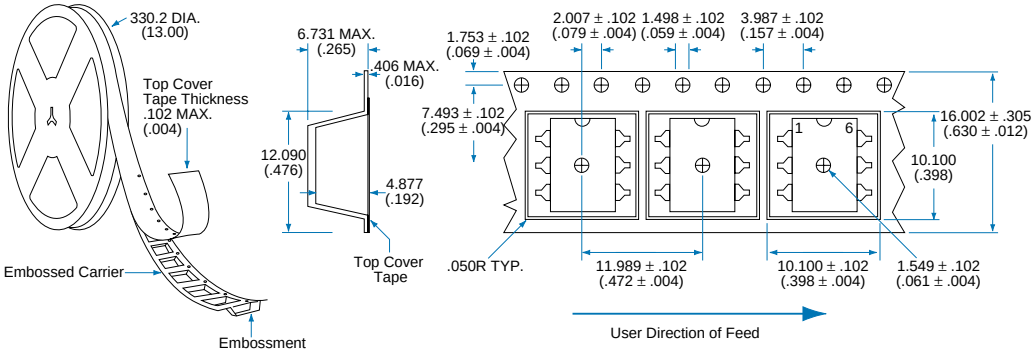
### 6 Pin DIP Through Hole (Standard)




### 6 Pin DIP Surface Mount ("S" Suffix)




### Tape and Reel Packaging for 6 Pin Surface Mount Package




Dimensions
mm
(inches)

CLARE

Micro Chips.
Macro Solutions.

# Worldwide Sales Offices

## CLARE LOCATIONS

Clare Headquarters
78 Cherry Hill Drive
Beverly, MA 01915
Tel: 1-978-524-6700
Fax: 1-978-524-4900
Toll Free: 1-800-27-CLARE

Clare Micronix Division
145 Columbia
Aliso Viejo, CA 92656-1490
Tel: 1-949-831-4622
Fax: 1-949-831-4628

## SALES OFFICES

## AMERICAS

**Americas Headquarters**
Clare
78 Cherry Hill Drive
Beverly, MA 01915
Tel: 1-978-524-6700
Fax: 1-978-524-4900
Toll Free: 1-800-27-CLARE

**Eastern Region**
Clare
P.O. Box 856
Mahwah, NJ 07430
Tel: 1-201-236-0101
Fax: 1-201-236-8685
Toll Free: 1-800-27-CLARE

**Central Region**
Clare Canada Ltd.
3425 Harvester Road, Suite 202
Burlington, Ontario L7N 3N1
Tel: 1-905-333-9066
Fax: 1-905-333-1824

**Western Region**
Clare
1852 West 11th Street, #348
Tracy, CA 95376
Tel: 1-209-832-4367
Fax: 1-209-832-4732
Toll Free: 1-800-27-CLARE

**Canada**
Clare Canada Ltd.
3425 Harvester Road, Suite 202
Burlington, Ontario L7N 3N1
Tel: 1-905-333-9066
Fax: 1-905-333-1824

## EUROPE

**European Headquarters**
CP Clare nv
Bampslaan 17
B-3500 Hasselt (Belgium)
Tel: 32-11-300868
Fax: 32-11-300890

**France**
Clare France Sales
Lead Rep
99 route de Versailles
91160 Champlan
France
Tel: 33 1 69 79 93 50
Fax: 33 1 69 79 93 59

**Germany**
Clare Germany Sales
ActiveComp Electronic GmbH
Mitterstrasse 12
85077 Manching
Germany
Tel: 49 8459 3214 10
Fax: 49 8459 3214 29

**Italy**
C.L.A.R.E.s.a.s.
Via C. Colombo 10/A
I-20066 Melzo (Milano)
Tel: 39-02-95737160
Fax: 39-02-95738829

**Sweden**
Clare Sales
Comptronic AB
Box 167
S-16329 Spånga
Tel: 46-862-10370
Fax: 46-862-10371

**United Kingdom**
Clare UK Sales
Marco Polo House
Cook Way
Bindon Road
Taunton
UK-Somerset TA2 6BG
Tel: 44-1-823 352541
Fax: 44-1-823 352797

## ASIA PACIFIC

**Asian Headquarters**
Clare
Room N1016, Chia-Hsin, Bldg II,
10F, No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan R.O.C.
Tel: 886-2-2523-6368
Fax: 886-2-2523-6369

**http://www.clare.com**



Specification: DS-LCA127-R9

02/02/01