# CPC1117N
## 4-Pin SOP OptoMOS® Relay

| Parameter | Rating | Units |
|---|---|---|
| Blocking Voltage | 60 | $V_P$ |
| Load Current | 150 | mA |
| Max On-resistance | 16 | Ω |
| LED Current to operate | 1 | mA |

## Features
- Designed for use in security systems complying with EN50130-4
- Only 1mA of LED current required to operate
- Small 4-Pin SOP Package
- TTL/CMOS Compatible input
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 1500$V_{rms}$ Input/Output Isolation
- No EMI/RFI Generation
- Immune to radiated EM fields
- SMD Pick & Place, Wave Solderable
- Tape & Reel Version Available

## Applications
- Security
  - Passive Infrared Detectors (PIR)
  - Data Signalling
  - Sensor Circuitry
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Aerospace
- Industrial Controls

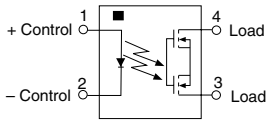
## Description
The CPC1117N is a miniature 1-Form-B solid state relay in a 4-Pin SOP package that employs optically coupled MOSFET technology to provide 1500$V_{rms}$ of input to output isolation. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS® architecture. The optically coupled output is controlled by the input's highly efficient GaAlAs infrared LED using Clare's state of the art double molded vertical construction packaging to produce the world's smallest relay. The CPC1117N offers board space savings of at least 20% over the competitor's larger 4-Pin SOP relay. It boasts the industries' lowest input current to operate in its class.

## Approvals
- UL Recognized Component
- Certified to EN60950

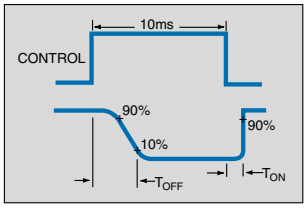
## Ordering Information

| Part # | Description |
|---|---|
| CPC1117N | 4-Pin SOP (100/tube) |
| CPC1117NTR | 4-Pin SOP (2000/reel) |

## Pin Configuration




**Switching Characteristics of Normally Closed (Form B) Devices**




PRELIMINARY

## Absolute Maximum Ratings

| Parameter | Ratings | Units |
|---|---|---|
| Blocking Voltage | 60 | $V_P$ |
| Reverse Input Voltage | 5 | V |
| Input control Current | 50 | mA |
| Peak (10ms) | 1 | A |
| Input Power Disipation | 70 | mW |
| Total Power Dissipation [1] | 400 | mW |
| Isolation voltage Input to Output | 1500 | $V_{rms}$ |
| Operational Temperature | -40 to +85 | °C |
| Storage Temperature | -40 to +125 | °C |

[1] Derate Linearly 3.33 mw / °C

Electrical absolute maximum ratings are at 25°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.*

PRELIMINARY

## Electrical Characteristics

| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **Output Characteristics @ 25°C** | | | | | | |
| Load Current (Continuous) [1] | $I_F$=0mA | $I_L$ | - | - | 150 | mA |
| Peak Load Current | 10ms | $I_{LPK}$ | - | - | 350 | mA |
| On-Resistance [2] | $I_L$=120mA | $R_{ON}$ | - | - | 16 | Ω |
| Off-State Leakage Current | $V_L$=60V, $I_F$=2mA | $I_{LEAK}$ | - | - | 1 | µA |
| Switching Speeds Turn-On | $I_F$=2mA, $V_L$=10V | $T_{ON}$ | - | - | 1 | ms |
| Turn-Off | $I_F$=2mA, $V_L$=10V | $T_{OFF}$ | - | - | 2 | ms |
| Output Capacitance | 50V; f=1MHz | $C_{OUT}$ | - | 25 | - | pF |
| **Input Characteristics @ 25°C** | | | | | | |
| Input Control Current[3] | $I_L$=120mA | $I_F$ | 1 | - | - | mA |
| Input Dropout Current | - | $I_F$ | 0.3 | 0.9 | - | mA |
| Input Voltage Drop | $I_F$=5mA | $V_F$ | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Current | $V_R$=5V | $I_R$ | - | - | 10 | µA |
| **Common Characteristics @ 25°C** | | | | | | |
| Capacitance Input to Output | - | - | - | 1 | - | pF |

[1] Load current derates linearly from 100mA @ 25°C to 70mA @85°C.
[2] Measurement taken within 1 second of on time.
[3] For applications requiring high temperature operation (greater than 60°C) an LED drive current of 10mA is recommended.

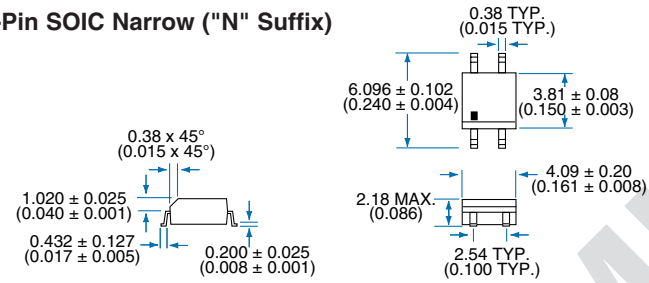
## Manufacturing Information

### Soldering
Recommended soldering processes are limited to 260ºC component body temperature for 10 seconds.

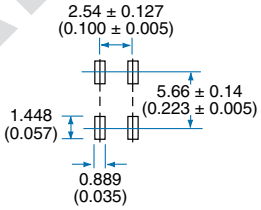
### Washing
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

## Mechanical Dimensions

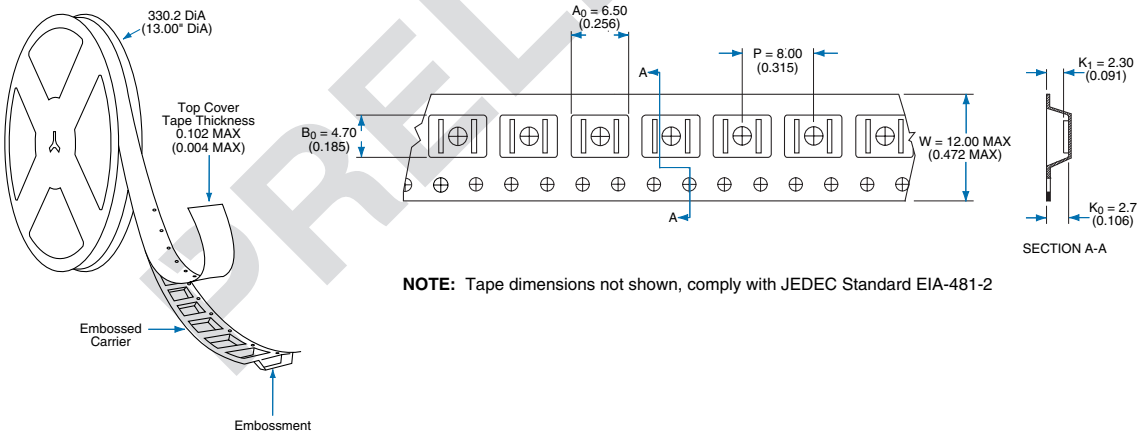
### 4-Pin SOIC Narrow ("N" Suffix)




### PC Board Pattern
### (Top View)




### Tape and Reel Packaging for 4-pin SOP package




**NOTE:** Tape dimensions not shown, comply with JEDEC Standard EIA-481-2

Dimensions:
mm
(inches)

PRELIMINARY

**For additional information please visit our website at: www.clare.com**

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