



| Parameter              | Rating | Units                                |
|------------------------|--------|--------------------------------------|
| Blocking Voltage       | 60     | V <sub>P</sub>                       |
| Load Current           | 120    | mA <sub>rms</sub> / mA <sub>DC</sub> |
| On-Resistance (max)    | 16     | Ω                                    |
| LED Current to operate | 1      | mA                                   |

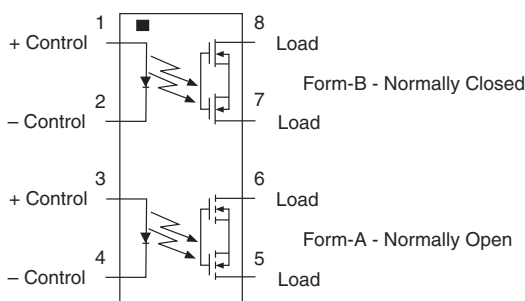
### Features

- 1500V<sub>rms</sub> Input/Output Isolation
- TTL/CMOS Compatible input
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Immune to radiated EM fields
- SMD Pick & Place, Wave Solderable
- Small 8-Pin SOIC Package
- Tape & Reel Version Available

### Applications

- Security
  - Passive Infrared Detectors (PIR)
  - Data Signaling
  - Sensor Circuitry
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
- Medical Equipment—Patient/Equipment Isolation
- Aerospace
- Industrial Controls

### Pin Configuration



### Description

The CPC2317N is a miniature device with one independent normally open (1-Form-A) solid state relay and one independent normally closed (1-Form-B) solid state relay in an 8-pin SOIC package. It employs optically coupled MOSFET technology to provide 1500V<sub>rms</sub> of input/output isolation.

The optically coupled outputs, which use IXYS Integrated Circuits Division's patented OptoMOS architecture, are controlled by a highly efficient GaAlAs infrared LED.

This device uses IXYS Integrated Circuits Division's state of the art, double-molded vertical construction packaging to produce one of the world's smallest relays. It is ideal for replacing larger, less-reliable reed and electromechanical relays.

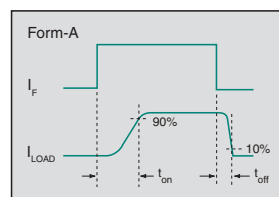
### Approvals

- UL Certified Component: File E76270
- CSA Certified Component: Certificate 1172007
- EN/IEC 60950-1 Certified Component:  
TUV Certificate B 10 05 49410 006

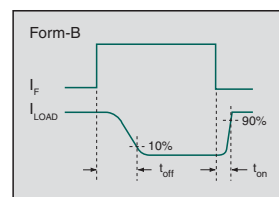
### Ordering Information

| Part #     | Description            |
|------------|------------------------|
| CPC2317N   | 8-Pin SOIC (50/tube)   |
| CPC2317NTR | 8-Pin SOIC (2000/reel) |

#### Switching Characteristics of Normally Open (Form-A) Devices



#### Switching Characteristics of Normally Closed (Form-B) Devices



## Absolute Maximum Ratings @ 25°C

| Parameter                            | Ratings     | Units            |
|--------------------------------------|-------------|------------------|
| Blocking Voltage                     | 60          | V <sub>P</sub>   |
| Reverse Input Voltage                | 5           | V                |
| Input Control Current                | 50          | mA               |
| Peak (10ms)                          | 1           | A                |
| Total Power Dissipation <sup>1</sup> | 600         | mW               |
| Isolation Voltage, Input to Output   | 1500        | V <sub>rms</sub> |
| Operational Temperature              | -40 to +85  | °C               |
| Storage Temperature                  | -40 to +125 | °C               |
| Soldering Temperature (10 Seconds)   | 260         | °C               |

<sup>1</sup> Derate linearly 5mW / °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 @ 25°C

| Parameter                                        | Conditions                                       | Symbol            | Min | Typ  | Max  | Units                                |
|--------------------------------------------------|--------------------------------------------------|-------------------|-----|------|------|--------------------------------------|
| Output Characteristics                           |                                                  |                   |     |      |      |                                      |
| Load Current                                     |                                                  |                   |     |      |      |                                      |
| Normally Open (Form-A) Continuous <sup>1</sup>   | I <sub>F</sub> =1mA                              | I <sub>L</sub>    | -   | -    | 120  | mA <sub>rms</sub> / mA <sub>DC</sub> |
| Normally Closed (Form-B) Continuous <sup>1</sup> | I <sub>F</sub> =0mA                              |                   |     |      |      |                                      |
| Peak                                             | t =10ms                                          |                   |     |      |      |                                      |
|                                                  |                                                  | I <sub>LPK</sub>  | -   | -    | ±350 | mA <sub>P</sub>                      |
| On-Resistance <sup>2</sup>                       | I <sub>L</sub> =120mA                            | R <sub>ON</sub>   | -   | -    | 16   | Ω                                    |
| Switching Speeds                                 |                                                  |                   |     |      |      |                                      |
| Turn-On                                          | I <sub>F</sub> =5mA, V <sub>L</sub> =10V         | t <sub>on</sub>   | -   | -    | 3    | ms                                   |
| Turn-Off                                         |                                                  | t <sub>off</sub>  | -   | -    | 3    |                                      |
| Off-State Leakage Current                        | V <sub>L</sub> =60V <sub>P</sub>                 | I <sub>LEAK</sub> | -   | -    | 1    | μA                                   |
| Output Capacitance                               |                                                  |                   |     |      |      |                                      |
| Normally Open (Form-A)                           | I <sub>F</sub> =0mA, V <sub>L</sub> =50V, f=1MHz | C <sub>OUT</sub>  | -   | 25   | -    | pF                                   |
| Normally Closed (Form-B)                         | I <sub>F</sub> =5mA, V <sub>L</sub> =50V, f=1MHz |                   |     |      |      |                                      |
| Input Characteristics                            |                                                  |                   |     |      |      |                                      |
| Input Control Current to Activate <sup>3</sup>   | I <sub>L</sub> =100mA                            | I <sub>F</sub>    | -   | 0.40 | 1    | mA                                   |
| Input Control Current to Deactivate              | -                                                | I <sub>F</sub>    | 0.1 | 0.35 | -    | mA                                   |
| Input Voltage Drop                               | I <sub>F</sub> =5mA                              | V <sub>F</sub>    | 0.9 | 1.2  | 1.4  | V                                    |
| Reverse Input Current                            | V <sub>R</sub> =5V                               | I <sub>R</sub>    | -   | -    | 10   | μA                                   |
| Common Characteristics                           |                                                  |                   |     |      |      |                                      |
| Capacitance, Input to Output                     | -                                                | -                 | -   | 1    | -    | pF                                   |

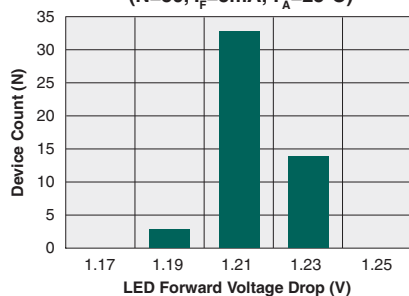
<sup>1</sup> Load current derates linearly from 120mA @ 25°C to 60mA @ 85°C, and must be derated for both poles operating simultaneously.

<sup>2</sup> Measurement taken within 1 second of on-time.

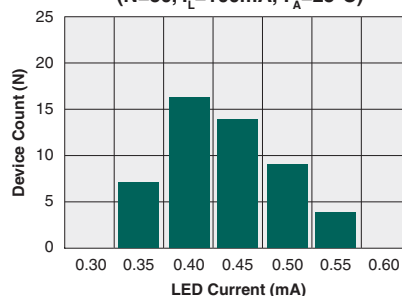
<sup>3</sup> For applications requiring high temperature operation (greater than 60°C) a LED drive current of 3mA is recommended.

# COMMON PERFORMANCE DATA\*

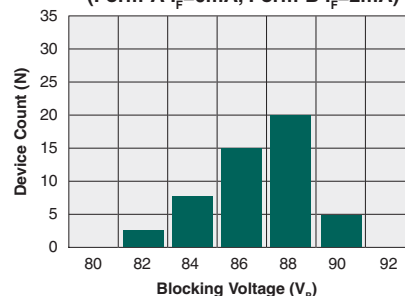
Typical LED Forward Voltage Drop  
(N=50,  $I_F=5\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



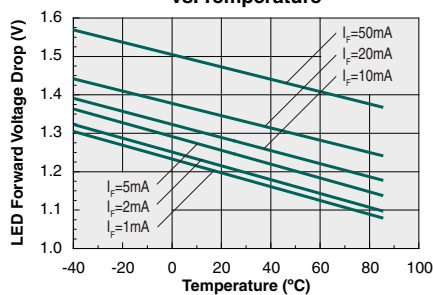
Typical  $I_F$  for Switch Operation  
(N=50,  $I_L=100\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



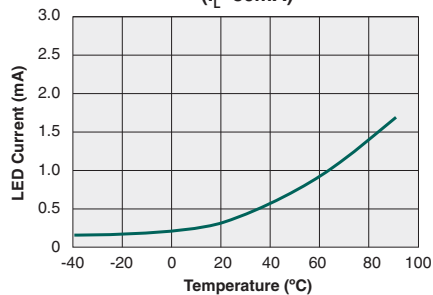
Typical Blocking Voltage Distribution  
(N=50,  $T_A=25^\circ\text{C}$ )  
(Form-A  $I_F=0\text{mA}$ , Form-B  $I_F=2\text{mA}$ )



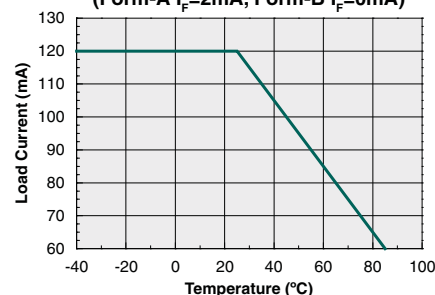
Typical LED Forward Voltage Drop  
vs. Temperature



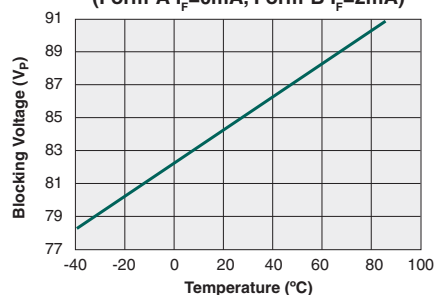
Typical  $I_F$  for Switch Operation  
vs. Temperature  
( $I_L=80\text{mA}$ )



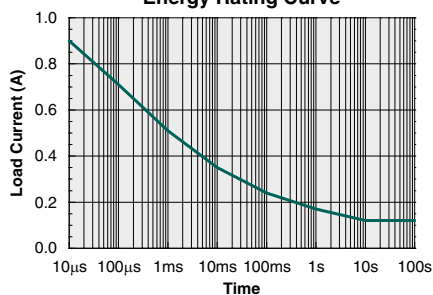
Maximum Load Current  
vs. Temperature  
(Form-A  $I_F=2\text{mA}$ , Form-B  $I_F=0\text{mA}$ )



Typical Blocking Voltage vs. Temperature  
(N=50,  $T_A=25^\circ\text{C}$ )  
(Form-A  $I_F=0\text{mA}$ , Form-B  $I_F=2\text{mA}$ )

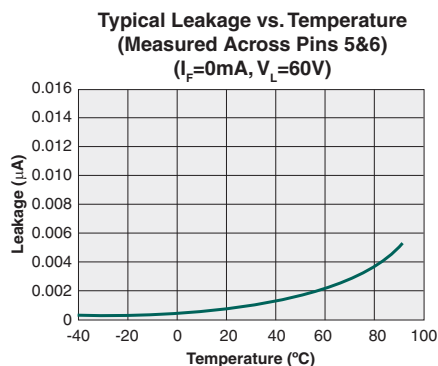
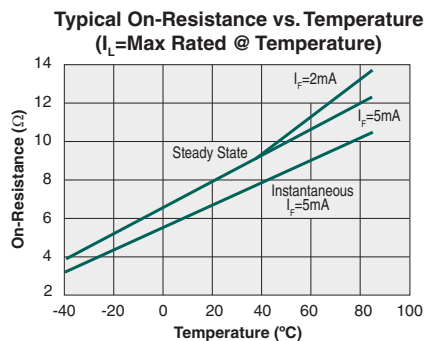
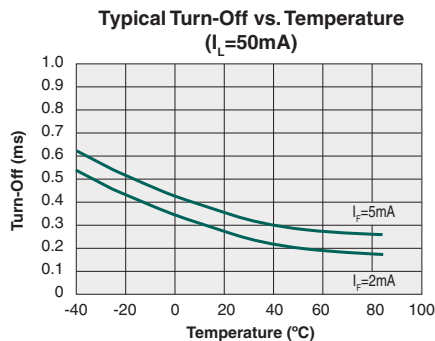
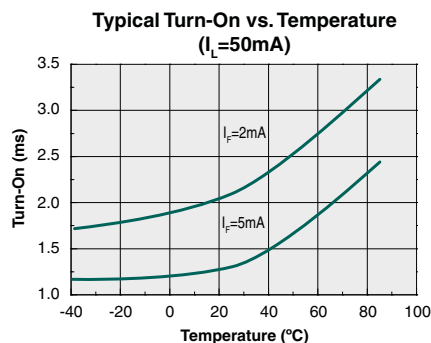
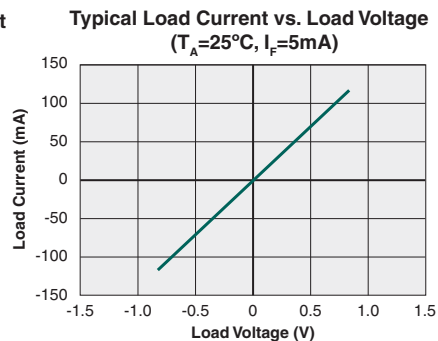
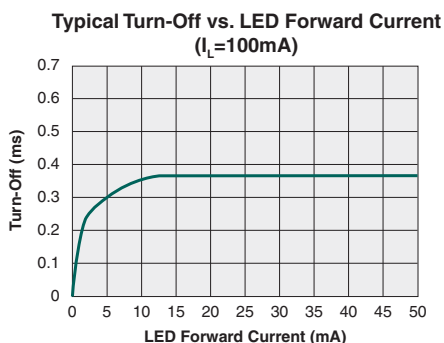
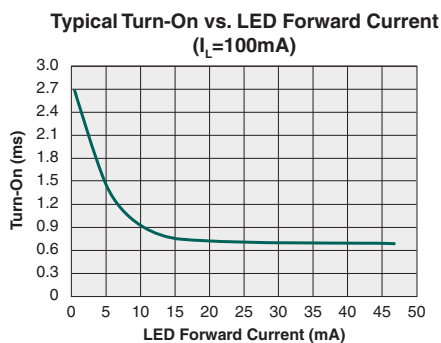
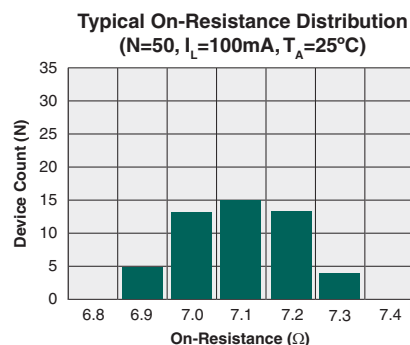
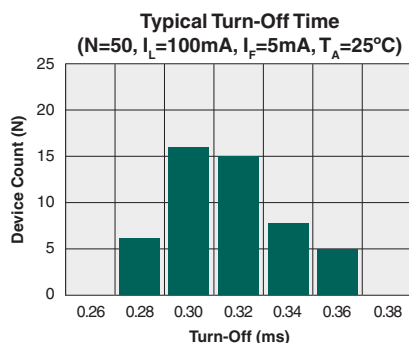
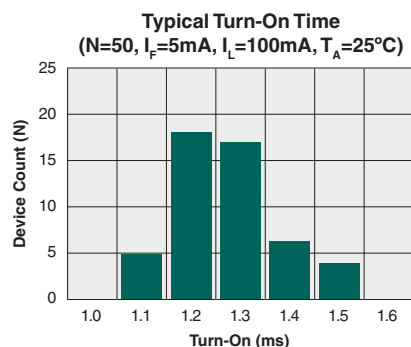


Energy Rating Curve



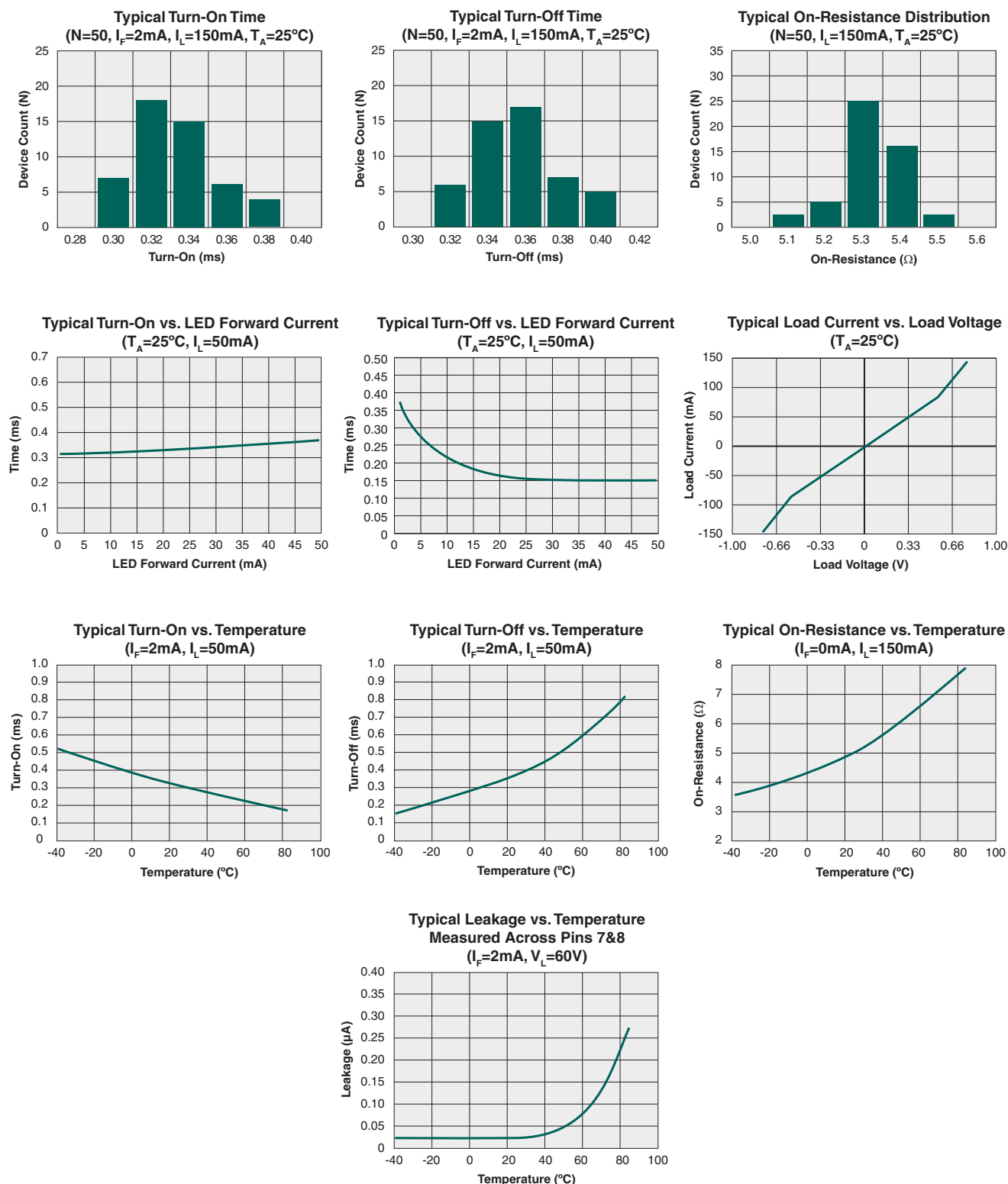
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

# FORM-A 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.

# FORM-B 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.

## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. IXYS Integrated Circuits Division classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

| Device   | Moisture Sensitivity Level (MSL) Rating |
|----------|-----------------------------------------|
| CPC2317N | MSL 3                                   |

### ESD Sensitivity



This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

### Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

| Device   | Maximum Temperature x Time |
|----------|----------------------------|
| CPC2317N | 260°C for 30 seconds       |

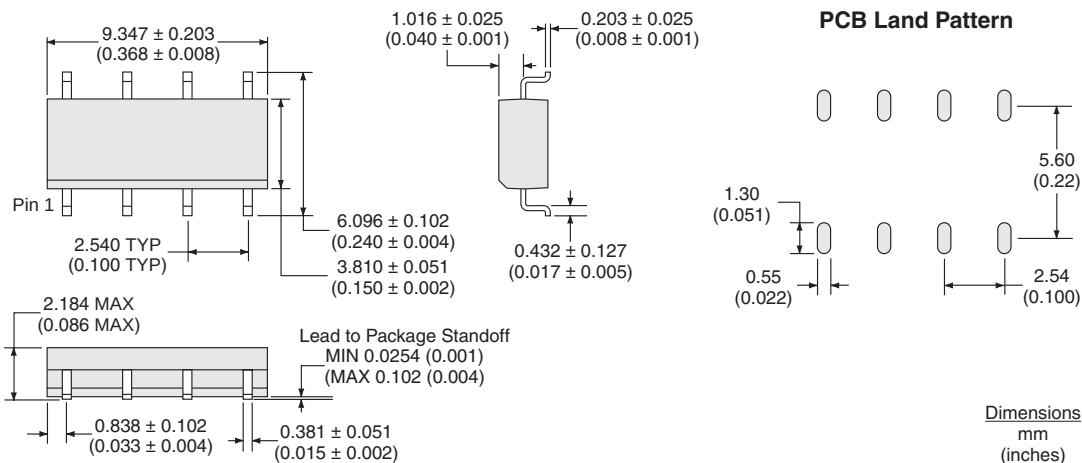
### Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

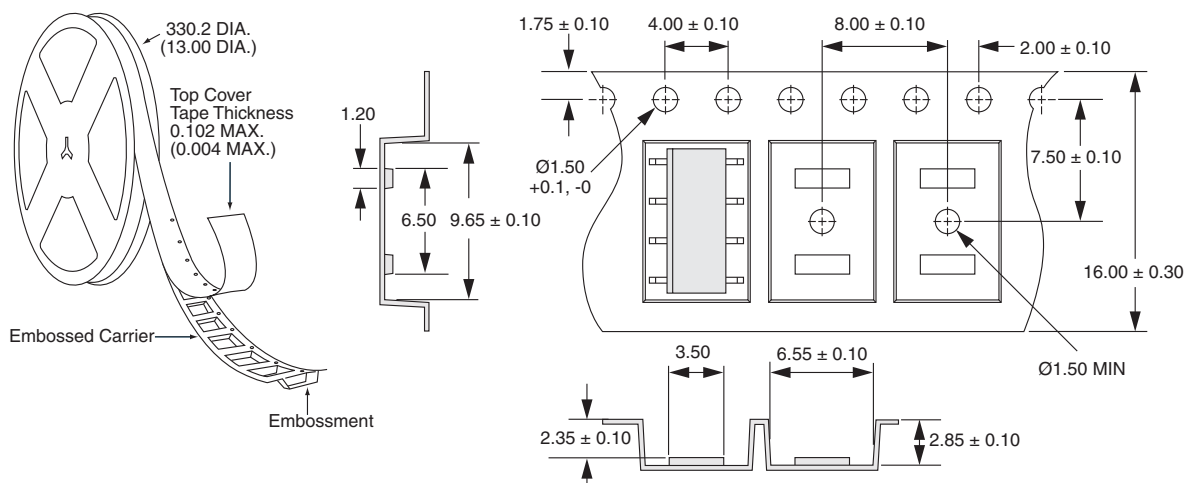


## MECHANICAL DIMENSIONS

### CPC2317N



### CPC2317NTR Tape & Reel



#### NOTES:

1. All dimensions in millimeters
2. 10 sprocket hole pitch cumulative tolerance ± 0.20.
3. Carrier camber is within 1mm in 250mm.
4. Tape material : Black Conductive Polystyrene Alloy.
5. All dimensions meet EIA-481-C requirements.
6. Thickness : 0.30 ± 0.05mm.
7. Component load per 13" reel : 2000 pcs.

For additional information please visit our website at: [www.ixysic.com](http://www.ixysic.com)

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