



Parameter	Rating	Units
Blocking Voltage	60	V <sub>p</sub>
Load Current	120	mA
Max On-resistance	16	Ω
LED Current to operate	1	mA

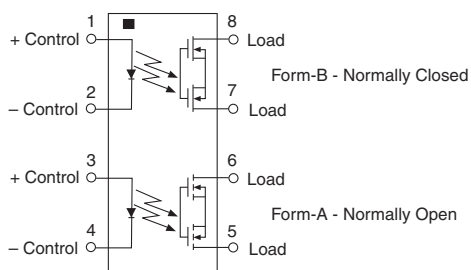
## Features

- Small 8-Pin SOIC Package
- TTL/CMOS Compatible input
- Arc-Free With No Snubbing Circuits
- 1500V<sub>rms</sub> 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
- 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 uses Clare's patented, optically coupled, OptoMOS architecture to provide 1500V<sub>rms</sub> of input/output isolation.

The relay outputs are constructed with efficient MOSFET switches and photovoltaic die that use Clare's patented OptoMOS architecture while the input, a highly efficient GaAlAs infrared LED, provides the optically coupled control.

CPC2317N uses Clare'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.

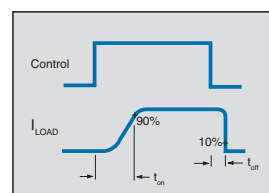
## Approvals

- UL Recognized Component: File E76270
- EN/IEC 60950-1: Pending

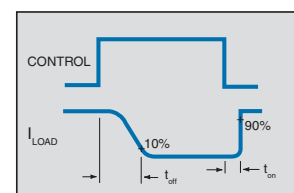
## Ordering Information

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 Peak (10ms)	50	mA
	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 5.0 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
<b>Output Characteristics @ 25°C</b>						
Load Current						
Normally Open (Form-A) Continuous <sup>1</sup>	I <sub>F</sub> =1mA	I <sub>L</sub>	-	-	120	mA
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)						
<b>Input Characteristics @ 25°C</b>						
Input Control Current <sup>3</sup>	I <sub>L</sub> =100mA	I <sub>F</sub>	-	0.40	1	mA
Input Dropout Current	-	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
<b>Common Characteristics @ 25°C</b>						
Capacitance, Input to Output	-	-	-	1	-	pF

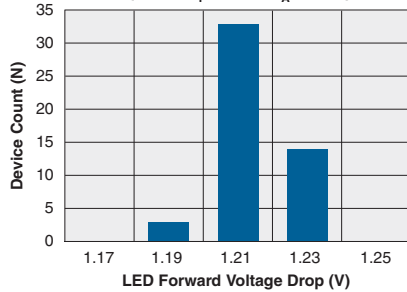
<sup>1</sup> Load current derates linearly from 120mA @ 25°C to 60mA @ 85°C, and must be derated for both poles operating simultaneously.

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

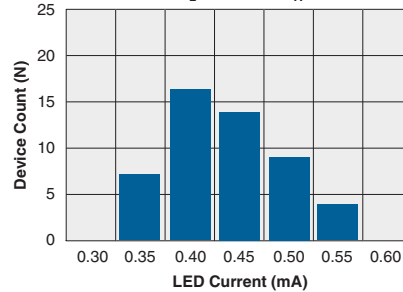
<sup>3</sup> For applications requiring high temperature operation (greater than 60°C) an LED drive current of 3mA is recommended.

**COMMON PERFORMANCE DATA\***

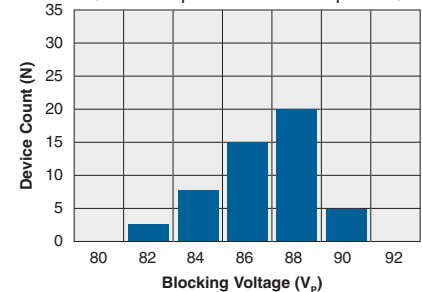
**Typical LED Forward Voltage Drop**  
(N=50, I<sub>F</sub>=5mA, T<sub>A</sub>=25°C)



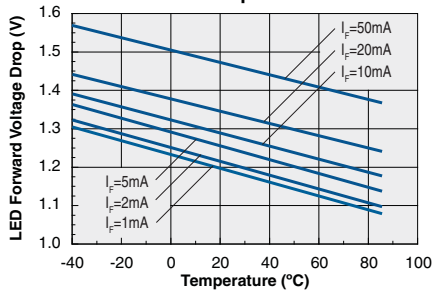
**Typical I<sub>F</sub> for Switch Operation**  
(N=50, I<sub>L</sub>=100mA, T<sub>A</sub>=25°C)



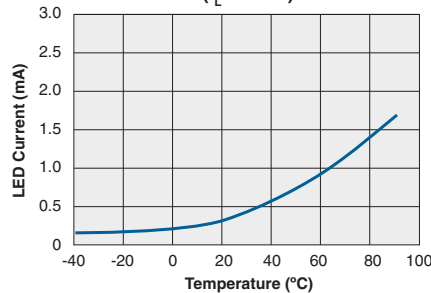
**Typical Blocking Voltage Distribution**  
(N=50, T<sub>A</sub>=25°C)  
(Form-A I<sub>F</sub>=0mA, Form-B I<sub>F</sub>=2mA)



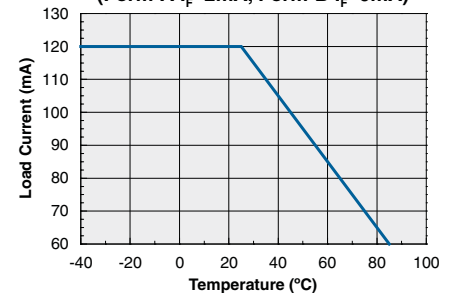
**Typical LED Forward Voltage Drop vs. Temperature**



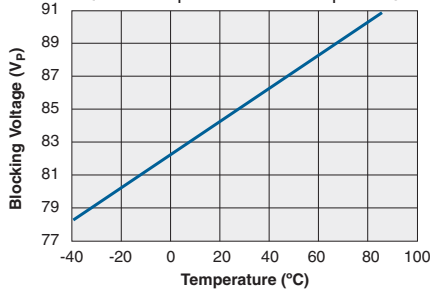
**Typical I<sub>F</sub> for Switch Operation vs. Temperature**  
(I<sub>L</sub>=80mA)



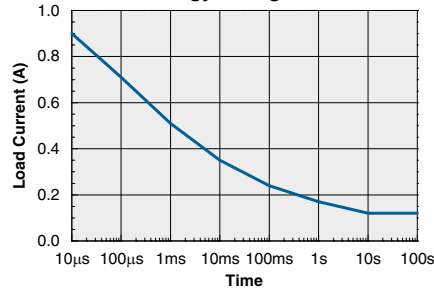
**Maximum Load Current vs. Temperature**  
(Form-A I<sub>F</sub>=2mA, Form-B I<sub>F</sub>=0mA)



**Typical Blocking Voltage vs. Temperature**  
(N=50, T<sub>A</sub>=25°C)  
(Form-A I<sub>F</sub>=0mA, Form-B I<sub>F</sub>=2mA)



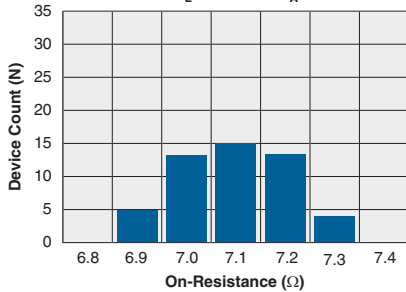
**Energy Rating Curve**



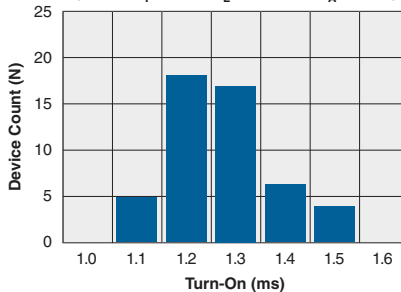
\*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

FORM-A PERFORMANCE DATA\*

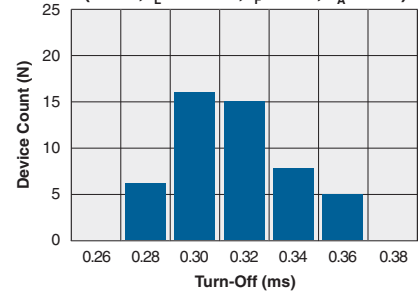
Typical On-Resistance Distribution  
(N=50,  $I_L=100\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



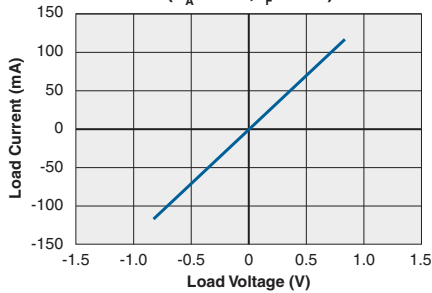
Typical Turn-On Time  
(N=50,  $I_F=5\text{mA}$ ,  $I_L=100\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



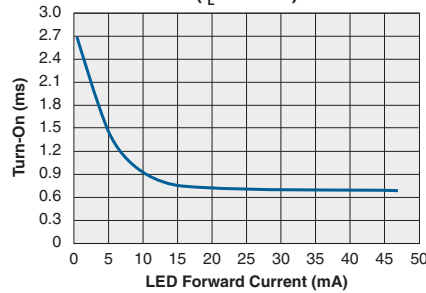
Typical Turn-Off Time  
(N=50,  $I_L=100\text{mA}$ ,  $I_F=5\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



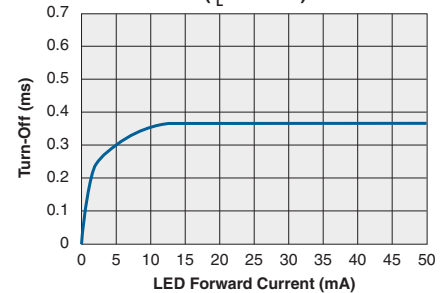
Typical Load Current vs. Load Voltage  
( $T_A=25^\circ\text{C}$ ,  $I_F=5\text{mA}$ )



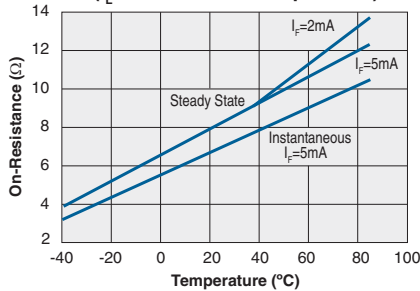
Typical Turn-On vs. LED Forward Current  
( $I_L=100\text{mA}$ )



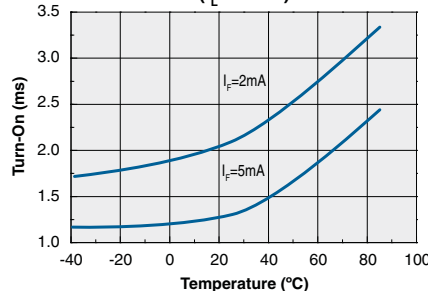
Typical Turn-Off vs. LED Forward Current  
( $I_L=100\text{mA}$ )



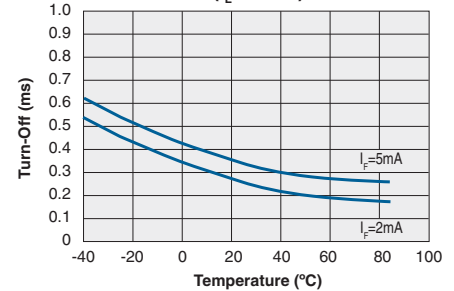
Typical On-Resistance vs. Temperature  
( $I_L=\text{Max Rated @ Temperature}$ )



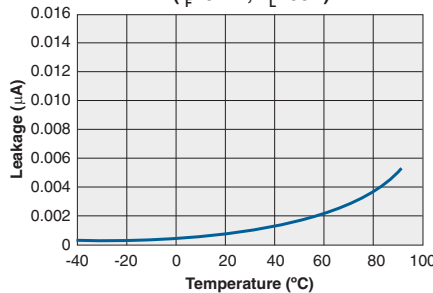
Typical Turn-On vs. Temperature  
( $I_L=50\text{mA}$ )



Typical Turn-Off vs. Temperature  
( $I_L=50\text{mA}$ )



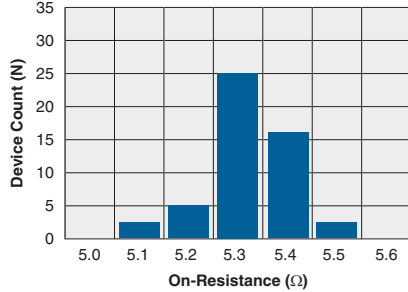
Typical Leakage vs. Temperature  
(Measured Across Pins 5&6)  
( $I_F=0\text{mA}$ ,  $V_L=60\text{V}$ )



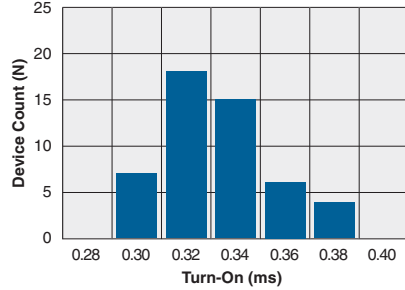
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**FORM-B PERFORMANCE DATA\***

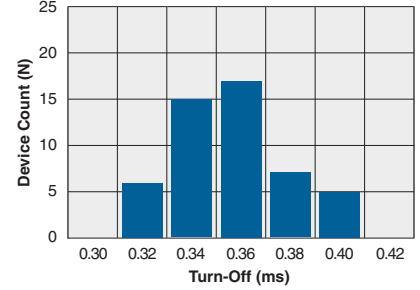
**Typical On-Resistance Distribution**  
(N=50,  $I_L=150\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



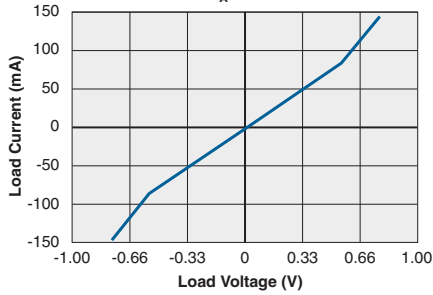
**Typical Turn-On Time**  
(N=50,  $I_F=2\text{mA}$ ,  $I_L=150\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



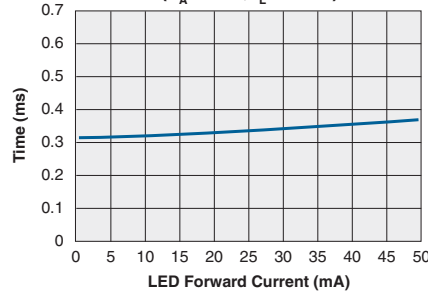
**Typical Turn-Off Time**  
(N=50,  $I_F=2\text{mA}$ ,  $I_L=150\text{mA}$ ,  $T_A=25^\circ\text{C}$ )



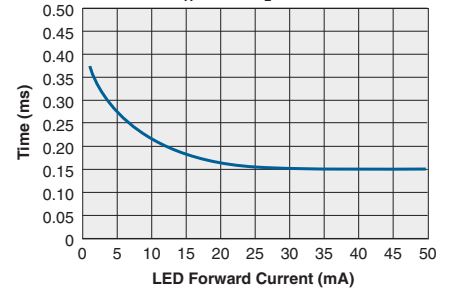
**Typical Load Current vs. Load Voltage**  
( $T_A=25^\circ\text{C}$ )



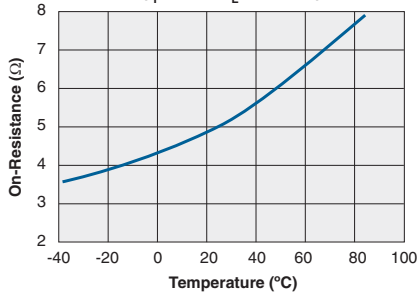
**Typical Turn-On vs. LED Forward Current**  
( $T_A=25^\circ\text{C}$ ,  $I_L=50\text{mA}$ )



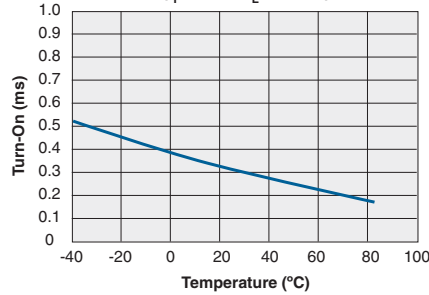
**Typical Turn-Off vs. LED Forward Current**  
( $T_A=25^\circ\text{C}$ ,  $I_L=50\text{mA}$ )



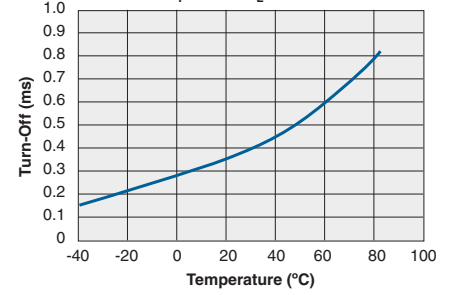
**Typical On-Resistance vs. Temperature**  
( $I_F=0\text{mA}$ ,  $I_L=150\text{mA}$ )



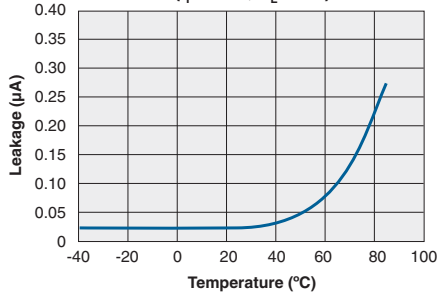
**Typical Turn-On vs. Temperature**  
( $I_F=2\text{mA}$ ,  $I_L=50\text{mA}$ )



**Typical Turn-Off vs. Temperature**  
( $I_F=2\text{mA}$ ,  $I_L=50\text{mA}$ )



**Typical Leakage vs. Temperature**  
Measured Across Pins 7&8  
( $I_F=2\text{mA}$ ,  $V_L=60\text{V}$ )



\*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**

Clare has characterized the moisture reflow sensitivity of this package, and has determined that this component must be handled in accordance with IPC/JEDEC standard J-STD-033 moisture sensitivity level (MSL), level 3 classification.

**Soldering Reflow Profile**

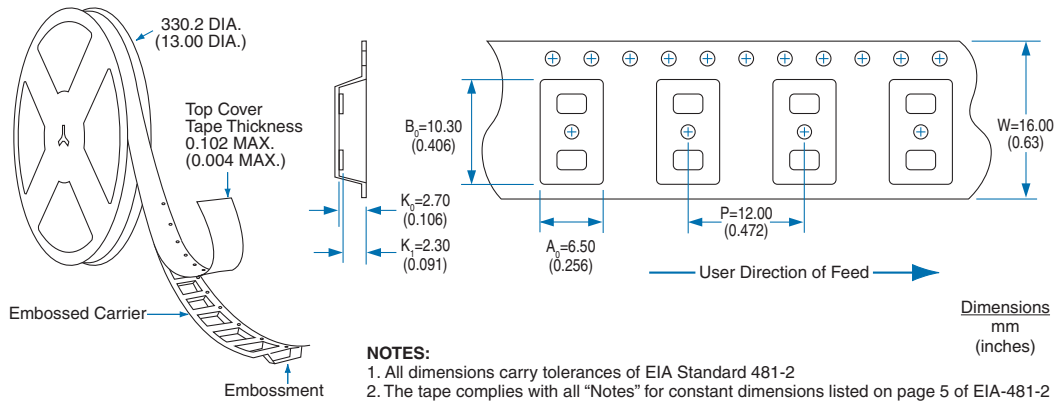
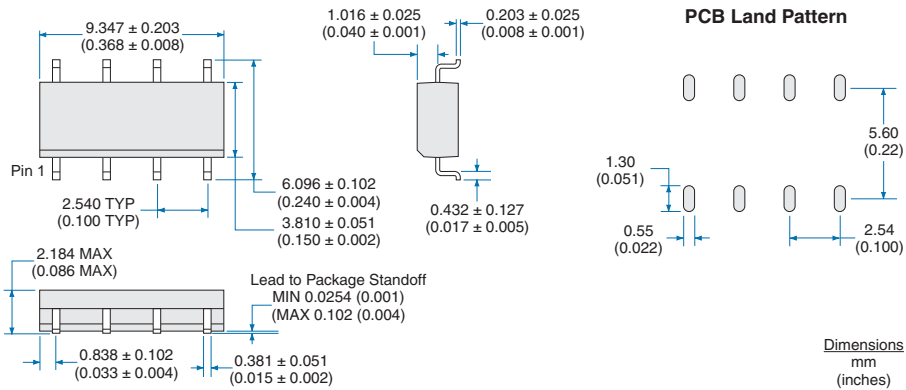
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.



**Washing**

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

**MECHANICAL DIMENSIONS**



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