



Parameter	Rating	Units
Blocking Voltage	100	V _p
Load Current	150	mA
Max On-resistance	8	Ω

Features

- Small 4-Pin SOP Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 1500V_{rms} Input/Output Isolation
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Tape & Reel Version Available

Applications

- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security Systems
- Aerospace
- Industrial Controls
- Reed Relay Replacement

Description

CPC1008N is a miniature, low-voltage, low on-resistance 1-Form-A solid state relay in a 4-Pin SOP package. It uses Clare's patented, optically coupled, OptoMOS architecture to provide 1500V_{rms} of input/output isolation.

OptoMOS input architecture comprises a highly efficient GaAlAs infrared LED that enables the efficient MOSFET switch output through optically coupled photovoltaic die.

CPC1008N 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.

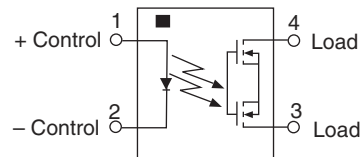
Approvals

- UL Recognized Component: File # E76270
- EN/IEC 60950-1 Certified Component: Certificate B 09 07 49410 004
- CSA Certified Component: Certificate # 1172007

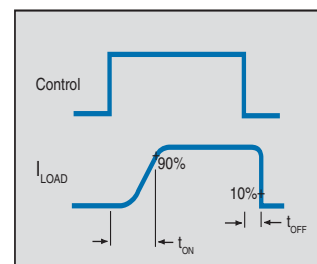
Ordering Information

Part #	Description
CPC1008N	4-Pin SOP (100/tube)
CPC1008NTR	4-Pin SOP (2000/reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	100	V _P
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation	70	mW
Total Power Dissipation ¹	400	mW
Isolation Voltage, Input to Output (60 Seconds)	1500	V _{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

¹ Derate Linearly 3.33 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 @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics						
Load Current Continuous ¹ Peak	-	I _L			150	mA
	t=10ms	I _{LPK}	-	-	350	
On-Resistance ²	I _L =150mA	R _{ON}	-	4.8	8	Ω
Off-State Leakage Current	V _L =100V	I _{LEAK}	-	-	1	μA
Switching Speeds						
Turn-On Turn-Off	I _F =5mA, V _L =10V	t _{ON}	-	1	2	ms
		t _{OFF}	-	0.17	0.5	
Output Capacitance	I _F =0mA, V _L =50V, f=1MHz	C _{OUT}	-	25	-	pF
Input Characteristics						
Input Control Current ³	I _L =150mA	I _F	-	0.45	2	mA
Input Dropout Current	-	I _F	0.2	-	-	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						
Capacitance, Input to Output	-	C _{I/O}	-	1	-	pF

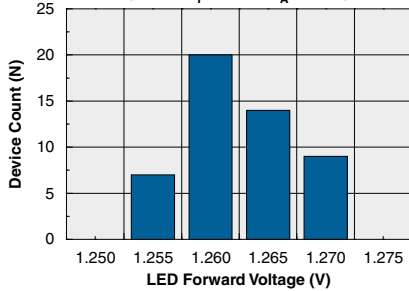
¹ Load current derates linearly from 150mA @ 25°C to 120mA @ 85°C.

² Measurement taken within 1 second of on time.

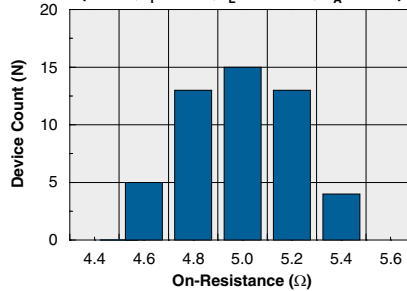
³ For high temperature operation (>60°C) a LED current of 4mA is recommended.

PERFORMANCE DATA*

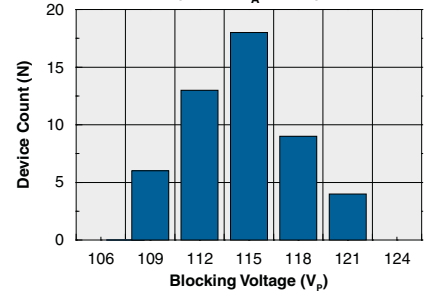
Typical LED Forward Voltage Drop
(N=50, $I_F=5\text{mA}$, $T_A=25^\circ\text{C}$)



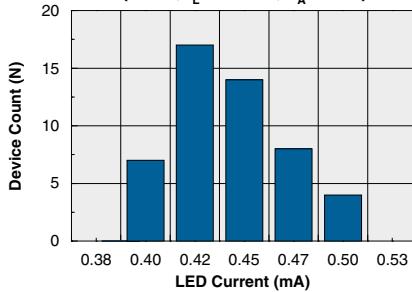
Typical On-Resistance Distribution
(N=50, $I_F=2\text{mA}$, $I_L=150\text{mA}$, $T_A=25^\circ\text{C}$)



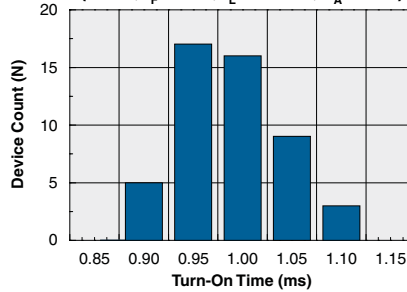
Typical Blocking Voltage Distribution
(N=50, $T_A=25^\circ\text{C}$)



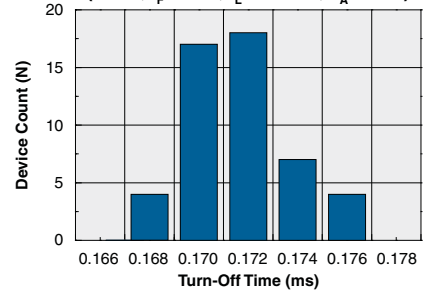
Typical I_F for Switch Operation
(N=50, $I_L=100\text{mA}$, $T_A=25^\circ\text{C}$)



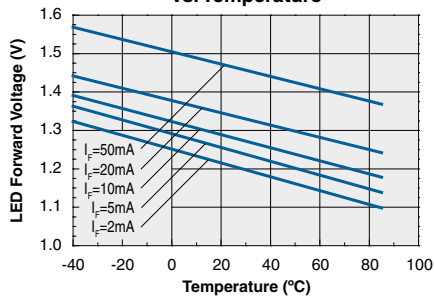
Typical Turn-On Time
(N=50, $I_F=5\text{mA}$, $I_L=100\text{mA}$, $T_A=25^\circ\text{C}$)



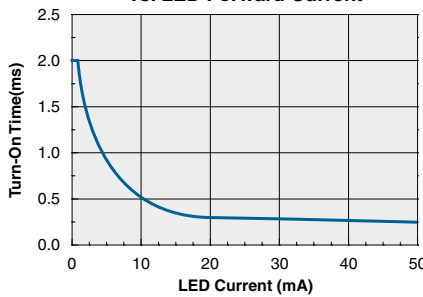
Typical Turn-Off Time
(N=50, $I_F=5\text{mA}$, $I_L=100\text{mA}$, $T_A=25^\circ\text{C}$)



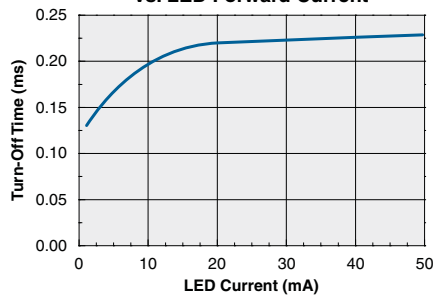
Typical LED Forward Voltage Drop vs. Temperature



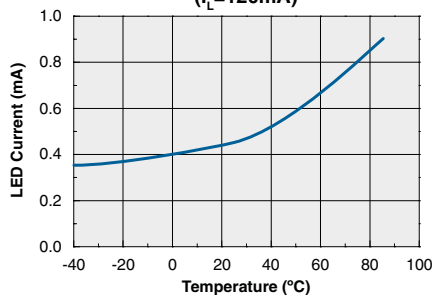
Typical Turn-On Time vs. LED Forward Current



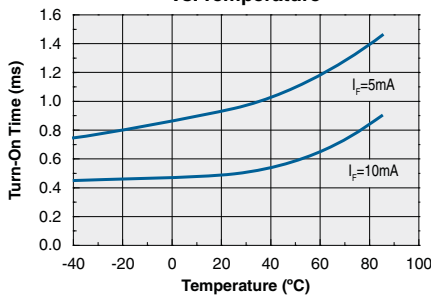
Typical Turn-Off Time vs. LED Forward Current



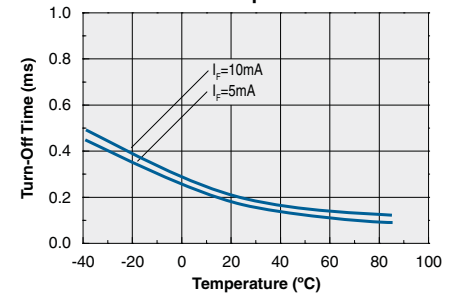
Typical I_F for Switch Operation vs. Temperature
($I_L=120\text{mA}$)



Typical Turn-On Time vs. Temperature



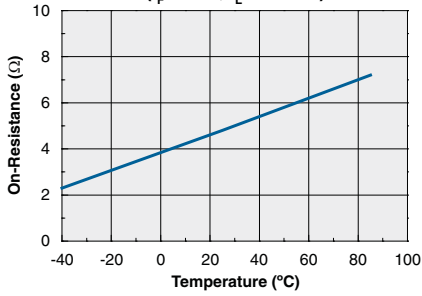
Typical Turn-Off Time vs. Temperature



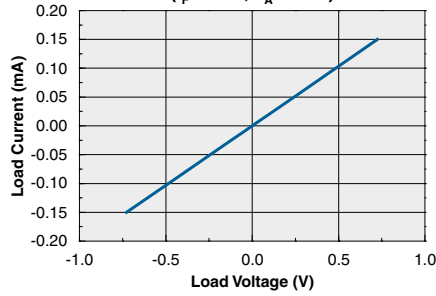
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

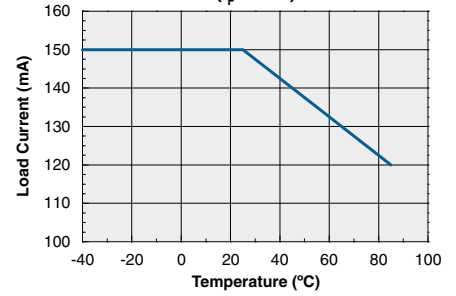
Typical On-Resistance vs. Temperature
($I_F=2\text{mA}$, $I_L=120\text{mA}$)



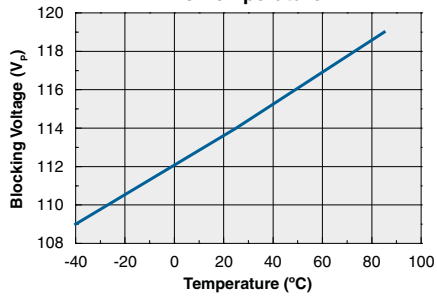
Typical Load Current vs. Load Voltage
($I_F=2\text{mA}$, $T_A=25^\circ\text{C}$)



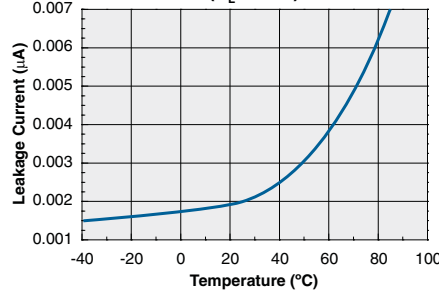
Maximum Load Current vs. Temperature
($I_F=5\text{mA}$)



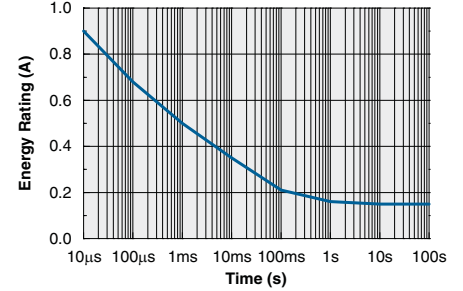
Typical Blocking Voltage vs. Temperature



Typical Leakage vs. Temperature
($V_L=100\text{V}$)



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.

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

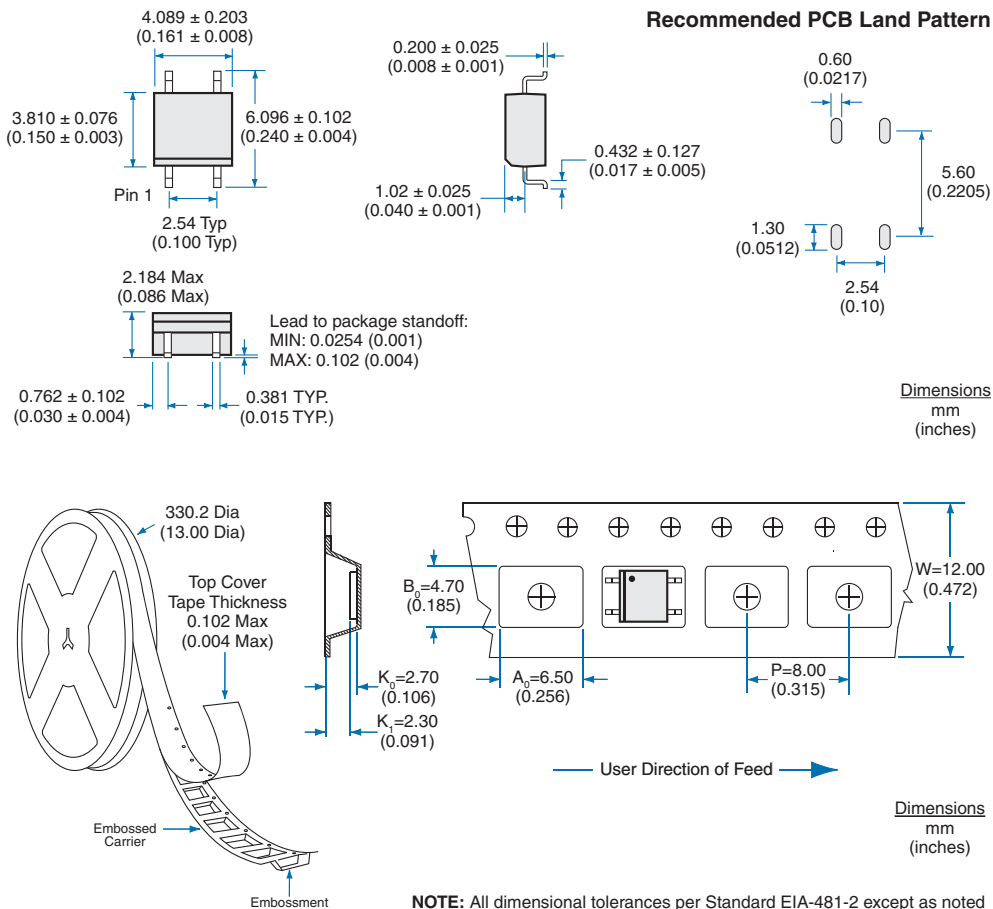
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.



Washing

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

MECHANICAL DIMENSIONS



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