



Parameter	Ratings	Units
Blocking Voltage	250	V <sub>P</sub>
Load Current	170	mA
Max On-resistance	20	Ω

### Features

- Small 6-Pin Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Surface Mount Tape & Reel Version Available
- Arc-Free With No Snubbing Circuits
- 3750V<sub>rms</sub> Input/Output Isolation
- FCC Compatible
- VDE Compatible
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable

### Applications

- Telecommunications
  - Telecom Switching
  - Tip/Ring Circuits
  - Modem Switching (Laptop, Notebook, Pocket Size)
  - Hook Switch
  - Dial Pulsing
  - Ground Start
  - Ringing Injection
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

### Description

The LCB120 is a 1-Form-B (normally closed) relay which uses optically coupled MOSFET technology to provide 3750V<sub>rms</sub> of input to output isolation. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS® architecture. A highly efficient GaAIAs infrared LED controls the optically coupled output. The LCB120 has low on-resistance and is well suited for most applications requiring a normally closed relay.

### Approvals

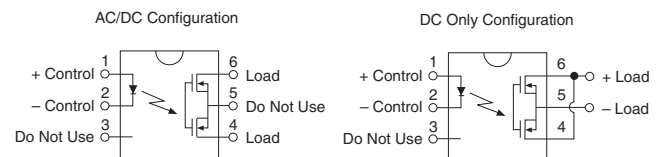
- UL Recognized Component: File # E76270
- CSA Certified Component: Certificate # 1175739
- EN/IEC 60950-1 Compliant

### Ordering Information

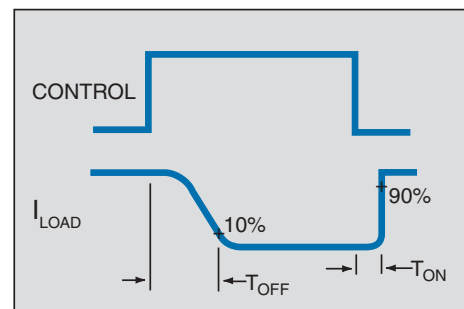
Part #	Description
LCB120	6-Pin DIP (50/Tube)
LCB120S	6-Pin Surface Mount (50/Tube)
LCB120STR	6-Pin Surface Mount (1000/Reel)

\* For other packaging options consult factory.

### Pin Configuration



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



## Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	250	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation <sup>1</sup>	150	mW
Total Power Dissipation <sup>2</sup>	800	mW
Isolation voltage Input to Output	3750	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate Linearly 1.33 mW / °C

<sup>2</sup> Derate Linearly 6.67 mW / °C

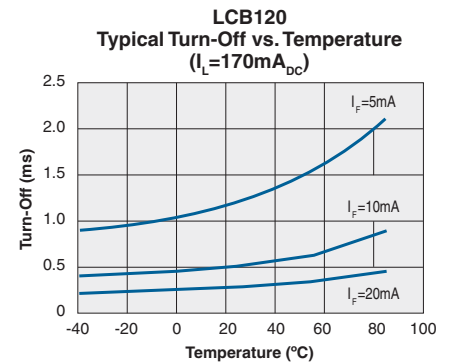
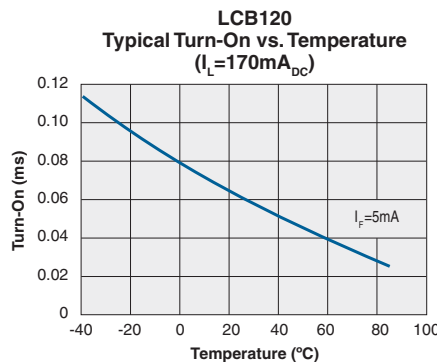
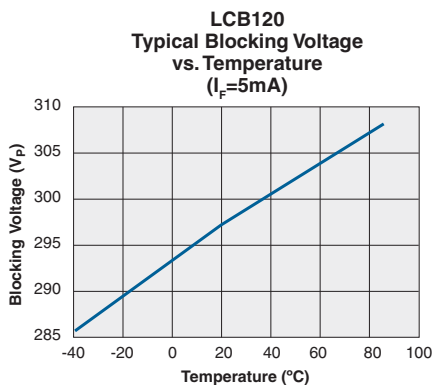
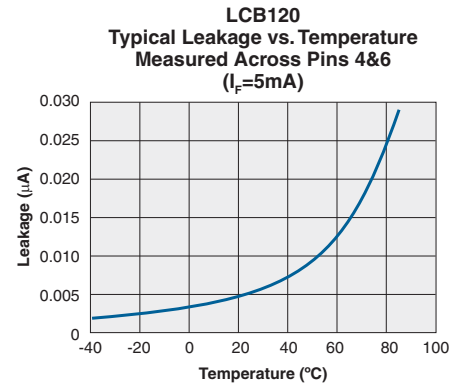
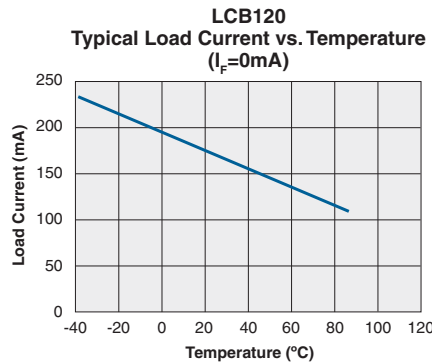
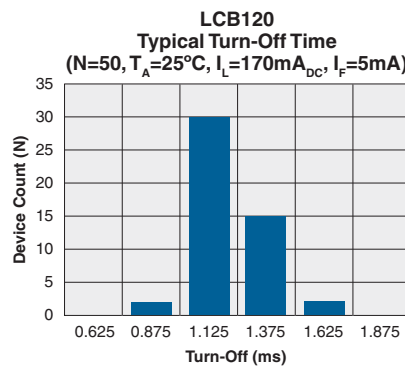
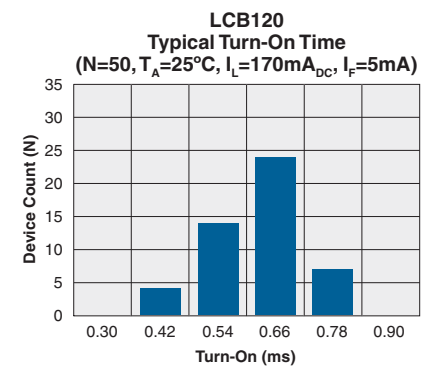
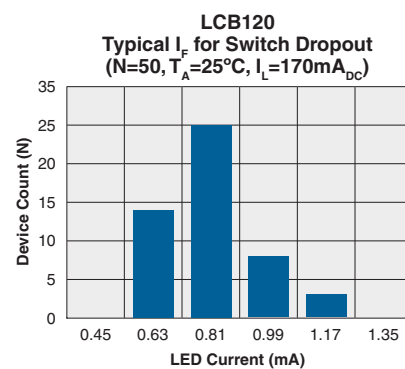
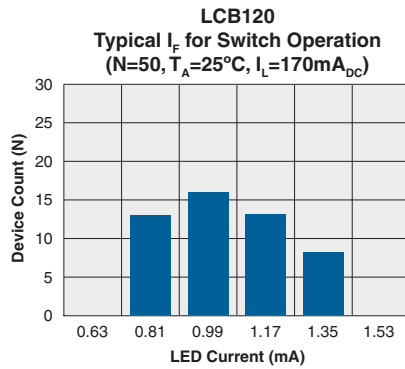
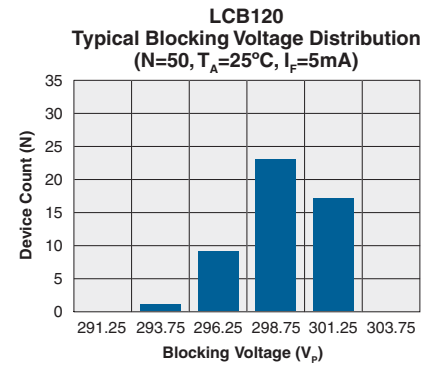
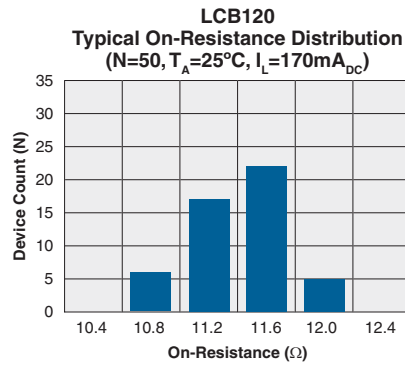
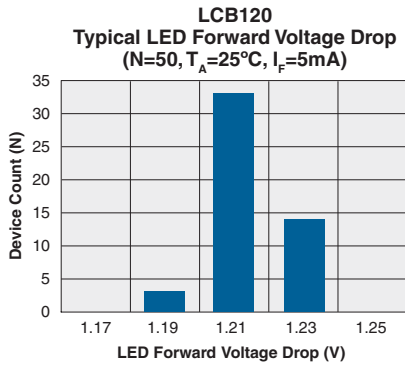
Electrical absolute maximum ratings are at 25°C

*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.*

## Electrical Characteristics

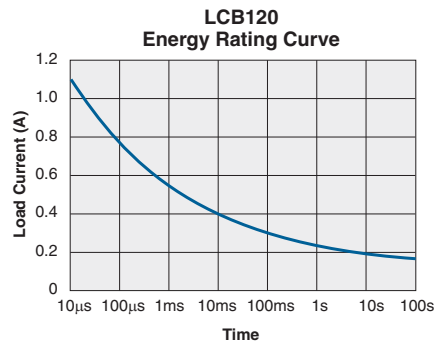
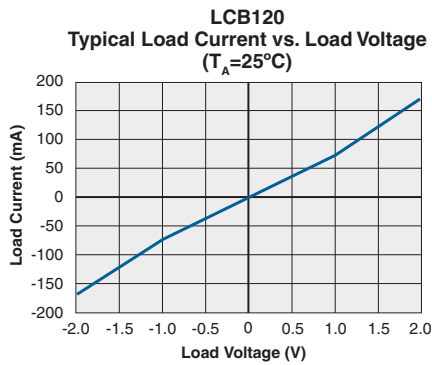
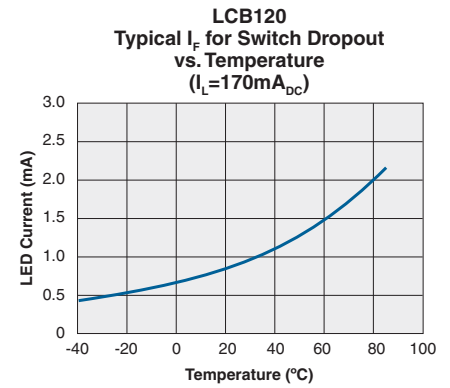
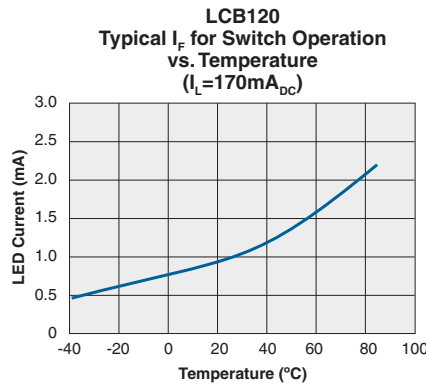
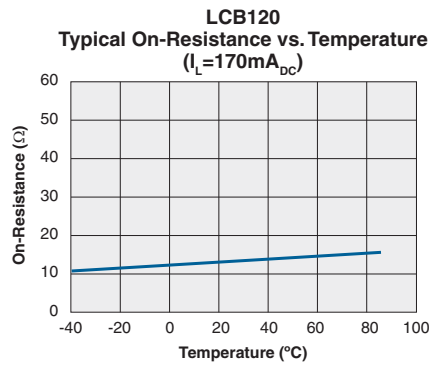
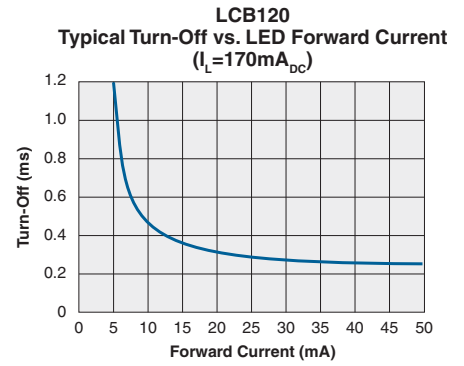
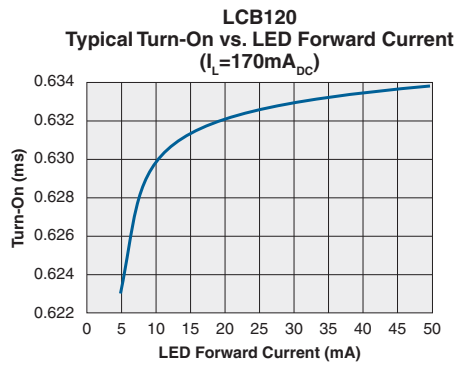
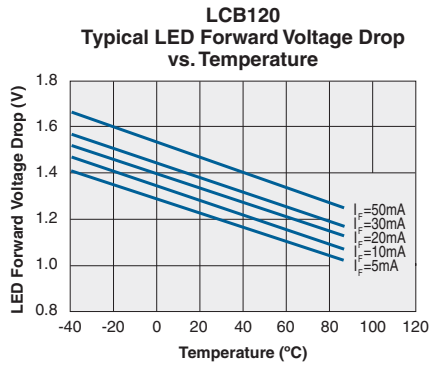
Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics @ 25°C</b>						
Load Current- Continuous						
AC/DC Configuration	-	I <sub>L</sub>	-	-	170	mA
DC Configuration			-	-	300	mA
Peak Load Current	t=10ms	I <sub>L</sub>	-	-	400	mA
On-Resistance						
AC/DC Configuration	I <sub>L</sub> =170mA	R <sub>ON</sub>	-	11	20	Ω
DC Configuration	I <sub>L</sub> =300mA		-	5	6	
Off-State Leakage Current	I <sub>F</sub> =5mA, V <sub>L</sub> =250V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μA
Switching Speeds						
Turn-On	I <sub>F</sub> =5mA, V <sub>L</sub> =10V	t <sub>ON</sub>	-	0.65	5	ms
Turn-Off		t <sub>OFF</sub>	-	1.30	5	ms
Output Capacitance	50V; f=1MHz, I <sub>F</sub> =50mA	C <sub>OUT</sub>	-	50	-	pF
<b>Input Characteristics @ 25°C</b>						
Input Control Current	I <sub>L</sub> =170mA	I <sub>F</sub>	-	-	5	mA
Input Dropout Current	-	I <sub>F</sub>	0.4	-	-	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>						
Input to Output Capacitance	-	C <sub>IO</sub>	-	3	-	pF

**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.

PERFORMANCE DATA\*



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**Manufacturing Information**

**Soldering**

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.

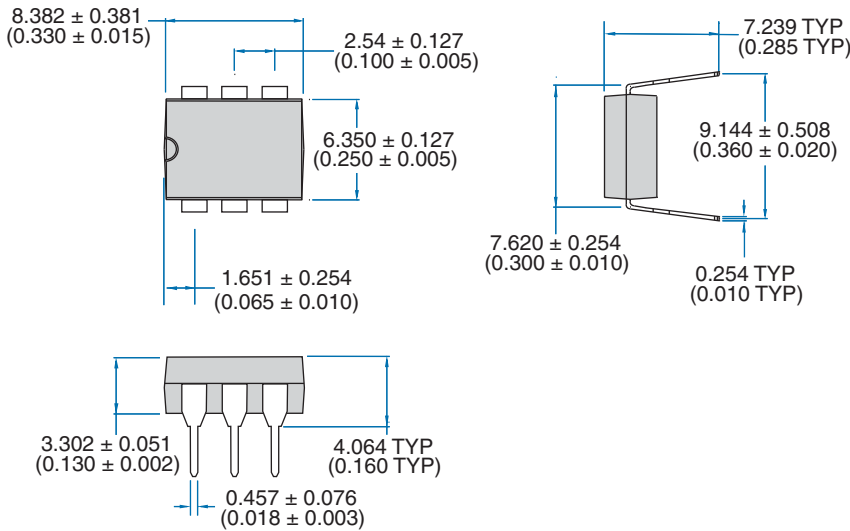
**Washing**

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

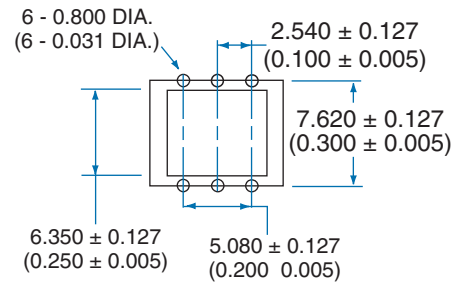


**MECHANICAL DIMENSIONS**

**6-Pin DIP Thru-Hole Package**

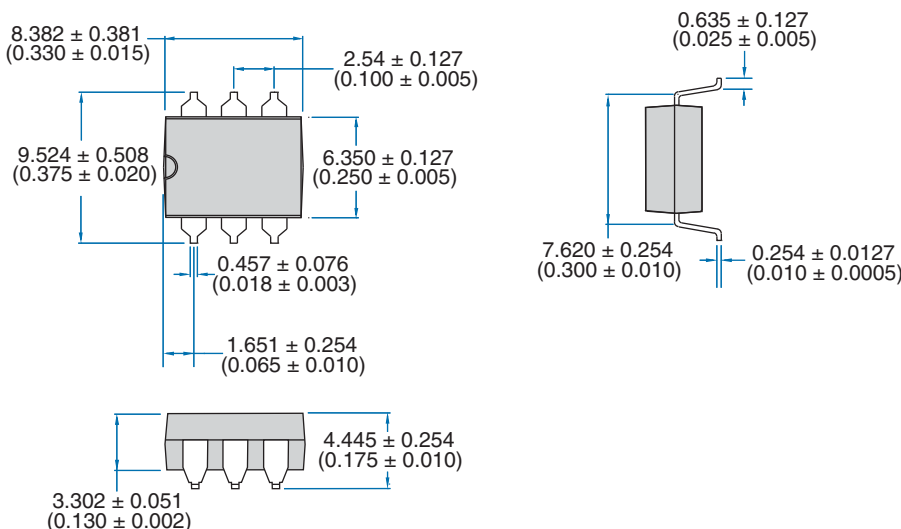


**PC Board Pattern**

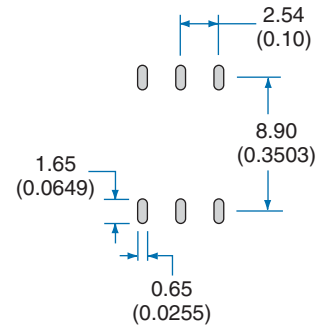


Dimensions  
mm  
(inches)

**6-Pin Surface Mount Package ("S" Suffix)**



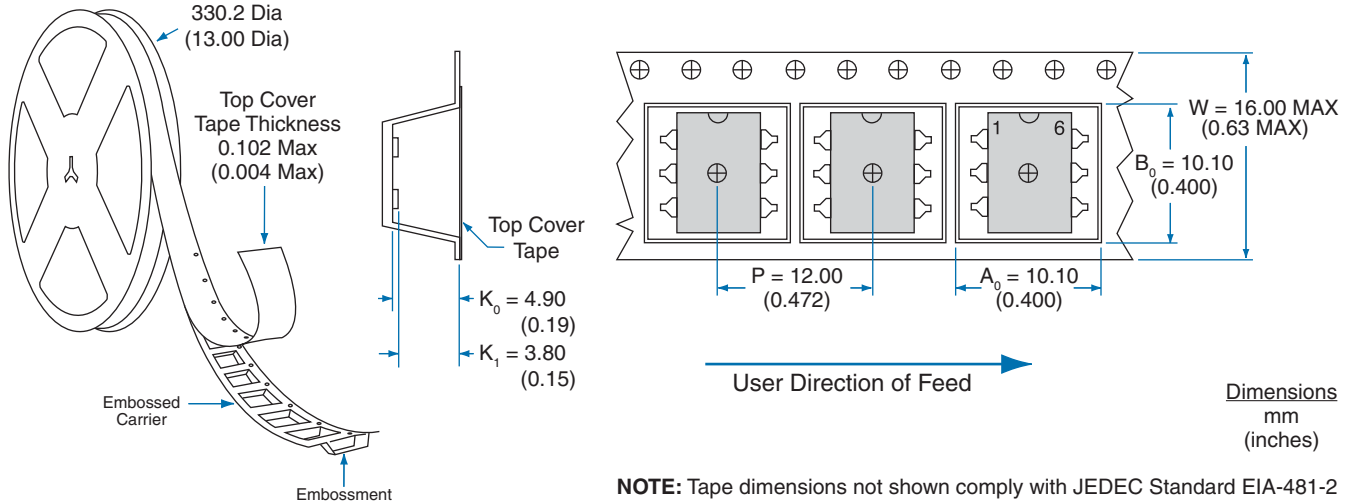
**Recommended PCB Land Pattern**



Dimensions  
mm  
(inches)

**MECHANICAL DIMENSIONS (Cont.)**

**Tape and Reel Packaging for 6-Pin "S" Suffix Parts**



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