LCB120

Single Pole OptoMOS® Relay



	LCB120	Units
Load Voltage	250	V
Load Current	170	mA
Max R_{ON}	20	Ω

Description

LCB120 is a 250V, 170mA, 20Ω 1-Form-B relay. It features enhanced peak load current capability and lower on-resistance.

Features

- Small 6 Pin DIP Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- 3750V_{RMS} Input/Output Isolation
- FCC Compatible
- VDE Compatible
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Current Limiting, Surface Mount and Tape & Reel Versions Available

Applications

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

Approvals

- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- BSI Certified to:
  - BS EN 60950:1992 (BS7002:1992) Certificate #: 7344
  - BS EN 41003:1993 Certificate #: 7344

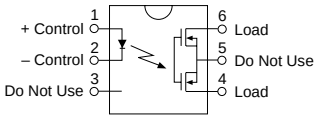
Ordering Information

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

Pin Configuration

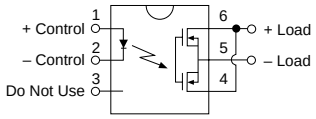
LCB120 Pinout

AC/DC Configuration

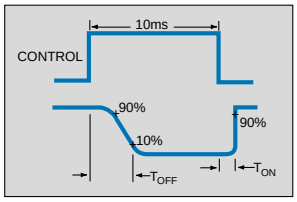


LCB120 Pinout

DC Only Configuration



Switching Characteristics of Normally Closed (Form B) Devices



Absolute Maximum Ratings (@ 25° C)

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150[1]	mW
Input Control Current	-	-	50	mA
Peak (10ms)	-	-	1	A
Reverse Input Voltage	-	-	5	V
Total Power Dissipation	-	-	800[2]	mW
Isolation Voltage				
Input to Output	3750	-	-	V_{RMS}
Operational Temperature	-40	-	+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature				
DIP Package	-	-	+260	°C
Surface Mount Package (10 Seconds Max.)	-	-	+220	°C

[1] Derate Linearly 1.33 mw/°C

[2] Derate Linearly 6.67 mw/°C

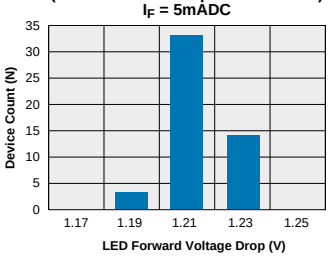
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.

Electrical Characteristics

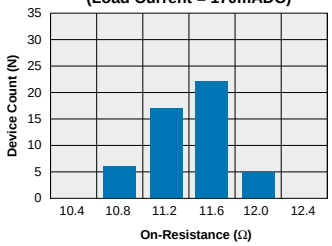
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Voltage (Peak)	-	V_L	-	-	250	V
Load Current (Continuous)						
AC/DC Configuration	-	I_L	-	-	170	mA
DC Configuration	-	I_L	-	-	300	mA
Peak Load Current	-	I_L	-	-	400	mA
On-Resistance						
AC/DC Configuration	I_L=170mA	R_{ON}	-	16	20	Ω
DC Configuration	I_L=300mA	R_{ON}	-	5	6	Ω
Off-State Leakage Current	V_L=250V	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	I_F=5mA, V_L=10V	T_{ON}	-	-	5	ms
Turn-Off	I_F=5mA, V_L=10V	T_{OFF}	-	-	5	ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	50	-	pF
Capacitance						
Input to Output	-	-	-	3	-	pF
Input Characteristics @ 25°C						
Input Control Current	I_L=170mA	I_F	5	-	50	mA
Input Dropout Current	-	I_F	0.4	0.7	-	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.2	1.4	V
Reverse Input Voltage	-	V_R	-	-	5	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics @ 25°C						
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF
Input to Output Isolation	-	$V_{I/O}$	3750	-	-	V_{RMS}

PERFORMANCE DATA*

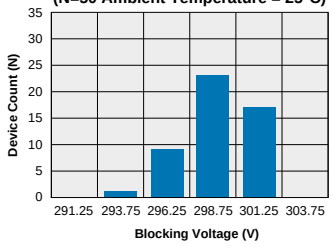
LCB120
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C)
I_F = 5mADC



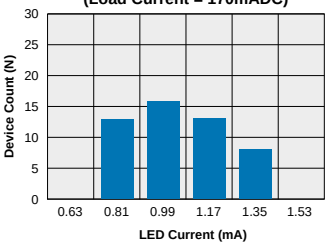
LCB120
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



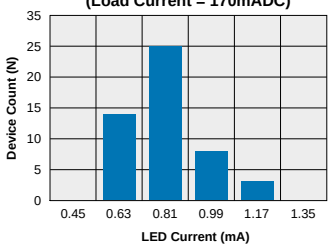
LCB120
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



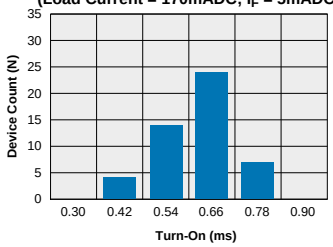
LCB120
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



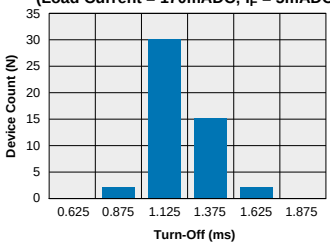
LCB120
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



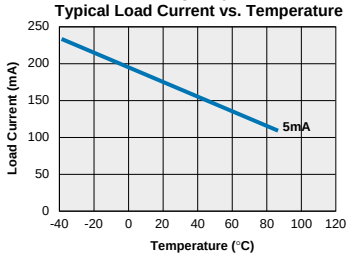
LCB120
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



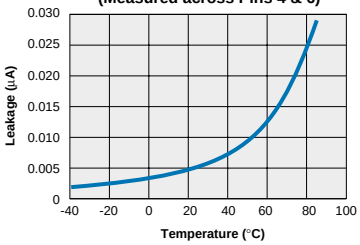
LCB120
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



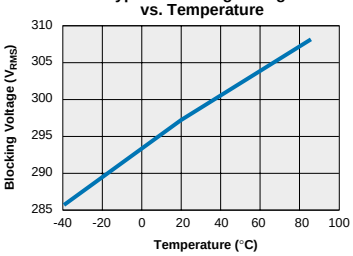
LCB120
Typical Load Current vs. Temperature



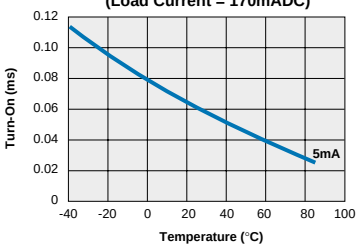
LCB120
Typical Leakage vs. Temperature
(Measured across Pins 4 & 6)



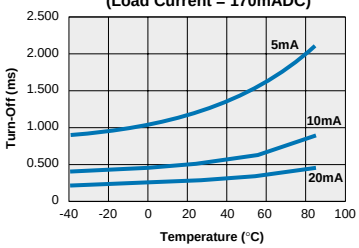
LCB120
Typical Blocking Voltage
vs. Temperature



LCB120
Typical Turn-On vs. Temperature
(Load Current = 170mADC)



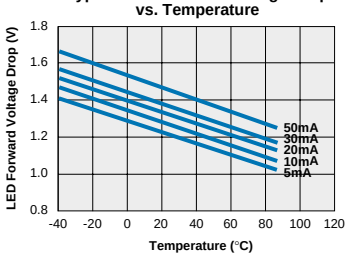
LCB120
Typical Turn-Off vs. Temperature
(Load Current = 170mADC)



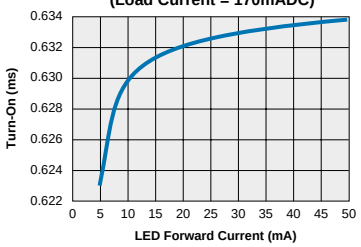
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

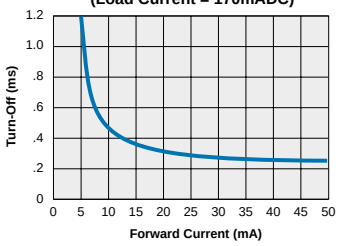
LCB120
Typical LED Forward Voltage Drop vs. Temperature



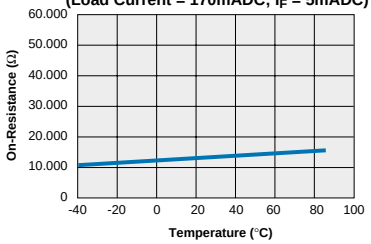
LCB120
Typical Turn-On vs. LED Forward Current (Load Current = 170mADC)



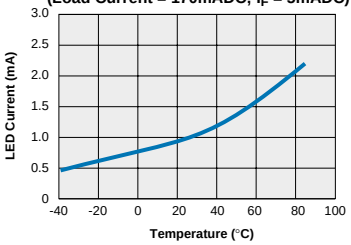
LCB120
Typical Turn-Off vs. LED Forward Current (Load Current = 170mADC)



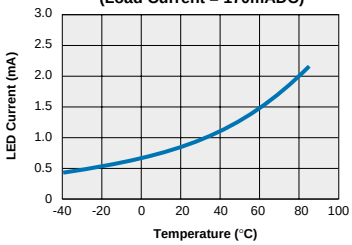
LCB120
Typical On-Resistance vs. Temperature (Load Current = 170mADC; I_F = 5mADC)



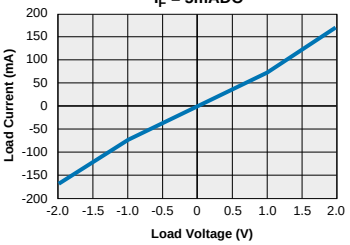
LCB120
Typical I_F for Switch Operation vs. Temperature (Load Current = 170mADC; I_F = 5mADC)



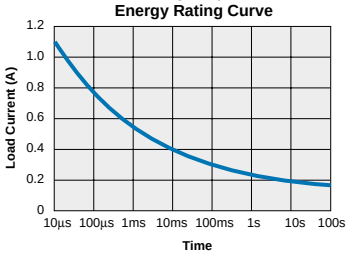
LCB120
Typical I_F for Switch Dropout vs. Temperature (Load Current = 170mADC)



LCB120
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) I_F = 5mADC



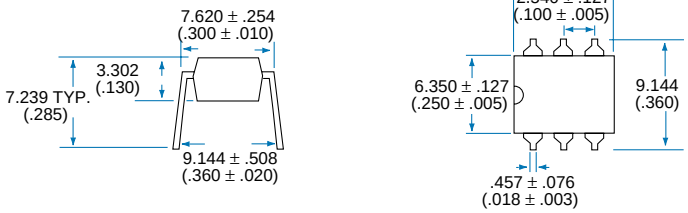
LCB120
Energy Rating Curve



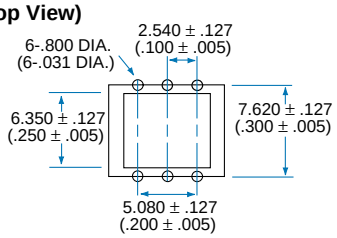
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MECHANICAL DIMENSIONS

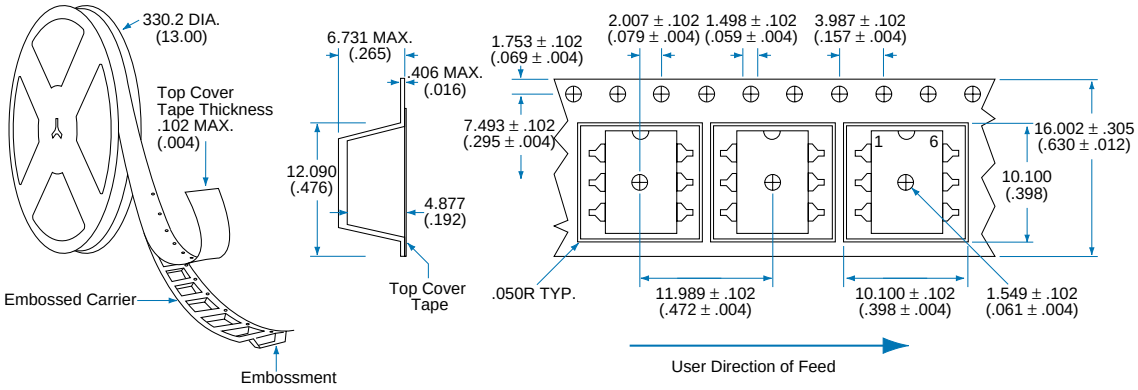
6 Pin DIP Through Hole (Standard)



PC Board Pattern (Top View)



Tape and Reel Packaging for 6 Pin Surface Mount Package



Dimensions
mm
(inches)

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Specification: DS-LCB120-R6
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2/6/01