LCA120
Single Pole OptoMOS® Relay



	LCA120	Units
Load Voltage	250	V
Load Current	170	mA
Max R_{ON}	20	Ω

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
- 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

Description
LCA120 is a 250V, 170mA, 20Ω 1-Form-A relay. It features enhanced peak load current capability. Current limiting version is available. (“L” suffix)

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

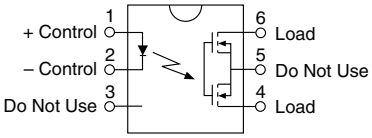
Ordering Information

Part #	Description
LBA120	6 Pin DIP (50/Tube)
LBA120LS	6 Pin Surface Mount (50/Tube)
LBA120STR	6 Pin Surface Mount (1000/Reel)

Pin Configuration

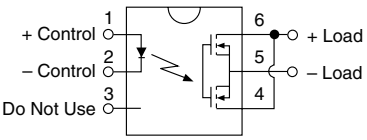
LCA120 Pinout

AC/DC Configuration

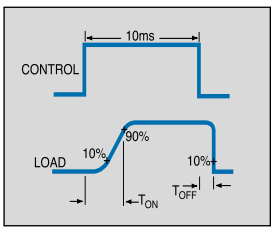


LCA120 Pinout

DC Only Configuration



Switching Characteristics of Normally Open (Form A) 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

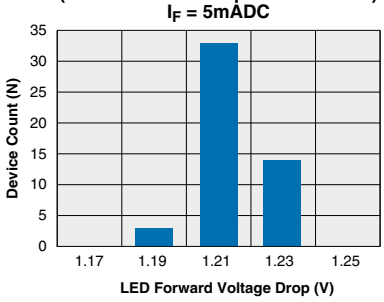
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to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

Electrical Characteristics

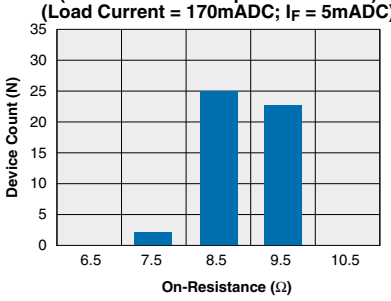
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Voltage (Peak)	-	V_L	-	-	250	V
Load Current (Continuous)						
AC/DC Configuration	-	I_L	-	-	150	mA
DC Configuration	-	I_L	-	-	200	mA
Peak Load Current	10ms	I_{LPK}	-	-	-	mA
On-Resistance						
AC/DC Configuration	I_L=Load Current	R_{ON}	-	15	20	Ω
DC Configuration	I_L=Load Current		-	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}	-	-	3	ms
Turn-Off	I_F =5mA, V_L=10V	T_{OFF}	-	-	3	ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	50	-	pF
Input Characteristics @ 25°C						
Input Control Current	I_L=Load Current	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
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF
Input to Output Isolation	-	$V_{I/O}$	3750	-	-	V_{RMS}

PERFORMANCE DATA*

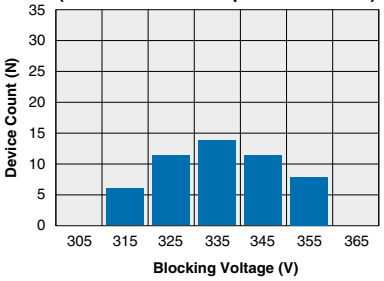
LCA120
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C)
I_F = 5mADC



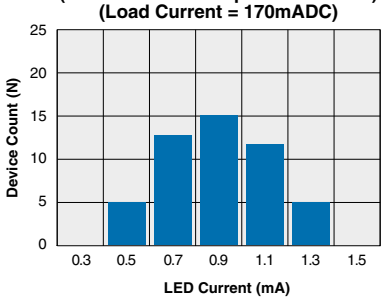
LCA120
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



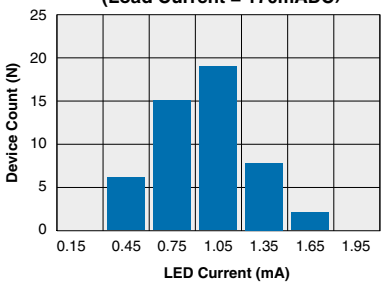
LCA120
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



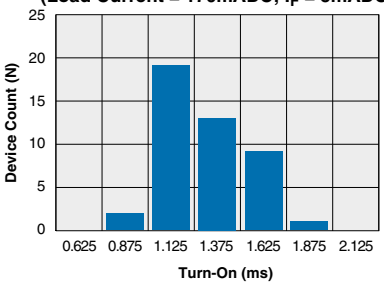
LCA120
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



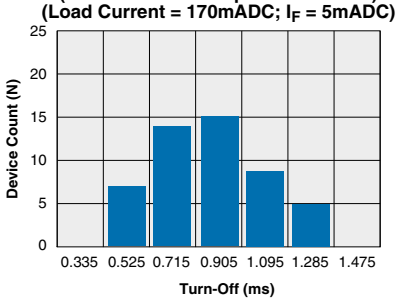
LCA120
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



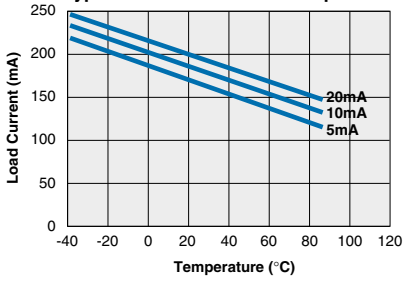
LCA120
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



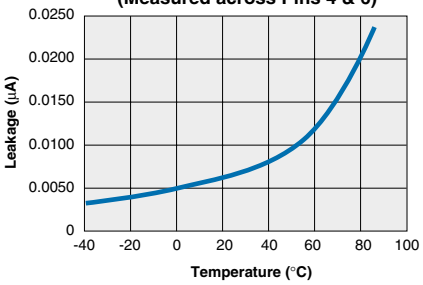
LCA120
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



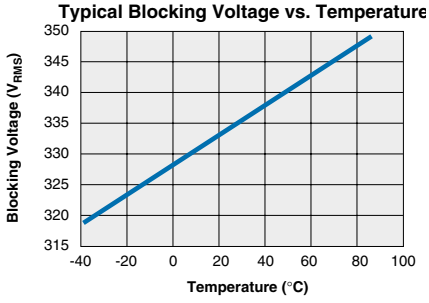
LCA120
Typical Load Current vs. Temperature



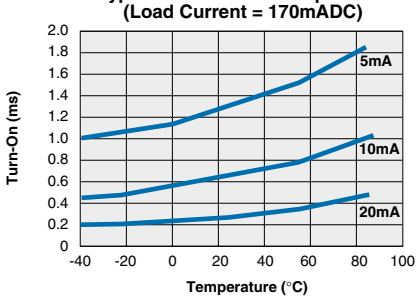
LCA120
Typical Leakage vs. Temperature
(Measured across Pins 4 & 6)



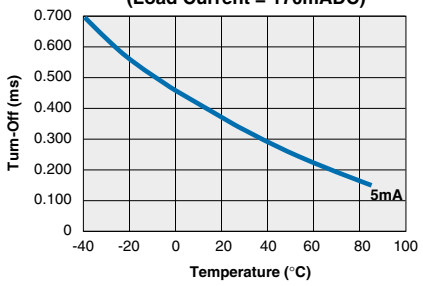
LCA120
Typical Blocking Voltage vs. Temperature



LCA120
Typical Turn-On vs. Temperature
(Load Current = 170mADC)



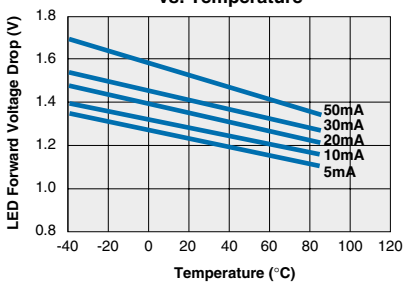
LCA120
Typical Turn-Off vs. Temperature
(Load Current = 170mADC)



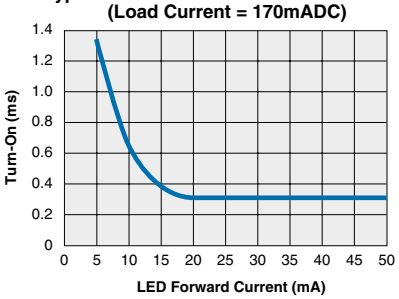
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

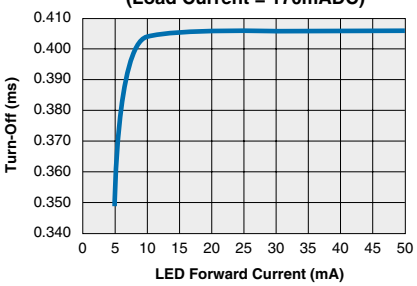
LCA120
Typical LED Forward Voltage Drop vs. Temperature



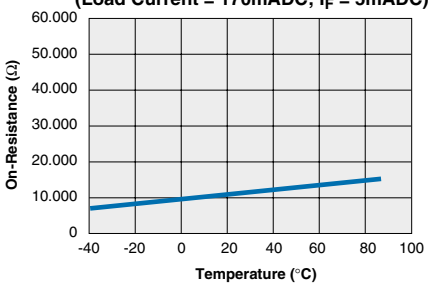
LCA120
Typical Turn-On vs.LED Forward Current (Load Current = 170mADC)



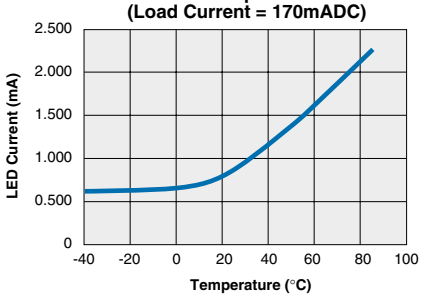
LCA120
Typical Turn-Off vs.LED Forward Current (Load Current = 170mADC)



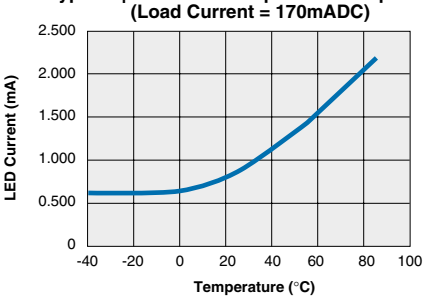
LCA120
Typical On-Resistance vs. Temperature (Load Current = 170mADC; I_F = 5mADC)



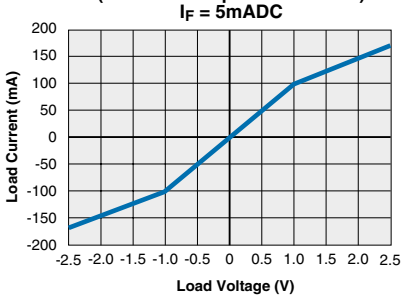
LCA120
Typical I_F for Switch Operation vs. Temperature (Load Current = 170mADC)



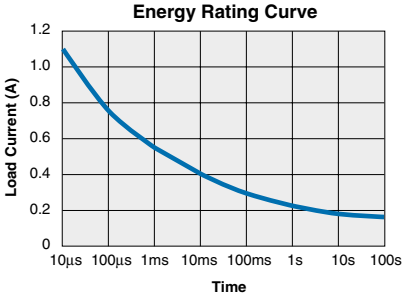
LCA120
Typical I_F for Switch Dropout vs. Temperature (Load Current = 170mADC)



LCA120
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) I_F = 5mADC



LCA120
Energy Rating Curve



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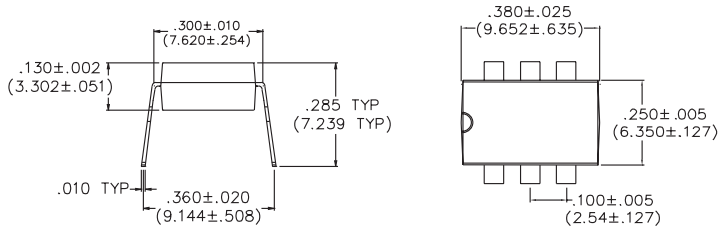
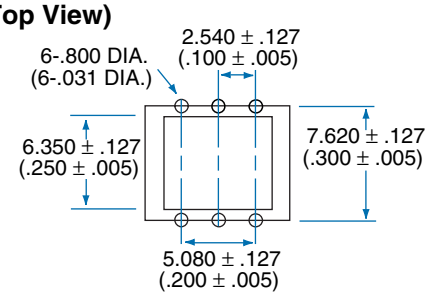
MECHANICAL DIMENSIONS

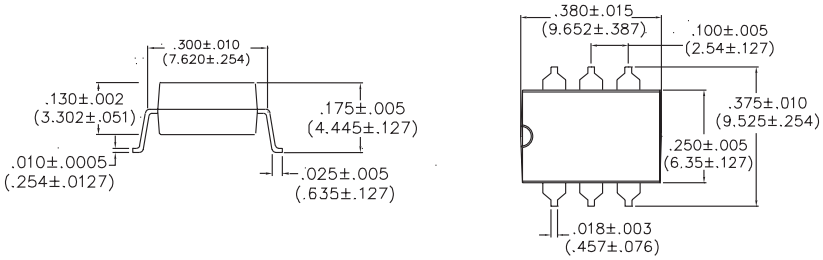
6 Pin Power DIP Through Hole (Standard)



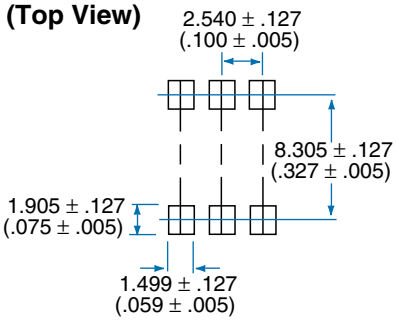
PC Board Pattern (Top View)



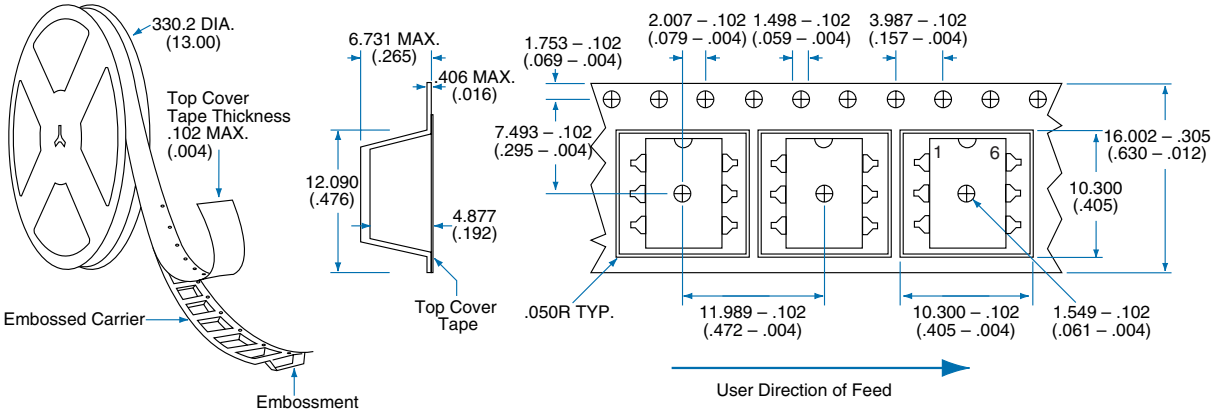
6 Pin Power DIP Surface Mount ("S" Suffix)



PC Board Pattern (Top View)



Tape and Reel Packaging for 6 Pin Power DIP Surface Mount Package



Dimensions
mm
(inches)

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7/17/01