LAA120L

DUAL POLE OptoMOS® Relay



	LAA120L	Units
Load Voltage	250	V
Load Current	170	mA
Max R_{ON}	20	Ω

Description

LAA120L is a 250V, 170mA, 20Ω 2-Form-A relay. It features enhanced peak load current handling capability and improved on-resistance. Current limiting version is available ("L" suffix, see specification for variations in performance).

Features

- Small 8 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

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

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

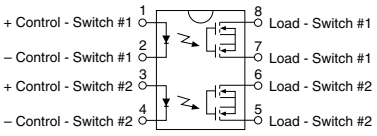
Ordering Information

Part #	Description
LAA120L	8 Pin DIP (50/Tube)
LAA120PL	8 Pin Flatpack (50/Tube)
LAA120PLTR	8 Pin Flatpack (1000/Reel)
LAA120LS	8 Pin Surface Mount (50/Tube)
LAA120LSTR	8 Pin Surface Mount (1000/Reel)

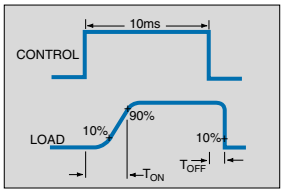
Pin Configuration

LAA120L Pinout

AC/DC 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
Flatpack/Surface Mount Package (10 Seconds Max.)	-	-	+220	°C

[1] Derate Linearly 1.33 mw/°C

[2] Derate Linearly 6.67 mw/°C

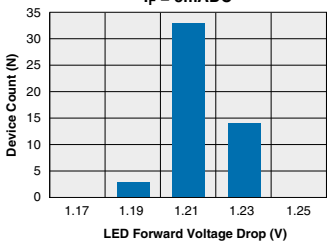
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to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

Electrical Characteristics

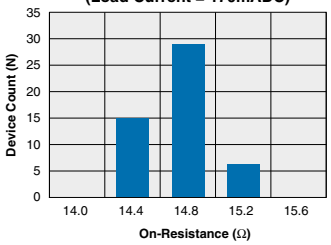
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Voltage (Peak)	-	V_L	-	-	250	V
Load Current (Continuous) AC/DC Configuration	-	I_L	-	-	150	mA
Peak Load Current	10ms max	I_{LPK}	-	-	-	mA
On-Resistance AC/DC Configuration	I_L=Load Current	R_{ON}	-	12	25	Ω
Off-State 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
Load Current Limiting		I_{CL}	190	235	280	mA
Input Characteristics @ 25°C						
Input Control Current	I_L=Load Current	I_F	5	-	50	mA
Input Dropout Current	-	-	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	Vr=5V	I_R	-	-	10	µA
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF
Input to Output Isolation	-	$V_{I/O}$	3750	-	-	V_{RMS}[3]

PERFORMANCE DATA*

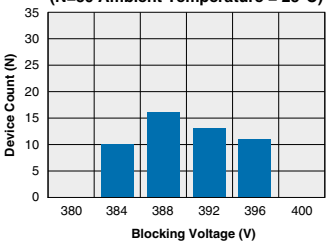
LAA120L
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C)
I_F = 5mADC



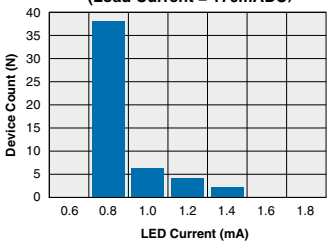
LAA120L
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



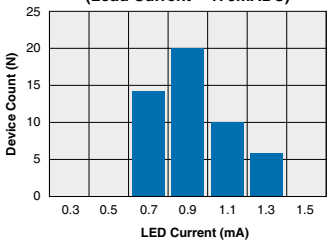
LAA120L
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



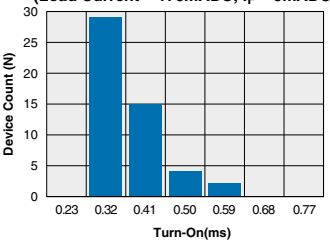
LAA120L
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



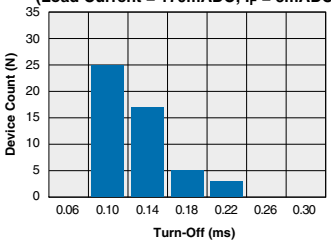
LAA120L
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC)



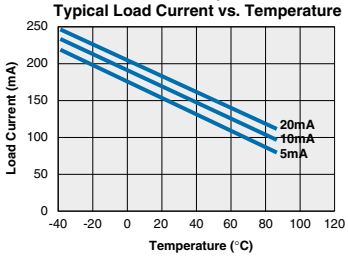
LAA120L
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



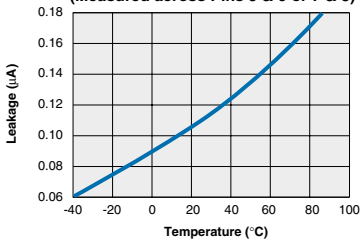
LAA120L
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 170mADC; I_F = 5mADC)



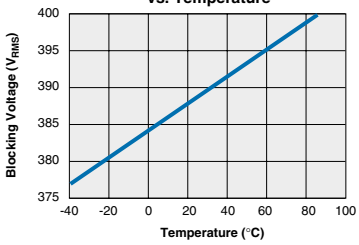
LAA120L
Typical Load Current vs. Temperature



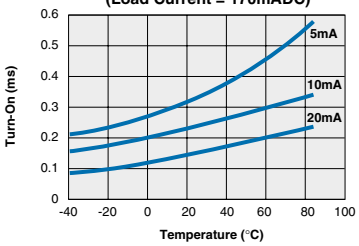
LAA120L
Typical Leakage vs. Temperature
(Measured across Pins 5 & 6 or 7 & 8)



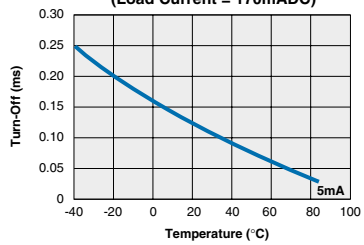
LAA120L
Typical Blocking Voltage
vs. Temperature



LAA120L
Typical Turn-On vs. Temperature
(Load Current = 170mADC)



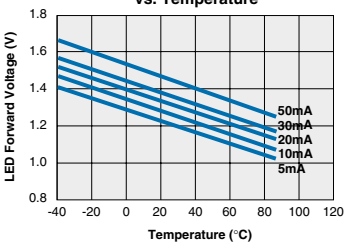
LAA120L
Typical Turn-Off vs. Temperature
(Load Current = 170mADC)



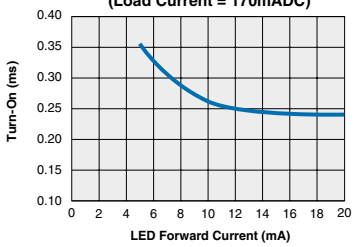
The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

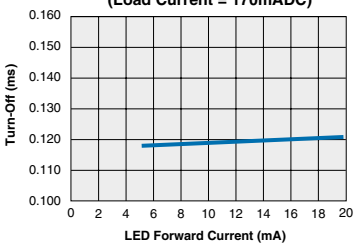
LAA120L
Typical LED Forward Voltage vs. Temperature



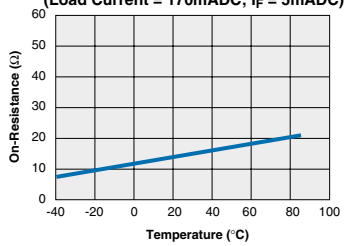
LAA120L
Typical Turn-On vs. LED Forward Current (Load Current = 170mADC)



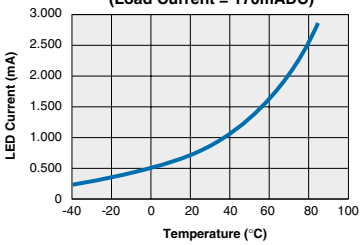
LAA120L
Typical Turn-Off vs. LED Forward Current (Load Current = 170mADC)



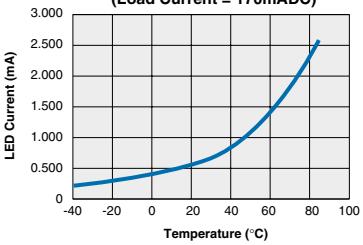
LAA120L
Typical On-Resistance vs. Temperature (Load Current = 170mADC; I_F = 5mADC)



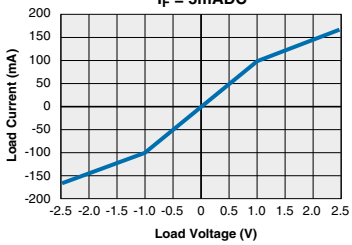
LAA120L
Typical I_F for Switch Operation vs. Temperature (Load Current = 170mADC)



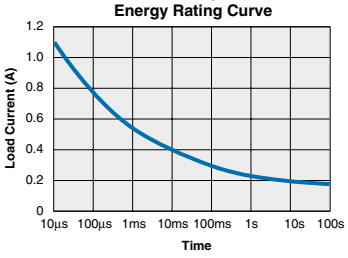
LAA120L
Typical I_F for Switch Dropout vs. Temperature (Load Current = 170mADC)



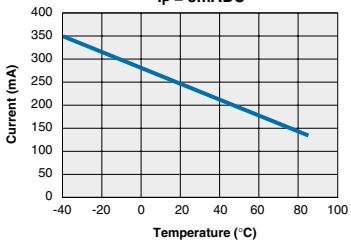
LAA120L
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) I_F = 5mADC



LAA120L
Energy Rating Curve



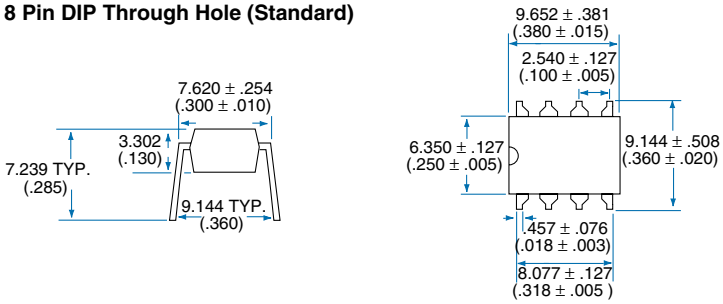
LAA120L
Typical Current Limiting vs. Temperature I_F = 5mADC



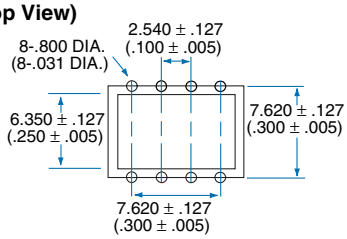
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Mechanical Dimensions

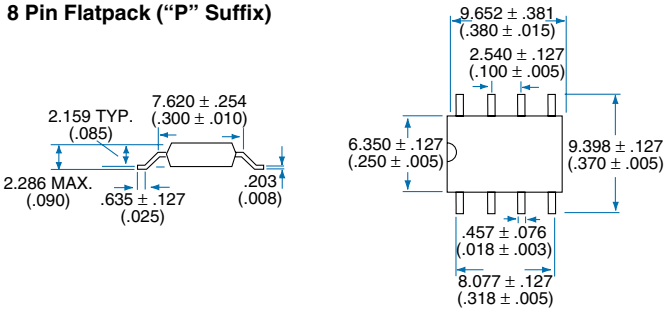
8 Pin DIP Through Hole (Standard)



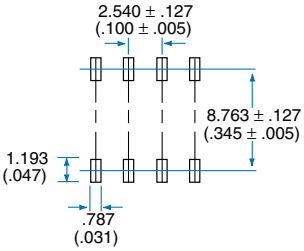
PC Board Pattern (Top View)



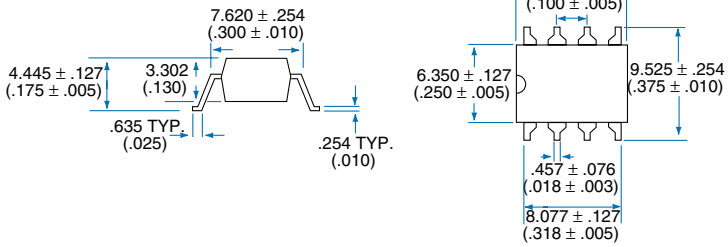
8 Pin Flatpack ("P" Suffix)



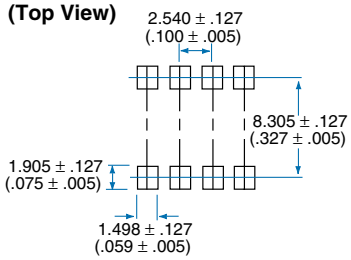
PC Board Pattern (Top View)



8 Pin DIP Surface Mount ("S" Suffix)



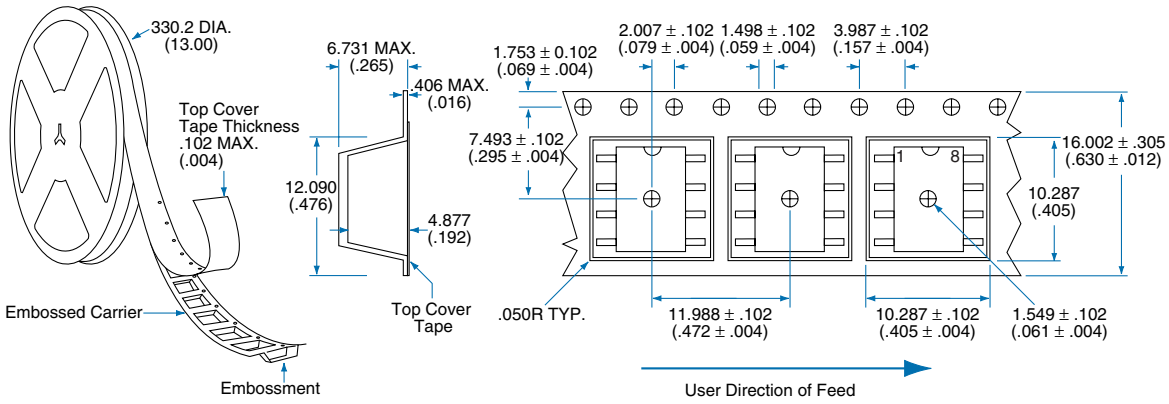
PC Board Pattern (Top View)



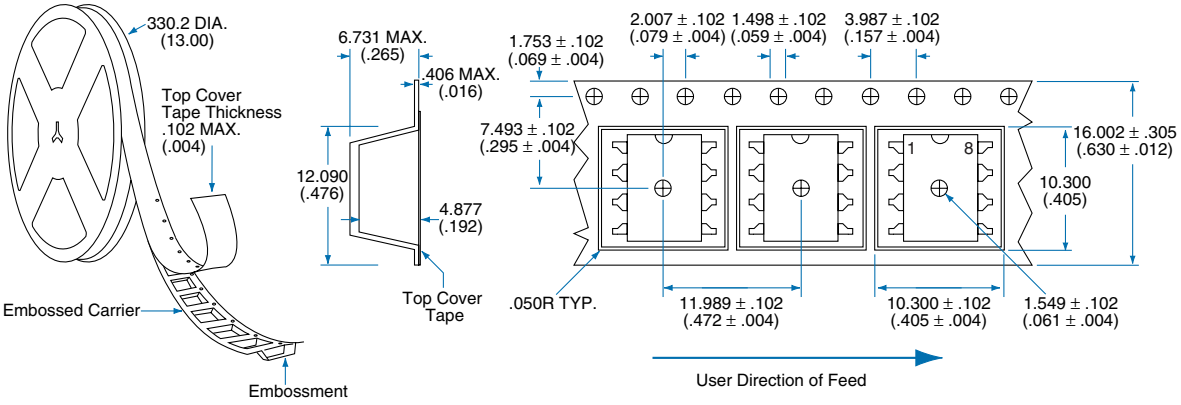
Dimensions
mm
(inches)

Mechanical Dimensions

Tape and Reel Packaging for 8 Pin Flatpack Package



Tape and Reel Packaging for 8 Pin Surface Mount Package



Dimensions
mm
(inches)

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Specification: DS-LAA120L-R4
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