LAA110/LAA110L

DESCRIPTION

LAA110 is a 350V, 120mA, 35Ω 2-Form-A relay. It provides an integrated solution to fit most applications where two Form-A relays are required. 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

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

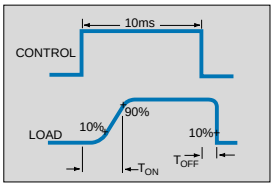
APPROVALS

- 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

OPTIONS / SUFFIXES

- P: Flatpack Package
- L: Current Limiting
- S: Surface Mount Package
- TR: Tape & Reel

Switching Characteristics of Normally Open (Form A) Devices



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
Capacitance Input to Output	-	3	-	pF
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

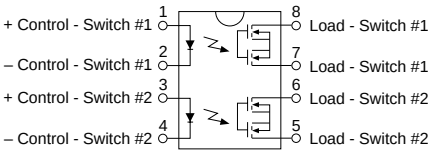
Note: For Mechanical Dimensions See Pages 408-415

SPECIFICATIONS

			LAA110			LAA110L			
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**MIN**	**TYP**	**MAX**	**UNITS**
Output Characteristics @ 25°C									
Load Voltage (Peak)	-	V_L	-	-	350	-	-	350	V
Load Current (Continuous) AC/DC Configuration	-	I_L	-	-	120	-	-	120	mA
Peak Load Current	10ms max	I_{LPK}	-	-	350	-	-	-	mA
On-Resistance AC/DC Configuration	I_L=120mA	R_{ON}	-	25	35	-	30	35	Ω
Off-State Leakage Current	V_L=350V	I_{LEAK}	-	-	1	-	-	1	µA
Switching Speeds Turn-On Turn-Off	 I_F=5mA, V_L=10V I_F=5mA, V_L=10V	 T_{ON} T_{OFF}	 - -	 - -	 3 3	 - -	 - -	 3 3	 ms ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	25	-	-	25	-	pF
Load Current Limiting		I_{CL}	-	-	-	130	170	210	mA
Input Characteristics @ 25°C									
Input Control Current	I_L=120mA	I_F	5	-	50	5	-	50	mA
Input Dropout Current	-	-	0.4	0.7	-	0.4	0.7	-	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.2	1.4	0.9	1.2	1.4	V
Reverse Input Voltage	-	V_R	-	-	5	-	-	5	V
Reverse Input Current	V_R=5V	I_R	-	-	10	-	-	10	µA
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	-	3	-	pF
Input to Output Isolation	-	$V_{I/O}$	3750	-	-	3750	-	-	V_{RM}

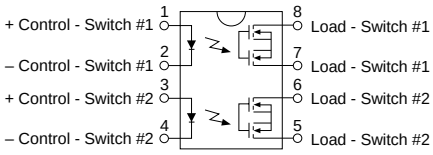
LAA110 Pinout

AC/DC Configuration



LAA110L Pinout

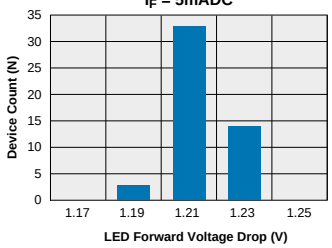
AC/DC Configuration



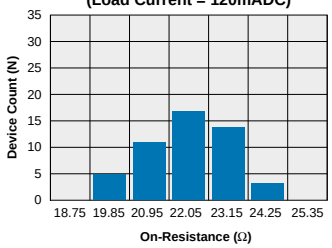
Note: For Mechanical Dimensions See Pages 408-415

PERFORMANCE DATA

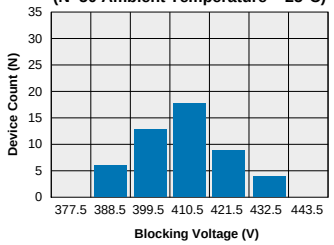
LAA110
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C)
I_F = 5mADC



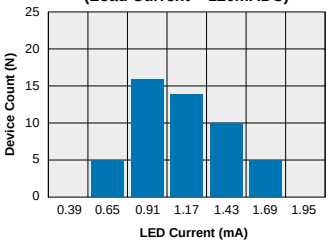
LAA110
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC)



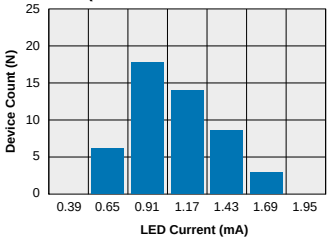
LAA110
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



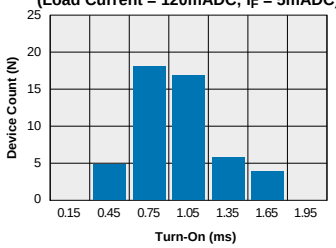
LAA110
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC)



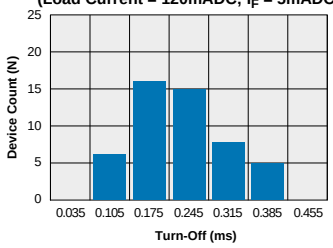
LAA110
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC)



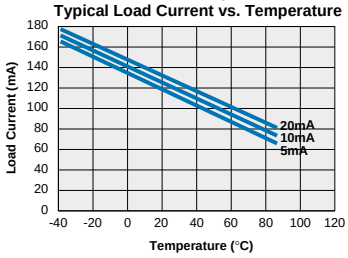
LAA110
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC; I_F = 5mADC)



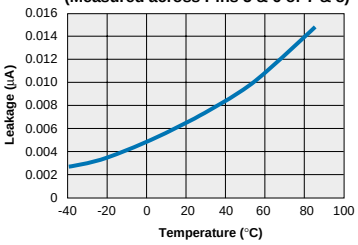
LAA110
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC; I_F = 5mADC)



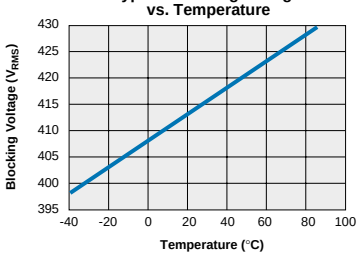
LAA110
Typical Load Current vs. Temperature



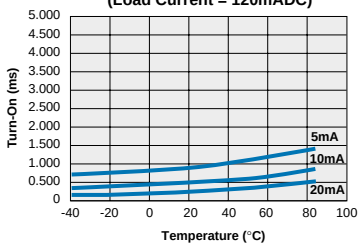
LAA110
Typical Leakage vs. Temperature
(Measured across Pins 5 & 6 or 7 & 8)



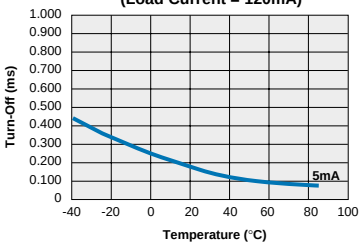
LAA110
Typical Blocking Voltage
vs. Temperature



LAA110
Typical Turn-On vs. Temperature
(Load Current = 120mADC)

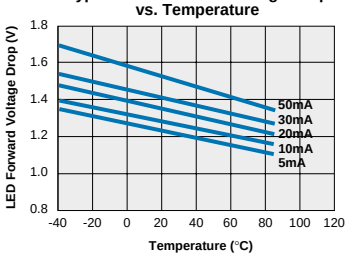


LAA110
Typical Turn-Off vs. Temperature
(Load Current = 120mA)

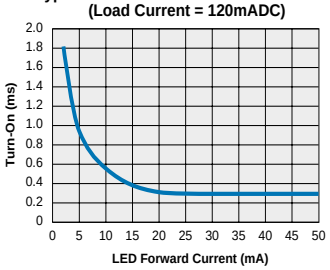


PERFORMANCE DATA

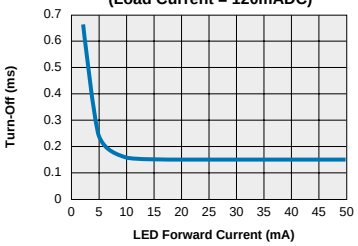
LAA110
Typical LED Forward Voltage Drop vs. Temperature



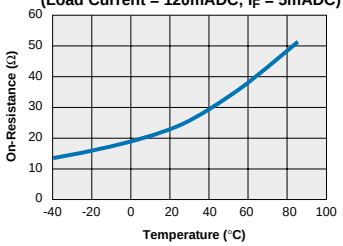
LAA110
Typical Turn-On vs. LED Forward Current (Load Current = 120mADC)



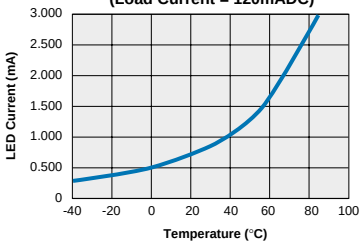
LAA110
Typical Turn-Off vs. LED Forward Current (Load Current = 120mADC)



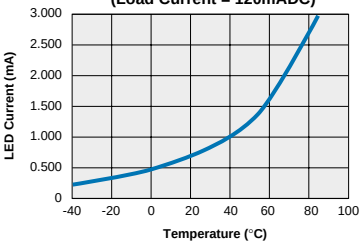
LAA110
Typical On-Resistance vs. Temperature (Load Current = 120mADC; I_F = 5mADC)



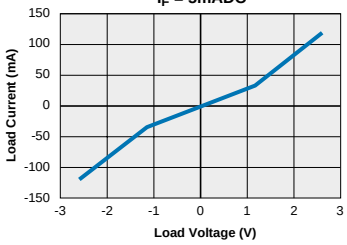
LAA110
Typical I_F for Switch Operation vs. Temperature (Load Current = 120mADC)



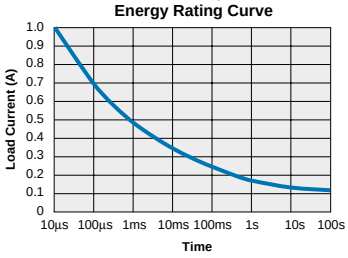
LAA110
Typical I_F for Switch Dropout vs. Temperature (Load Current = 120mADC)



LAA110
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) I_F = 5mADC

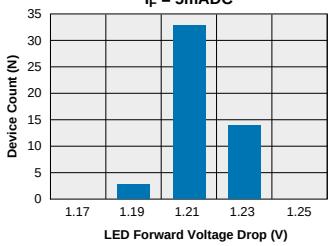


LAA110
Energy Rating Curve

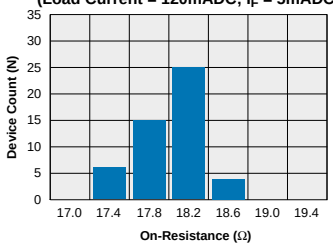


PERFORMANCE DATA

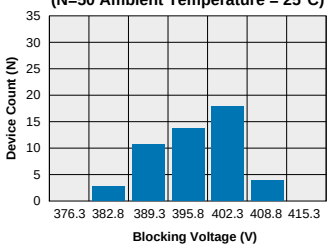
LAA110L
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C)
I_F = 5mADC



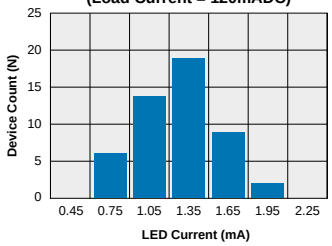
LAA110L
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC; I_F = 5mADC)



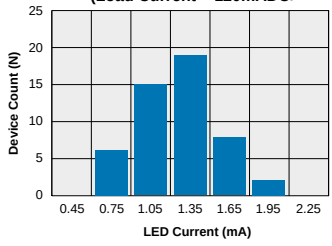
LAA110L
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



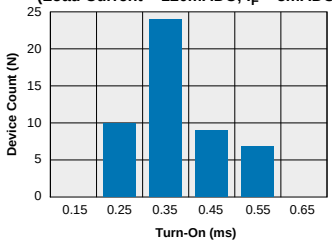
LAA110L
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC)



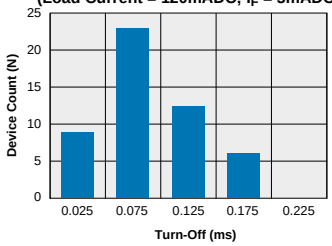
LAA110L
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC)



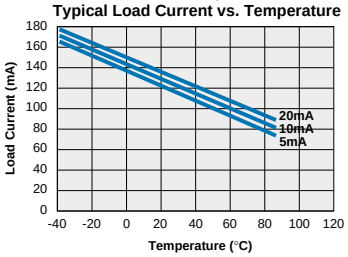
LAA110L
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC; I_F = 5mADC)



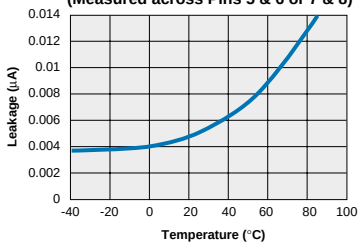
LAA110L
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 120mADC; I_F = 5mADC)



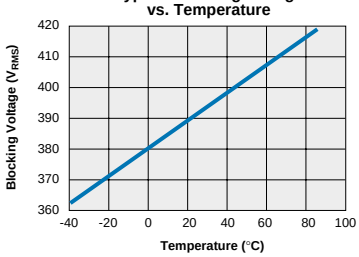
LAA110L
Typical Load Current vs. Temperature



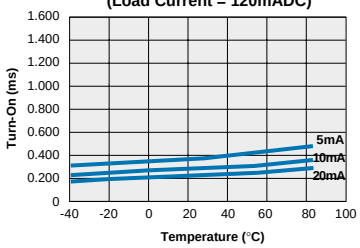
LAA110L
Typical Leakage vs. Temperature
(Measured across Pins 5 & 6 or 7 & 8)



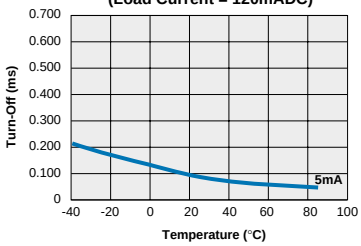
LAA110L
Typical Blocking Voltage
vs. Temperature



LAA110L
Typical Turn-On vs. Temperature
(Load Current = 120mADC)

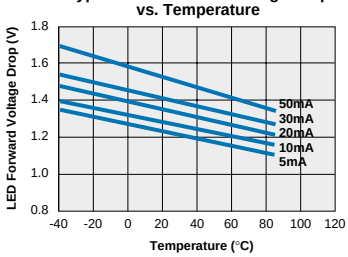


LAA110L
Typical Turn-Off vs. Temperature
(Load Current = 120mADC)

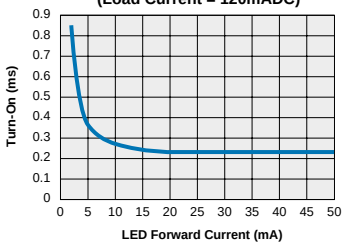


PERFORMANCE DATA

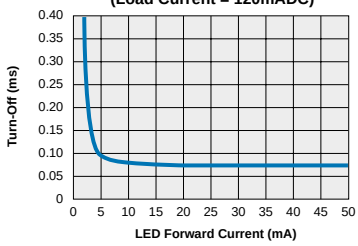
LAA110L
Typical LED Forward Voltage Drop vs. Temperature



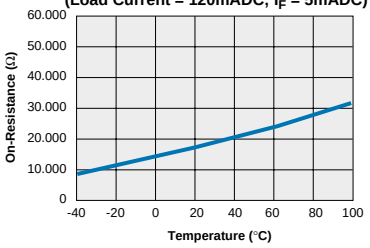
LAA110L
Typical Turn-On vs. LED Forward Current (Load Current = 120mADC)



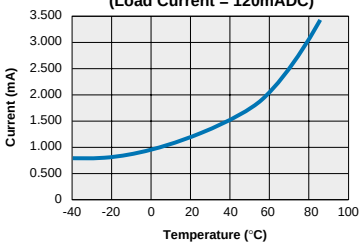
LAA110L
Typical Turn-Off vs. LED Forward Current (Load Current = 120mADC)



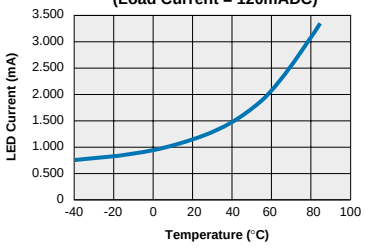
LAA110L
Typical On-Resistance vs. Temperature (Load Current = 120mADC; I_F = 5mADC)



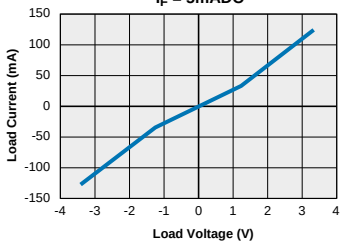
LAA110L
Typical I_F for Switch Operation vs. Temperature (Load Current = 120mADC)



LAA110L
Typical I_F for Switch Dropout vs. Temperature (Load Current = 120mADC)



LAA110L
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) I_F = 5mADC



LAA110L
Energy Rating Curve