LAA108
Dual Single-Pole OptoMOS® Relay

Parameter	Ratings	Units
Blocking Voltage	100	V_P
Load Current	300	mA
Max R_{ON}	8	Ω

Features
- Small 8-pin Package
- Low Drive Power Requirements (TTL/CMOS Compatible)
- 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 Tape & Reel Versions Available

Applications
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

Description
Clare's LAA108 is a 100V, 300mA, 8Ω dual 1-Form-A (single-pole normally open) Solid State Relay that has two independently controlled, optically coupled outputs.

The output MOSFET switches and photovoltaic die use Clare's patented OptoMOS architecture to provide 3750 V_{rms} of input-to-output isolation. The optically coupled output is controlled by a highly efficient GaAlAs infrared LED.

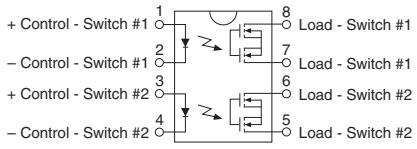
This dual single-pole OptoMOS relay provides a more compact design solution than two discrete single-pole relays in a variety of applications, saving board space by incorporating both switches in a single 8-Pin package.

Approvals
- UL Recognized Component: File # E76270
- CSA Certified Component: Certificate # 1172007
- Certified to:
  IEC 60950-1: 2005
  EN 60950-1: 2006
  TUV Certificate # B 09 07 49410 004

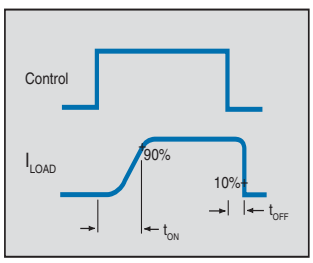
Ordering Information

Part #	Description
LAA108	8-Pin DIP (50/Tube)
LAA108S	8-Pin Surface Mount (50/Tube)
LAA108STR	8-Pin Surface Mount (1,000/Reel)
LAA108P	8-Pin Flat Pack (50/Tube)
LAA108PTR	8-Pin Flat Pack (1,000/Reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	100	V_P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation [1]	150	mW
Total Power Dissipation [2]	800	mW
Isolation Voltage Input to Output	3750	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate Linearly 1.33 mw/°C
[2] 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.

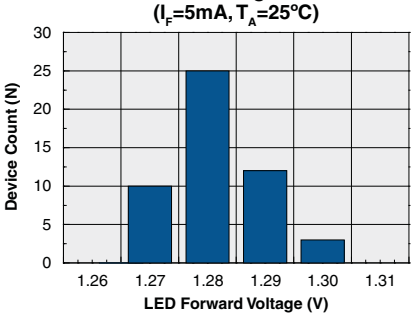
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current						
Continuous [1]	-	I_L	-	-	300	mA
Peak	t =10ms	I_{LPK}	-	-	400	
On-Resistance [2]	I_L=300mA	R_{ON}	-	4.5	8	Ω
Off-State Leakage Current	V_L=100V_P	I_{LEAK}	-	-	1	µA
Switching Speeds						
Turn-On	I_F=5mA, V_L=10V	t_{ON}	-	0.43	3	ms
Turn-Off		t_{OFF}	-	0.17	3	
Output Capacitance	50V, f=1MHz	C_{OUT}	-	110	-	pF
Input Characteristics @ 25°C						
Input Control Current [3]	I_L=300mA	I_F	-	0.5	2	mA
Input Dropout Current	-	-	0.2	0.3	-	mA
Input Voltage Drop	I_F=5mA	V_F	0.9	1.2	1.4	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics @ 25°C						
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF

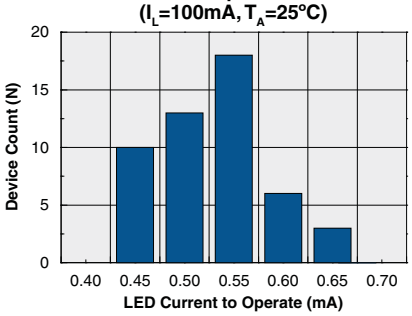
[1] If both poles operate simultaneously, the load current must be derated so as not to exceed the package total power dissipation value.
[2] Measurement taken within one (1) second of on time.
[3] For applications requiring high-temperature operation (T>60ºC), an LED drive currrent of 4mA is recommended.

PERFORMANCE DATA*

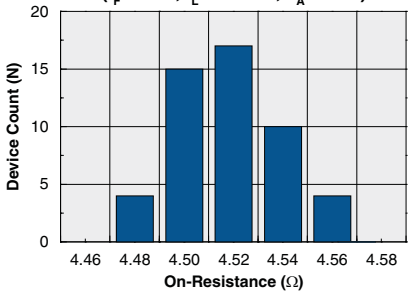
LED Forward Voltage Distribution
(I_F=5mA, T_A=25°C)



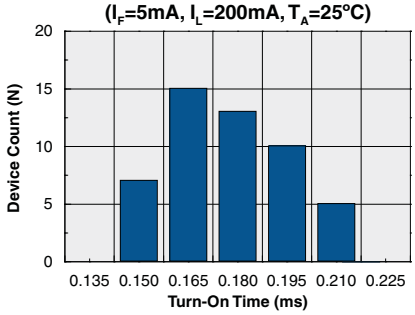
LED Current to Operate Distribution
(I_L=100mA, T_A=25°C)



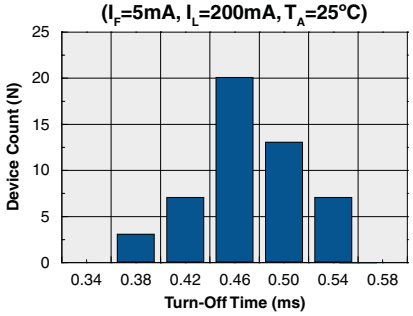
On-Resistance Distribution
(I_F=2mA, I_L=200mA, T_A=25°C)



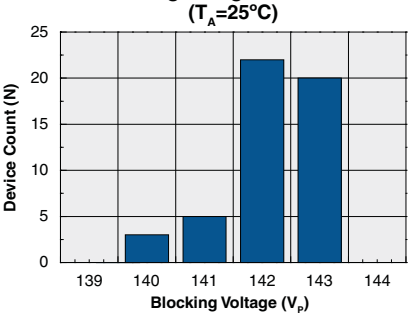
Turn-On Time Distribution
(I_F=5mA, I_L=200mA, T_A=25°C)



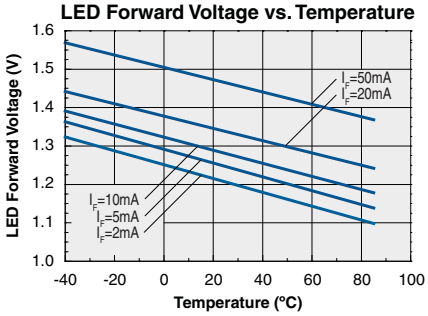
Turn-Off Time Distribution
(I_F=5mA, I_L=200mA, T_A=25°C)



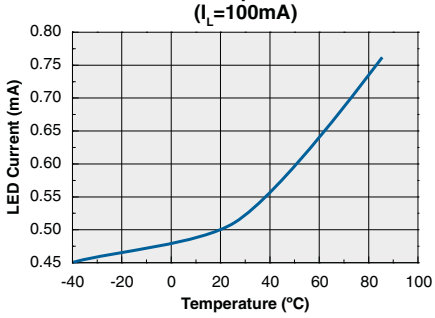
Blocking Voltage Distribution
(T_A=25°C)



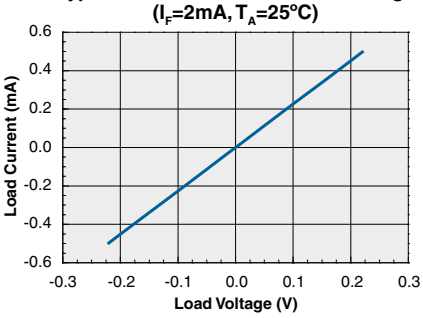
LED Forward Voltage vs. Temperature



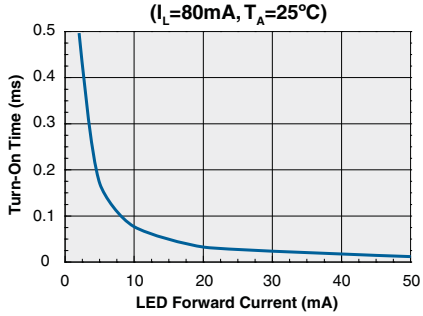
LED Current to Operate vs. Temperature
(I_L=100mA)



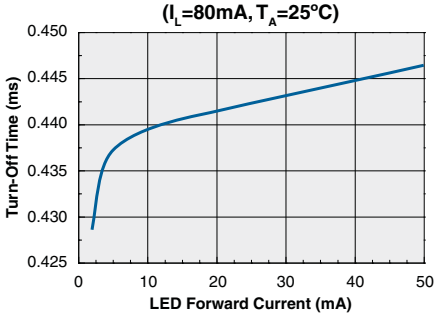
Typical Load Current vs. Load Voltage
(I_F=2mA, T_A=25°C)



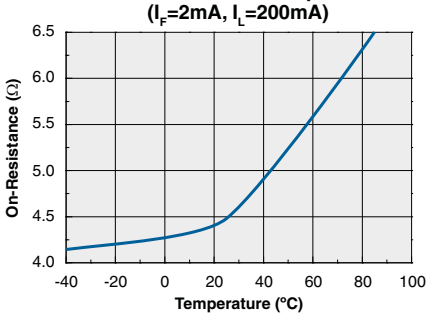
Turn-On Time vs. LED Forward Current
(I_L=80mA, T_A=25°C)



Turn-Off Time vs. LED Forward Current
(I_L=80mA, T_A=25°C)



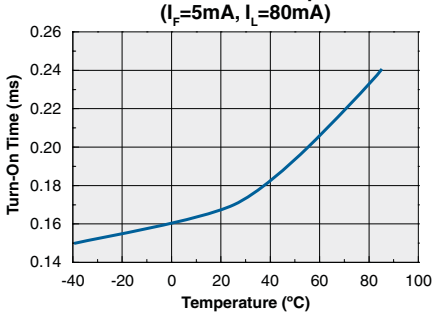
On-Resistance vs. Temperature
(I_F=2mA, I_L=200mA)



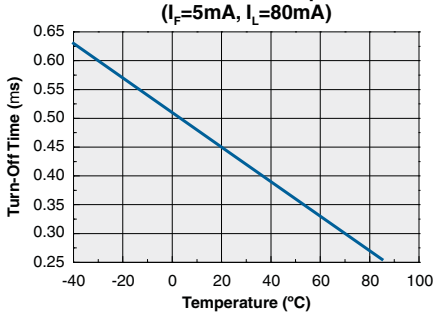
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

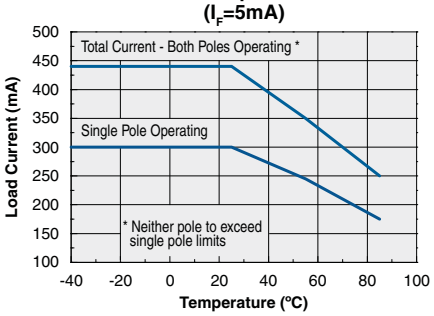
Turn-On Time vs. Temperature (I_F=5mA, I_L=80mA)



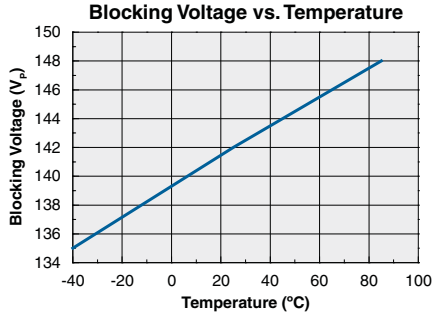
Turn-Off Time vs. Temperature (I_F=5mA, I_L=80mA)



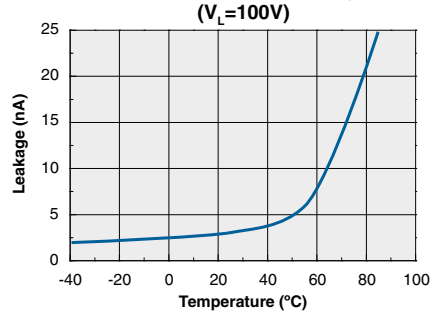
Maximum Load Current vs. Temperature (I_F=5mA)



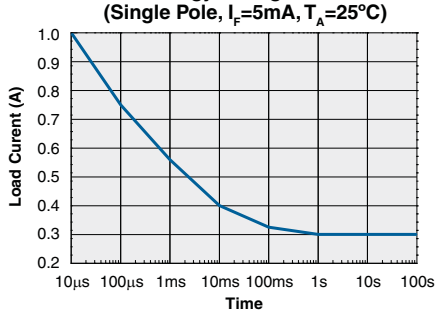
Blocking Voltage vs. Temperature



Leakage Current vs. Temperature Measured Across Pins 5 & 6, 7 & 8 (V_L=100V)



Energy Rating Curve (Single Pole, I_F=5mA, T_A=25°C)



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MANUFACTURING INFORMATION

Soldering

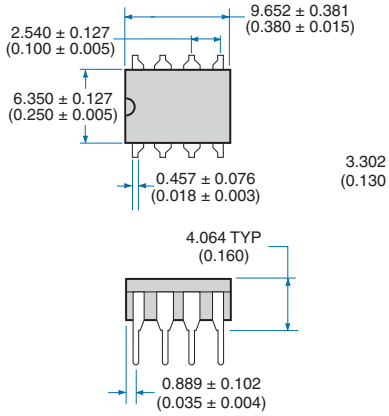
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

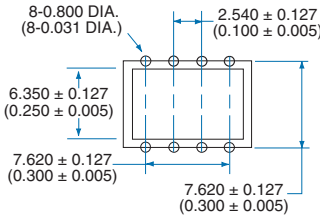
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

8-Pin DIP Through-Hole Package

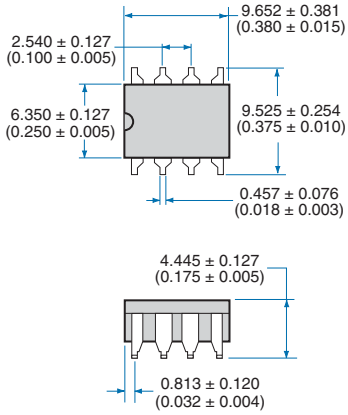


PC Board Pattern

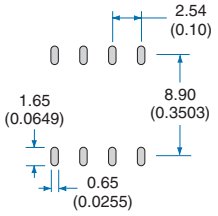


Dimensions
mm
(inches)

8-Pin Surface Mount Package

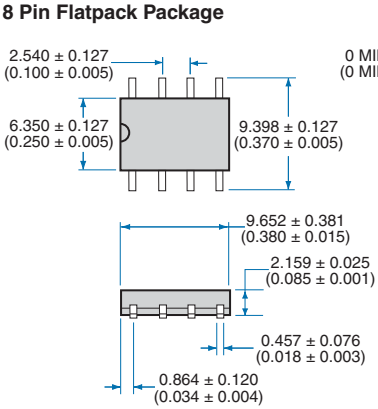


Recommended PCB Land Pattern

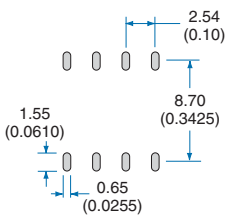


Dimensions
mm
(inches)

8 Pin Flatpack Package



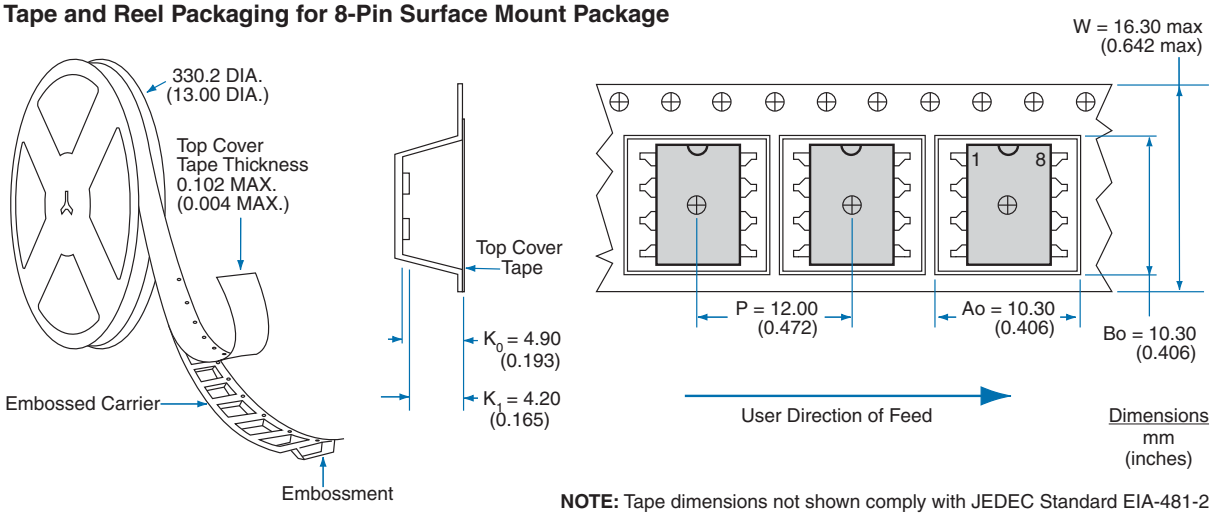
Recommended PCB Land Pattern



Dimensions
mm
(inches)

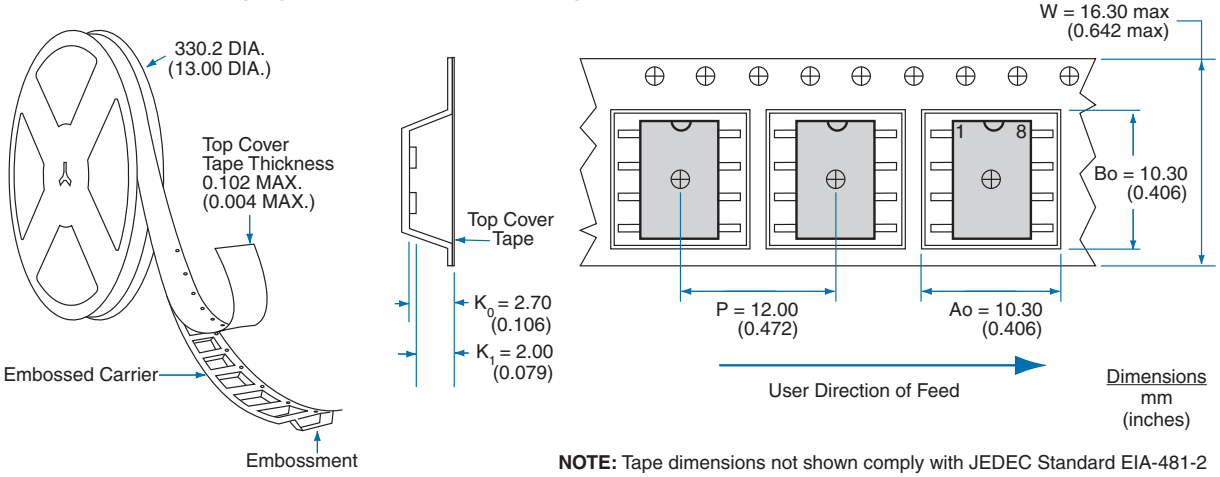
MECHANICAL DIMENSIONS

Tape and Reel Packaging for 8-Pin Surface Mount Package



NOTE: Tape dimensions not shown comply with JEDEC Standard EIA-481-2

Tape and Reel Packaging for 8 Pin Flatpack Package



NOTE: Tape dimensions not shown comply with JEDEC Standard EIA-481-2

For additional information please visit our website at: www.clare.com

Specification: DS-LAA108-R02

11/13/09