



Parameter	Rating	Units
Blocking Voltage	60	V <sub>P</sub>
Load Current	600	mA
Input Control Current	2	mA
Max R <sub>ON</sub>	1	Ω

### Features

- Low Input Control Current: 2mA
- 3750V<sub>rms</sub> Input/Output Isolation
- Small 8-Pin Package
- TTL/CMOS Compatible
- No Moving Parts
- High Reliability
- Arc-Free With No Snubbing Circuits
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Surface Mount Tape & Reel Version 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
- Automotive

### Description

The PAA132 Solid State Relay has two independent, optically coupled, single-pole, normally open (1-Form-A), relays in a single 8-pin package. Clare's patented OptoMOS architecture makes available the optically coupled technology necessary to activate the output's efficient MOSFET switches while providing a 3750V<sub>rms</sub> input-to-output isolation barrier. Control of the isolated output is accomplished by means of a highly effective GaAlAs infrared LED at the input.

By incorporating two independent, single-pole relays into a single 8-pin package, the PAA132 saves board space by providing a more compact design solution than two discrete single-pole relays in a variety of applications.

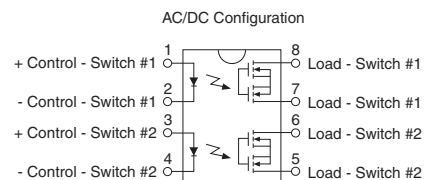
### Approvals

- UL Recognized Component: File E76270
- CSA Certified Component: Certificate 1175739
- EN/IEC 60950-1 Certified Component:  
TUV Certificate B 09 07 49410 004

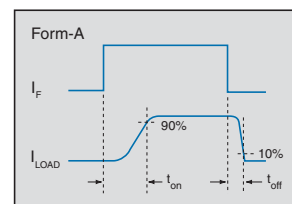
### Ordering Information

Part #	Description
PAA132	8-Pin DIP (50/Tube)
PAA132S	8-Pin Surface Mount (50/Tube)
PAA132STR	8-Pin Surface Mount (1,000/Reel)

### Pin Configuration



### Switching Characteristics of Normally Open Devices



### Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	60	V <sub>P</sub>
Reverse Input Voltage	5	V
Input Control Current Peak (10ms)	50	mA
	1	A
Input Power Dissipation <sup>1</sup>	150	mW
Total Power Dissipation <sup>2</sup>	800	mW
Isolation Voltage, Input to Output	3750	V <sub>rms</sub>
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

<sup>1</sup> Derate linearly 1.33 mW / °C

<sup>2</sup> Derate linearly 6.67 mW / °C

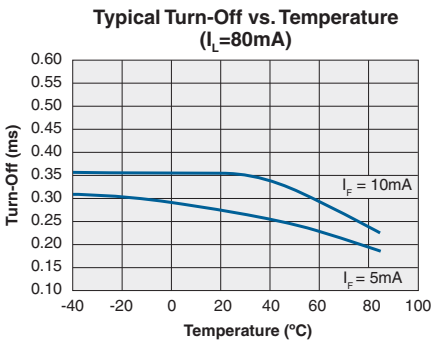
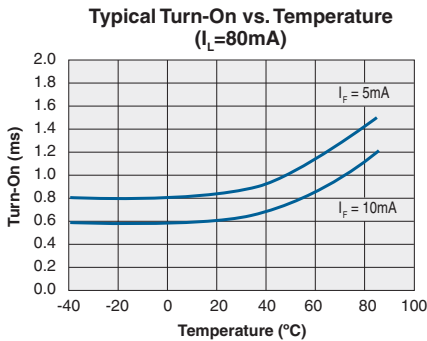
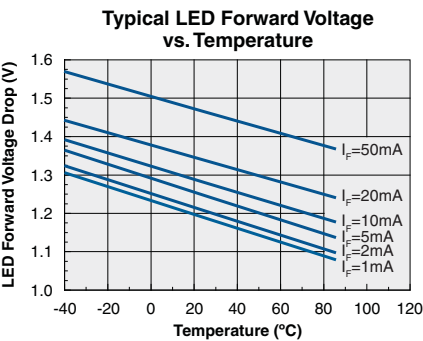
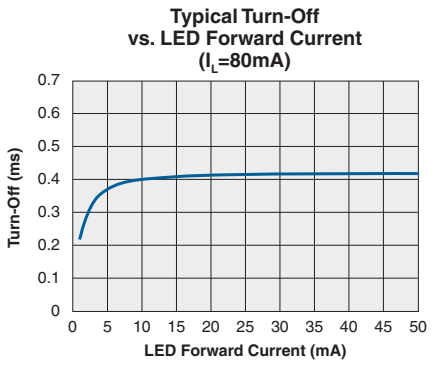
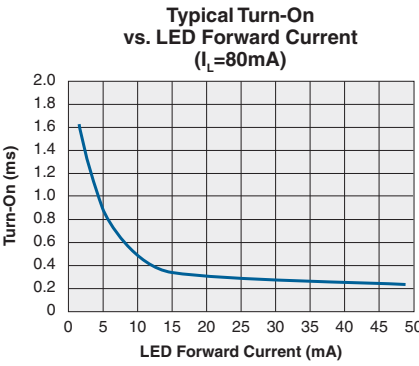
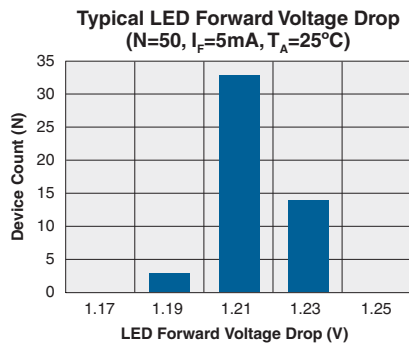
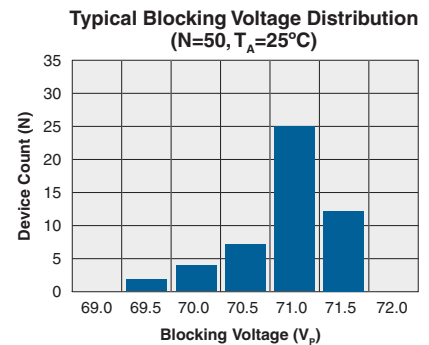
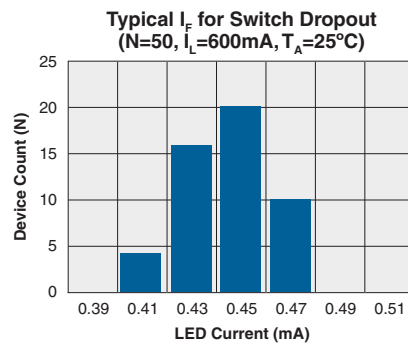
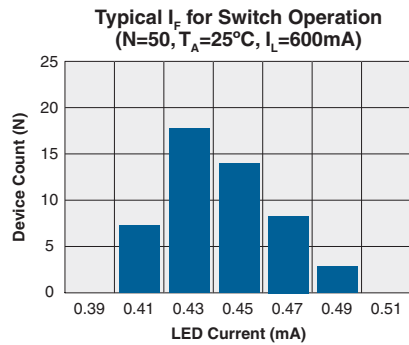
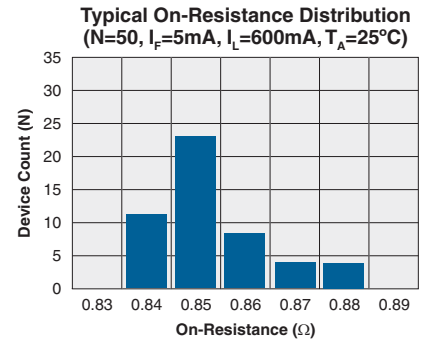
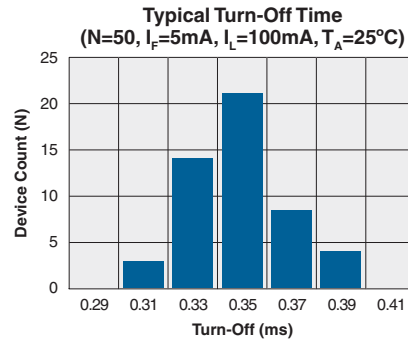
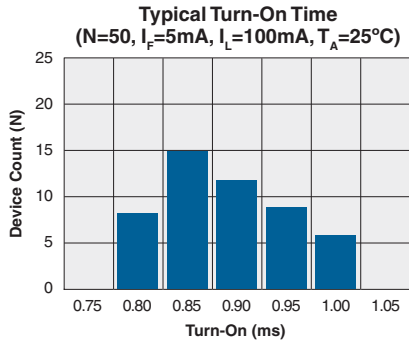
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

### Electrical Characteristics @ 25°C

Parameter	Conditions	Symbol	Min	Typ	Max	Units
<b>Output Characteristics</b>						
Load Current Continuous <sup>1</sup> Peak	-	I <sub>L</sub>	-	-	600	mA
	t ≤ 10ms	I <sub>LPK</sub>	-	-	2	A
On-Resistance	I <sub>L</sub> = 600mA	R <sub>ON</sub>	-	0.85	1	Ω
Off-State Leakage Current	V <sub>L</sub> = 60V <sub>P</sub>	I <sub>LEAK</sub>	-	-	1	μA
<b>Switching Speeds</b>						
Turn-On	I <sub>F</sub> = 5mA, V <sub>L</sub> = 10V	t <sub>on</sub>	-	-	5	ms
Turn-Off		t <sub>off</sub>	-	-	2	ms
Output Capacitance	V <sub>L</sub> = 50V, f = 1MHz	C <sub>OUT</sub>	-	25	-	pF
<b>Input Characteristics</b>						
Input Control Current	I <sub>L</sub> = 600mA	I <sub>F</sub>	-	-	2	mA
Input Dropout Current	-	I <sub>F</sub>	0.2	-	-	mA
Input Voltage Drop	I <sub>F</sub> = 10mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> = 5V	I <sub>R</sub>	-	-	10	μA
<b>Common Characteristics</b>						
Capacitance Input to Output	-	C <sub>I/O</sub>	-	3	-	pF

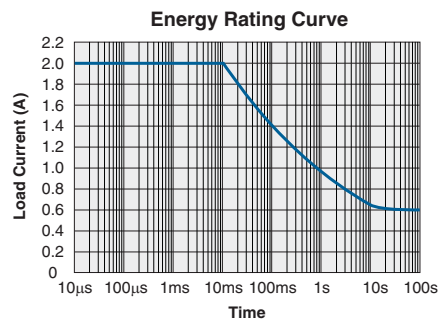
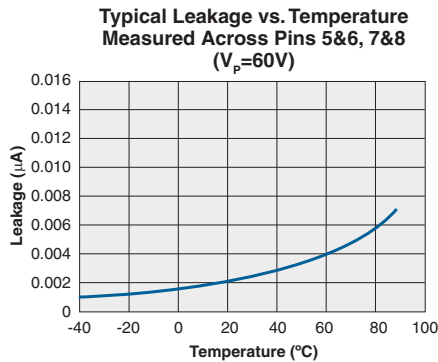
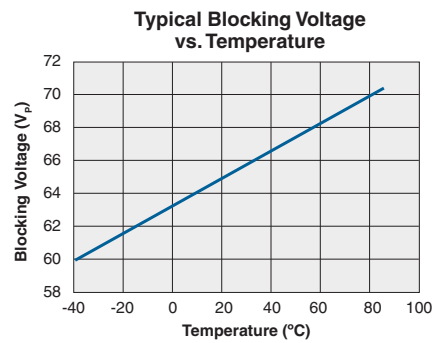
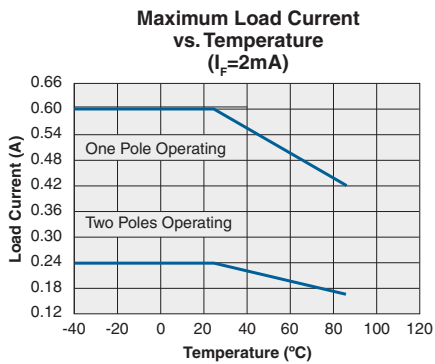
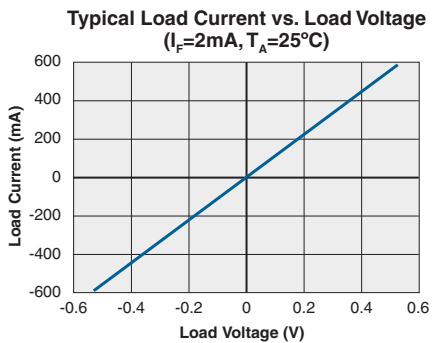
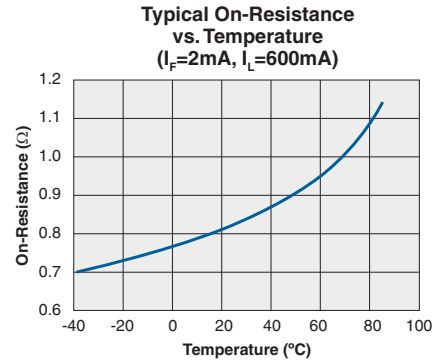
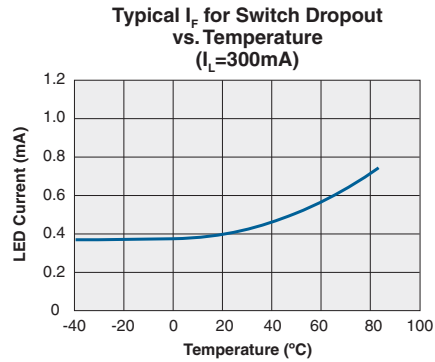
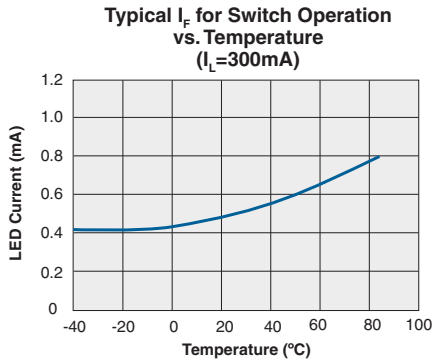
<sup>1</sup> If both poles operate, then the load current must be derated so that the package power dissipation value is not exceeded.

**PERFORMANCE DATA\***



\*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.

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## Manufacturing Information

### Moisture Sensitivity



All plastic encapsulated semiconductor packages are susceptible to moisture ingress. Clare classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Rating
PAA132 / PAA132S	MSL 1

### ESD Sensitivity



This product is **ESD Sensitive**, and should be handled according to the industry standard **JESD-625**.

### Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
PAA132 / PAA132S	250°C for 30 seconds

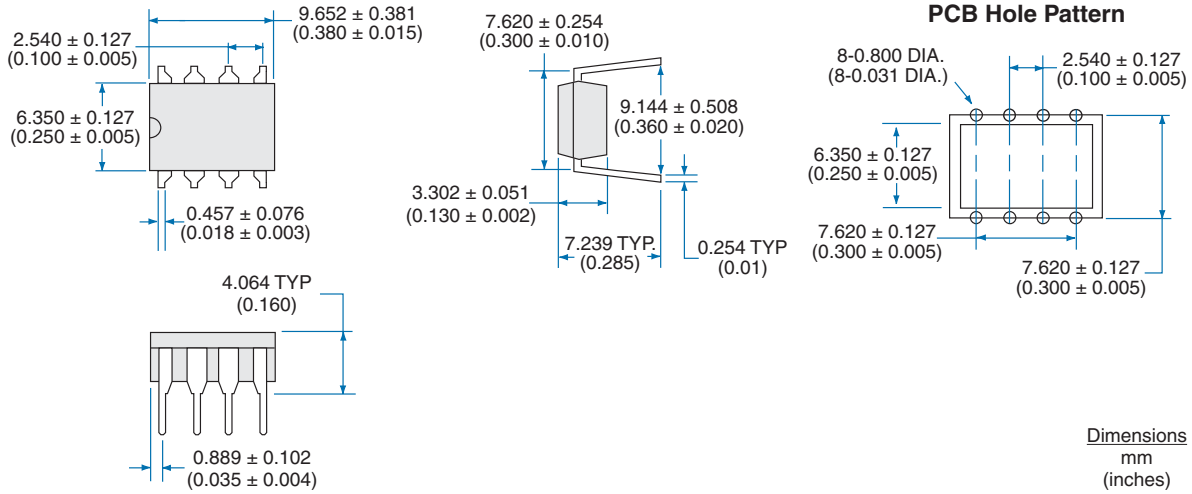
### Board Wash

Clare recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since Clare employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.

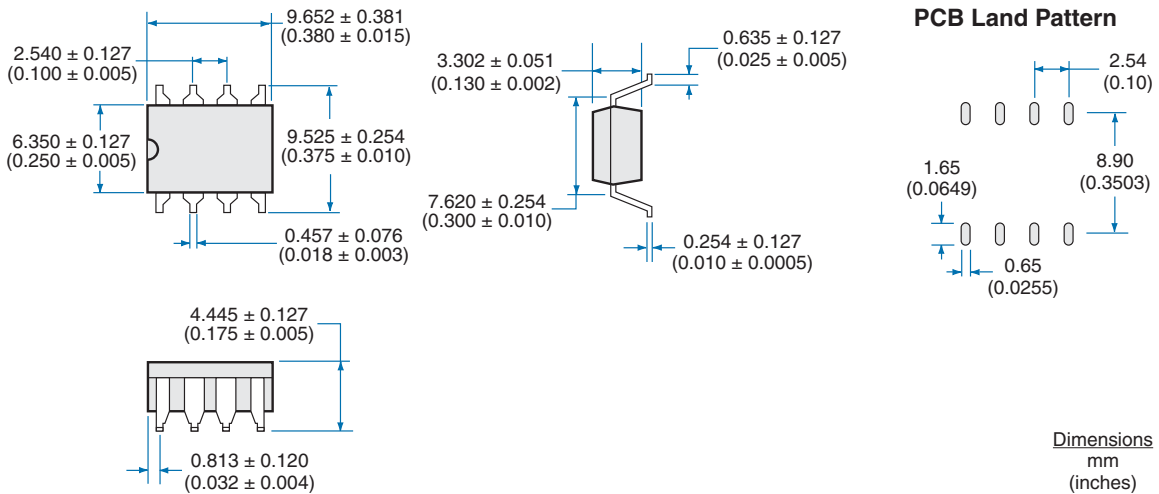


**MECHANICAL DIMENSIONS**

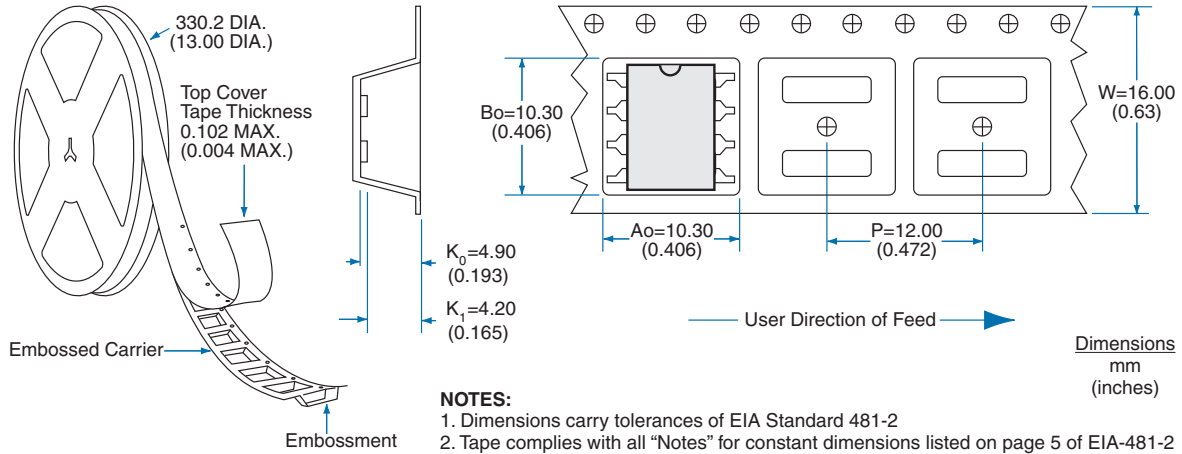
**PAA132**



**PAA132S**



**PAA132S Tape & Reel**



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