

Parameter	Ratings	Units
Blocking Voltage	60	V <sub>P</sub>
Load Current	150	$\rm mA_{rms}$ / $\rm mA_{DC}$
On-Resistance (max)	16	Ω
LED Current to Operate	1	mA

#### **Features**

- · Low Input Control Current: 1mA
- 3750V nns Input/Output Isolation
- Low Drive Power Requirements (TTL/CMOS Compatible)
- · Arc-Free With No Snubbing Circuits
- FCC Compatible
- VDE Compatible
- No EMI/RFI Generation
- · Machine Insertable, Wave Solderable
- Surface Mount Tape & Reel Version Available

# **Applications**

- Security
  - · Passive Infrared Detectors (PIR)
  - Data Signaling
  - Sensor Circuitry
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - · Electronic Switching
  - I/O Subsystems
- · Meters (Watt-Hour, Water, Gas)
- · Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

### **Description**

The XAA117 is a dual, single-pole, normally open (1-Form-A) Solid State Relay with two independently controlled, optically coupled MOSFET switches that feature 3750V<sub>rms</sub> of input to output isolation.

The optically coupled outputs, which use the patented OptoMOS architecture, are controlled by a highly efficient GaAlAs infrared LED.

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

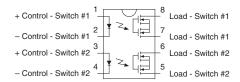
# **Approvals**

- UL Recognized Component: File E76270
- CSA Certified Component: Certificate 1175739
- EN/IEC 60950-1 Compliant

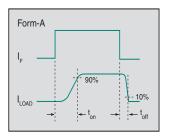
## **Ordering Information**

Part #	Description
XAA117	8-Pin DIP (50/Tube)
XAA117S	8-Pin Surface Mount (50/Tube)
XAA117STR	8-Pin Surface Mount (1,000/Reel)
XAA117P	8-Pin Flat Pack (50/Tube)
XAA117PTR	8-Pin Flat Pack (1,000/Reel)

# **Pin Configuration**



#### Switching Characteristics of Normally Open Devices











# Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Blocking Voltage	60	$V_P$
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	Α
Input Power Dissipation 1	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>&</sup>lt;sup>1</sup> Derate linearly 1.33 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

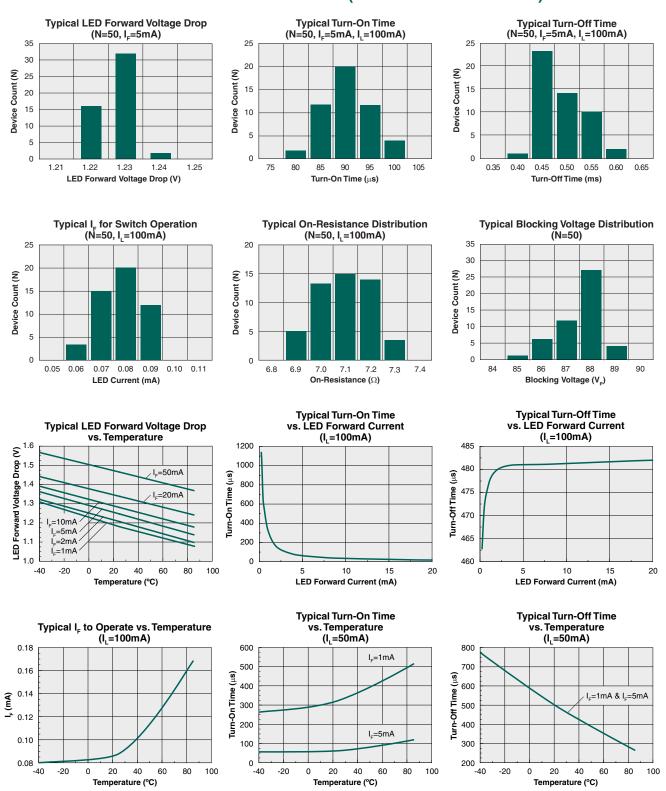
Parameter	Conditions	Symbol	Min	Тур	Max	Units
Output Characteristics						
Load Current						
Continuous <sup>1</sup>	-	IL	-	-	150	$\rm mA_{\rm rms}$ / $\rm mA_{\rm DC}$
Peak	t =10ms	I <sub>LPK</sub>	-	-	±400	mA <sub>P</sub>
On-Resistance	I <sub>L</sub> =150mA	R <sub>ON</sub>	-	7	16	Ω
Off-State Leakage Current	$V_L = 60V_P$	I <sub>LEAK</sub>	-	-	1	μΑ
Switching Speeds						
Turn-On	I <sub>E</sub> =5mA, V <sub>I</sub> =10V	t <sub>on</sub>	-	0.1	5	- ms
Turn-Off	I <sub>F</sub> =SIIIA, V <sub>L</sub> =10V	t <sub>off</sub>	-	0.5	5	1115
Output Capacitance	V <sub>L</sub> =50V, f=1MHz	C <sub>OUT</sub>	-	25	-	pF
Input Characteristics						
Input Control Current to Activate	I <sub>L</sub> =150mA	I <sub>F</sub>	-	-	1	mA
Input Control Current to Deactivate	-	-	0.05	-	-	mA
Input Voltage Drop	I <sub>F</sub> =5mA	V <sub>F</sub>	0.9	1.2	1.4	V
Reverse Input Current	V <sub>R</sub> =5V	I <sub>R</sub>	-	-	10	μΑ
Common Characteristics	<u> </u>			•	•	
Input to Output Capacitance	-	C <sub>I/O</sub>	-	3	-	pF

<sup>&</sup>lt;sup>1</sup> If both poles operate simultaneously, then the load current must be derated so as not to exceed the package power dissipation value.

<sup>&</sup>lt;sup>2</sup> Derate linearly 6.67 mW / °C



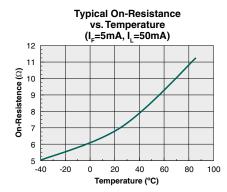
# PERFORMANCE DATA @25°C (Unless Otherwise Noted)\*

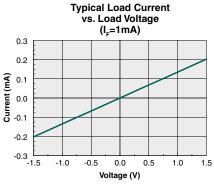


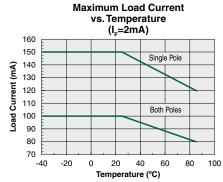
<sup>\*</sup>The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

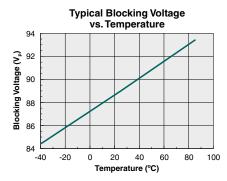


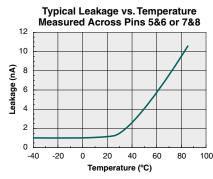
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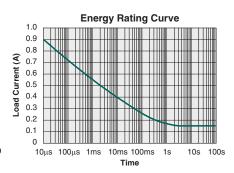












<sup>\*</sup>The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.



## **Manufacturing Information**

### **Moisture Sensitivity**

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. IXYS Integrated Circuits Division 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
XAA117 / XAA117S / XAA117P	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
XAA117 / XAA117S	250°C for 30 seconds
XAA117P	260°C for 30 seconds

### **Board Wash**

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division 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.



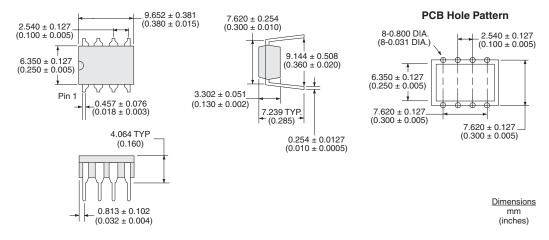




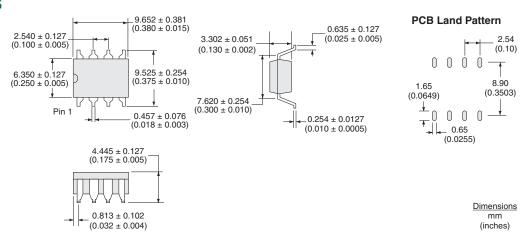


#### **Mechanical Dimensions**

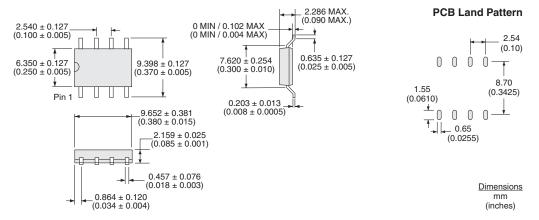
# **XAA117**



#### **XAA117S**

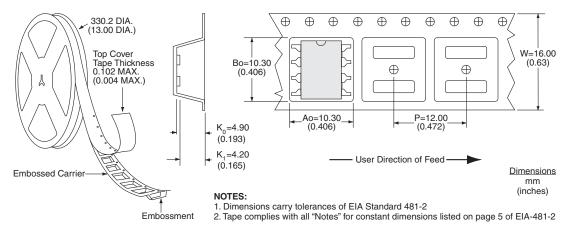


### **XAA117P**

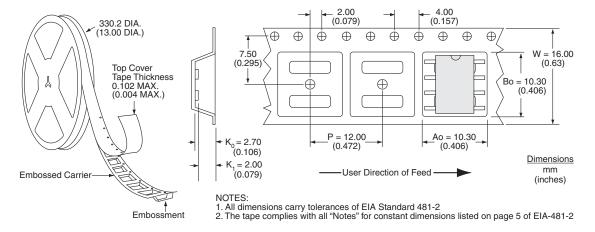




## XAA117STR Tape & Reel



## **XAA117PTR Tape & Reel**



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