XAA117 Dual Single Pole OptoMOS® Relay

Parameter	Ratings	Units
Blocking Voltage	60	V _P
Load Current	150	mA
Max R _{ON}	16	Ω
LED Current to Operate	1	mA

Features

- Low Drive Power Requirements (TTL/CMOS Compatible)
- 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 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

Clare's XAA117 is a dual 1-Form-A Solid State Relay that has two independently controlled, optically coupled MOSFET switches.

The 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 discrete single-pole relays in a variety of applications, and saves board space by incorporating both switches in a single 8-Pin package.

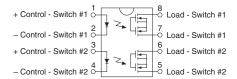
Approvals

- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10

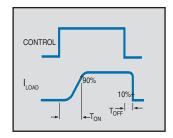
Ordering Information

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 (Form A) Devices











Absolute Maximum Ratings

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 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

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

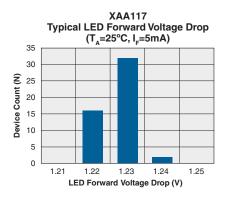
Parameter	Conditions	Symbol	Min	Тур	Max	Units
Output Characteristics @ 25°C	,					
Load Current						
Continuous ¹	-	I_L	-	-	150	- mA
Peak	t =10ms	I _{LPK}	-	-	400	
On-Resistance	I _L =150mA	R _{ON}	-	7	16	Ω
Off-State Leakage Current	V _L =60V	I _{LEAK}	-	-	1	μΑ
Switching Speeds						
Turn-On	I -5m / \/ -10\/	T_{ON}	-	0.1	5	mo
Turn-Off	I _F =5mA, V _L =10V	T _{OFF}	-	0.5	5	ms
Output Capacitance	50V; f=1MHz	C _{OUT}	-	25	-	pF
Input Characteristics @ 25°C						
Input Control Current	I _L =150mA	l _F	-	-	1	mA
Input Dropout Current	-	-	0.05	-	-	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	μΑ
Common Characteristics @ 25°C						
Input to Output Capacitance	-	C _{I/O}	-	3	-	pF

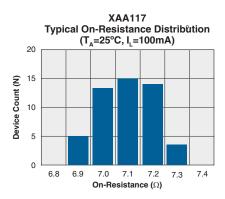
¹ If both poles operate, the load current must be derated so as not to exceed the package power dissipation value.

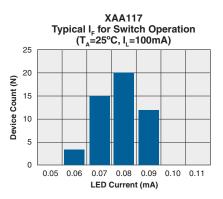
² Derate Linearly 6.67 mw/°C

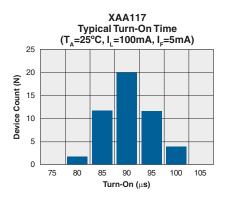


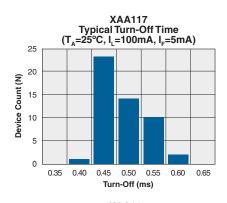
PERFORMANCE DATA*

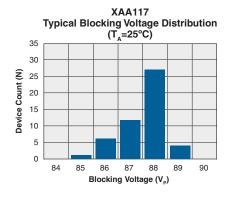


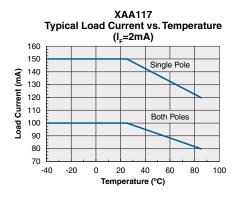


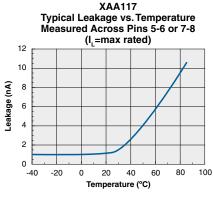


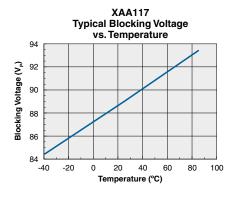


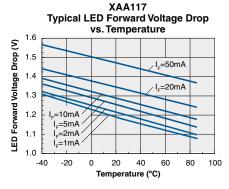


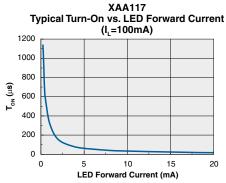


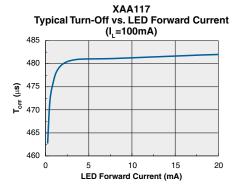








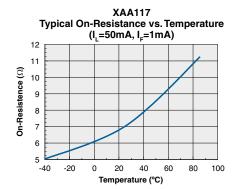


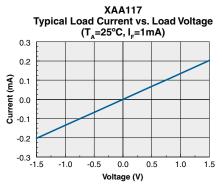


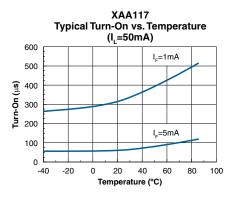
^{*}The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

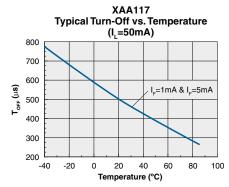


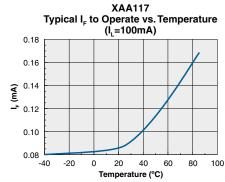
PERFORMANCE DATA*

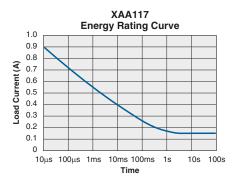












^{*}The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.



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.





PC Board Pattern



MECHANICAL DIMENSIONS

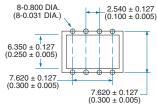
3.302 (0.130)

7.239 TYP. (0.285)

8-Pin DIP Through-Hole Package

9.652 ± 0.381 (0.380 ± 0.015) (0.100 ± 0.005) (0.250 ± 0.005) (0.250 ± 0.005) (0.457 ± 0.076 (0.018 ± 0.003) (0.360 ± 0.020) (0.318 ± 0.005) (0.364 Typ (0.160 Typ)

7.620 ± 0.254 (0.300 ± 0.010) 8-0.800 DIA. (8-0.031 DIA.) 9.144 TYP. (0.360 TYP.) 6.350 ± 0.127 (0.360 TYP.)

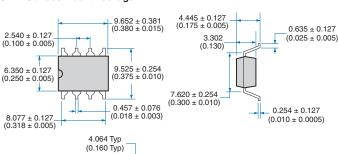


Dimensions mm (inches)

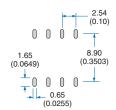
8-Pin Surface Mount Package

 (0.035 ± 0.004)

0.889 ± 0.102 (0.035 ± 0.004)

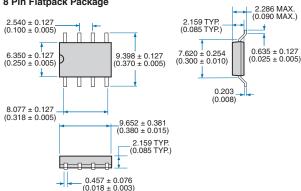


Recommended PCB Land Pattern

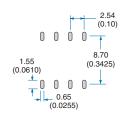


Dimensions mm (inches)

8 Pin Flatpack Package



Recommended PCB Land Pattern



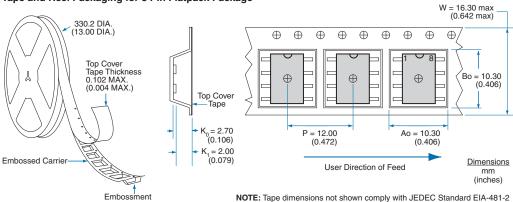
Dimensions mm (inches)



MECHANICAL DIMENSIONS

Tape and Reel Packaging for 8-Pin Surface Mount Package W = 16.30 max (0.642 max) 330.2 DIA. (13.00 DIA.) **** Ф \oplus \oplus \oplus \oplus \oplus \oplus \oplus \oplus Φ. Top Cover Tape Thickness 0.102 MAX. (0.004 MAX.) \oplus \oplus Tape P = 12.00 (0.472) Ao = 10.30 (0.406) Bo = 10.30 (0.406) $K_0 = 4.90$ (0.193) $K_1 = 4.20$ (0.165) **Embossed Carrier** User Direction of Feed **Dimensions** (inches) Embossment NOTE: Tape dimensions not shown comply with JEDEC Standard EIA-481-2

Tape and Reel Packaging for 8 Pin Flatpack Package



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