PAA140

Single Pole OptoMOS® Relays

	PAA140	Units
Load Voltage	400	V
Load Current	250	mA
Max R_{ON}	8	Ω

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
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- 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

Description

PAA140 is a 400V, 250mA, 8Ω 2-Form-A relay. This performance leader provides a high peak load voltage handling capability combined with a very low resistance for specialized applications.

Approvals

These products comply with the requirements of:

- UL 1577 (UL recognized file #E76270)
- CSA #14 (CSA certified file #LR43639)
- EN 60950
- IEC 950
- AS/NZS 3260

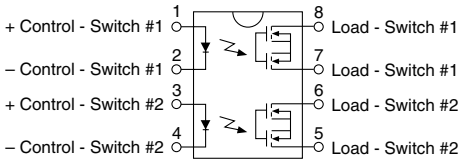
Ordering Information

Part #	Description
PAA140	8 Pin DIP (50/Tube)
PAA140P	8 Pin Flatpack (50/Tube)
PAA140PTR	8 Pin Flatpack (1000/Reel)
PAA140S	8 Pin Surface Mount (50/Tube)
PAA140STR	8 Pin Surface Mount (1000/Reel)

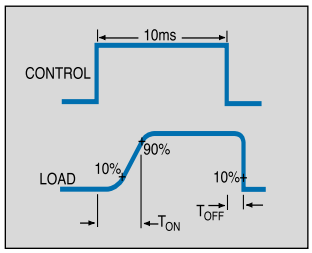
Pin Configuration

PAA140 Pinout

AC/DC Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum 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
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

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 these or any other conditions beyond those indicated in the operational sections of this data sheet is not implied. Exposure of the device to the absolute maximum ratings for an extended period may degrade the device and effect its reliability.

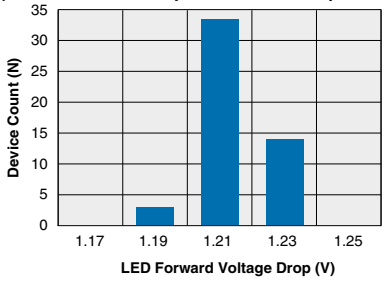
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	MaX	Units
Output Characteristics @ 25°C						
Load Voltage (Peak)	-	V_L	-	-	400	V
Load Current* (Continuous) AC/DC Configuration	-	I_L	-	-	250	mA
Peak Load Current	10ms	I_{LPK}	-	-	500	mA
On-Resistance AC/DC Configuration	I_L=250mA	R_{ON}	-	6	8	Ω
Off-State Leakage Current	V_L=400V	I_{LEAK}	-	-	1	µA
Switching Speeds Turn-On	I_F=5mA, V_L=10V	T_{ON}	-	-	3.0	ms
Turn-Off	I_F=5mA, V_L=10V	T_{OFF}	-	-	1.0	ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	65	-	pF
Capacitance Input to Output	-	-	-	3	-	pF
Input Characteristics @ 25°C						
Input Control Current	I_L= 250mA	I_F	5	-	50	mA
Input Dropout Current	-	I_F	0.4	0.7	-	mA
Input Voltage Drop	I_F= 5mA	V_F	0.9	1.2	1.4	V
Reverse Input Voltage	-	V_R	-	-	5	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF
Input to Output Isolation	-	$V_{I/O}$	3750	-	-	V_{RMS}

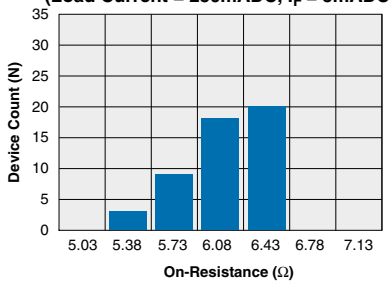
*NOTE: If both poles operate simultaneously load current must be derated so as not to exceed the package power dissipation value.

PERFORMANCE DATA*

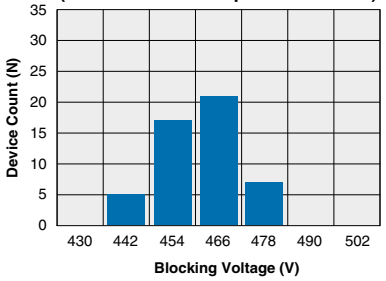
PAA140
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C; I_F = 5mADC)



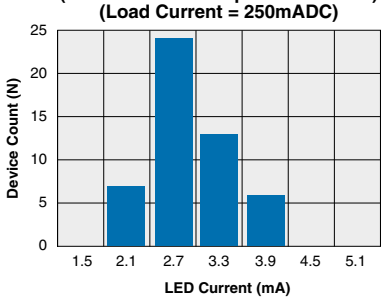
PAA140
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 250mADC, I_F = 5mADC)



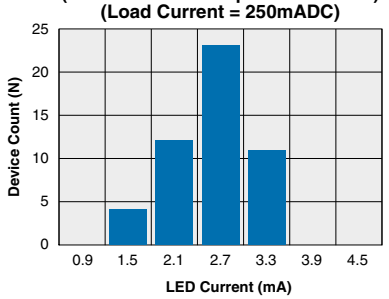
PAA140
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



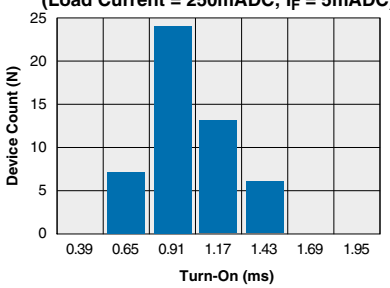
PAA140
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 250mADC)



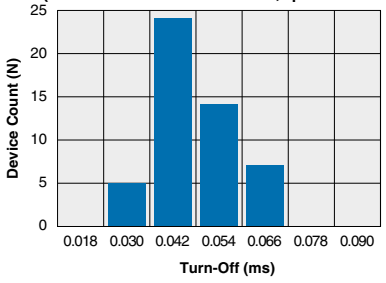
PAA140
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 250mADC)



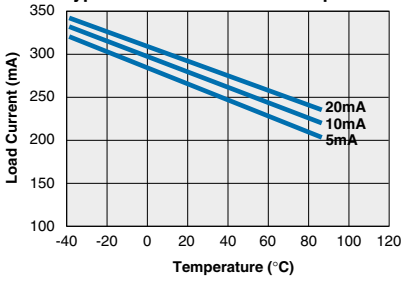
PAA140
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 250mADC; I_F = 5mADC)



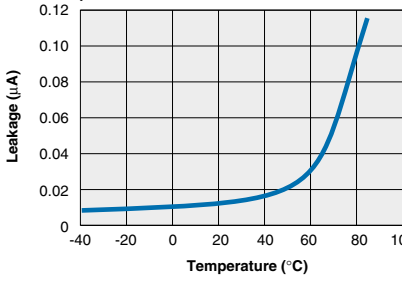
PAA140
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 250mADC; I_F = 5mADC)



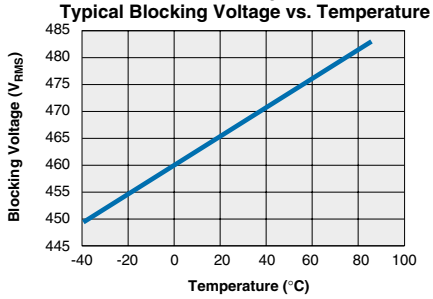
PAA140
Typical Load Current vs. Temperature



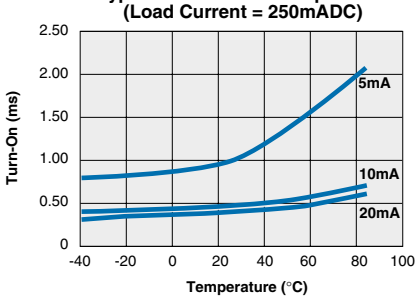
PAA140
Typical Leakage vs. Temperature
(Measured across Pins 5 & 6 or 7 & 8



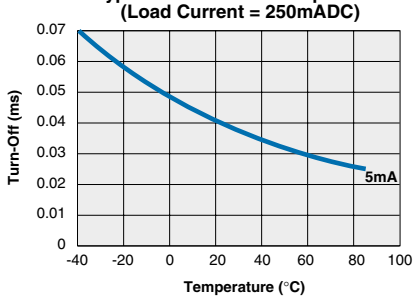
PAA140
Typical Blocking Voltage vs. Temperature



PAA140
Typical Turn-On vs. Temperature
(Load Current = 250mADC)



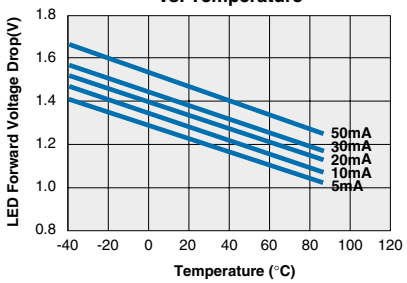
PAA140
Typical Turn-Off vs. Temperature
(Load Current = 250mADC)



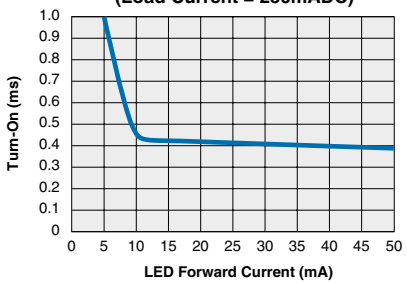
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

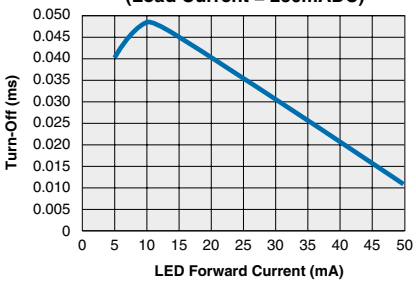
PAA140
Typical LED Forward Voltage Drop vs. Temperature



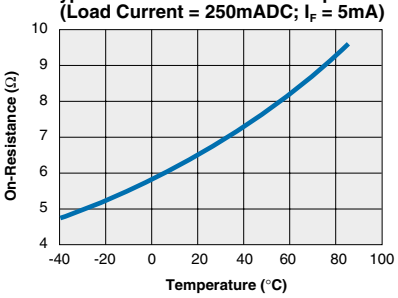
PAA140
Typical Turn-On vs. LED Forward Current (Load Current = 250mADC)



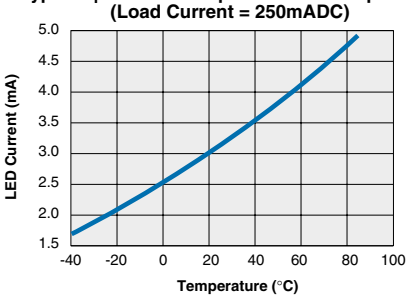
PAA140
Typical Turn-Off vs. LED Forward Current (Load Current = 250mADC)



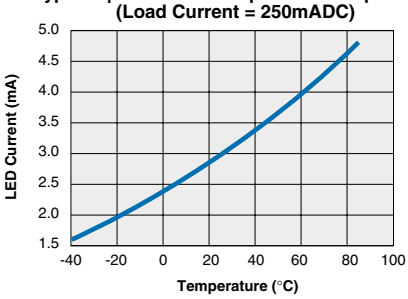
PAA140
Typical On-Resistance vs. Temperature (Load Current = 250mADC; I_F = 5mA)



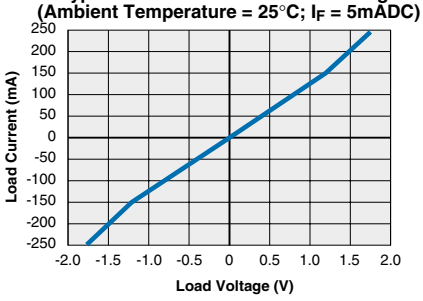
PAA140
Typical I_F for Switch Operation vs. Temperature (Load Current = 250mADC)



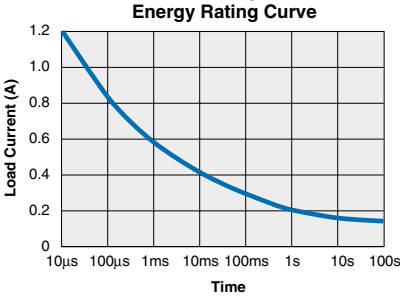
PAA140
Typical I_F for Switch Dropout vs. Temperature (Load Current = 250mADC)



PAA140
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C; I_F = 5mADC)



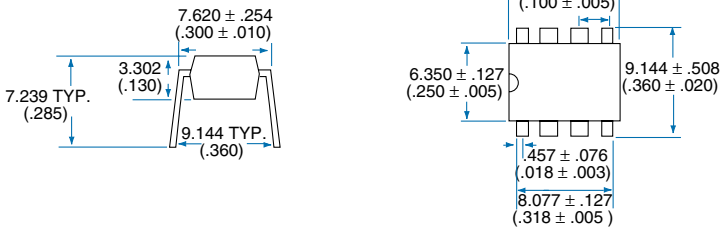
PAA140
Energy Rating Curve



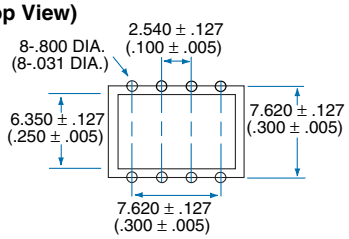
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

MECHANICAL DIMENSIONS

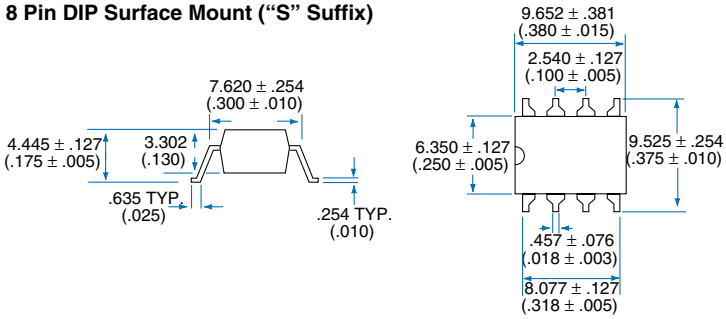
8 Pin DIP Through Hole (Standard)



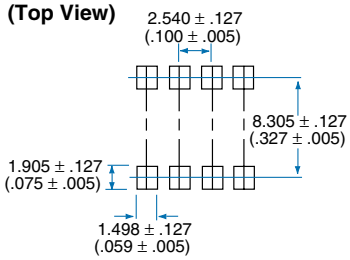
PC Board Pattern (Top View)



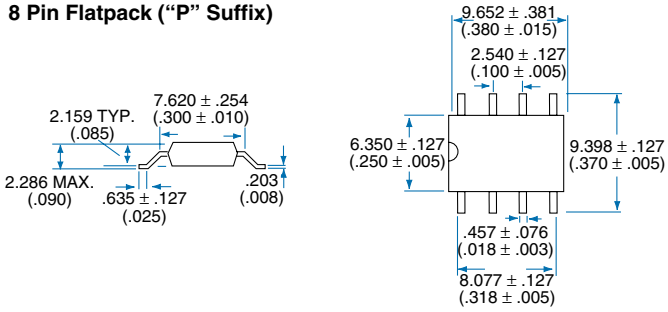
8 Pin DIP Surface Mount ("S" Suffix)



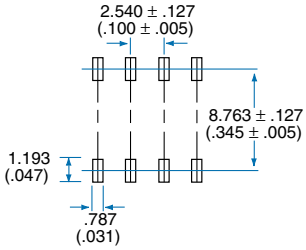
PC Board Pattern (Top View)



8 Pin Flatpack ("P" Suffix)



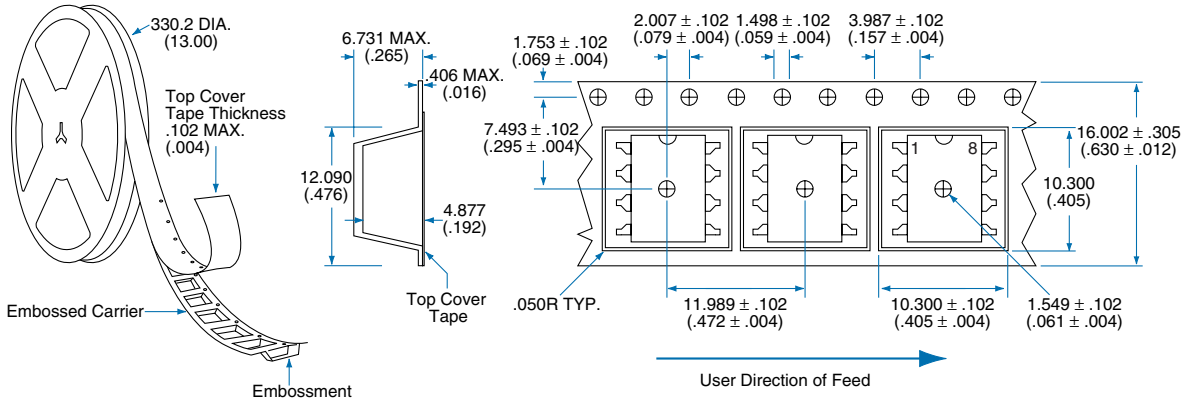
PC Board Pattern (Top View)



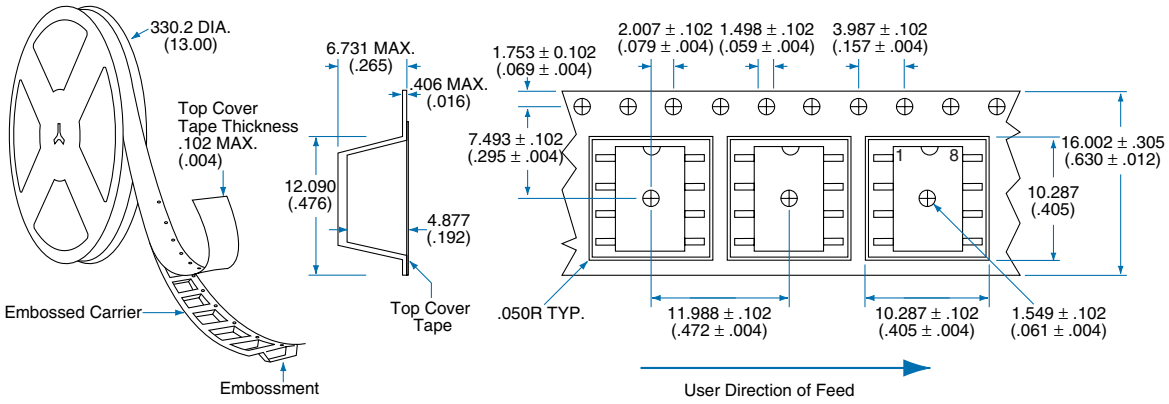
Dimensions
mm
(inches)

MECHANICAL DIMENSIONS

Tape and Reel Packaging for 8 Pin Surface Mount Package



Tape and Reel Packaging for 8 Pin Flatpack Package



Dimensions
mm
(inches)

CLARE

Worldwide Sales Offices

CLARE LOCATIONS

Clare Headquarters
78 Cherry Hill Drive
Beverly, MA 01915
Tel: 1-978-524-6700
Fax: 1-978-524-4900
Toll Free: 1-800-27-CLARE

Clare Micronix Division
145 Columbia
Aliso Viejo, CA 92656-1490
Tel: 1-949-831-4622
Fax: 1-949-831-4628

SALES OFFICES

AMERICAS

Americas Headquarters
Clare
78 Cherry Hill Drive
Beverly, MA 01915
Tel: 1-978-524-6700
Fax: 1-978-524-4900
Toll Free: 1-800-27-CLARE

Eastern Region
Clare
603 Apache Court
Mahwah, NJ 07430
Tel: 1-201-236-0101
Fax: 1-201-236-8685
Toll Free: 1-800-27-CLARE

Central Region
Clare Canada Ltd.
3425 Harvester Road, Suite 202
Burlington, Ontario L7N 3N1
Tel: 1-905-333-9066
Fax: 1-905-333-1824

Western Region
Clare
1852 West 11th Street, #348
Tracy, CA 95376
Tel: 1-209-832-4367
Fax: 1-209-832-4732
Toll Free: 1-800-27-CLARE

Canada
Clare Canada Ltd.
3425 Harvester Road, Suite 202
Burlington, Ontario L7N 3N1
Tel: 1-905-333-9066
Fax: 1-905-333-1824

EUROPE

European Headquarters
CP Clare nv
Bampslaan 17
B-3500 Hasselt (Belgium)
Tel: 32-11-300868
Fax: 32-11-300890

France
Clare France Sales
Lead Rep
99 route de Versailles
91160 Champlan
France
Tel: 33 1 69 79 93 50
Fax: 33 1 69 79 93 59

Germany
Clare Germany Sales
ActiveComp Electronic GmbH
Mitterstrasse 12
85077 Manching
Germany
Tel: 49 8459 3214 10
Fax: 49 8459 3214 29

Italy
C.L.A.R.E.s.a.s.
Via C. Colombo 10/A
I-20066 Melzo (Milano)
Tel: 39-02-95737160
Fax: 39-02-95738829

Sweden
Clare Sales
Comptronic AB
Box 167
S-16329 Spånga
Tel: 46-862-10370
Fax: 46-862-10371

United Kingdom
Clare UK Sales
Marco Polo House
Cook Way
Bindon Road
Taunton
UK-Somerset TA2 6BG
Tel: 44-1-823 352541
Fax: 44-1-823 352797

ASIA/PACIFIC

Asian Headquarters
Clare
Room N1016, Chia-Hsin, Bldg II,
10F, No. 96, Sec. 2
Chung Shan North Road
Taipei, Taiwan R.O.C.
Tel: 886-2-2523-6368
Fax: 886-2-2523-6369

http://www.clare.com

Specification: DS-PAA140-R5

8/7/01