OAA160
Dual Pole OptoMOS® Relays

Parameter	Rating	Units
Load Voltage	250	V
Load Current	50	mA
Max R_{ON}	100	Ω

Description
OAA160 is a 250V, 50mA, 100Ω dual 1-Form-A relay. This high performance product provides the fastest (0.125ms) switching available for two independent Form-A relays in a single package.

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

Approvals
- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- Certified to:
  - EN 60950
  - EN 41003

Applications
- Telecommunications
  - Telecom Switching
  - Tip/Ring Circuits
  - Modem Switching (Laptop, Notebook, Pocket Size)
  - Hook Switch
  - Dial Pulsing
  - Ground Start
  - Ringing Injection
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment-Patient/Equipment Isolation
- Security
- Aerospace
- Industrial Controls

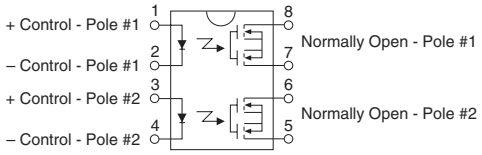
Ordering Information

Part #	Description
OAA160	8 Pin DIP (50/tube)
OAA160P	8 Pin Flatpack (50/tube)
OAA160PTR	8 Pin Flatpack (1000/Reel)
OAA160S	8 Pin Surface Mount (50/tube)
OAA160STR	8 Pin Surface Mount (1000/Reel)

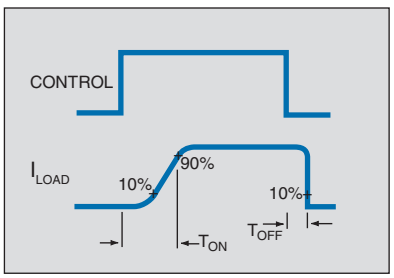
Pin Configuration

OAA160 Pinout

AC/DC Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings (@ 25˚ C)

Parameter	Ratings	Units
Blocking Voltage	250	V
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation	150[1]	mW
Total Power Dissipation	800[2]	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

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.

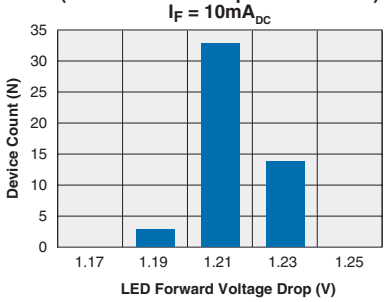
Electrical Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current* AC/DC Configuration	Continuous	I_L	-	-	50	mA
Peak Load Current	t=10ms	I_{LPK}	-	-	100	mA
On-Resistance AC/DC Configuration	I_L=50mA	R_{ON}	-	50	100	Ω
Off-State Leakage Current	V_L=250V	I_{LEAK}	-	-	0.025	µA
Switching Speeds Turn-On	I_F=10mA, V_L=10V	T_{ON}	-	-	0.125	ms
Turn-Off	I_F=10mA, V_L=10V	T_{OFF}	-	-	0.125	ms
Turn-On	I_F=4.0mA, V_L=10V	T_{ON}	0.060	-	0.150	ms
Turn-Off	I_F=4.0mA, V_L=10V	T_{OFF}	-	-	0.055	ms
Output Capacitance	50V; f=1MHz	C_{OUT}	-	5	-	pF
Input Characteristics @ 25°C						
Input Control Current	I_L=50mA	I_F	-	-	3	mA
Input Dropout Current	-	I_F	0.4	0.7	-	mA
Input Voltage Drop	I_F=10mA	V_F	0.9	1.2	1.4	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF

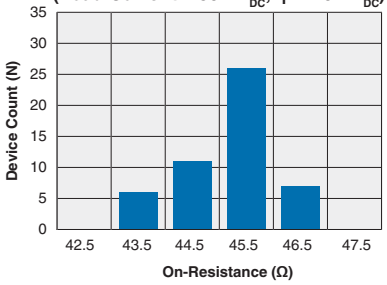
*NOTE: If both poles operate simultaneously load current must be derated so as not to exceed the package power dissipation value.

PERFORMANCE DATA*

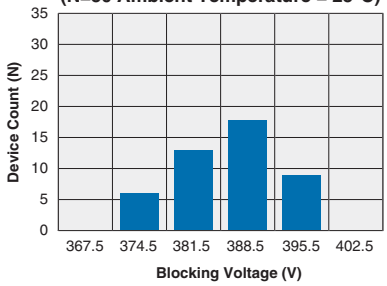
OAA160
Typical LED Forward Voltage Drop
(N=50 Ambient Temperature = 25°C)
I_F = 10mA$_{DC}$



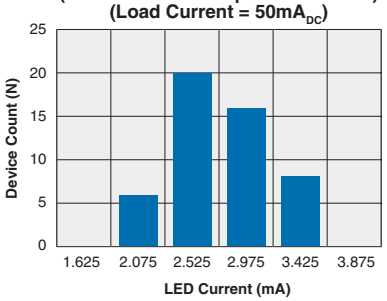
OAA160
Typical On-Resistance Distribution
(N=50 Ambient Temperature = 25°C)
(Load Current = 50mA$_{DC}$; I_F = 10mA$_{DC}$)



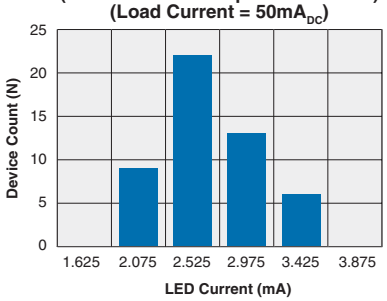
OAA160
Typical Blocking Voltage Distribution
(N=50 Ambient Temperature = 25°C)



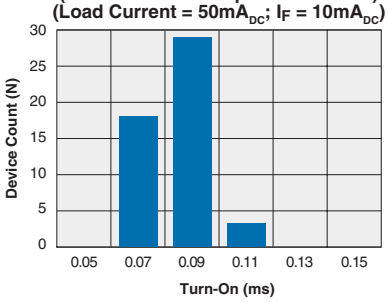
OAA160
Typical I_F for Switch Operation
(N=50 Ambient Temperature = 25°C)
(Load Current = 50mA$_{DC}$)



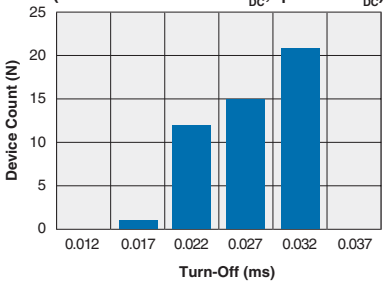
OAA160
Typical I_F for Switch Dropout
(N=50 Ambient Temperature = 25°C)
(Load Current = 50mA$_{DC}$)



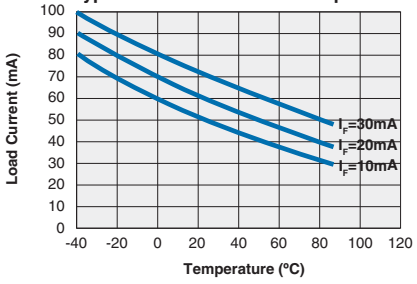
OAA160
Typical Turn-On Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 50mA$_{DC}$; I_F = 10mA$_{DC}$)



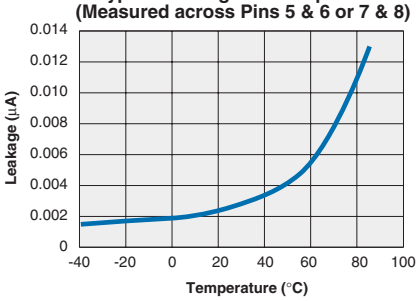
OAA160
Typical Turn-Off Time
(N=50 Ambient Temperature = 25°C)
(Load Current = 50mA$_{DC}$; I_F = 10mA$_{DC}$)



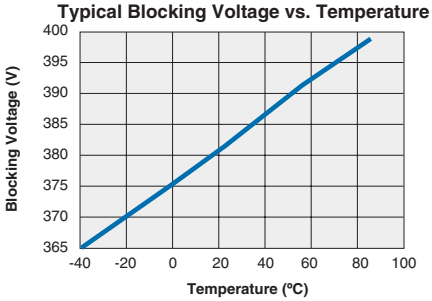
OAA160
Typical Load Current vs. Temperature



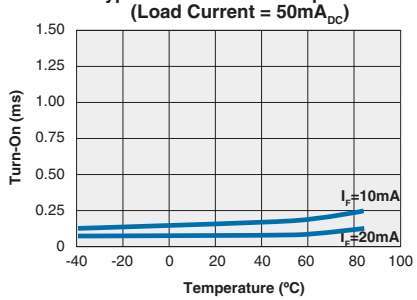
OAA160
Typical Leakage vs. Temperature
(Measured across Pins 5 & 6 or 7 & 8)



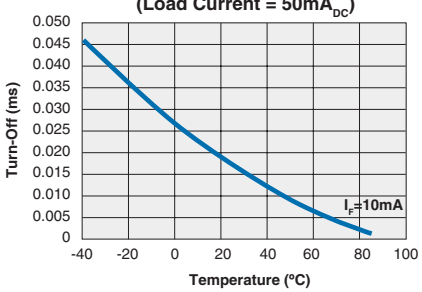
OAA160
Typical Blocking Voltage vs. Temperature



OAA160
Typical Turn-On vs. Temperature
(Load Current = 50mA$_{DC}$)



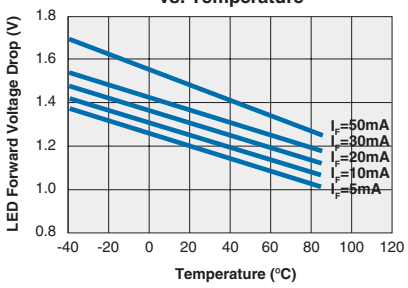
OAA160
Typical Turn-Off vs. Temperature
(Load Current = 50mA$_{DC}$)



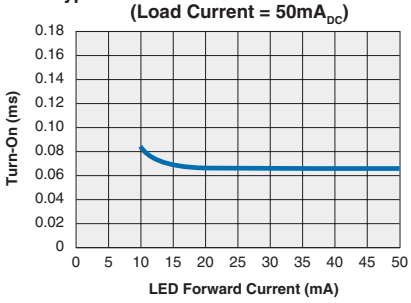
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

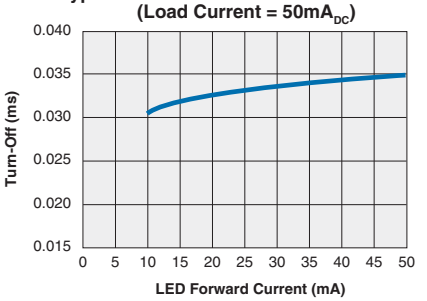
OAA160
Typical LED Forward Voltage Drop vs. Temperature



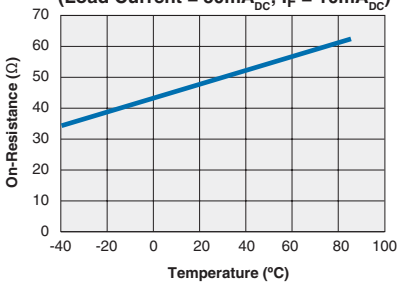
OAA160
Typical Turn-On vs. LED Forward Current (Load Current = 50mA$_{DC}$)



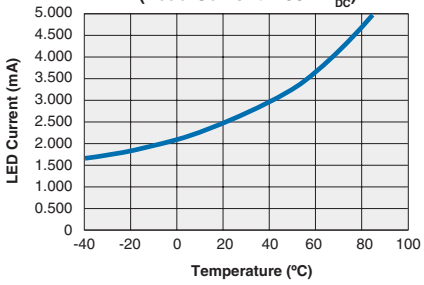
OAA160
Typical Turn-Off vs. LED Forward Current (Load Current = 50mA$_{DC}$)



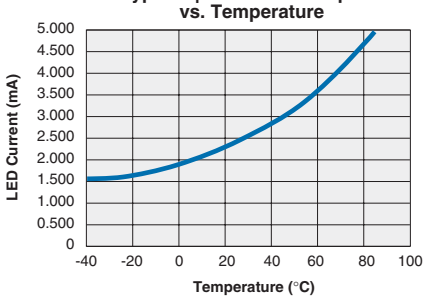
OAA160
Typical On-Resistance vs. Temperature (Load Current = 50mA$_{DC}$; I_F = 10mA$_{DC}$)



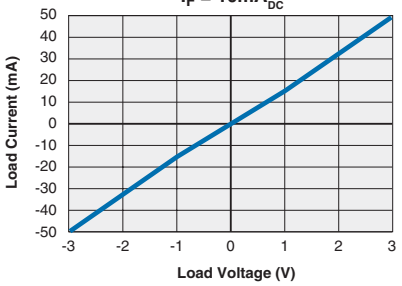
OAA160
Typical I_F for Switch Operation vs. Temperature (Load Current = 50mA$_{DC}$)



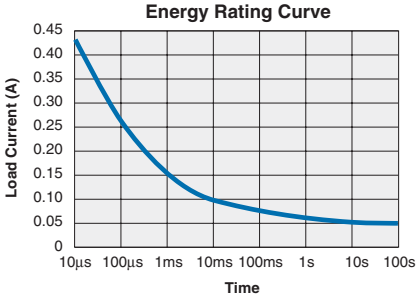
OAA160
Typical I_F for Switch Dropout vs. Temperature



OAA160
Typical Load Current vs. Load Voltage (Ambient Temperature = 25°C) I_F = 10mA$_{DC}$



OAA160
Energy Rating Curve



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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.

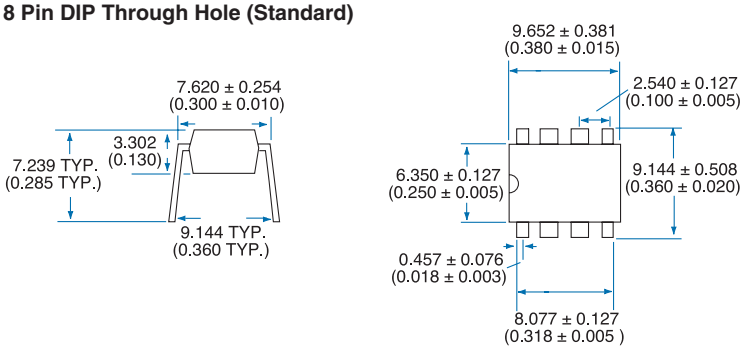
Recommended soldering processes are limited to 260ºC component body temperature for 10 seconds.

Washing

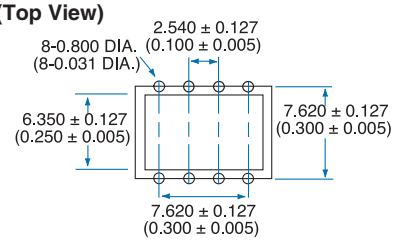
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

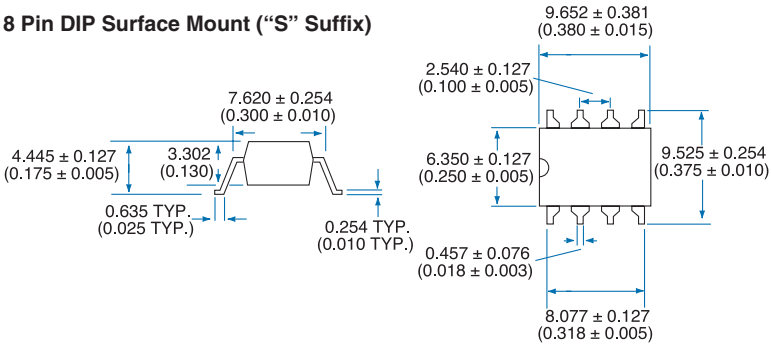
8 Pin DIP Through Hole (Standard)



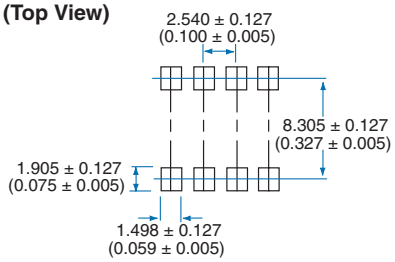
PC Board Pattern (Top View)



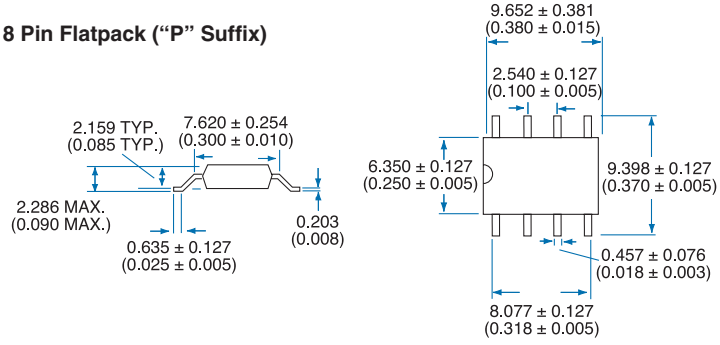
8 Pin DIP Surface Mount ("S" Suffix)



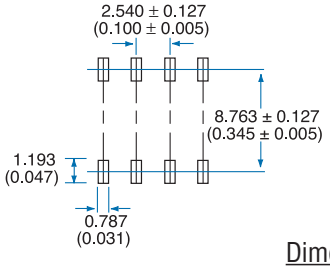
PC Board Pattern (Top View)



8 Pin Flatpack ("P" Suffix)



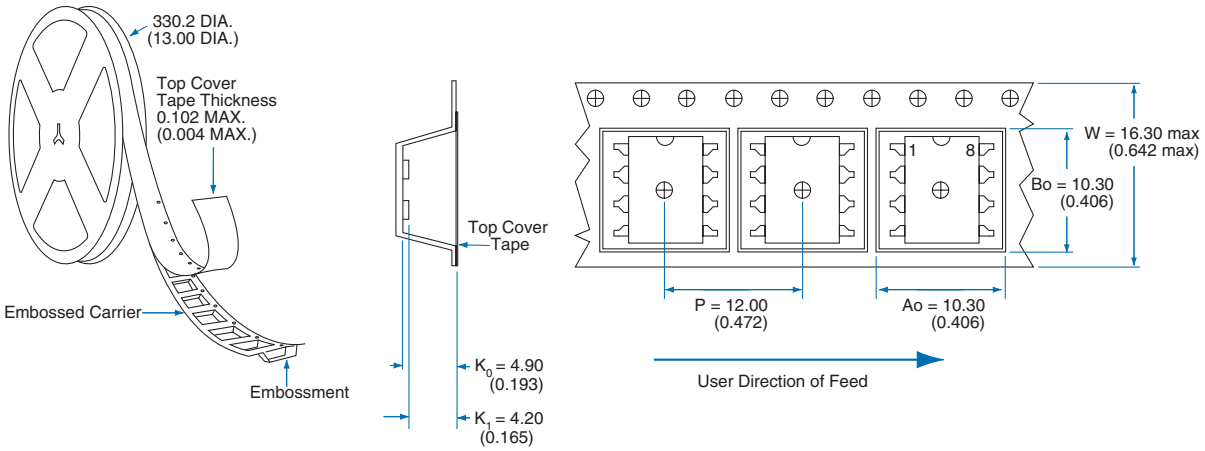
PC Board Pattern (Top View)



Dimensions:
mm
(inches)

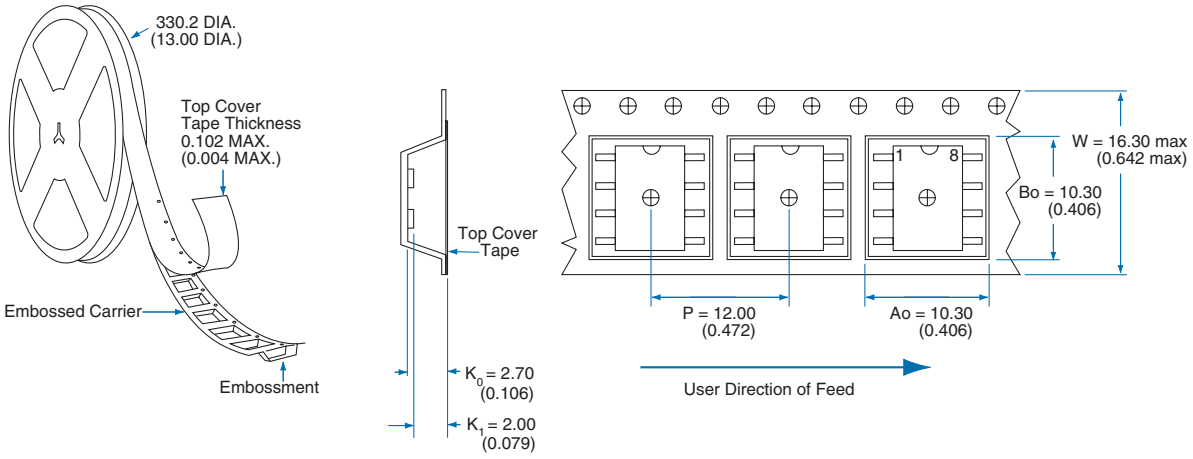
MECHANICAL DIMENSIONS

Tape and Reel Packaging for 8-Pin Surface Mount Package



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

Dimensions:
mm
(inches)

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

Specification: DS-OAA160-R06

10/20/06