PLA160
Single Pole OptoMOS® Relays

Parameter	Rating	Units
Maximum Turn-On/Turn-Off Times	50	µs
Blocking Voltage	300	V_P
Load Current	50	mA
Max On-resistance	100	Ω

Features
- Fastest Switching OptoMOS Relay, 50µs
- Small 6-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
- FCC Compatible
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable
- Surface Mount Tape & Reel Version Available
- Flammability Classification Rating of V-0

Applications
- Instrumentation
  - Multiplexers
  - Data Acquisition
  - Electronic Switching
  - I/O Subsystems
  - Meters (Watt-Hour, Water, Gas)
- Medical Equipment—Patient/Equipment Isolation
- Security Systems
- Aerospace
- Industrial Controls
- Reed Relay Replacement

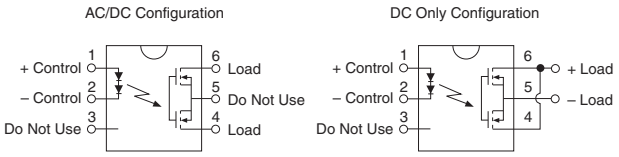
Description
PLA160 is a 300V, 50mA, 100Ω 1-Form-A relay. This performance leader features the fastest switching speed (50µs) available in an OptoMOS relay.

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

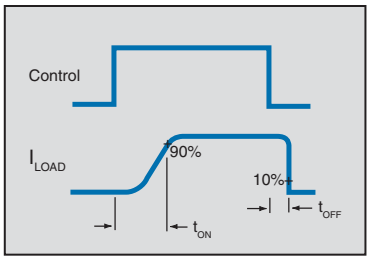
Ordering Information

Part Number	Description
PLA160	6-Pin DIP (50/Tube)
PLA160S	6-Pin Surface Mount (50/Tube)
PLA160STR	6-Pin Surface Mount (1,000/Reel)

Pin Configuration



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings

Parameter	Ratings	Units
Blocking Voltage	300	V_P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
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

[2] Derate Linearly 6.67 mW/˚C

Electrical absolute maximum ratings are at 25°C

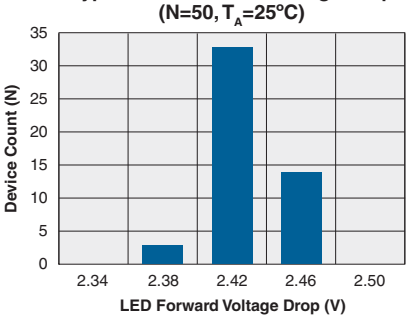
Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical Characteristics

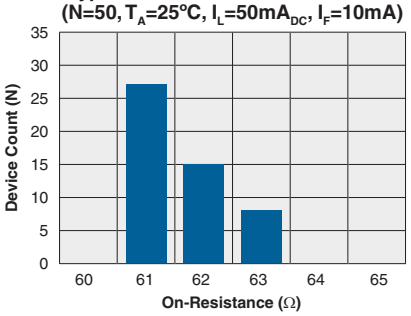
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Load Current (Continuous)						
AC/DC Configuration	-	I_L	-	-	50	mA
DC Configuration			-	-	80	
Peak Load Current	t=10ms	I_{LPK}	-	-	200	mA
On-Resistance						
AC/DC Configuration	I_F=50mA	R_{ON}	-	60	100	Ω
DC Configuration	I_F=80mA		-	15	30	
Off-State Leakage Current	V_L=300V	I_{LEAK}	-	-	25	nA
	V_L=100V		-	1	10	
Switching Speeds						
Turn-On	I_F=10mA, V_L=10V	t_{ON}	-	25	50	µs
Turn-Off		t_{OFF}		42		
Output Capacitance	50V, f=1mHz	C_{OUT}	-	3	-	pF
Input Characteristics @ 25°C						
Input Control Current	I_L=50mA	I_F	-	1.35	10	mA
Input Dropout Current	-	I_F	0.4	1.25	-	mA
Input Voltage Drop	I_F=10mA	V_F	1.8	2.4	2.8	V
Reverse Input Current	V_R=5V	I_R	-	-	10	µA
Common Characteristics @ 25°C						
Input to Output Capacitance	-	$C_{I/O}$	-	3	-	pF

PERFORMANCE DATA*

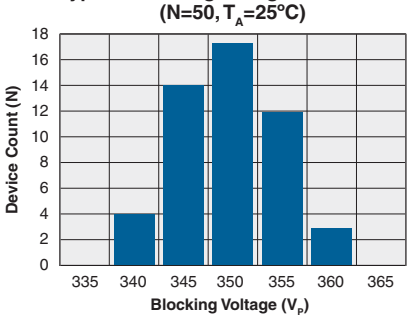
Typical LED Forward Voltage Drop
(N=50, T_A=25°C)



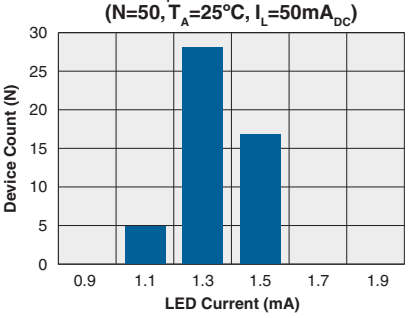
Typical On-Resistance Distribution
(N=50, T_A=25°C, I_L=50mA$_{DC}$, I_F=10mA)



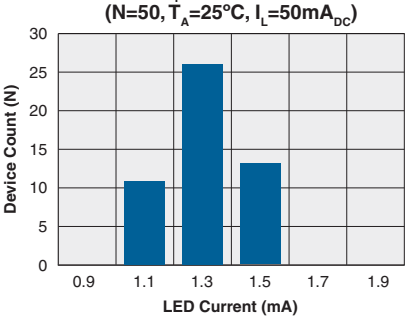
Typical Blocking Voltage Distribution
(N=50, T_A=25°C)



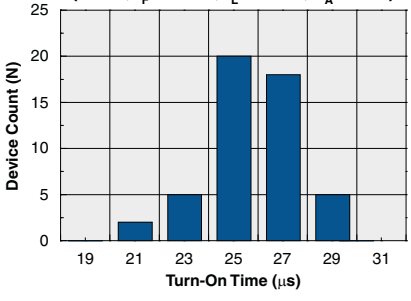
Typical I_F for Switch Operation
(N=50, T_A=25°C, I_L=50mA$_{DC}$)



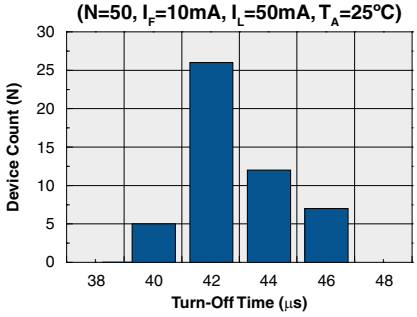
Typical I_F for Switch Dropout
(N=50, T_A=25°C, I_L=50mA$_{DC}$)



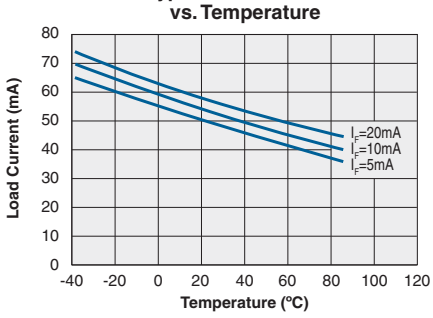
Turn-On Time Distribution
(N=50, I_F=10mA, I_L=50mA, T_A=25°C)



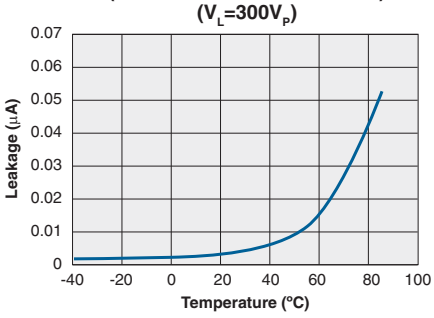
Turn-Off Time Distribution
(N=50, I_F=10mA, I_L=50mA, T_A=25°C)



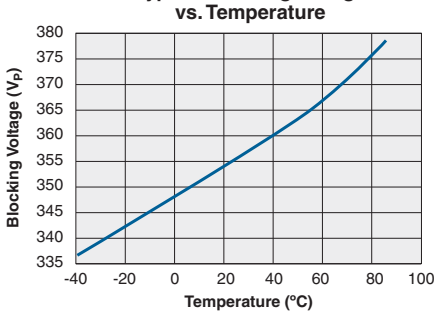
Typical Load Current
vs. Temperature



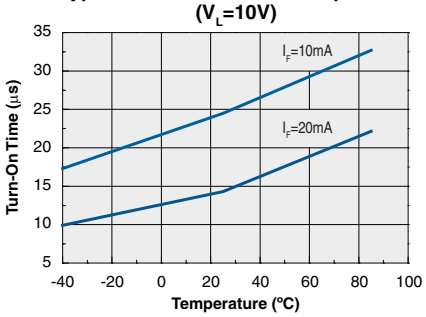
Typical Leakage vs. Temperature
(Measured across Pins 4 & 6)
(V_L=300V_P)



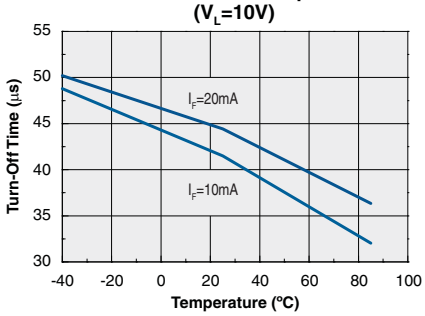
Typical Blocking Voltage
vs. Temperature



Typical Turn-On Time vs. Temperature
(V_L=10V)



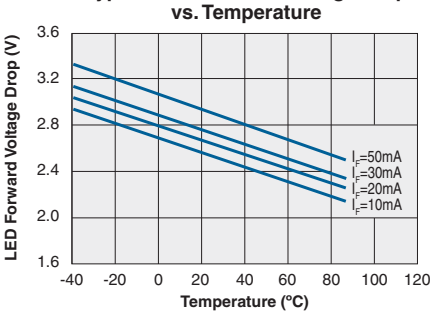
Turn-Off Time vs. Temperature
(V_L=10V)



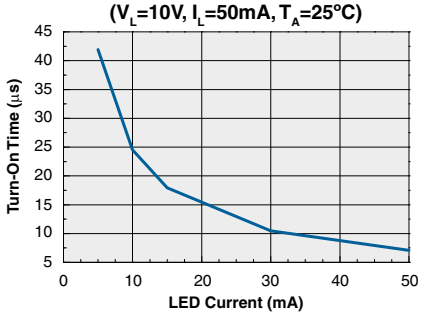
*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

PERFORMANCE DATA*

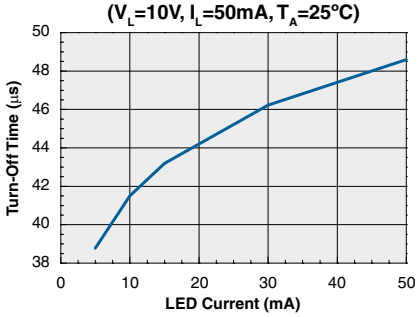
Typical LED Forward Voltage Drop vs. Temperature



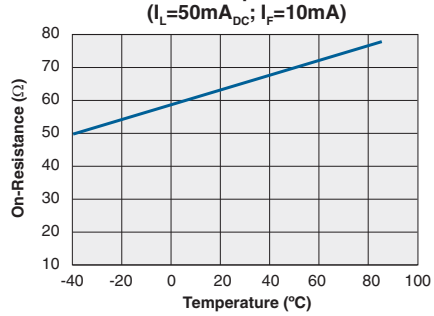
Turn-On Time vs. LED Current (V_L=10V, I_L=50mA, T_A=25°C)



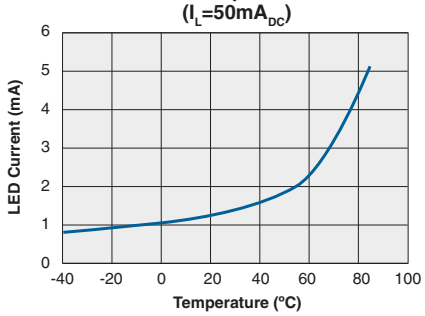
Turn-Off Time vs. LED Current (V_L=10V, I_L=50mA, T_A=25°C)



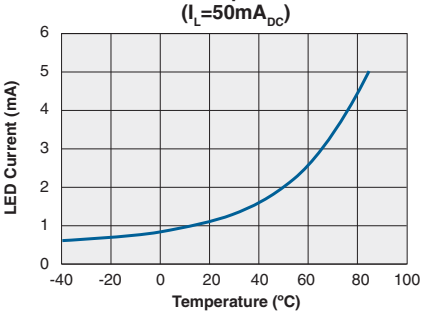
Typical On-Resistance vs. Temperature (I_L=50mA$_{DC}$; I_F=10mA)



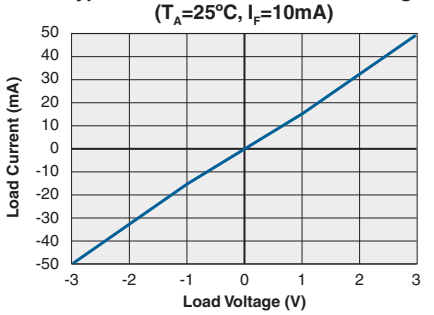
Typical I_F for Switch Operation vs. Temperature (I_L=50mA$_{DC}$)



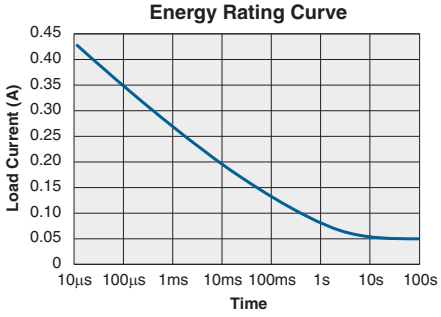
Typical I_F for Switch Dropout vs. Temperature (I_L=50mA$_{DC}$)



Typical Load Current vs. Load Voltage (T_A=25°C, I_F=10mA)



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.

Manufacturing Information

Soldering

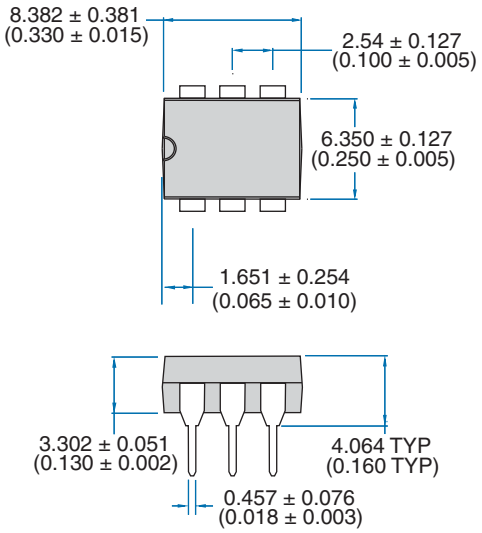
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

Washing

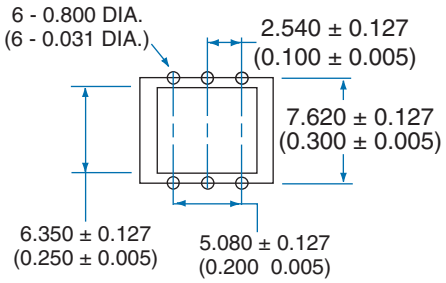
Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS

6-Pin DIP Thru-Hole Package

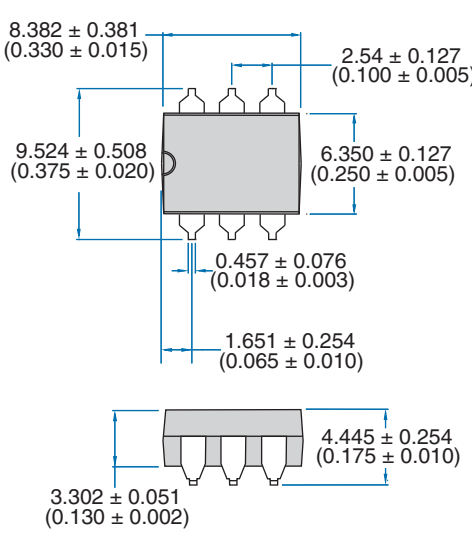


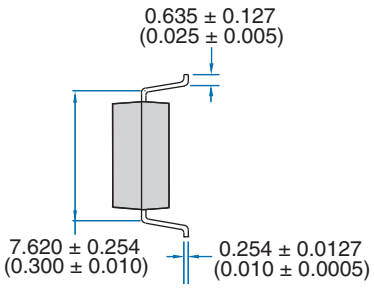
PC Board Pattern



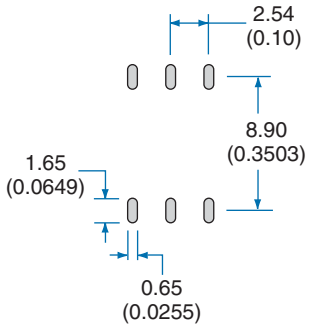
Dimensions
mm
(inches)

6-Pin Surface Mount Package (”S” Suffix)



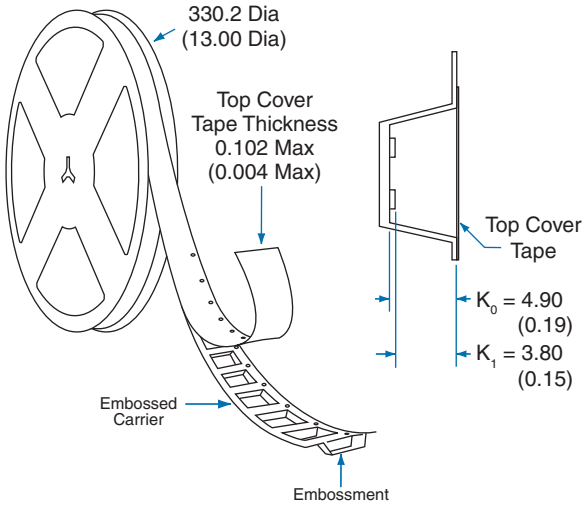


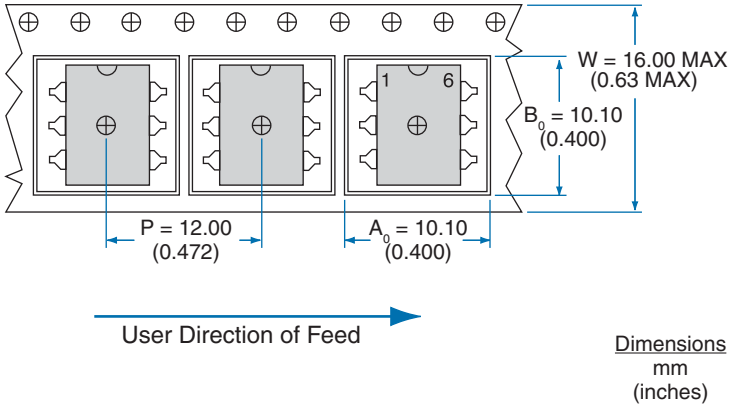
Recommended PCB Land Pattern



Dimensions
mm
(inches)

Tape and Reel Packaging for 6-Pin "S" Suffix Parts





Dimensions
mm
(inches)

NOTE: Tape dimensions not shown comply with JEDEC Standard EIA-481-2

Specification: DS-PLA160-R04

6/4/09