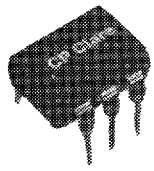
# OptoMOS®
## Solid State Switches



| Engineering Specifications | LCA110 | LCA120 | LCA125 | PLA110 | LCB110 | LCB120 | XCA110 | XCA120 | OMA130 | OMA160 |
|---|---|---|---|---|---|---|---|---|---|---|
| | B | A | A | A | A | | | | | |
| | 250 | 300 | 200 | 60 | 250 | | | | | |
| | 170 | 100 | 150 | 250 | 50 | | | | | |
| | 300 | 150 | 250 | 400 | 80 | | | | | |
| | 400 | 350 | 400 | 500 | 100 | | | | | |
| | 16 | 28 | 15 | 8 | 50 | | | | | |
| | 20 | 40 | 25 | 10 | 100 | | | | | |
| | 5 | 9 | 5 | 2 | 15 | | | | | |
| | 6 | 15 | 10 | 3 | 30 | | | | | |
| | 5 | 5 | 8 | 10 | 10 | | | | | |
| | 5 | 4 | 5 | 5 | 0.125 | | | | | |
| | 5 | 4 | 5 | 5 | 0.125 | | | | | |
| | 1 | 1 | 1 | 1 | 0.025 | | | | | |
| | 50 | 25 | 50 | 50 | 5 | | | | | |

**Output Characteristics**

| Contact Form | A | A | A | A | B |
|---|---|---|---|---|---|
| **Peak Blocking (V)** | 350 | 250 | 300 | 400 | 350 |
| **Continuous Rated Load (mA)** | | | | | |
| X Configuration | 120 | 170 | 170 | 150 | 120 |
| Y Configuration | 200 | 300 | 300 | 210 | 200 |
| **Peak Load/mA (10msec)** | 350 | 400 | 400 | 400 | 350 |
| **On Resistance (Ohms)** | | | | | |
| X Configuration, Typical | 23 | 12 | 10 | 15 | 23 |
| Maximum | 35 | 20 | 16 | 22 | 35 |
| Y Configuration, Typical | 7 | 4 | 4 | 5 | 7 |
| Maximum | 10 | 6 | 5 | 7 | 10 |
| **Switching Time (Max)** | | | | | |
| $I_{CONTROL}$(mA) | 5[1] | 5 | 5 | 5 | 5 |
| $T_{ON}$ (msec) | 3 | 5 | 5 | 1 | 3 |
| $T_{OFF}$ (msec) | 3 | 5 | 5 | 0.25 | 3 |
| **Off State Leakage (Max) at Full Rated Voltage (μA)** | 1 | 1 | 1 | 1 | 1 |
| **Typical Capacitance at 0 Volts** f = IMHz (pF) | 25 | 50 | 50 | 35 | 25 |

[1]Also operates with $I_{CONTROL}$ = 2mA ; $T_{ON}$ = 5 msec.; $T_{OFF}$ = 3 msec.

**Input Characteristics**

| | | | | | |
|---|---|---|---|---|---|
| **Control Current (mA)**** | | | | | |
| Minimum | 5 | 5 | 8 | 10 | 10 |
| Maximum | 100 | 100 | 100 | 100 | 100 |
| **Voltage Drop (V)** | | | | | |
| Minimum | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |
| Maximum | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| **Reverse Voltage (V, Max)** | 5 | 5 | 5 | 5 | 5 |
| **Reverse Leakage (μA, Max)** | 10 | 10 | 10 | 10 | 10 |
| **Input/Output (Capacitance, pF)** | 3 | 3 | 3 | 3 | 3 |

*$I_{CONTROL}$ represents the forward LED current used to activate the switch.

**Absolute Maximum Ratings**

| Parameter | Min | Max | Units |
|---|---|---|---|
| Input/Output Isolation | 2500 | — | $V_{RMS}$ |
| Optional "E" Suffix | 3750 | — | $V_{RMS}$ |
| Operating Temperature† | -40 | 85 | °C |
| Storage Temperature | -40 | 125 | °C |
| Soldering Temperature (10 seconds on leads) | — | 260 | °C |

All characteristics at 25°C

***Typical Switching Time vs. Temperature:
- ■ - LCA110, LCA120, LCA125 and OMA130
- ■ - XCA110 and XCA120
- ■ - OMA160

**Features:**
- ■ Small 6-pin DIP package
- ■ Machine insertable/wave solderable
- ■ Two milliwatt logic-compatible drive power
- ■ No moving parts
- ■ Loads up to 400 Volts AC/DC and 400 mA
- ■ Lifetime in excess of 15 billion operations
- ■ Arc-free with no snubbing circuits
- ■ Optimal switching speeds
- ■ 3,750 Volt input/output isolation
- ■ UL recognized: File No. E76270
- ■ CSA compatible
- ■ TO-5 package available
- ■ MIL processing available
- ■ Other configurations available
- ■ BABT (BS 6301/BS 415 / BS7002) approval

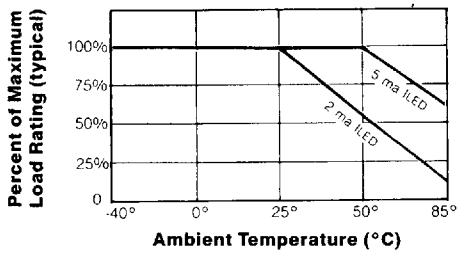
When ordering CP Clare solid state switches, a suffix may be added to the part number to specify the following options:

| Suffix | Option |
|---|---|
| E | 3,750V Isolation Voltage |
| S | Gull-Wing Package* |
| T/R | Tape and Reel Package* |
| L | Current Limiting Versions (Available in 110, 120 and 190 Families) |
| C | Optional 4-Pin Configuration |

*For a complete listing of CP Clare Solid State Products ask for our SSP15 catalog.

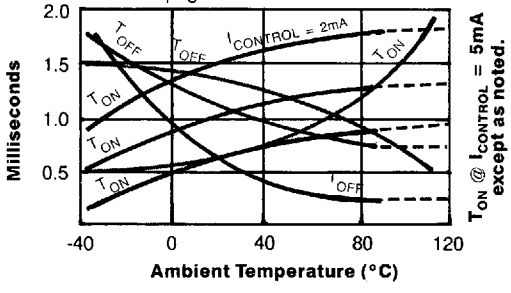
## Performance

### Load vs. Temperature

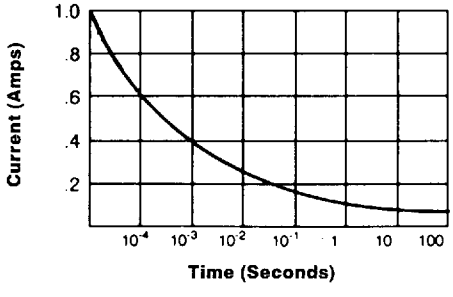



### Typical Switching Time vs. Temperature***

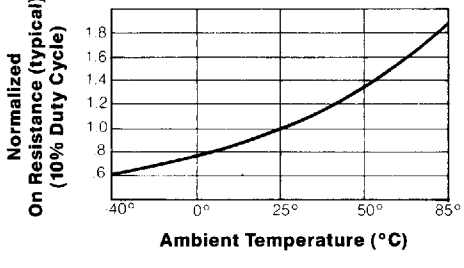
Please see bottom of page 36.



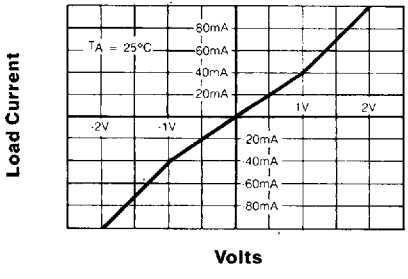

### Energy Rating



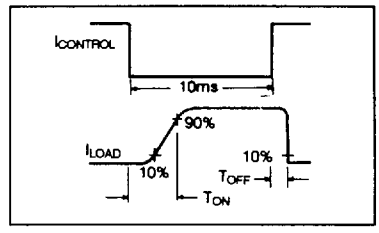

### On Resistance vs. Temperature

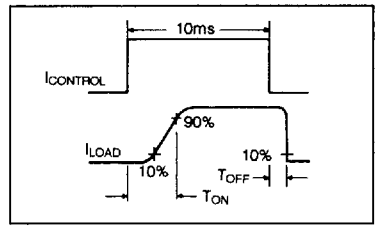



### Typical I/V Characteristics

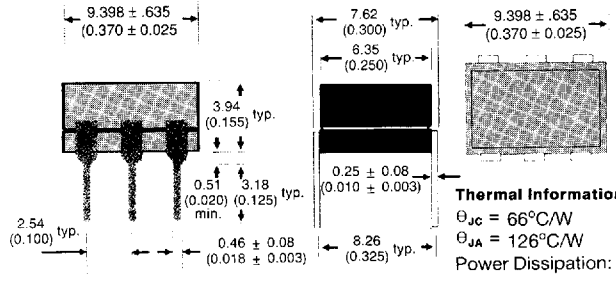



### Switching Characteristics



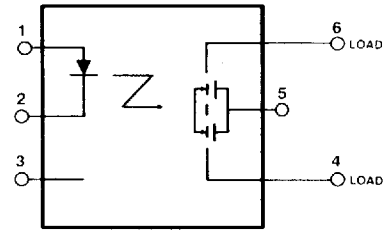

## Package Mechanical Dimensions




**Thermal Information:**
$\theta_{JC}$ = 66°C/W
$\theta_{JA}$ = 126°C/W
Power Dissipation: 0.8W

### Configuration X

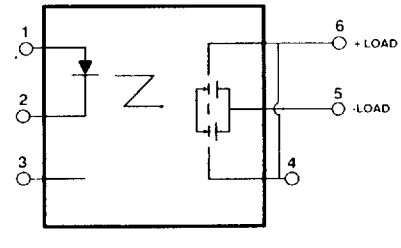
**This is the preferred configuration for AC circuits.**




**Pin Connections**
1 +Control
2 –Control
3 Do not use
4 Load
5 Do not use
6 Load

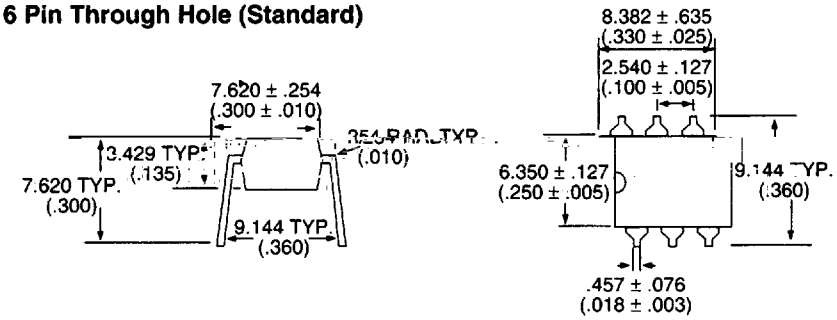
### Configuration Y

**This configuration is most useful for DC circuits where the direction of the current does not change.**

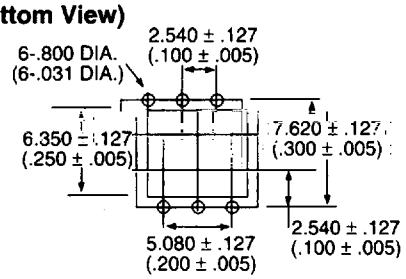



**Pin Connections**
1 +Control
2 –Control
3 Do not use
4 +Load
5 –Load

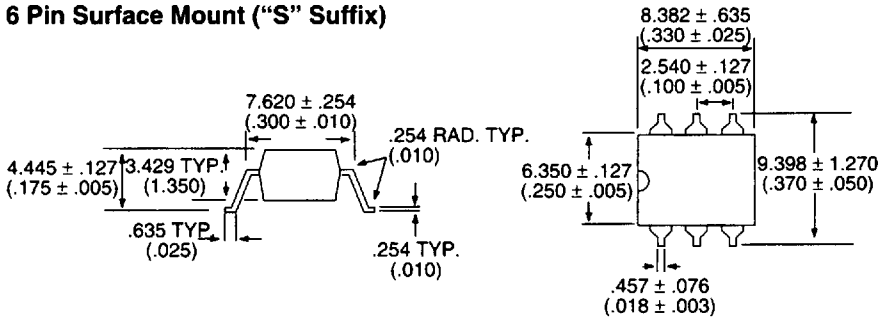
### 6 Pin Through Hole (Standard)



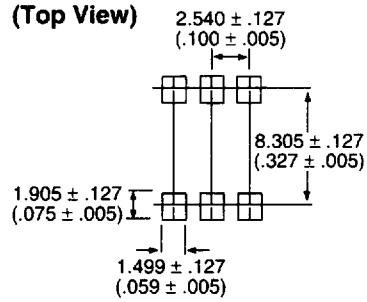

### 6 Pin PC Board Pattern (Bottom View)



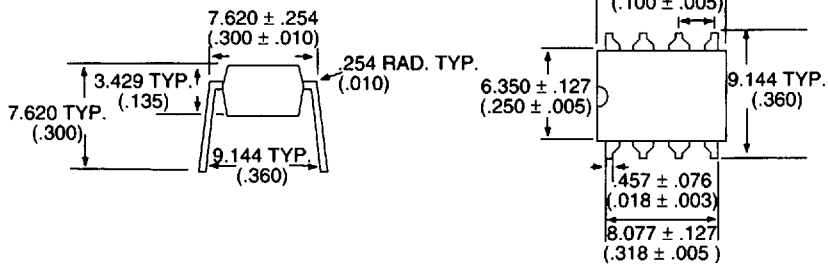

### 6 Pin Surface Mount ("S" Suffix)



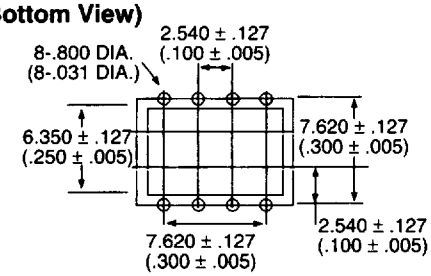

### 6 Pin Mounting Pad (Top View)



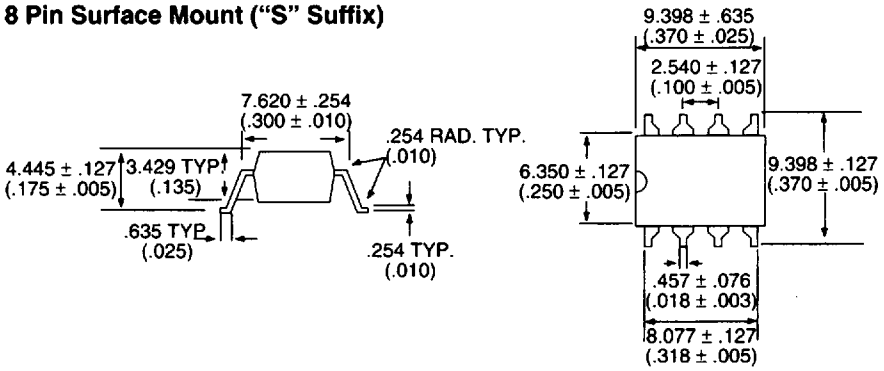

### 8 Pin Through Hole (Standard)



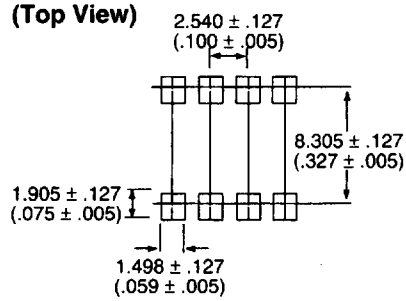

### 8 Pin PC Board Pattern (Bottom View)




### 8 Pin Surface Mount ("S" Suffix)

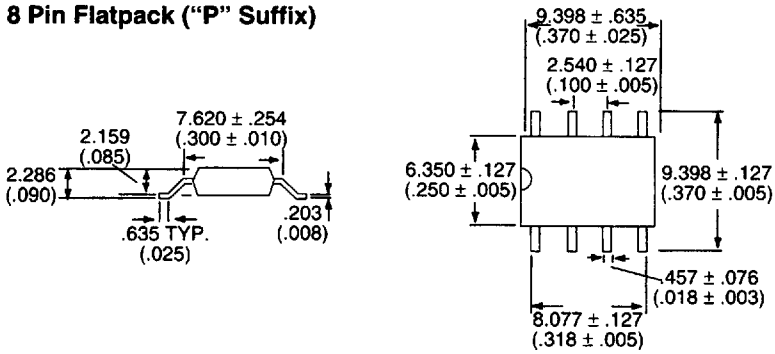



### 8 Pin Mounting Pad (Top View)

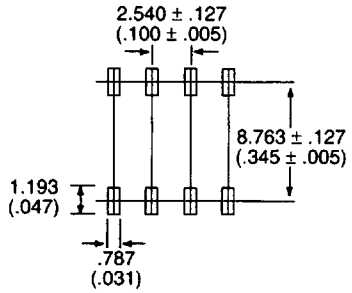



DIMENSIONS
mm
(Inches)

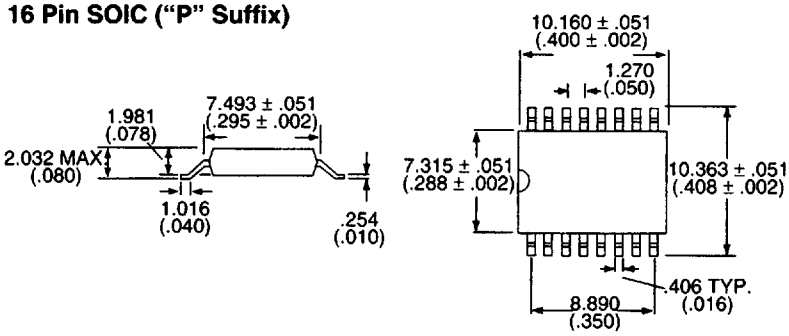
### 8 Pin Flatpack ("P" Suffix)



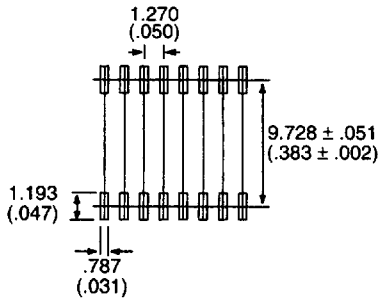

### 8 Pin Flatpack Mounting Pad (Top View)



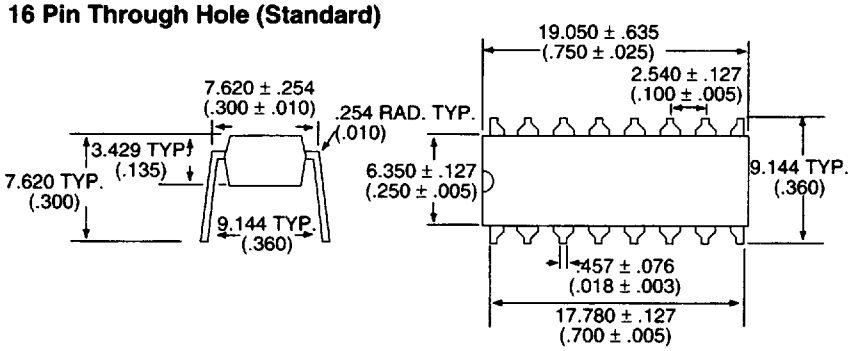

### 16 Pin SOIC ("P" Suffix)



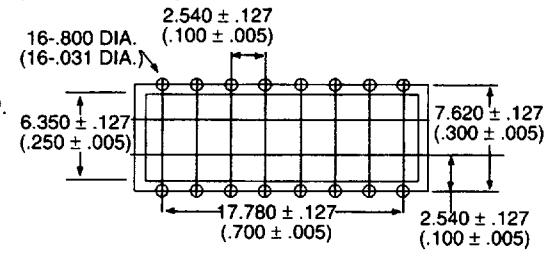

### 16 Pin SOIC Mounting Pad (Top View)



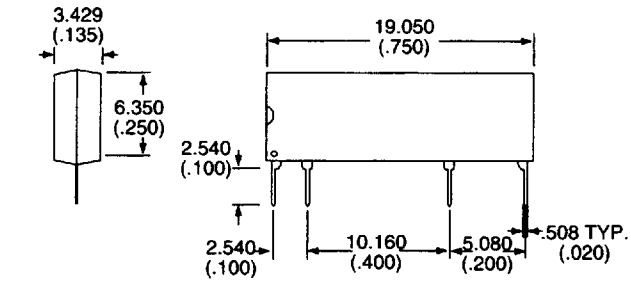

### 16 Pin Through Hole (Standard)




### 16 Pin PC Board Pattern (Bottom View)

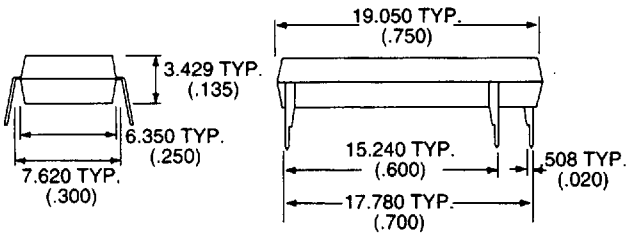



### 8 Pin SIP

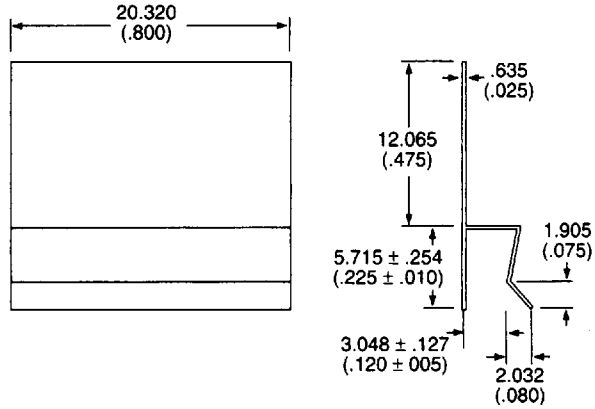



DIMENSIONS
mm
(Inches)

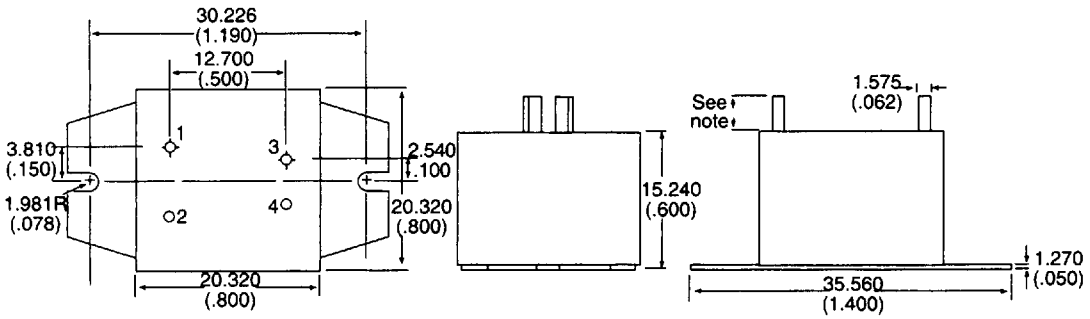
## 16 Pin DIP




## Thermal Clip

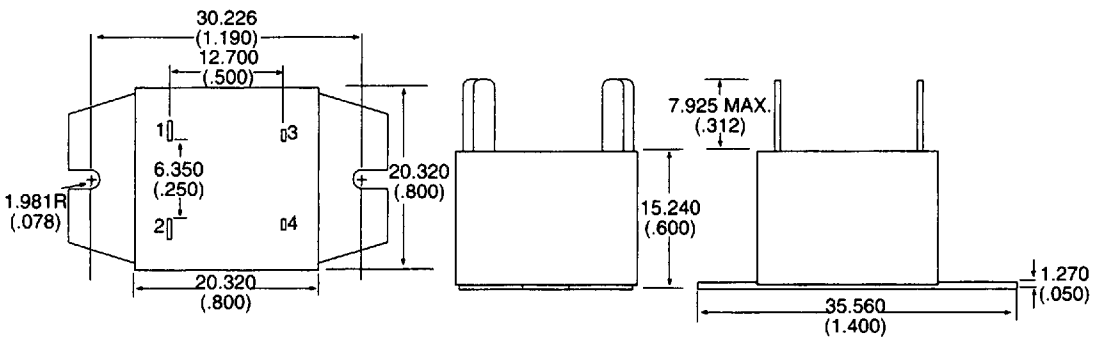



## OptoFILM® 10A Series, Pins

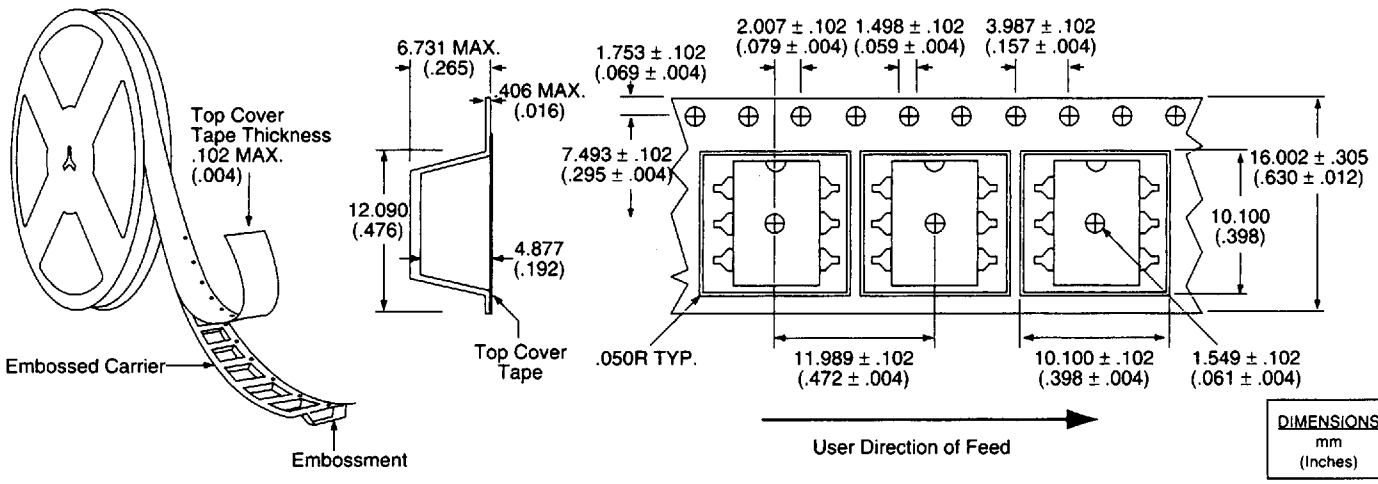



Note: Specify "-1" (0.300" pins)
Specify "-3" (0.175" pins)

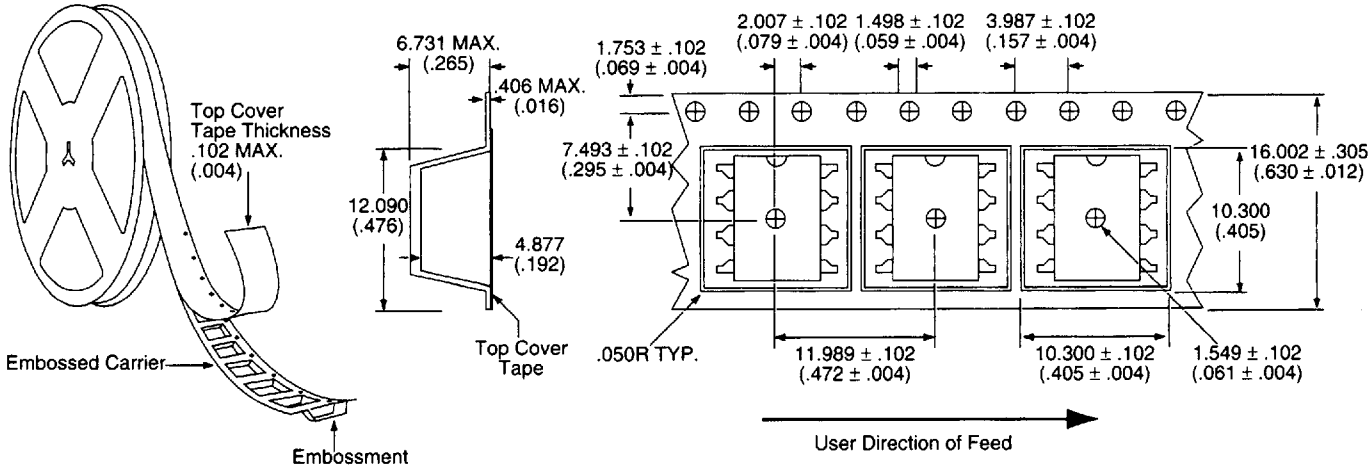
## OptoFILM® 10A Series, Quick Connect



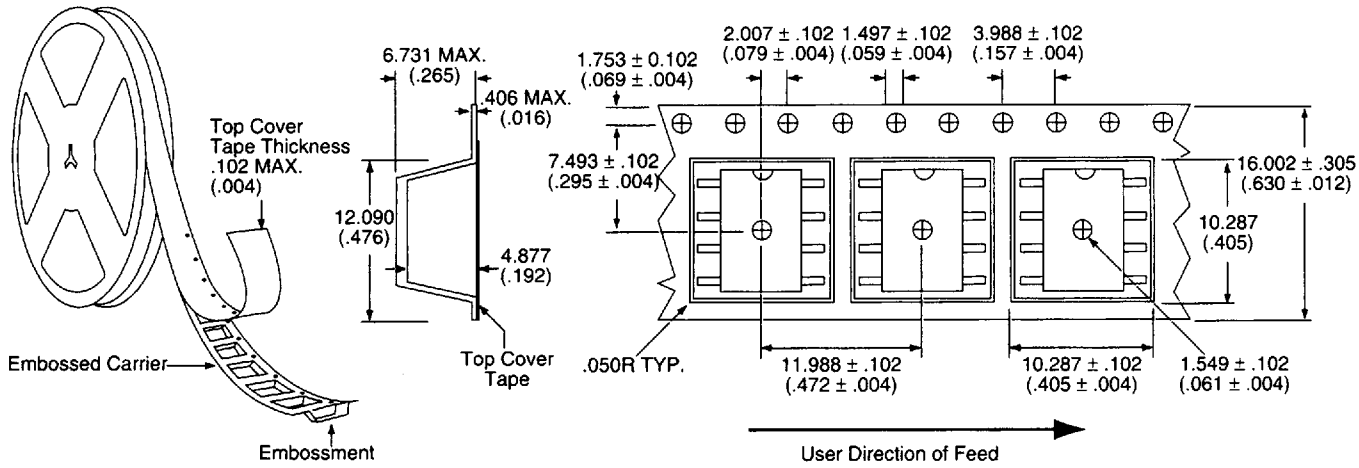

## Tape and Reel Packaging for 6 Pin Surface Mount Package



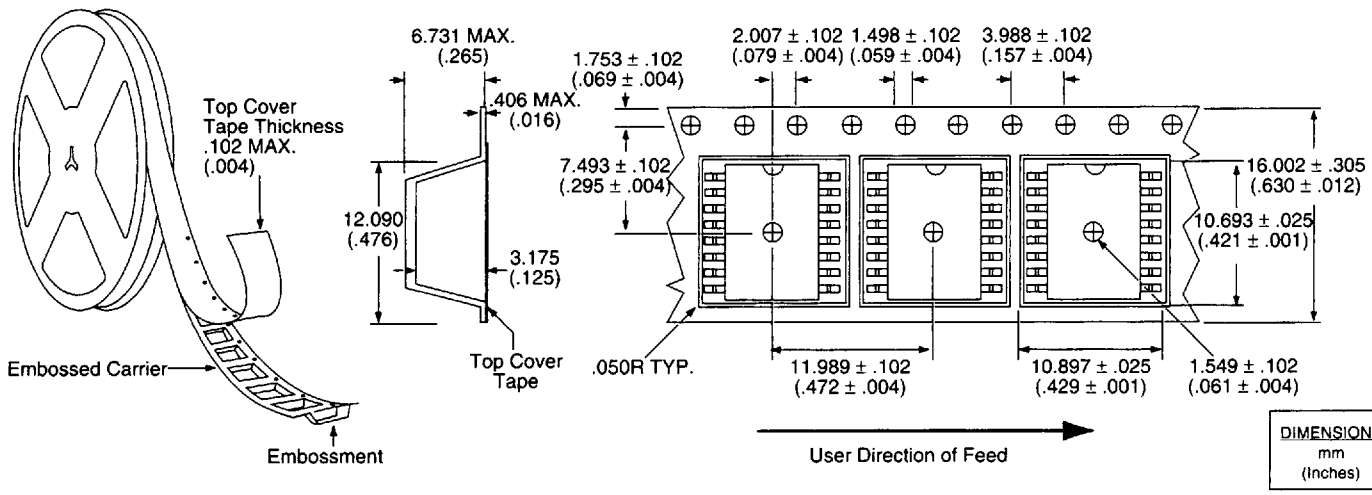
### Tape and Reel Packaging for 8 Pin Surface Mount Package




### Tape and Reel Packaging for 8 Pin Flatpack Package




### Tape and Reel Packaging for 16 Pin SOIC Package




DIMENSIONS
mm
(Inches)