

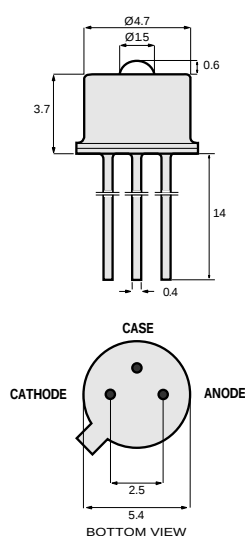
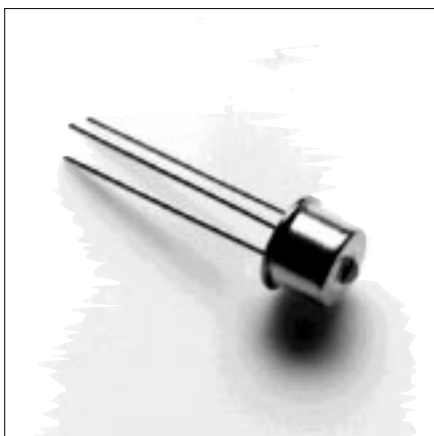
# PRODUCT INFORMATION

860nm

**1A194**  
High-Performance LED

Datacom, General Purpose

This device is designed for Ethernet and general applications and offers an excellent price/performance ratio for cost-effective solutions. Its double-lens optical system results in optimum coupling of power into the fiber.



All dimensions in mm

The diode chip is isolated from the case.

**TO-46 Package With Lens**

## Optical and Electrical Characteristics (25°C Case Temperature)

| PARAMETER                                    | SYMBOL             | MIN. | TYP. | MAX. | UNIT          | TEST CONDITION                                                |
|----------------------------------------------|--------------------|------|------|------|---------------|---------------------------------------------------------------|
| Fiber-Coupled Power (Fig.1, 2,& 3) (Table 1) | $P_{\text{fiber}}$ | 25   | 45   |      | $\mu\text{W}$ | $I_F = 60 \text{ mA}$ (Note 1)<br>Fiber: 50/125 $\mu\text{m}$ |
| Rise and Fall Time (10-90%)                  | $t_r, t_f$         |      | 5    | 7    | ns            | $I_F = 60 \text{ mA}$ (no bias)<br>Graded Index<br>NA=0.20    |
| Bandwidth (3dB $_{\text{el}}$ )              | $f_c$              |      | 70   |      | MHz           | $I_F = 60 \text{ mA}$                                         |
| Peak Wavelength                              | $\lambda_p$        | 840  | 860  | 880  | nm            | $I_F = 60 \text{ mA}$                                         |
| Spectral Width (FWHM)                        | $\Delta\lambda$    |      | 50   |      | nm            | $I_F = 60 \text{ mA}$                                         |
| Forward Voltage (Fig.5)                      | $V_F$              |      | 1.7  | 1.9  | V             | $I_F = 60 \text{ mA}$                                         |
| Reverse Current                              | $I_R$              |      |      | 20   | $\mu\text{A}$ | $V_R = 1\text{V}$                                             |
| Capacitance                                  | $C$                |      | 250  |      | pF            | $V_R = 0\text{V}, f = 1 \text{ MHz}$                          |

**Note 1:** Measured at the exit of 100 meters of fiber.

## Absolute Maximum Ratings

| PARAMETER                                                               | SYMBOL           | LIMIT         |
|-------------------------------------------------------------------------|------------------|---------------|
| Storage Temperature                                                     | $T_{\text{stg}}$ | -55 to +125°C |
| Operating Temperature (derating: Fig.4)                                 | $T_{\text{op}}$  | -55 to +125°C |
| Electrical Power Dissipation (derating: Fig.4)                          | $P_{\text{tot}}$ | 160 mW        |
| Continuous Forward Current ( $f \leq 10 \text{ kHz}$ )                  | $I_F$            | 80 mA         |
| Peak Forward Current (duty cycle $\leq 50\%$ , $f \geq 1 \text{ MHz}$ ) | $I_{\text{FRM}}$ | 130 mA        |
| Reverse Voltage                                                         | $V_R$            | 1.5 V         |
| Soldering Temperature (2mm from the case for 10 sec)                    | $T_{\text{sld}}$ | 260°C         |

## Thermal Characteristics

| PARAMETER                               | SYMBOL            | MIN. | TYP. | MAX. | UNIT  |
|-----------------------------------------|-------------------|------|------|------|-------|
| Thermal Resistance - Infinite Heat Sink | $R_{\text{thjc}}$ |      |      | 200  | °C/W  |
| Thermal Resistance - No Heat Sink       | $R_{\text{thja}}$ |      |      | 500  | °C/W  |
| Temperature Coefficient - Optical Power | $dP/dT_j$         |      | -0.5 |      | %/°C  |
| Temperature Coefficient - Wavelength    | $d\lambda/dT_j$   |      | 0.3  |      | nm/°C |

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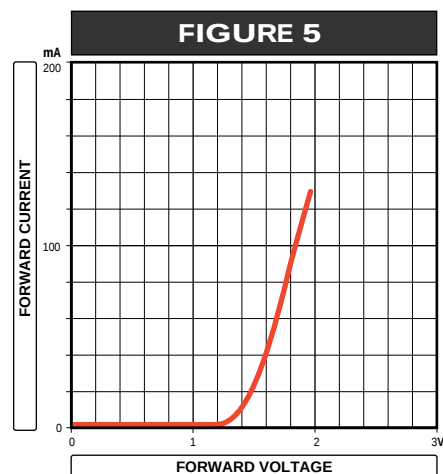
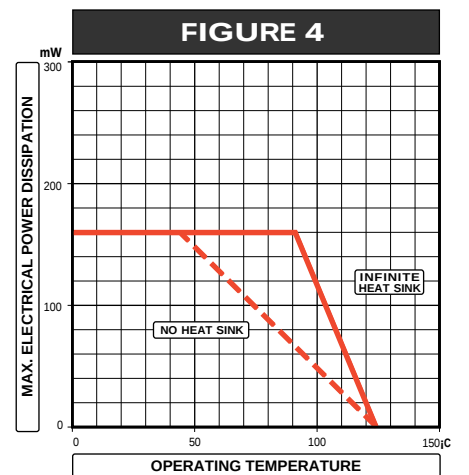
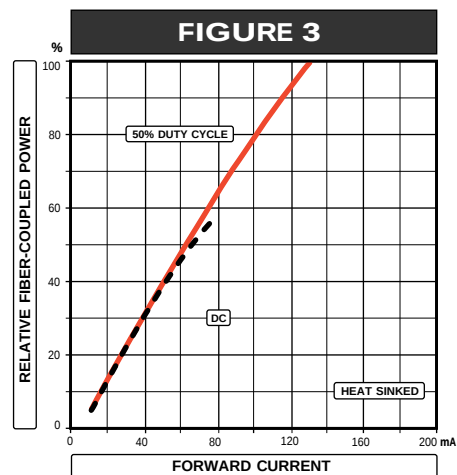
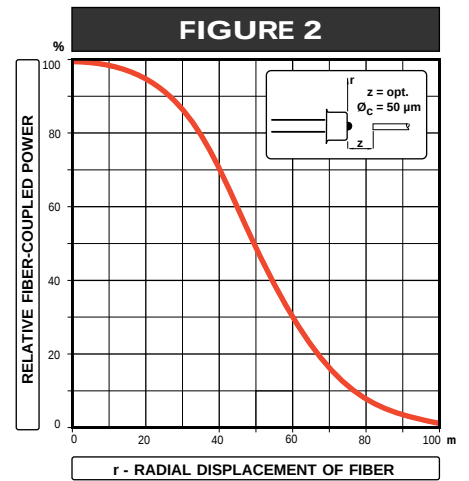
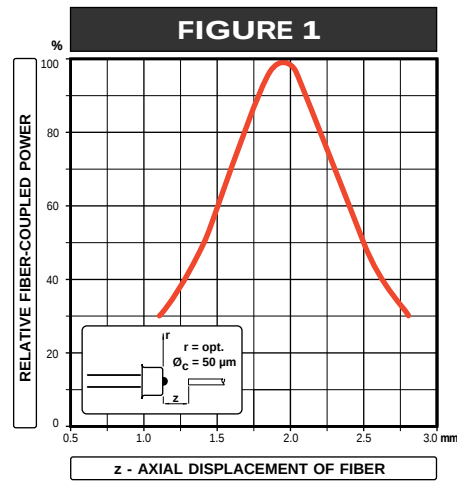
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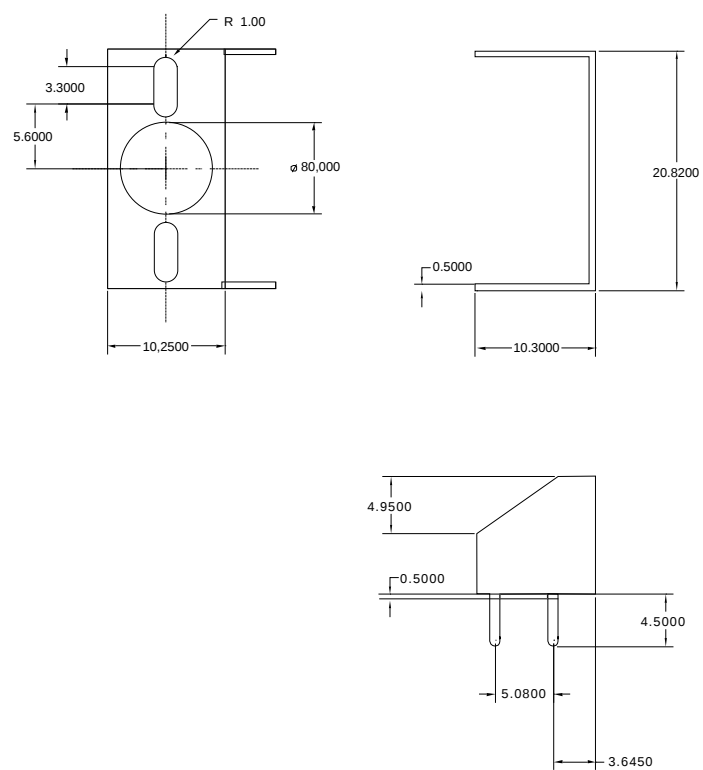
### Typical Fiber-Coupled Power

| Core Diameter/Cladding Diameter<br>Numerical Aperture |                                 |                               |                               |
|-------------------------------------------------------|---------------------------------|-------------------------------|-------------------------------|
| 50/125 $\mu\text{m}$<br>0.20                          | 62.5/125 $\mu\text{m}$<br>0.275 | 100/140 $\mu\text{m}$<br>0.29 | 200/230 $\mu\text{m}$<br>0.37 |
| 45 $\mu\text{W}$                                      | 95 $\mu\text{W}$                | 210 $\mu\text{W}$             | 440 $\mu\text{W}$             |

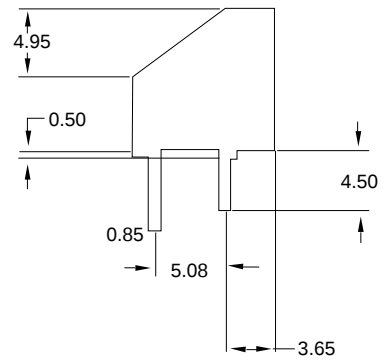
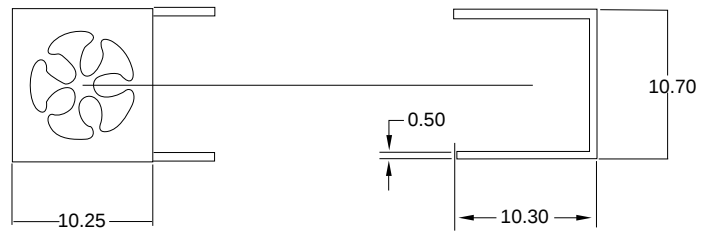
Table 1



# Clip for SC-2A



## Clip for Pigtail-3A

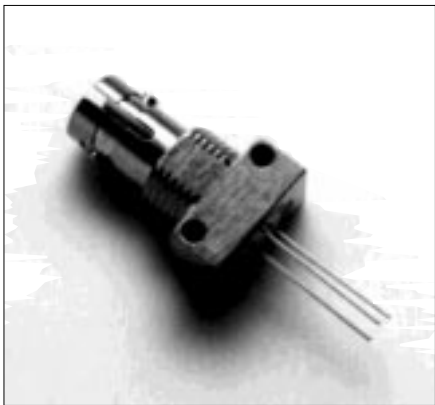


# PRODUCT INFORMATION

## ST-2A Package

### Emitter or Detector in ST® Package

Mitel emitters and detectors can be provided in this low-profile ST® package. The device is electrically isolated from the ST® receptacle to facilitate electrical connection. And optimum fiber-coupled power or responsivity is ensured by active alignment against the fiber.



### Absolute Maximum Ratings

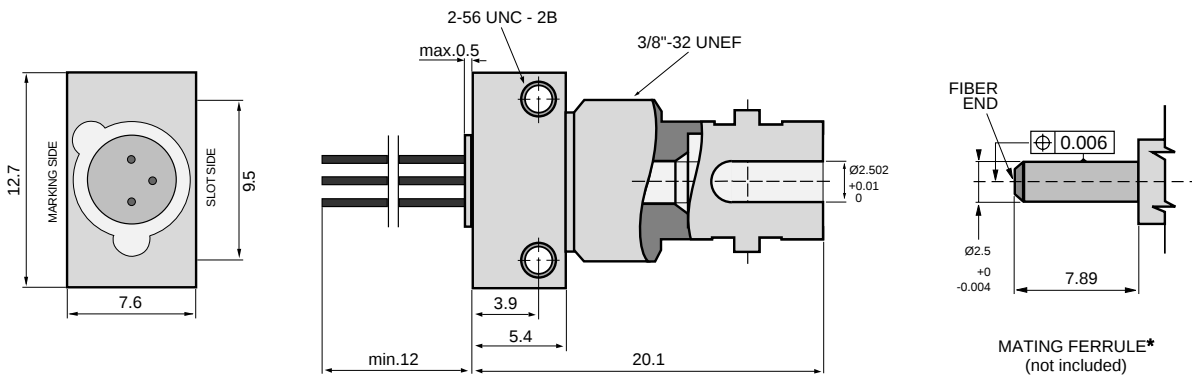
| PARAMETER                                         | SYMBOL            | LIMIT        |
|---------------------------------------------------|-------------------|--------------|
| Operating & Storage Temperature<br>ST-2A (Note 1) | $T_{stg}, T_{op}$ | -40 to +85°C |

**Note 1:** Temperature range can be extended to -55° to +125°C on request.

### Thermal Characteristics

| PARAMETER                                           | SYMBOL     | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------------------------|------------|------|------|------|------|
| Thermal Resistance - Infinite Heat Sink<br>(Note 2) | $R_{thcc}$ |      |      | 40   | °C/W |
| Thermal Resistance - No Heat Sink<br>(Note 2)       | $R_{thca}$ |      |      | 200  | °C/W |
| Thermal Resistance - On PC Board<br>(Note 2)        | $R_{thca}$ |      | 80   |      | °C/W |

**Note 2:** Add  $R_{thjc}$  for emitter or detector to estimate the total thermal resistance.



All Dimensions in mm

\*The fiber-coupled power/responsivity is guaranteed to meet the LED/PIN data sheet - provided a ferrule meeting this specification is used.

### Mechanical Outline of Diode in ST-2A Housing

(ST is a registered trademark of AT&T)

103326 1994-09-20



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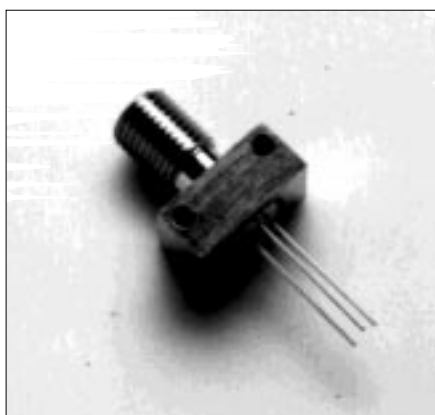
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# PRODUCT INFORMATION

## SMA-2A Package

### Emitter or Detector in SMA Package

Mitel emitters and detectors can be provided in this low-profile SMA package. The device is electrically isolated from the SMA receptacle to facilitate electrical connection. And optimum fiber-coupled power or responsivity is ensured by active alignment against the fiber.



### Absolute Maximum Ratings

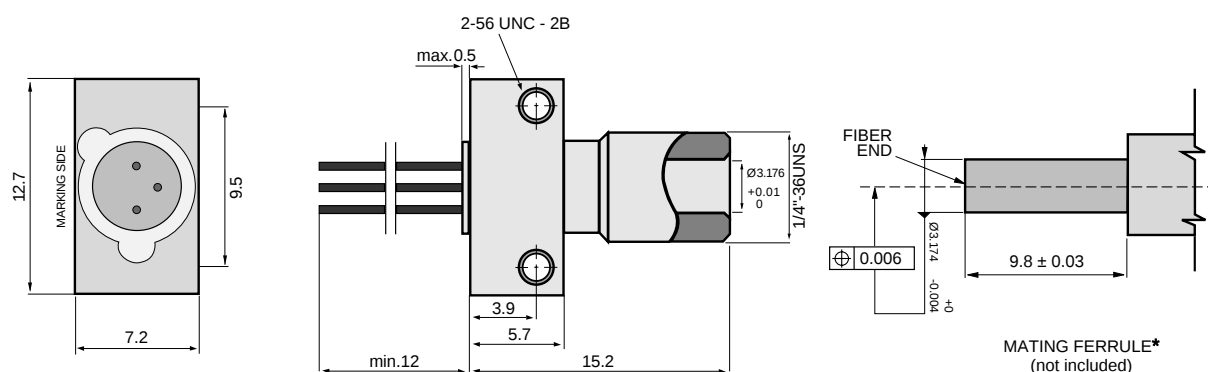
| PARAMETER                                          | SYMBOL            | LIMIT        |
|----------------------------------------------------|-------------------|--------------|
| Operating & Storage Temperature<br>SMA-2A (Note 1) | $T_{stg}, T_{op}$ | -40 to +85°C |

**Note 1:** Temperature range can be extended to -55° to +125°C on request.

### Thermal Characteristics

| PARAMETER                                           | SYMBOL     | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------------------------|------------|------|------|------|------|
| Thermal Resistance - Infinite Heat Sink<br>(Note 2) | $R_{thcc}$ |      |      | 40   | °C/W |
| Thermal Resistance - No Heat Sink<br>(Note 2)       | $R_{thca}$ |      |      | 200  | °C/W |
| Thermal Resistance - On PC Board<br>(Note 2)        | $R_{thca}$ |      | 80   |      | °C/W |

**Note 2:** Add  $R_{thjc}$  for emitter or detector to estimate the total thermal resistance.



All Dimensions in mm

\*The fiber-coupled power/responsivity is guaranteed to meet the LED/PIN data sheet - provided a ferrule meeting this specification is used.

### Mechanical Outline of Diode in SMA-2A Housing

103325 1994-09-20



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# PRODUCT INFORMATION

## SC-2A Package

## Emitter or Detector in SC Package

Mitel emitters and detectors can be provided in this low-profile SC package. The device is electrically isolated from the SC receptacle to facilitate electrical connection. And optimum fiber-coupled power or responsivity is ensured by active alignment against the fiber..



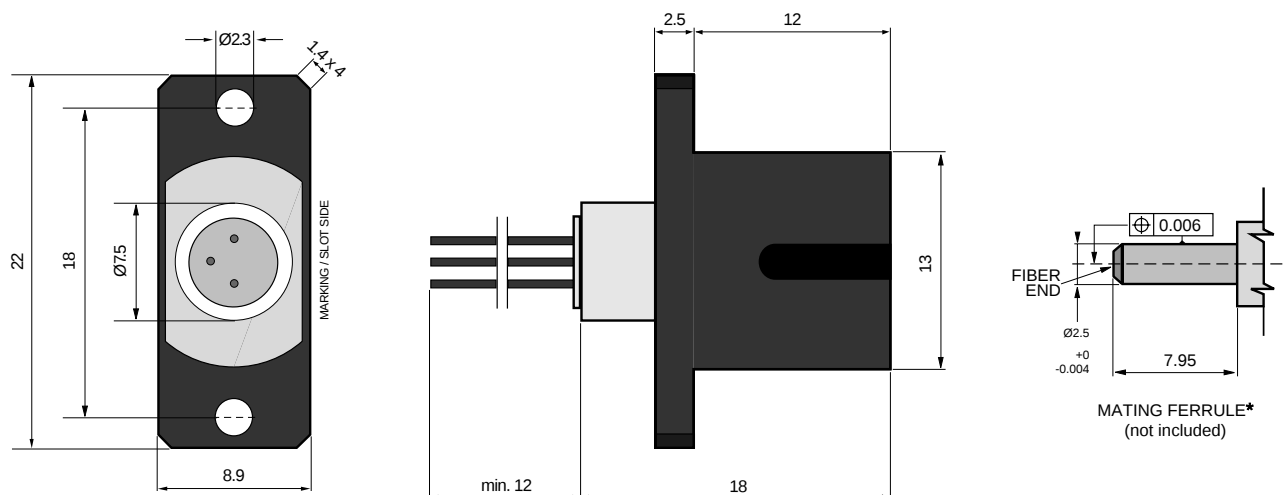
### Absolute Maximum Ratings

| PARAMETER                       | SYMBOL            | LIMIT        |
|---------------------------------|-------------------|--------------|
| Operating & Storage Temperature | $T_{stg}, T_{op}$ | -40 to +85°C |

### Thermal Characteristics

| PARAMETER                                        | SYMBOL     | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------------------|------------|------|------|------|------|
| Thermal Resistance - Infinite Heat Sink (Note 1) | $R_{thcc}$ |      |      | 40   | °C/W |
| Thermal Resistance - No Heat Sink (Note 1)       | $R_{thca}$ |      |      | 200  | °C/W |
| Thermal Resistance - On PC Board (Note 1)        | $R_{thca}$ |      | 125  |      | °C/W |

**Note 1:** Add  $R_{thjc}$  for emitter or detector to estimate the total thermal resistance.



All Dimensions in mm

\* The fiber-coupled power/responsivity is guaranteed to meet the LED/PIN data sheet - provided a ferrule meeting this specification is used.

### Mechanical Outline of Diode in SC-2A Housing

105967 1994-09-20



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# PRODUCT INFORMATION

## Pigtail-3A Package

### Emitter or Detector in Pigtail Package

Mitel emitters and detectors can be provided in this pigtail package with a wide selection of fiber types. The device is electrically isolated from the pigtail receptacle to facilitate electrical connection. And optimum fiber-coupled power or responsivity is ensured by active alignment against the fiber. A special design maximizes the return loss for detectors in this package.



### Absolute Maximum Ratings

| PARAMETER                                    | SYMBOL            | LIMIT        |
|----------------------------------------------|-------------------|--------------|
| Operating & Storage Temperature (Note 1 & 2) | $T_{stg}, T_{op}$ | -40 to +85°C |

**Note 1:** Temperature range can be extended to -55/+125°C on request.

**Note 2:** Temperature range may be limited by the specification of the fiber.

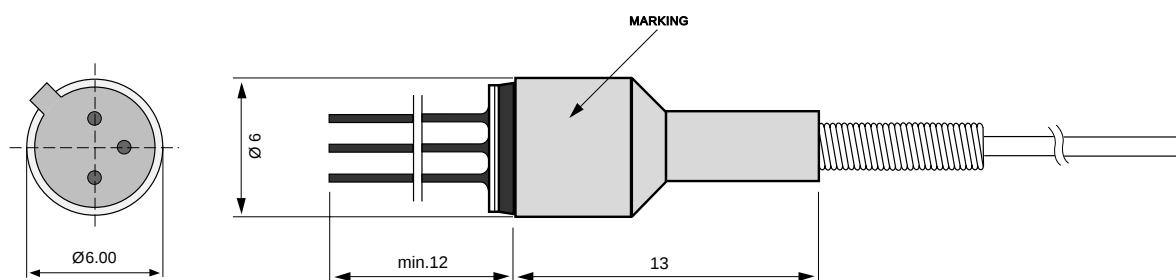
### Thermal Characteristics

| PARAMETER                                        | SYMBOL     | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------------------|------------|------|------|------|------|
| Thermal Resistance - Infinite Heat Sink (Note 3) | $R_{thcc}$ |      |      | 25   | °C/W |
| Thermal Resistance - No Heat Sink (Note 3)       | $R_{thca}$ |      |      | 250  | °C/W |
| Thermal Resistance - On PC-Board (Note 3)        | $R_{thca}$ |      | 120  |      | °C/W |

**Note 3:** Add  $R_{thjc}$  for LED to estimate the total thermal resistance.

### Optical Characteristics

| PARAMETER                             | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---------------------------------------|--------|------|------|------|------|
| Return Loss 10/125μm fiber (PIN only) | RL     | 40   | 55   |      | dB   |



All Dimensions in mm

### Mechanical Outline of Diode in PIGTAIL-3A Housing

105429 1997-07-03

# PRODUCT INFORMATION

## FC-2A Package

## Emitter or Detector in FC Package

Mitel emitters and detectors can be provided in this low-profile FC package. The device is electrically isolated from the FC receptacle to facilitate electrical connection. And optimum fiber-coupled power or responsivity is ensured by active alignment against the fiber.



### Absolute Maximum Ratings

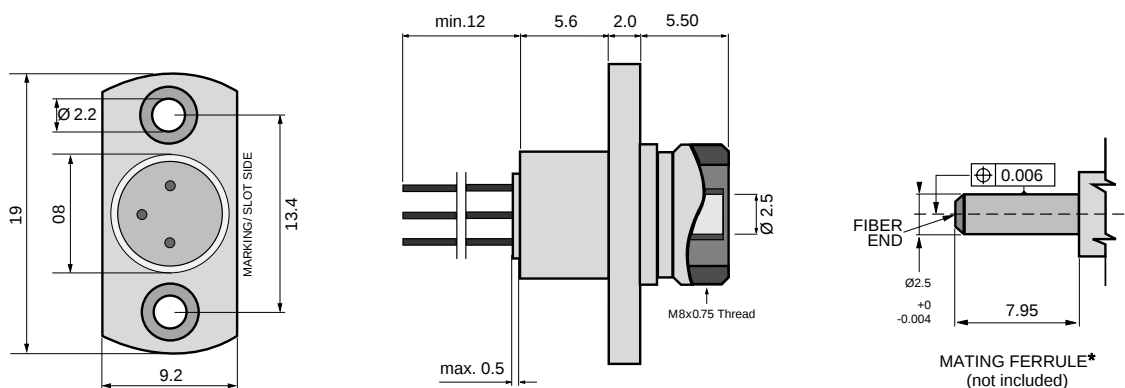
| PARAMETER                                         | SYMBOL            | LIMIT        |
|---------------------------------------------------|-------------------|--------------|
| Operating & Storage Temperature<br>FC-2A (Note 1) | $T_{stg}, T_{op}$ | -40 to +85°C |

**Note 1:** Temperature range can be extended to -55° to +125°C on request.

### Thermal Characteristics

| PARAMETER                                           | SYMBOL     | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------------------------|------------|------|------|------|------|
| Thermal Resistance - Infinite Heat Sink<br>(Note 2) | $R_{thcc}$ |      |      | 40   | °C/W |
| Thermal Resistance - No Heat Sink<br>(Note 2)       | $R_{thca}$ |      |      | 200  | °C/W |
| Thermal Resistance - On PC Board<br>(Note 2)        | $R_{thca}$ |      | 80   |      | °C/W |

**Note 2:** Add  $R_{thjc}$  for emitter or detector to estimate the total thermal resistance.



All Dimensions in mm

\* The fiber-coupled power/responsivity is guaranteed to meet the LED/PIN data sheet - provided a ferrule meeting this specification is used.

## Mechanical Outline of Diode in FC-2A Housing

105515 1994-09-20



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