

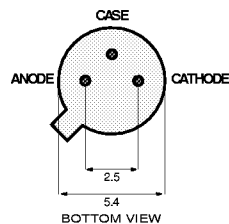
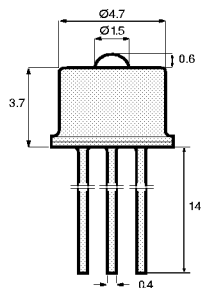
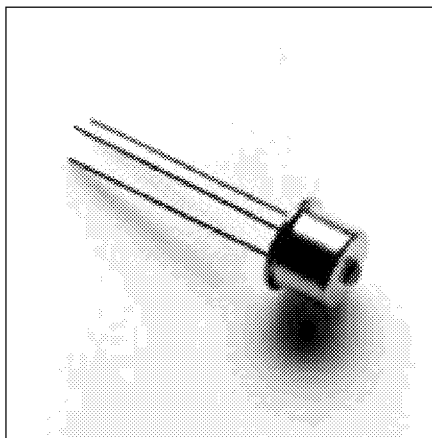
# PRODUCT INFORMATION

840nm

**1A444**  
VCSEL Laser Diode

Datacom, General Purpose

This Vertical Cavity Surface-Emitting Laser is designed for Fibre Channel, Gigabit Ethernet, ATM and general applications. It operates in multiple transverse and single longitudinal mode, ensuring stable coupling of power and low noise.



All dimensions in mm

The chip is isolated from the case.

**TO-46 Package With Lens**

**WARNING:** Laser Radiation, avoid exposure to beam. Class 3B laser product, potential eye hazard. Warning labels in each box.

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

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITION
Fiber-Coupled Power	$P_{\text{fiber}}$		1.3		mW	$I_F=12\text{mA}$ (Note 1)
Optical Power	$P_O$	0.9	1.7	3.0	mW	$I_F=12\text{mA}$
Slope Efficiency <small>(<math>dP_O/dI_F</math>)</small>	$\eta$		200		mW/A	$I_F=12\text{mA}$
Bandwidth <small>(3dB<sub>e1</sub>)</small>	$f_C$		2		GHz	$I_F=12\text{mA}$
Peak Wavelength	$\lambda_p$	830	840	860	nm	$I_F=12\text{mA}$
Spectral Width (FWHM)	$\Delta\lambda$		0.5	1	nm	$I_F=12\text{mA}$
Forward Voltage	$V_F$		1.9	2.2	V	$I_F=12\text{mA}$
Threshold Current	$I_{th}$		3.5	6	mA	
Relative Intensity Noise	RIN		-130		dB/Hz	$I_F=12\text{mA}$ , $f=1\text{GHz}$

**Note 1:** Fiber: 50/125 Graded Index, NA=0.2 or 62.5/125 Graded Index, NA=0.275.

## Absolute Maximum Ratings

PARAMETER	SYMBOL	LIMIT
Storage Temperature	$T_{\text{stg}}$	-55 to +125°C
Operating Temperature	$T_{\text{op}}$	0 to +70°C
Electrical Power Dissipation	$P_{\text{tot}}$	35 mW
Continuous Forward Current ( $f \leq 10\text{kHz}$ )	$I_F$	15 mA
Peak Forward Current (duty cycle $\leq 50\%$ , $f \geq 1\text{MHz}$ )	$I_{\text{FRM}}$	25 mA
Reverse Voltage	$V_R$	1.5 V
Soldering Temperature (2mm from the case for 10 sec)	$T_{\text{slid}}$	260°C

## Thermal Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Thermal Resistance - Infinite Heat Sink	$R_{\text{thjc}}$		400		°C/W
Thermal Resistance - No Heat Sink	$R_{\text{thja}}$		700		°C/W
Temp. Coefficient - Wavelength	$d\lambda/dT_j$		0.06		nm/°C
Optical Power - Variation 0 to 70°C	$\Delta P$		$\pm 0.7$		dB
Threshold Current - Variation 0 to 70°C	$\Delta I_{th}$		$\pm 0.6$		mA

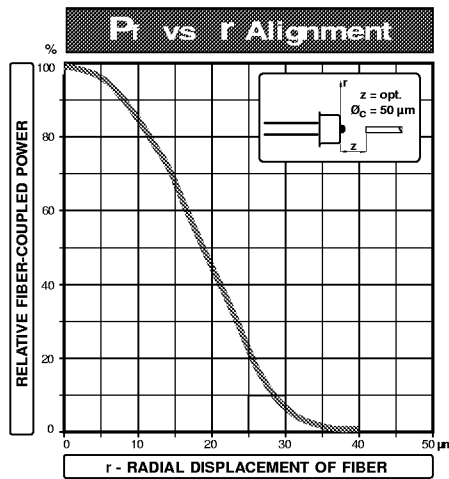
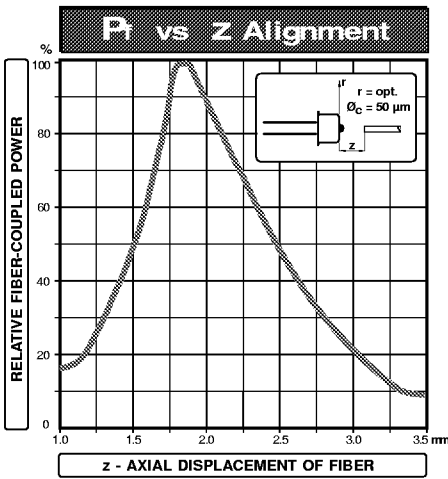
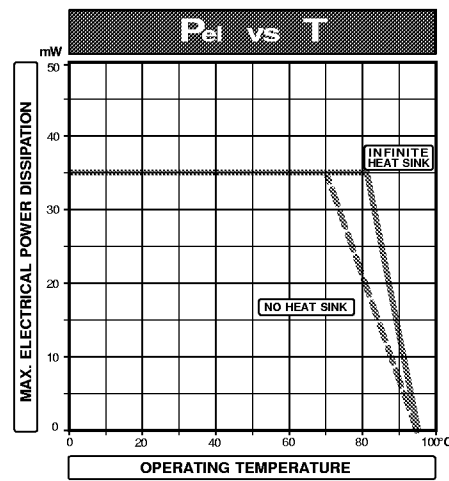
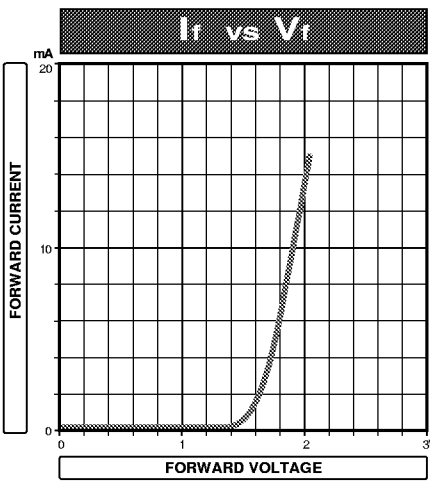
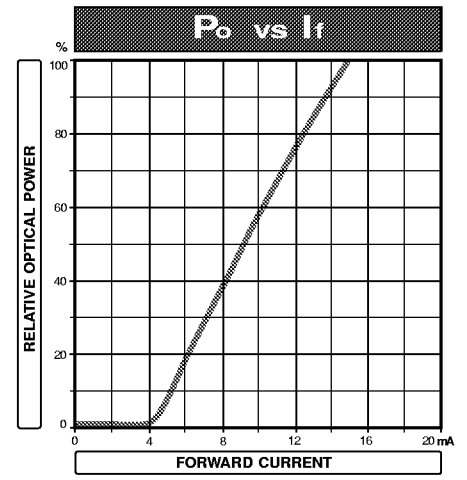
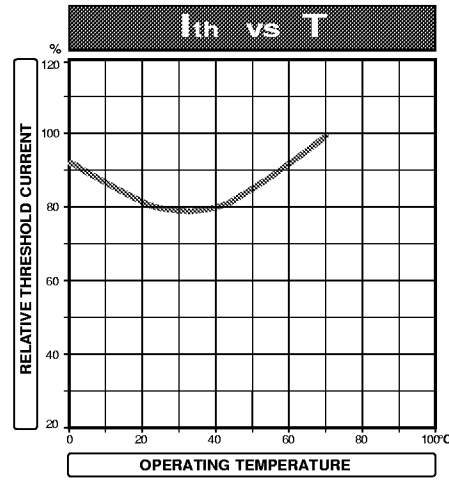
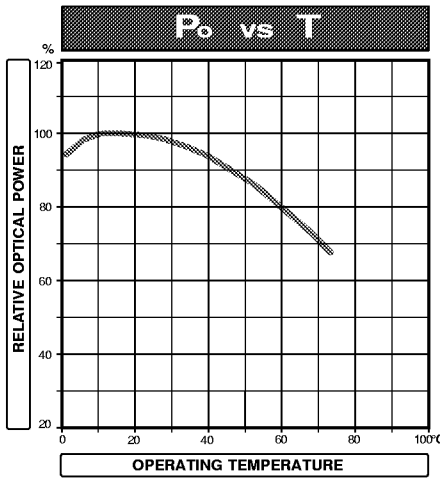
13457.11 1999-04-01



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**1A444** 840nm  
VCSEL Laser Diode

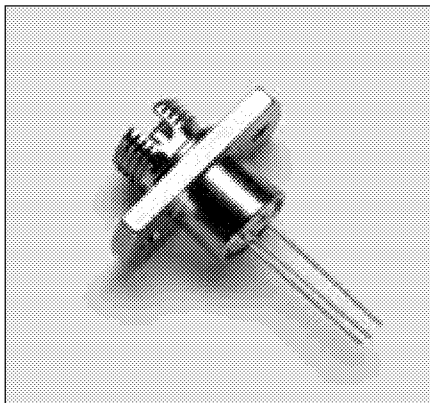


# PRODUCT INFORMATION

## 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

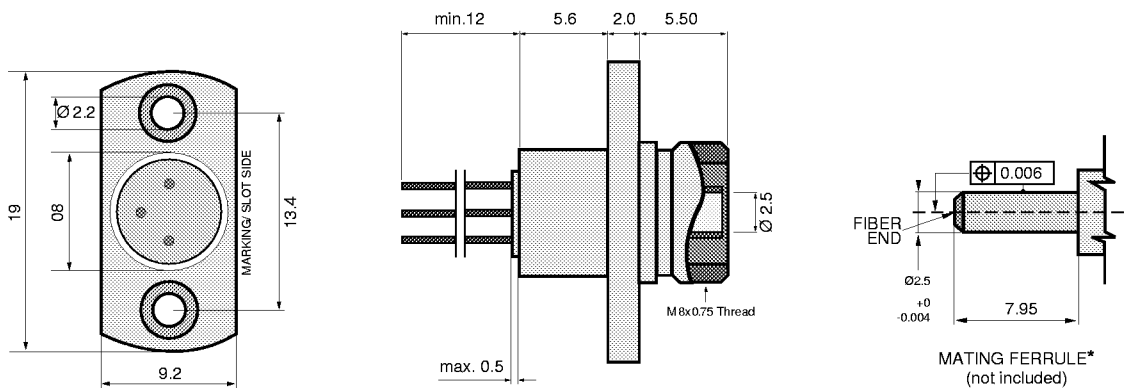
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature FC-2A (Note 1)	$T_{stg}, T_{op}$	-40 to +85°C

**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 (Note 2)	$R_{thcc}$			40	°C/W
Thermal Resistance - No Heat Sink (Note 2)	$R_{thca}$			200	°C/W
Thermal Resistance - On PC Board (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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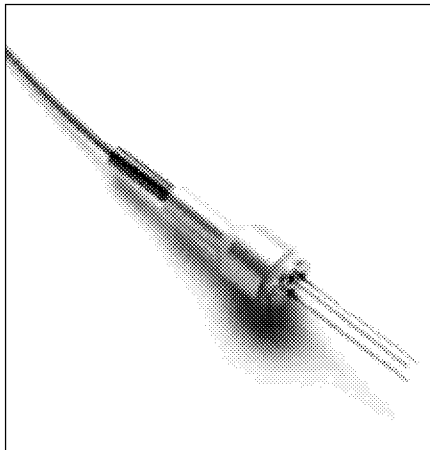
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# PRODUCT INFORMATION

## 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.

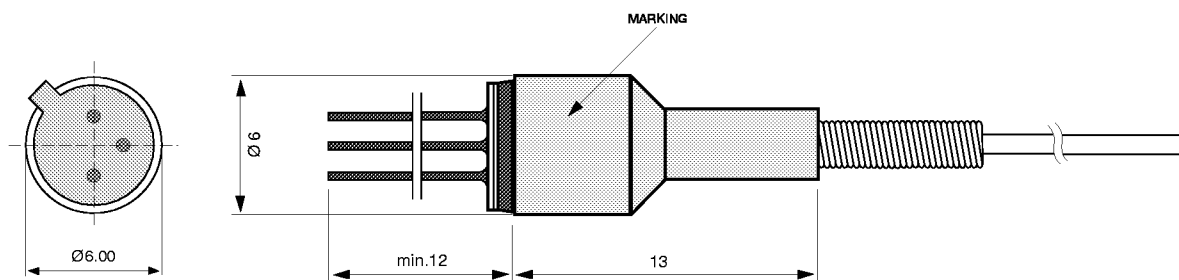
#### Thermal Characteristics

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



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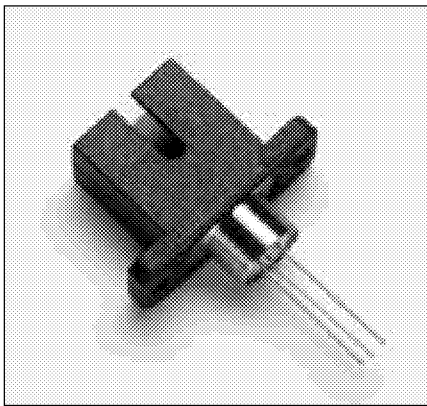
America: Tel 1-800-96MITEL Fax (613) 592-6909  
Asia: Tel (65) 293 5312 Fax (65) 293 8527

# 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.



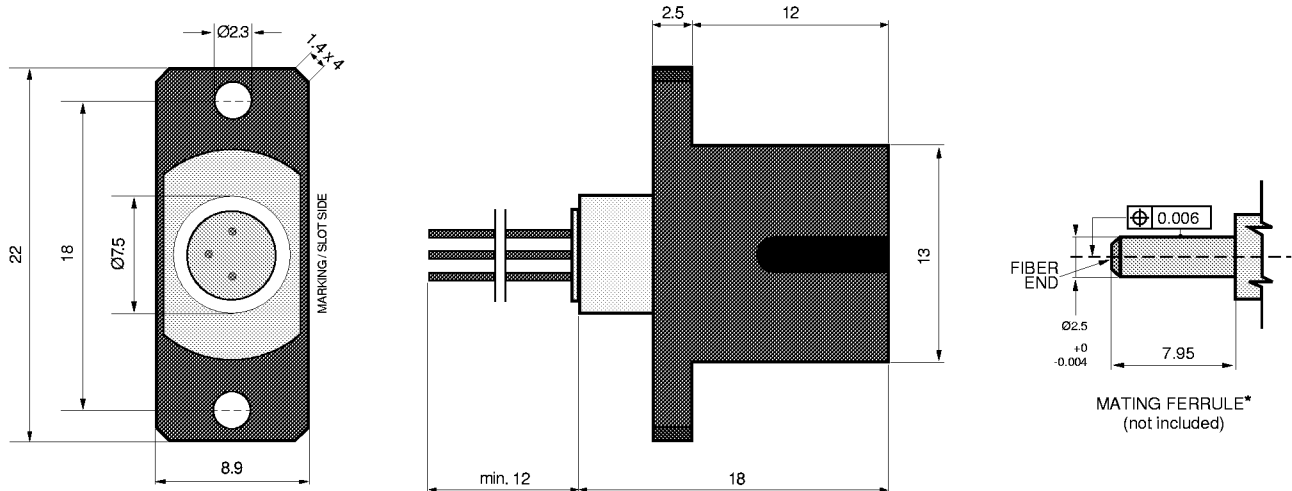
### Absolute Maximum Ratings

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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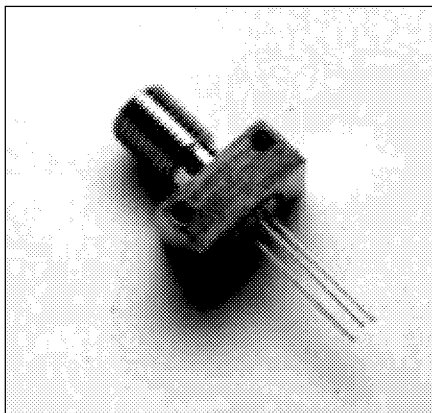
America: Tel 1-800-96MITEL Fax (613) 592-6909  
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# PRODUCT INFORMATION

## 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

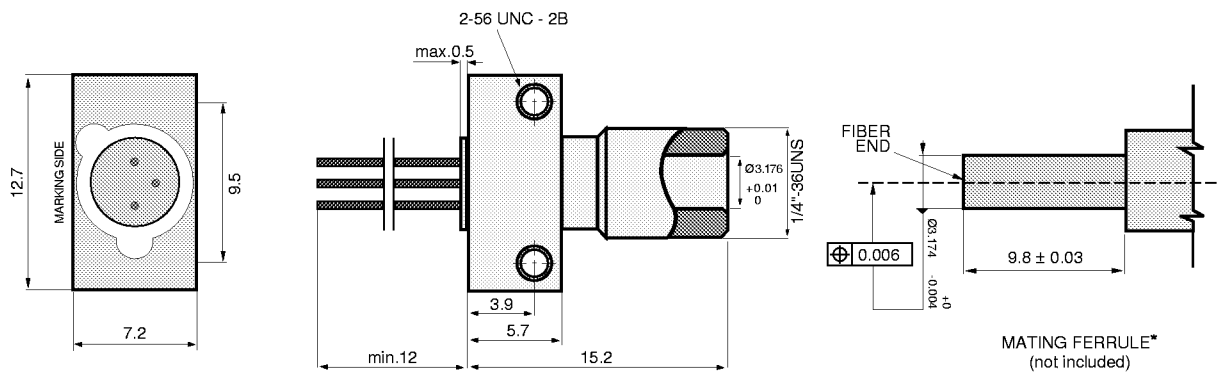
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature SMA-2A (Note 1)	$T_{stg}, T_{op}$	-40 to +85°C

**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 (Note 2)	$R_{thcc}$			40	°C/W
Thermal Resistance - No Heat Sink (Note 2)	$R_{thca}$			200	°C/W
Thermal Resistance - On PC Board (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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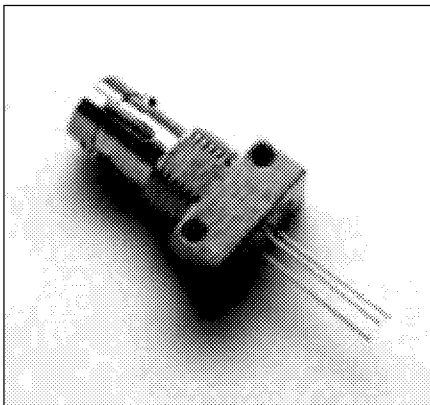
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Asia: Tel (65) 293 5312 Fax (65) 293 8527

# 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

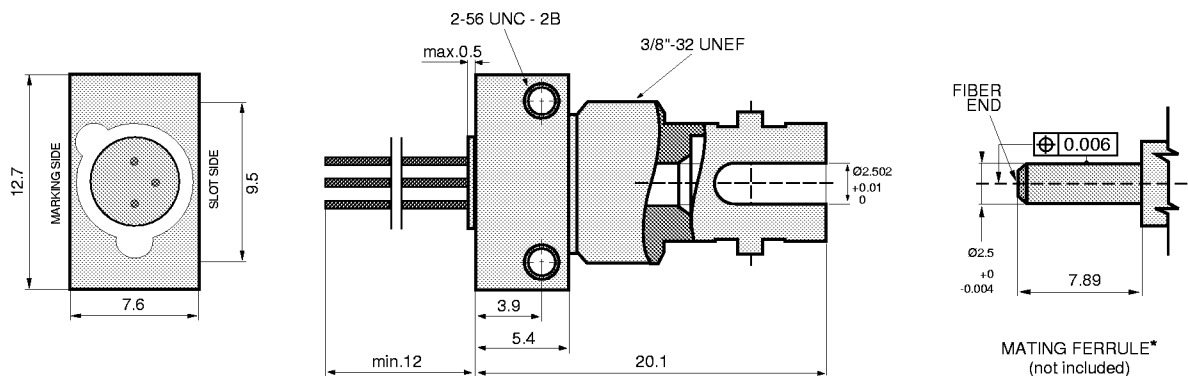
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature ST-2A (Note 1)	$T_{stg}, T_{op}$	-40 to +85°C

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

### Thermal Characteristics

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

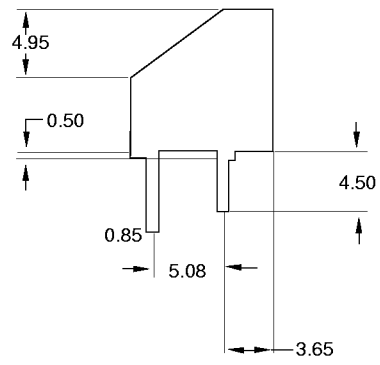
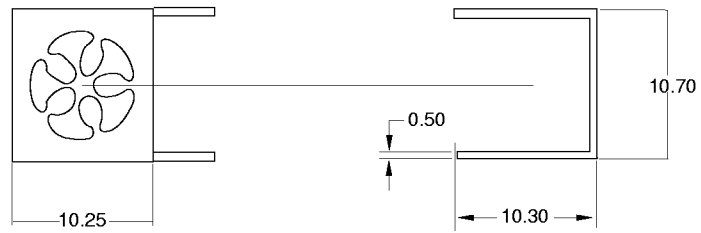
103326 1994-09-20



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Tel (44) 1291 436180 Fax (44) 1291 436771

America: Tel 1-800-96MITEL Fax (613) 592-6909  
Asia: Tel (65) 293 5312 Fax (65) 293 8527

# Clip for Pigtail-3A



# Clip for SC-2A

