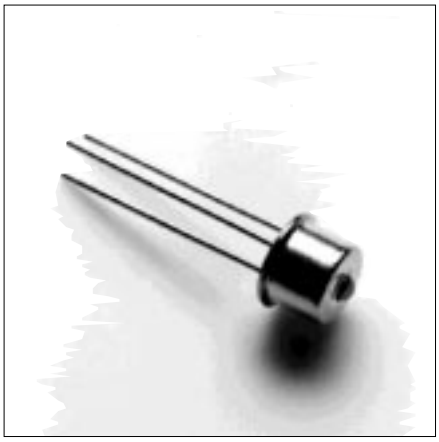
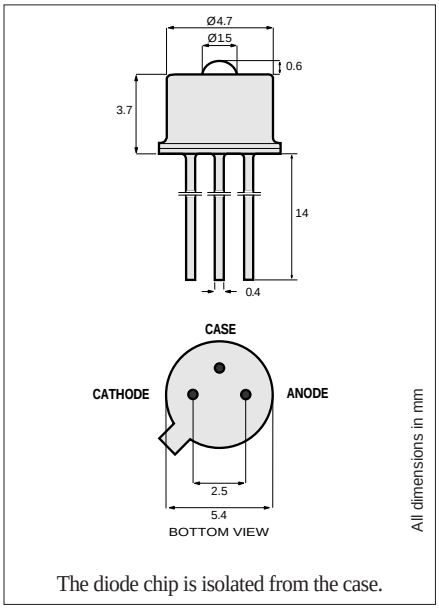
880nm 1A212 High-Performance DUPLEX

Half-Duplex Communication

This single-chip device operates as both an Emitter and Detector, and transmits data over a single fiber in half-duplex mode — thus reducing both fiber and component costs when compared with traditional approaches.





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	
EMITTING MODE	Fiber-Coupled Power (Fig.1, 2,&3) (Table 1)	P_{fiber}	25	55		µW	I_F=60 mA (Note 1)	Fiber: 50/125µm Graded Index NA=0.20
	Rise and Fall Time (10-90%)	t_r, t_f		7	10	ns	I_F=60 mA (no bias)	
	Bandwidth ($3dB_{el}$)	f_c		50		MHz	I_F=60 mA	
	Peak Wavelength	λ_p	870	880	890	nm	I_F=60 mA	
	Spectral Width (FWHM)	$\Delta\lambda$		50		nm	I_F=60 mA	
	Forward Voltage (Fig.5)	V_F		1.7	1.9	V	I_F=60 mA	
RECEIVING MODE	Responsivity (Fig. 6,7,&8) (Table 2)	R	0.10	0.15		A/W	V_R=1V λ=880 nm	Fiber: 50/125µm Graded Index NA=0.20
	Rise and Fall Time (10-90%)	t_r, t_f		7	10	ns	V_R=1V R_L=50Ω (no bias)	
	Bandwidth	f_c		50		MHz	V_R=1V R_L=50Ω	
	Capacitance	C		30		pF	V_R= 1V, f=1 MHz	
	Dark Current	I_d		5	10	nA	V_R=1V	

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

Absolute Maximum Ratings

PARAMETER	SYMBOL	LIMIT
Storage Temperature	T_{stg}	-55 to +125°C
Operating Temperature (derating: Fig.4)	T_{op}	-55 to +125°C
Electrical Power Dissipation (derating: Fig.4)	P_{tot}	160 mW
Continuous Forward Current (f≤10 kHz)	I_F	80 mA
Peak Forward Current (duty cycle≤50%, f≥1 MHz)	I_{FRM}	130 mA
Reverse Voltage	V_R	2.0 V
Soldering Temperature (2mm from the case for 10 sec)	T_{sld}	260°C

Thermal Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT
Thermal Resistance - Infinite Heat Sink	R_{thjc}			200	°C/W
Thermal Resistance - No Heat Sink	R_{thja}			500	°C/W
Temperature Coefficient - Optical Power	dP/dT_j		-0.4		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.3		nm/°C
Temperature Coefficient - Responsivity	dR/dT_j		0.2		%/°C
Temperature Coefficient - Dark Current	dI_d/dT_j		2.5		%/°C

11841.12 1994-09-20

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Typical Fiber-Coupled Power	
Core Diameter/Cladding Diameter Numerical Aperture	
50/125 µm 0.20	62.5/125 µm 0.275
55 µW	90 µW

Table 1

Typical Responsivity	
Core Diameter/Cladding Diameter Numerical Aperture	
50/125 µm 0.20	62.5/125 µm 0.275
0.15 A/W	0.15 A/W

Table 2

FIGURE 1

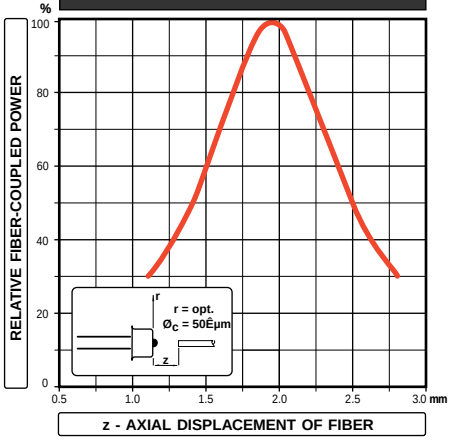


FIGURE 2

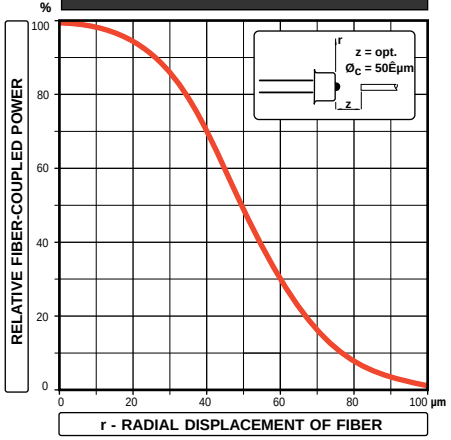


FIGURE 3

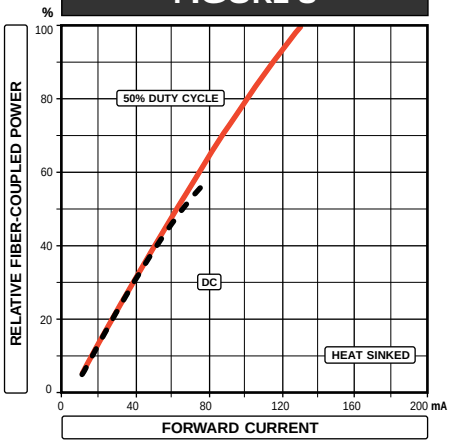


FIGURE 4

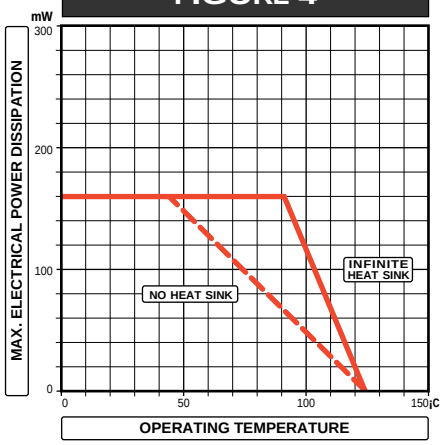


FIGURE 5

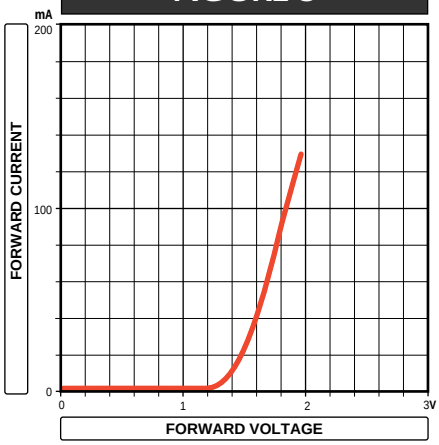


FIGURE 6

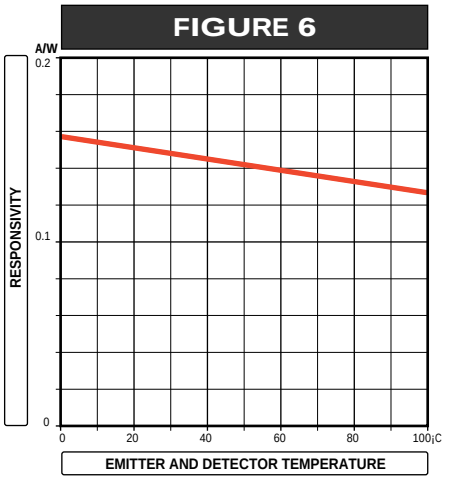


FIGURE 7

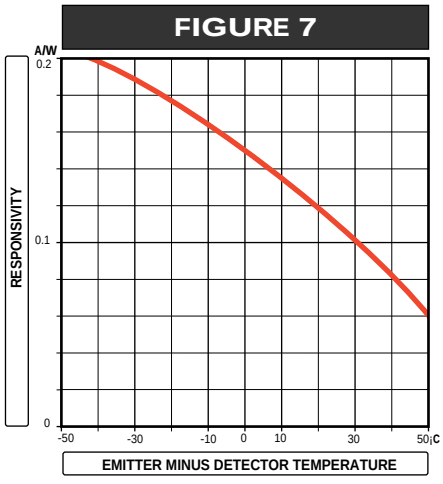
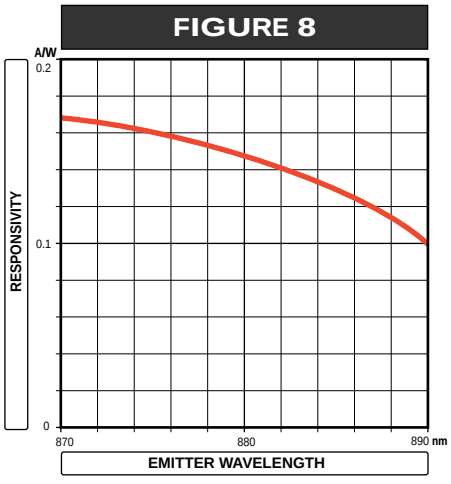
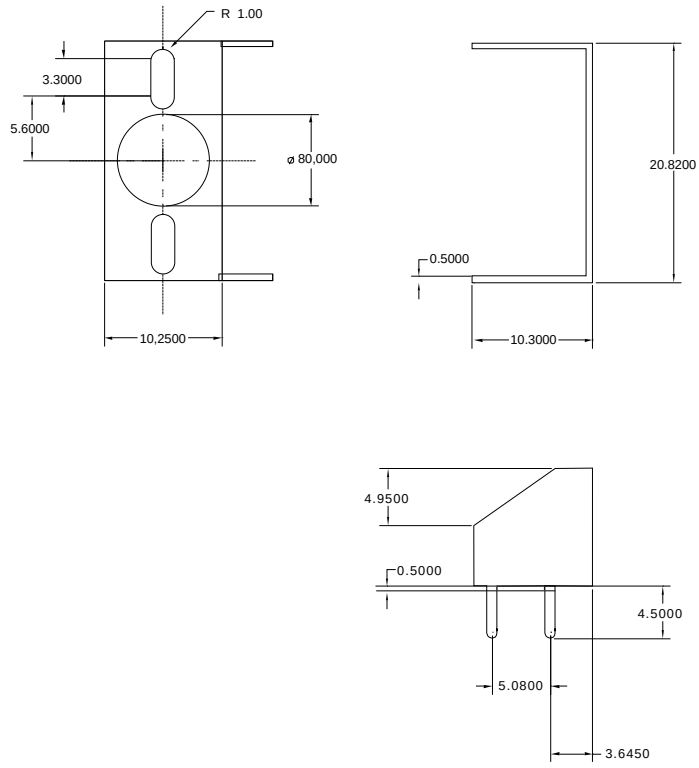


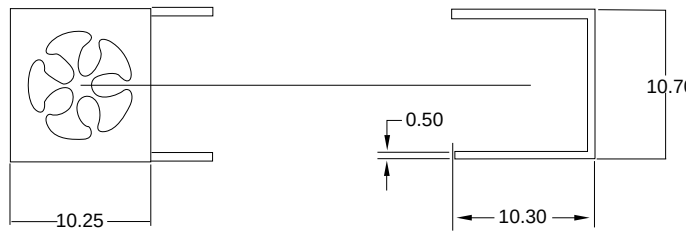
FIGURE 8

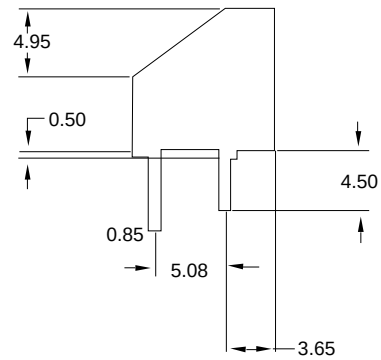


Clip for SC-2A



Clip for Pigtail-3A

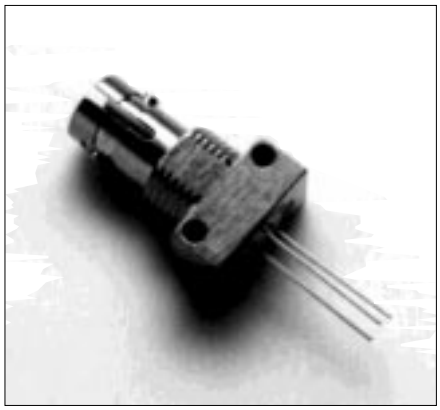




ST-2A
Package

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

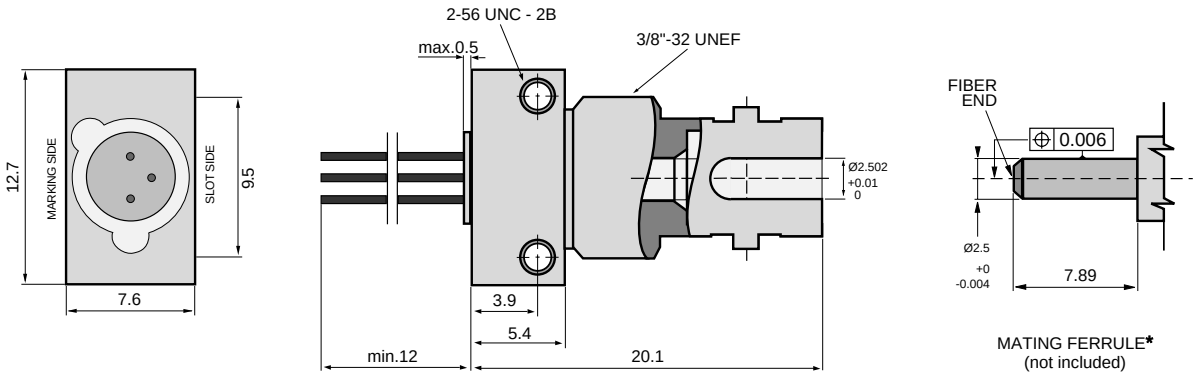
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature ST-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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

Thermal Characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	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)	Rthca		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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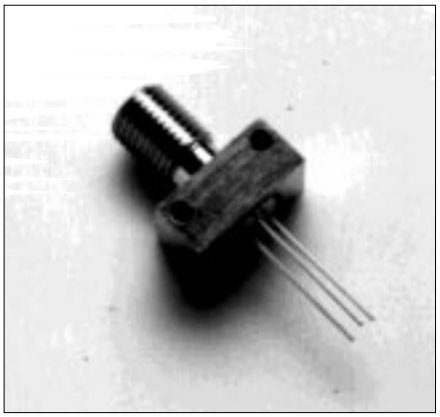
SMA-2A
Package

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

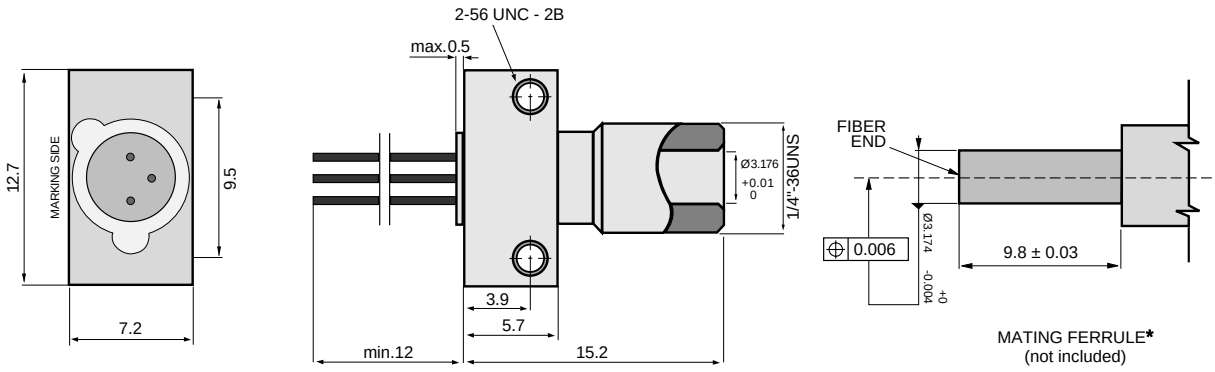
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature SMA-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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)	Rthca		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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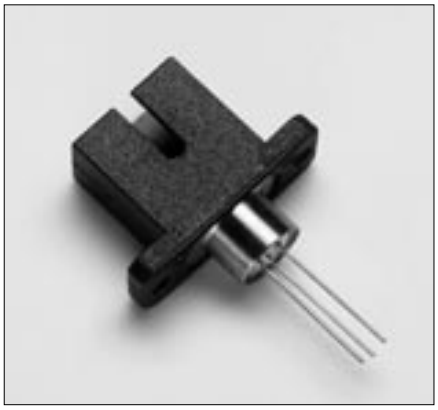
SC-2A Package

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..



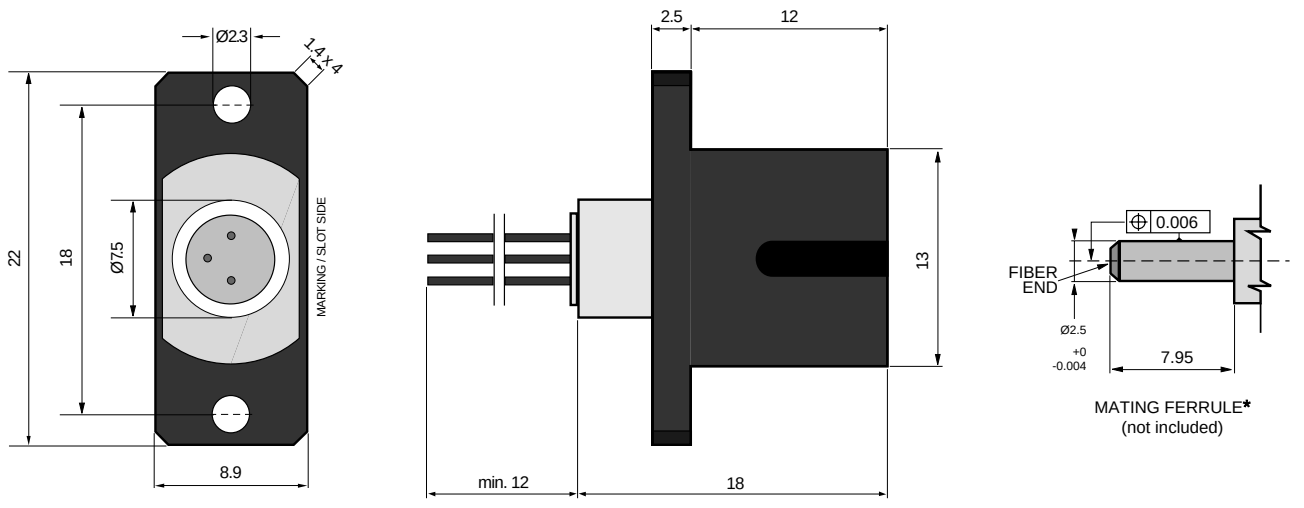
Absolute Maximum Ratings

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)	Rthca		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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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.

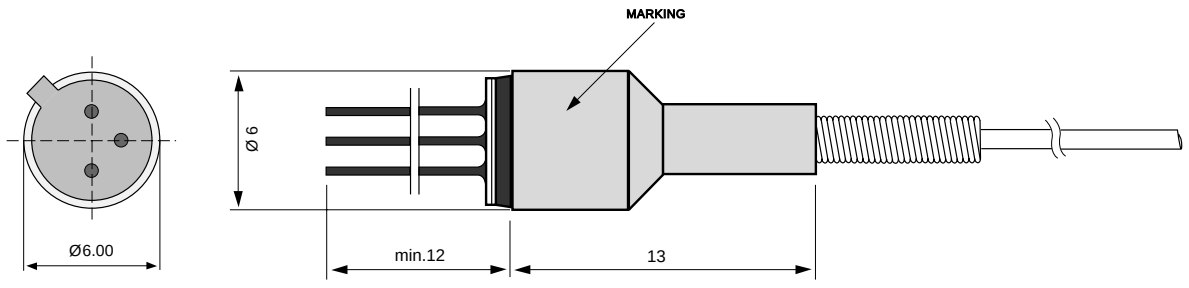
Thermal Characteristics

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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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

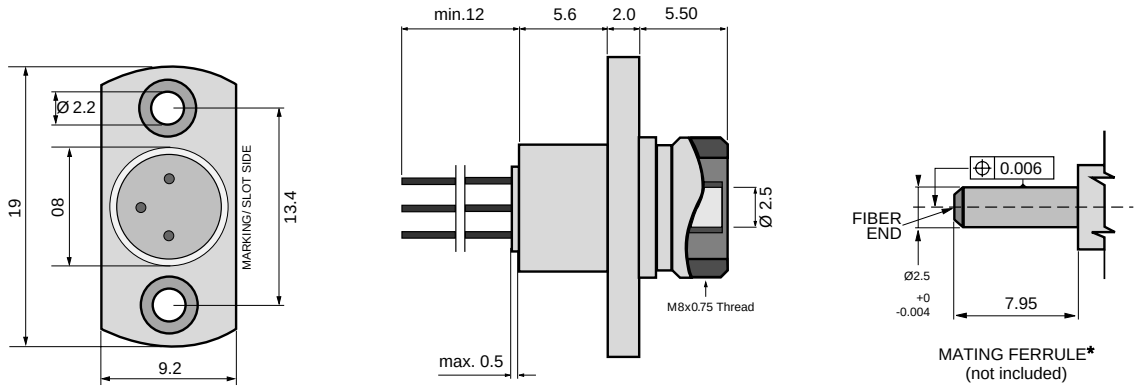
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature FC-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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)	Rthca		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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