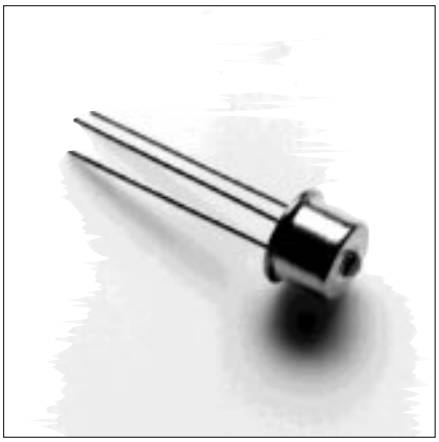
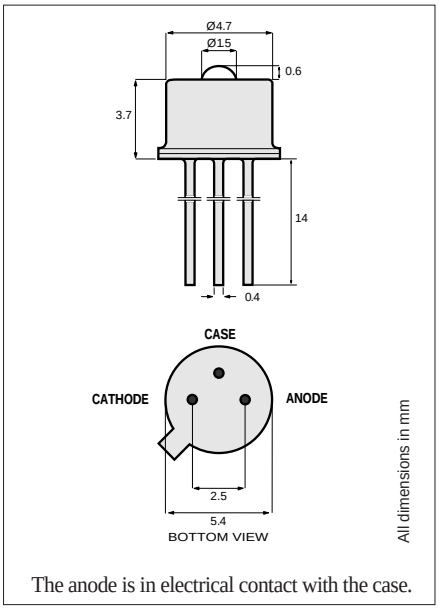
840nm 1A288 High-Performance LED

Avionics, Military Datacom

This high speed device is optimized at 810 nm wavelength which is of particular interest for use in radiation-hardened fiber. It operates in a wide temperature range and delivers very high power to 200 µm core fiber, making it ideal in avionics and military datacom applications.





The anode is in electrical contact with 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_{fiber}	700	850		µW	I_F=100 mA (Note 1)	Fiber: 100/140µm Graded Index NA=0.29
Rise and Fall Time (10-90%)	t_r, t_f		3.5	5	ns	I_F=100 mA (no bias)	
Bandwidth ($3dB_{el}$)	f_c		100		MHz	I_F=100 mA	
Peak Wavelength	λ_p	800	840	880	nm	I_F=100 mA	
Spectral Width (FWHM)	$\Delta\lambda$		50		nm	I_F=100 mA	
Forward Voltage (Fig.5)	V_F		2.0	2.4	V	I_F=100 mA	
Reverse Current	I_R			20	µA	V_R=1V	
Capacitance	C		250		pF	V_R= 0V, f=1 MHz	

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}	250 mW
Continuous Forward Current (f≤10 kHz)	I_F	110 mA
Peak Forward Current (duty cycle≤50%, f≥1 MHz)	I_{FRM}	180 mA
Reverse Voltage	V_R	1.5 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}			100	°C/W
Thermal Resistance - No Heat Sink	R_{thja}			400	°C/W
Temperature Coefficient - Optical Power	dP/dT_j		-0.4		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.3		nm/°C

12324.11 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	100/140 µm 0.29
150 µW	400 µW	850 µW

Table 1

FIGURE 1

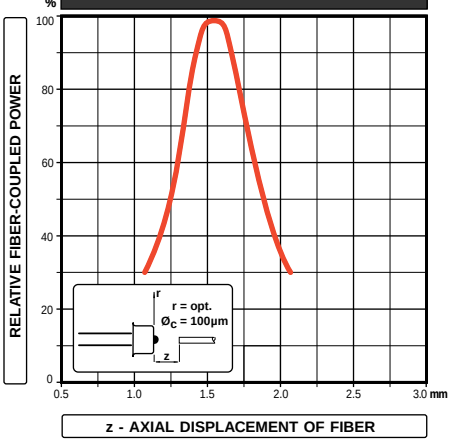


FIGURE 2

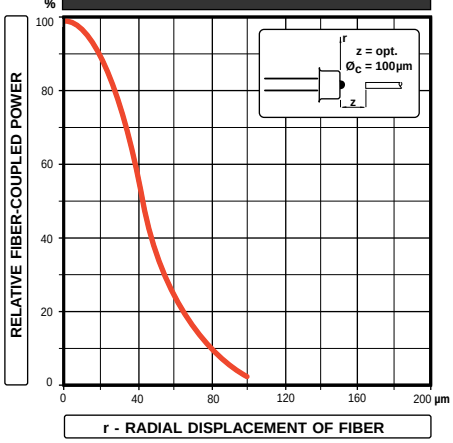


FIGURE 3

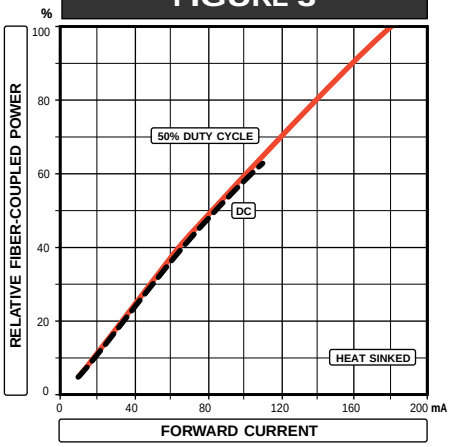


FIGURE 4

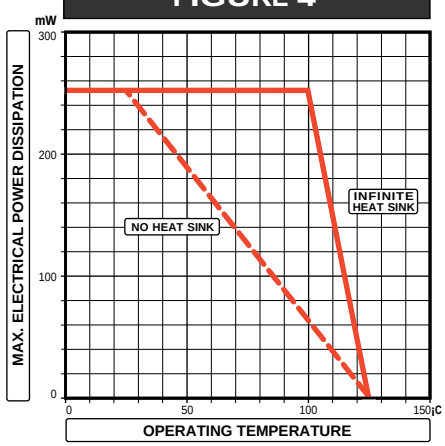
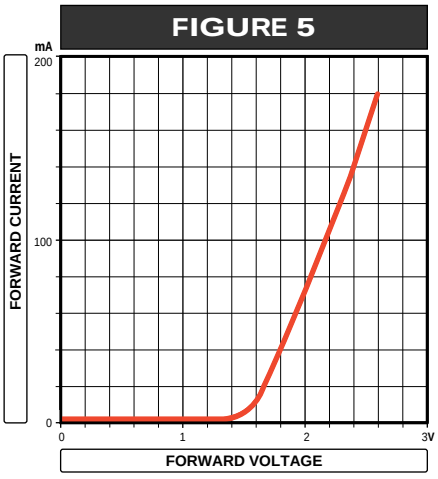
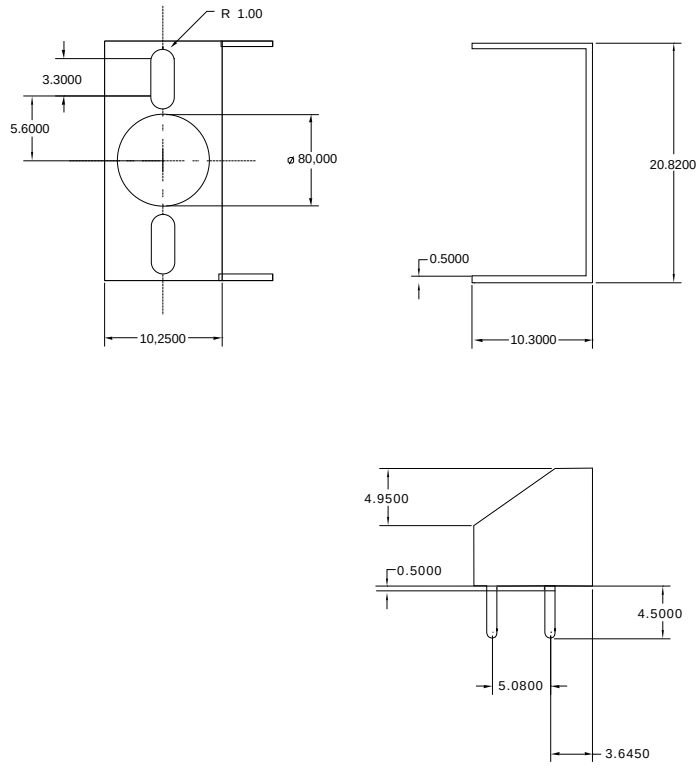


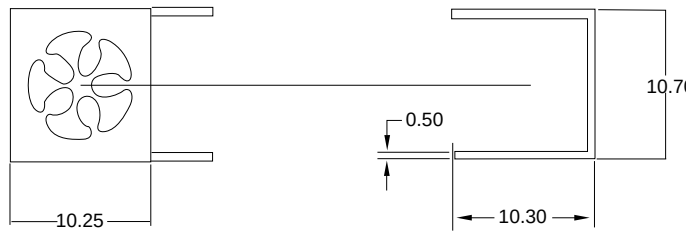
FIGURE 5

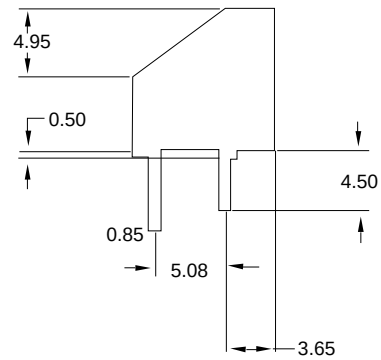


Clip for SC-2A



Clip for Pigtail-3A

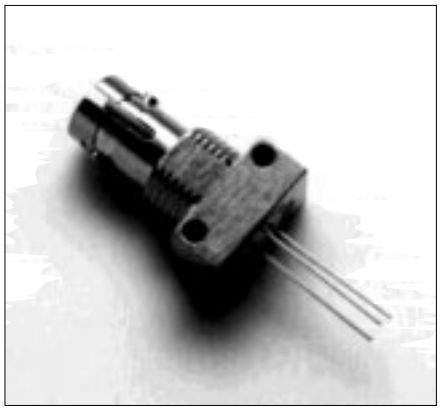




ST-2A
Package

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

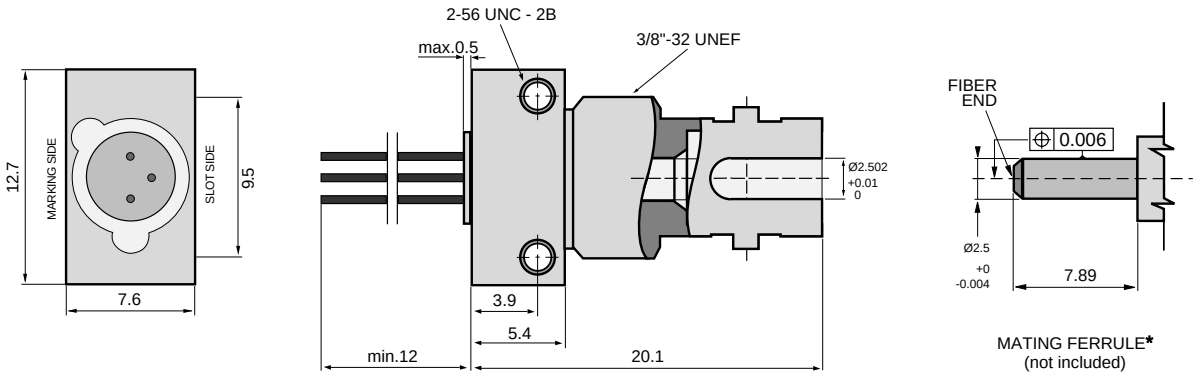
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature ST-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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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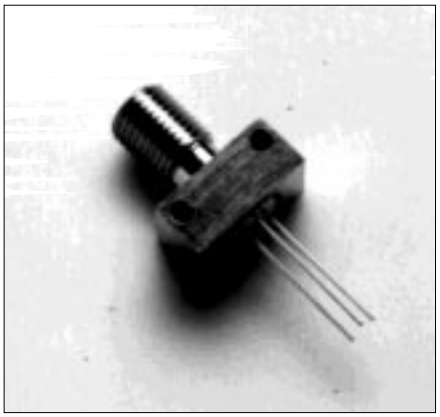
SMA-2A
Package

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

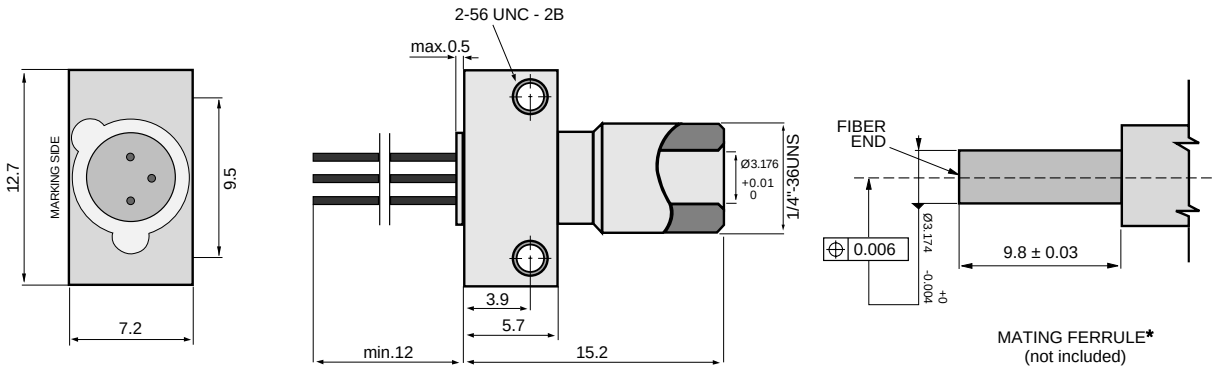
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature SMA-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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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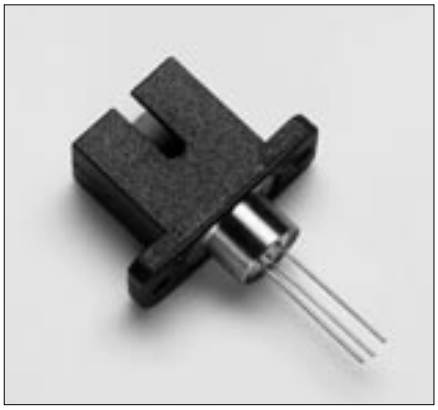
SC-2A Package

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..



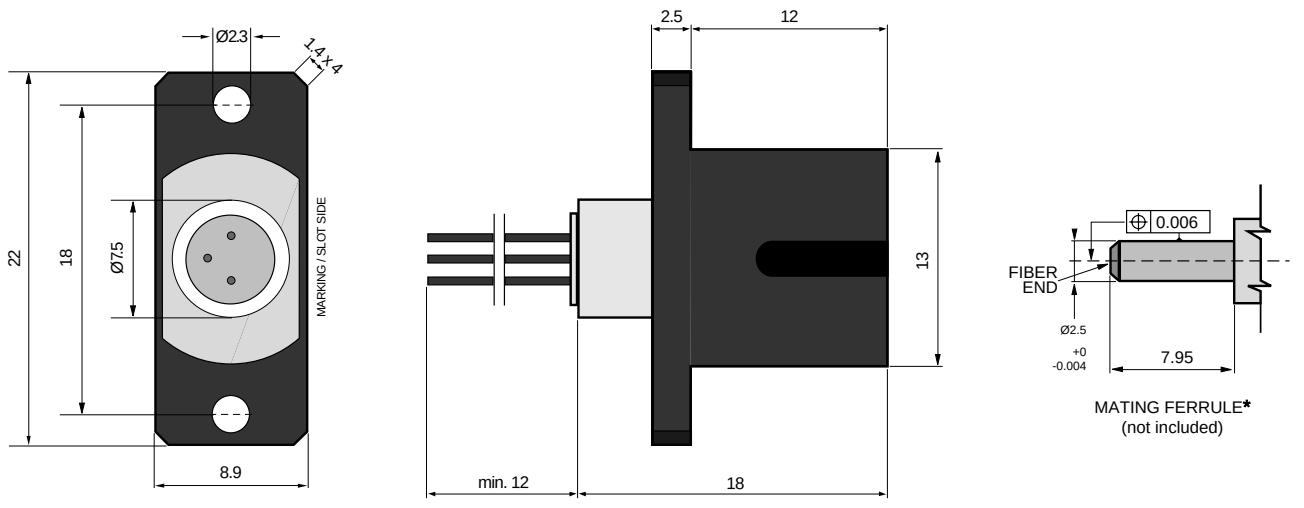
Absolute Maximum Ratings

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.

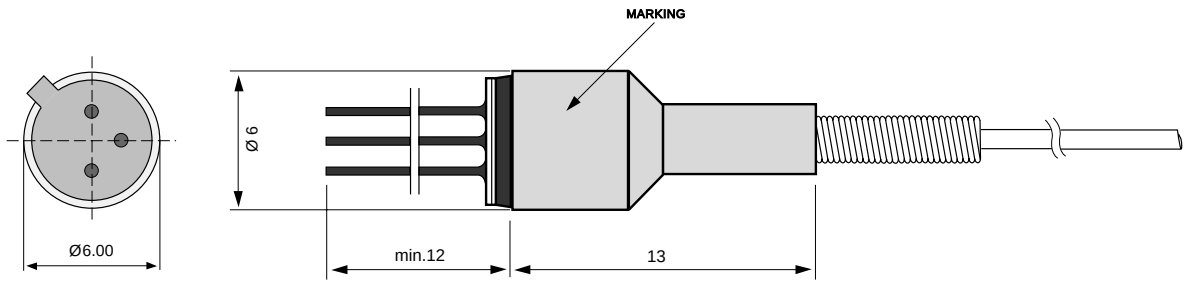
Thermal Characteristics

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

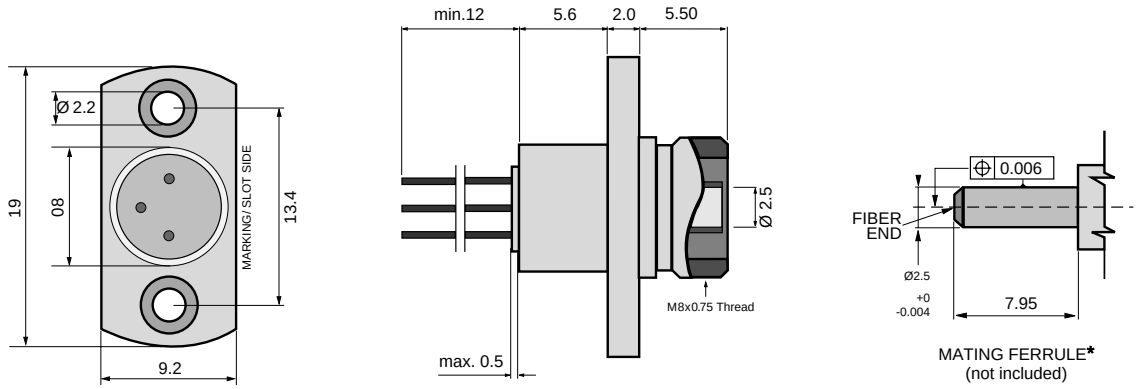
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature FC-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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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