

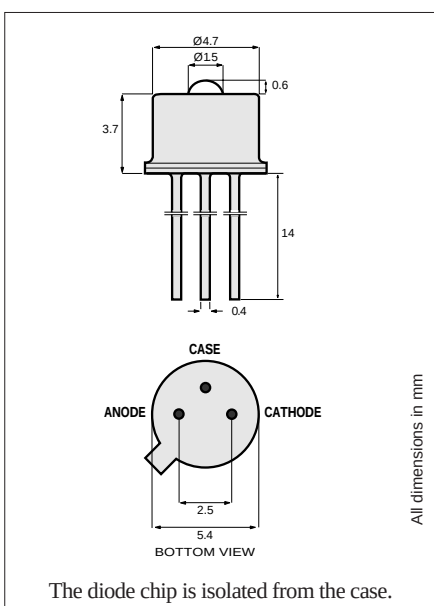
PRODUCT INFORMATION

1320nm

1A353
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.



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)	50	55		μW	$I_F=80$ mA (Note 1)
	Rise and Fall Time (10-90%)		4		ns	$I_F=80$ mA (no bias)
	Bandwidth (3dB _{el})		50		MHz	$I_F=80$ mA
	Peak Wavelength	1280	1320	1350	nm	$I_F=80$ mA
	Spectral Width (FWHM)		140		nm	$I_F=80$ mA
	Forward Voltage (Fig.5)		1.7	1.9	V	$I_F=80$ mA
RECEIVING MODE	Responsivity (Fig.1, 2) (Table 2)	0.25	0.3		A/W	$V_R=1$ V $\lambda=1320$ nm
	Rise and Fall Time (10-90%)		4		ns	$V_R=1$ V $R_L=50\Omega$ (no bias)
	Bandwidth		50		MHz	$V_R=1$ V $R_L=50\Omega$
	Capacitance		300		pF	$V_R=1$ V, $f=1$ MHz
	Dark Current		20	100	nA	$V_R=1$ V

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 ($f \leq 10$ kHz)	I_F	110 mA
Peak Forward Current (duty cycle $\leq 50\%$, $f \geq 1$ MHz)	I_{FRM}	150 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		-0.8		%/°C
Temperature Coefficient - Wavelength	$d\lambda/dT_j$		0.55		nm/°C
Temperature Coefficient - Responsivity	dR/dT_j		0.2		%/°C
Temperature Coefficient - Dark Current	dI_d/dT_j		5		%/°C

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1A353 High-Performance Duplex

1320nm

Typical Fiber-Coupled Power

Core Diameter/Cladding Diameter Numerical Aperture

50/125 μm 0.20	62.5/125 μm 0.275
15 μW	55 μW

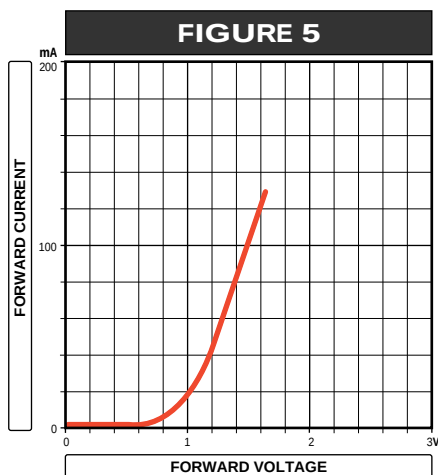
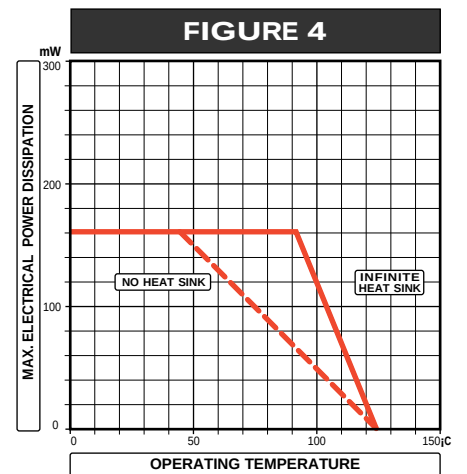
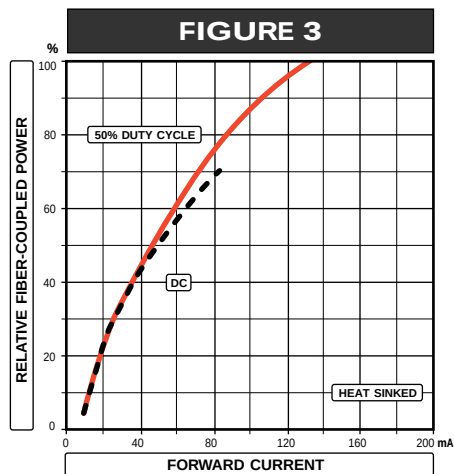
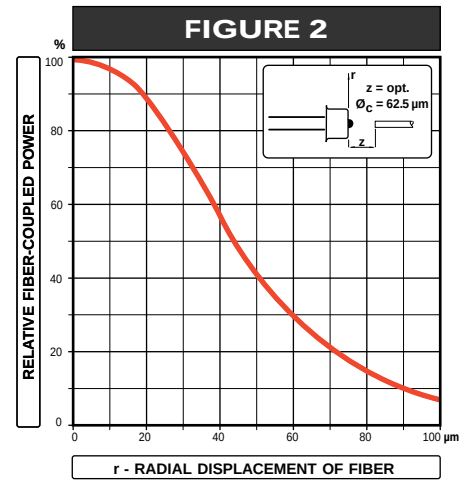
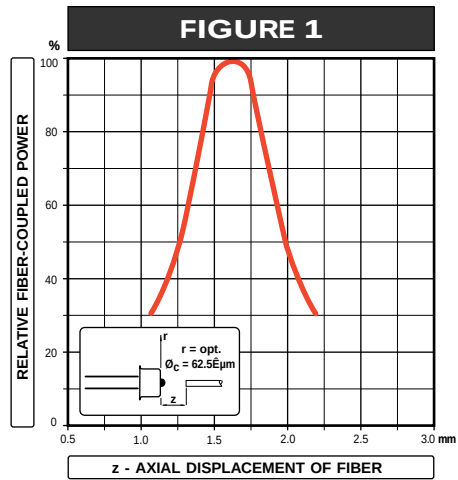
Table 1

Typical Responsivity

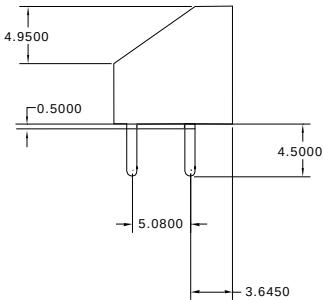
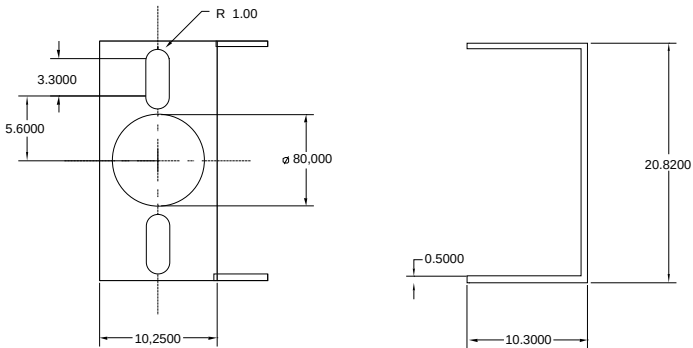
Core Diameter/Cladding Diameter Numerical Aperture

50/125 μm 0.20	62.5/125 μm 0.275
0.3 A/W	0.3 A/W

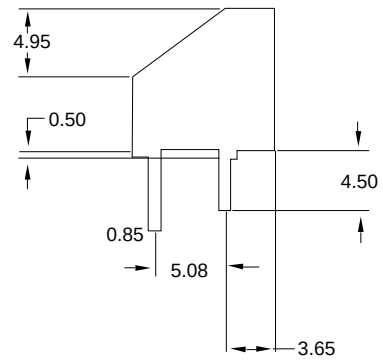
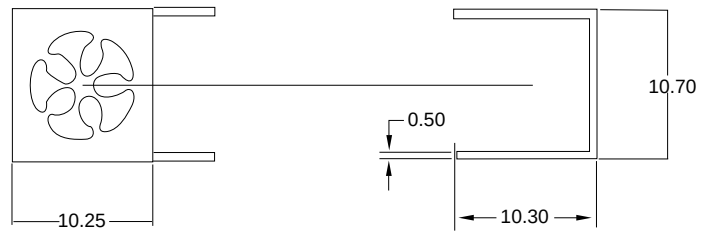
Table 2



Clip for SC-2A



Clip for Pigtail-3A

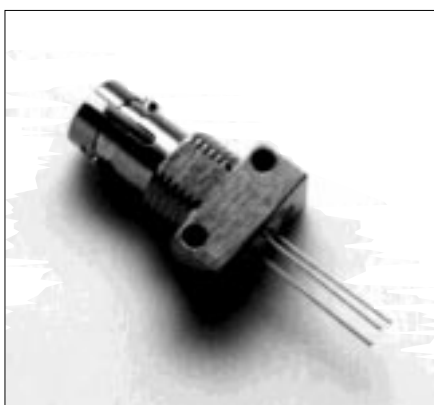


PRODUCT INFORMATION

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

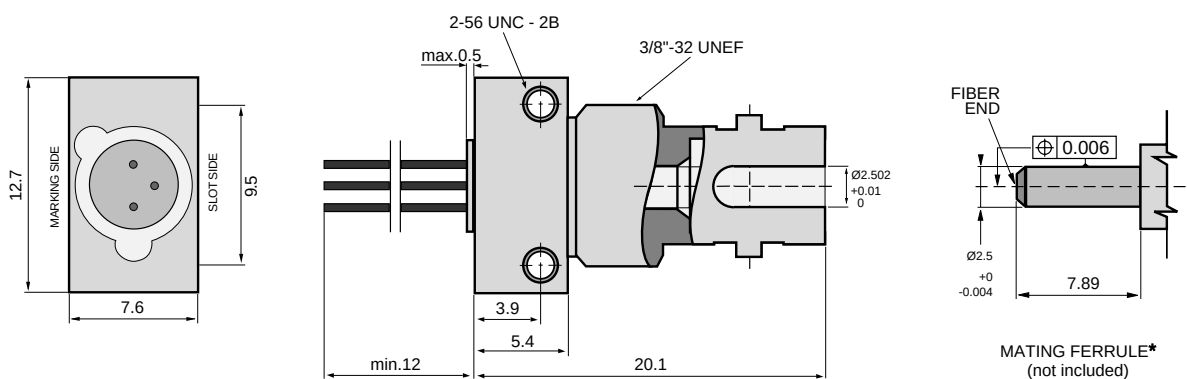
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature ST-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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)	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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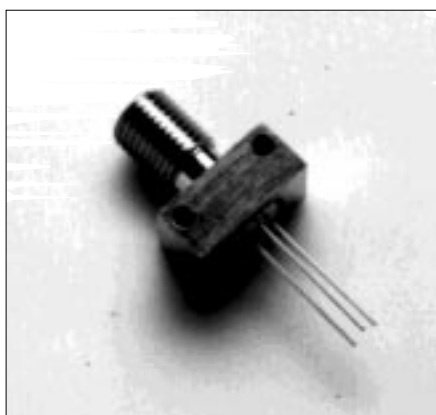
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PRODUCT INFORMATION

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

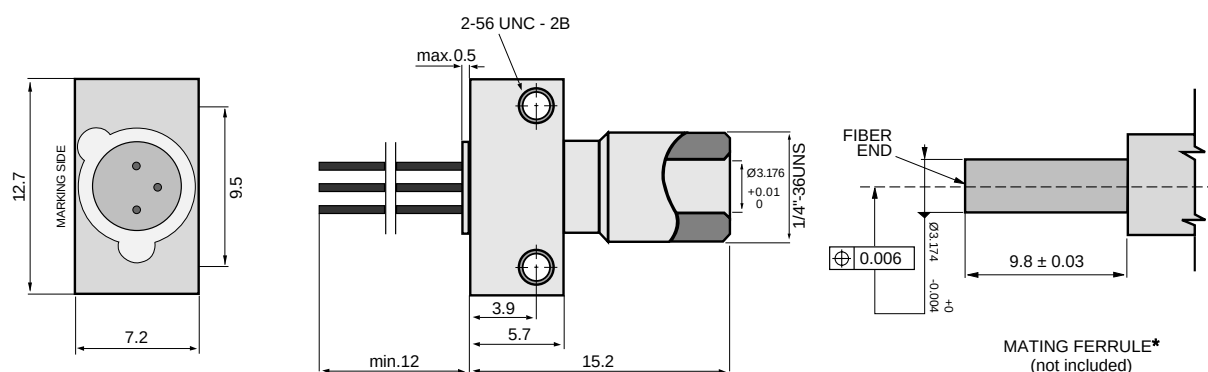
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature SMA-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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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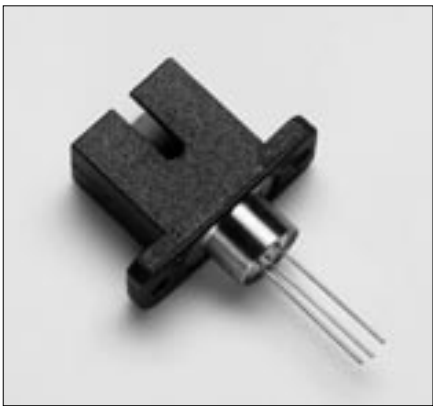
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PRODUCT INFORMATION

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..



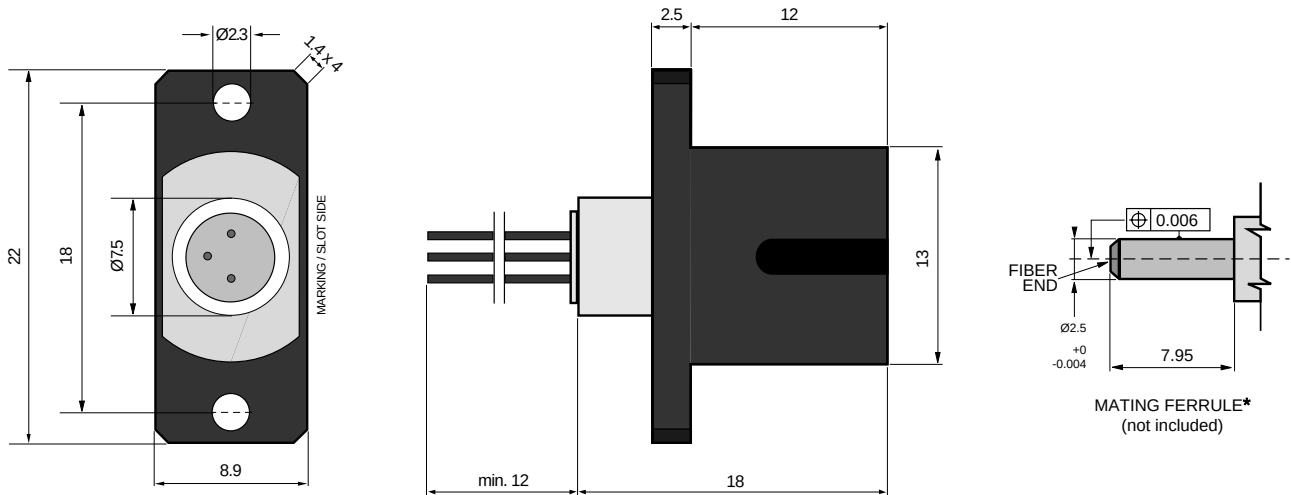
Absolute Maximum Ratings

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.

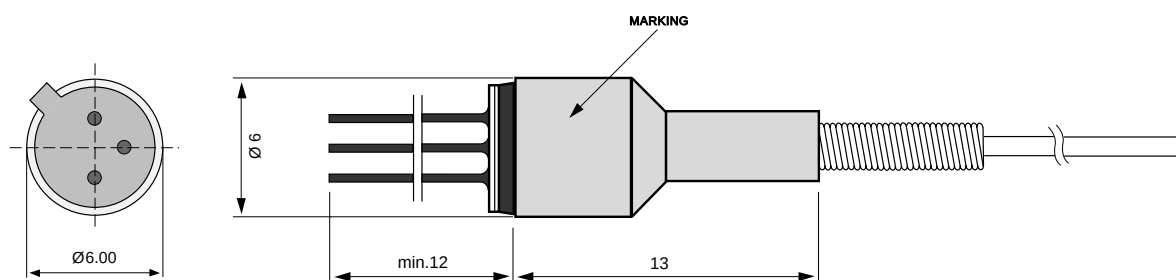
Thermal Characteristics

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

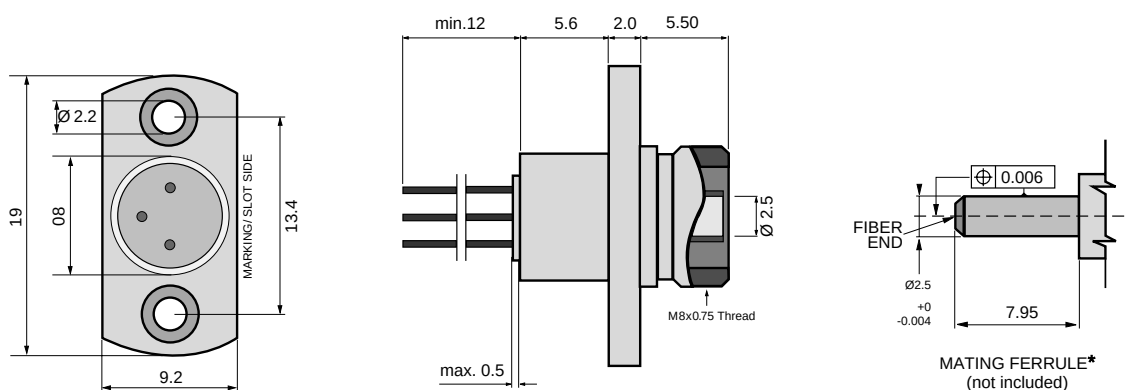
PARAMETER	SYMBOL	LIMIT
Operating & Storage Temperature FC-2A (Note 1)	T_{stg}, T_{op}	-40 to +85°C

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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