

T-41-90

British
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&
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TECHNOLOGIES

LSC1300

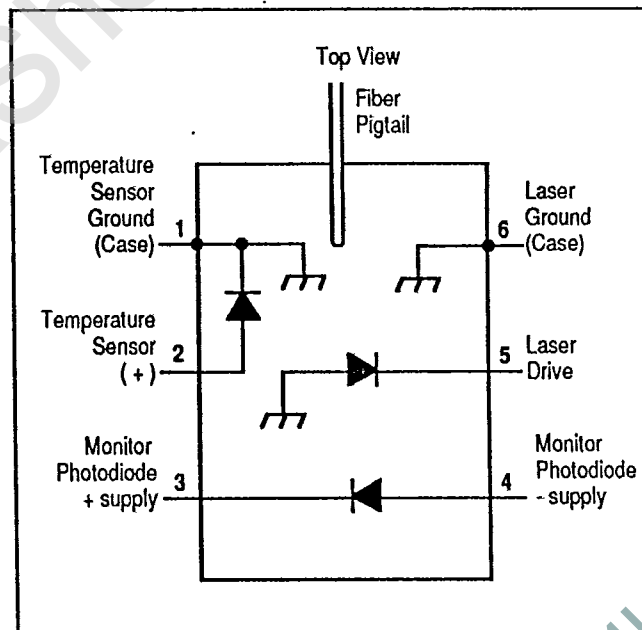
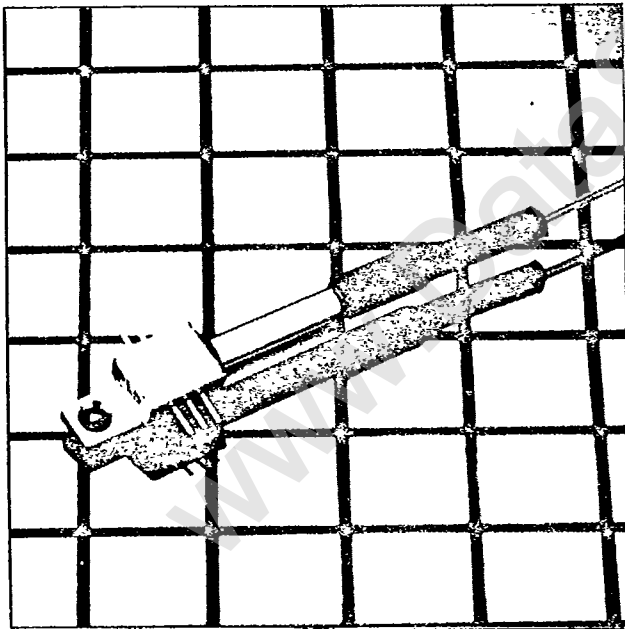
MINIATURE LASER MODULE

Features

- Miniature 6 pin hermetic package includes laser, monitor photodiode, single mode fiber pigtail, and optional temperature sensor
- 200 μ W (-7dBm) typical power output
- 1280 - 1330 nm wavelength
- Modulation capability up to 1.4 Gbits/s

Applications

- Telecommunications
- Local area and metropolitan area networks
- Point to point data communications
- Fiber optic sensors
- Cable television
- Military communications and control systems
- Instrumentation

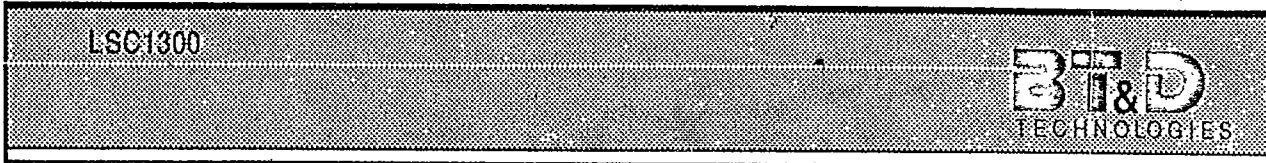


Description

The LSC1300 miniature laser module converts electricity to light in the 1300 nanometer band. Using an InGaAsP buried heterostructure laser diode fabricated by the Metal-Organic Vapor Phase Epitaxy (MOVPE) process, the LSC1300

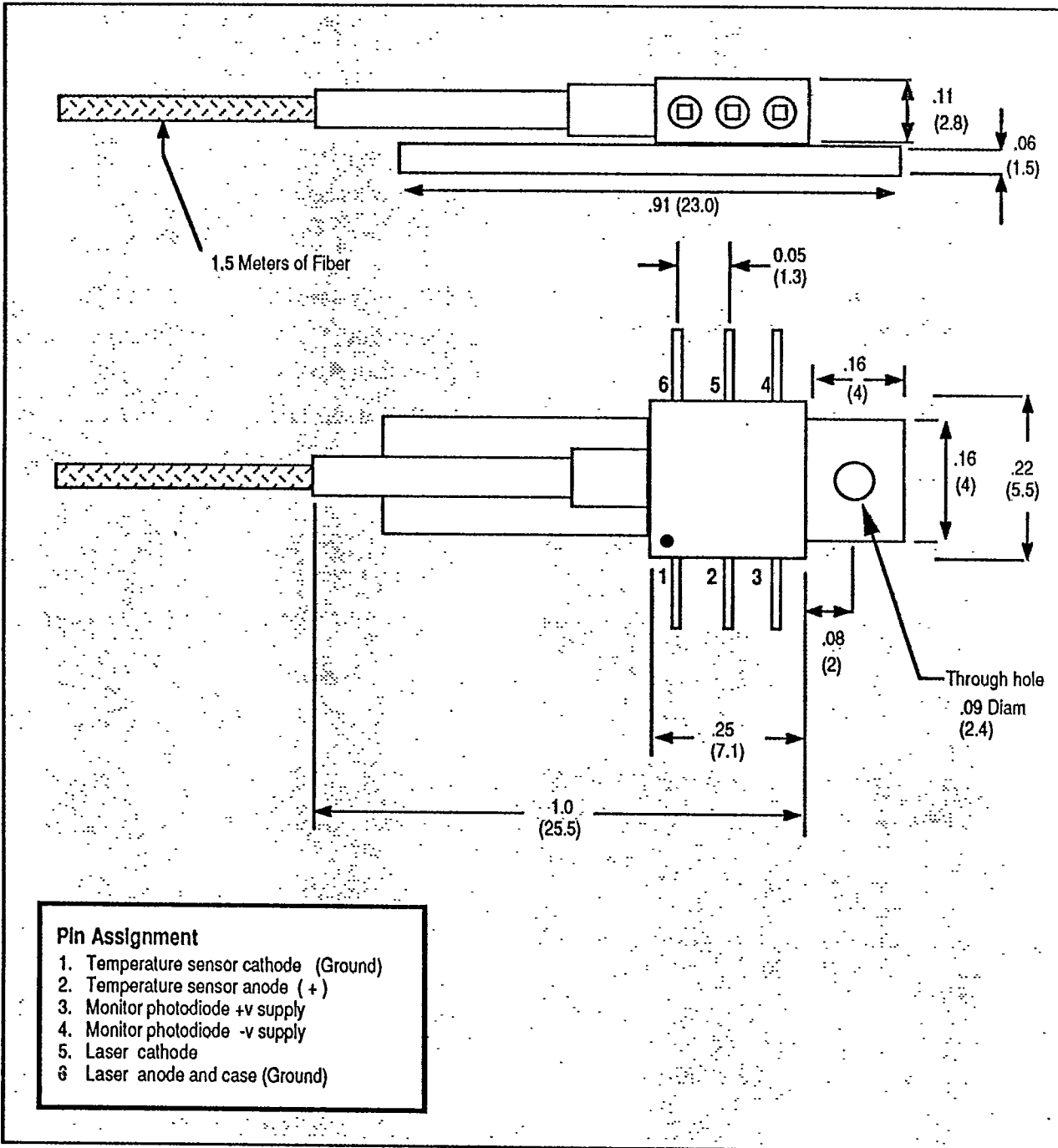
offers excellent reliability and modest threshold currents. The hermetic package contains laser, monitor photodiode, optional temperature sensor, and sealed single mode fiber.

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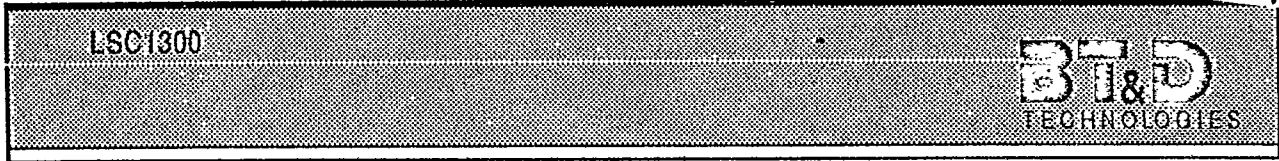


PACKAGE DIMENSIONS

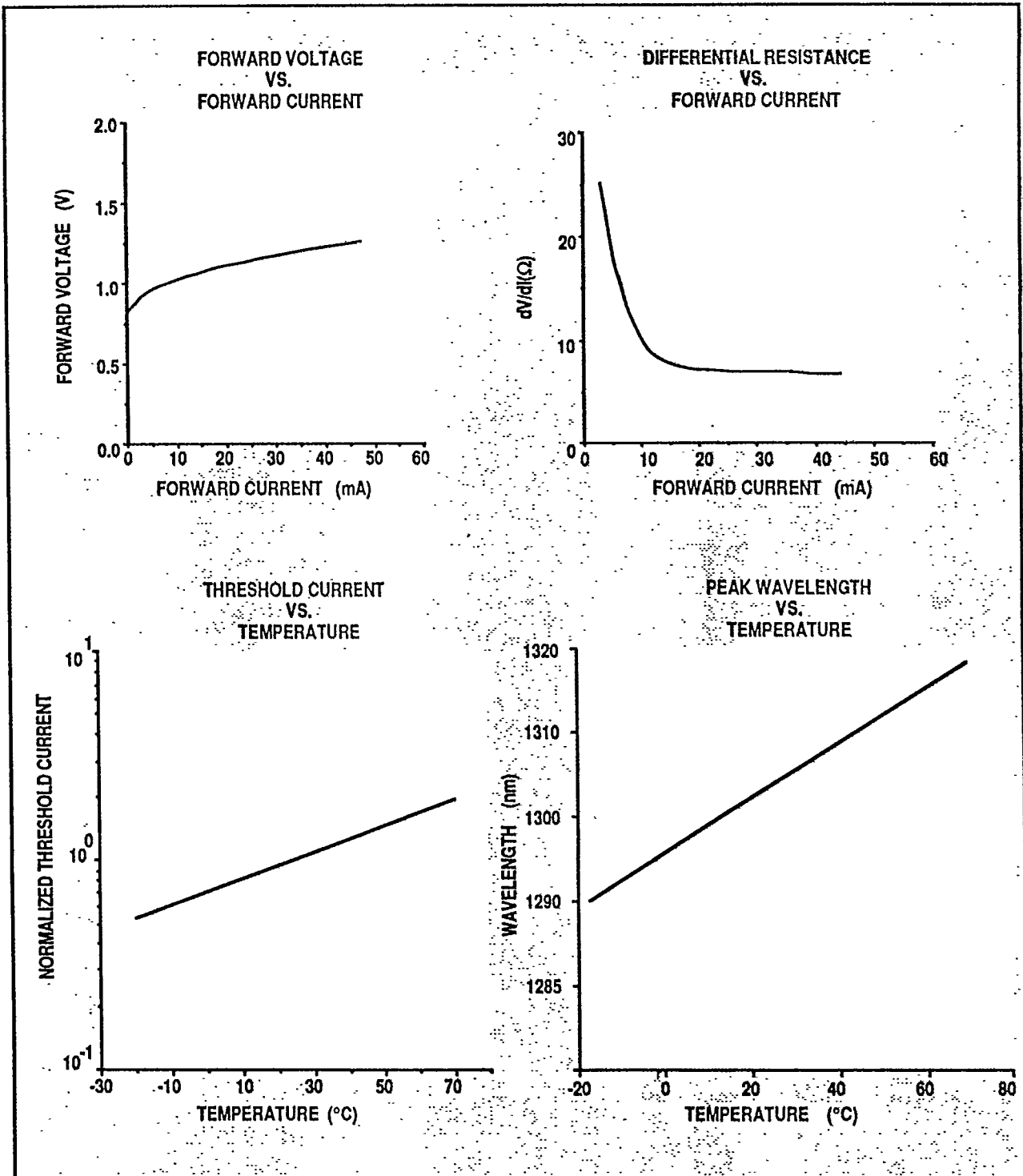
dimensions in inches (millimeters)



T-41-90




LASER DIODE TYPICAL OPERATING CHARACTERISTICS

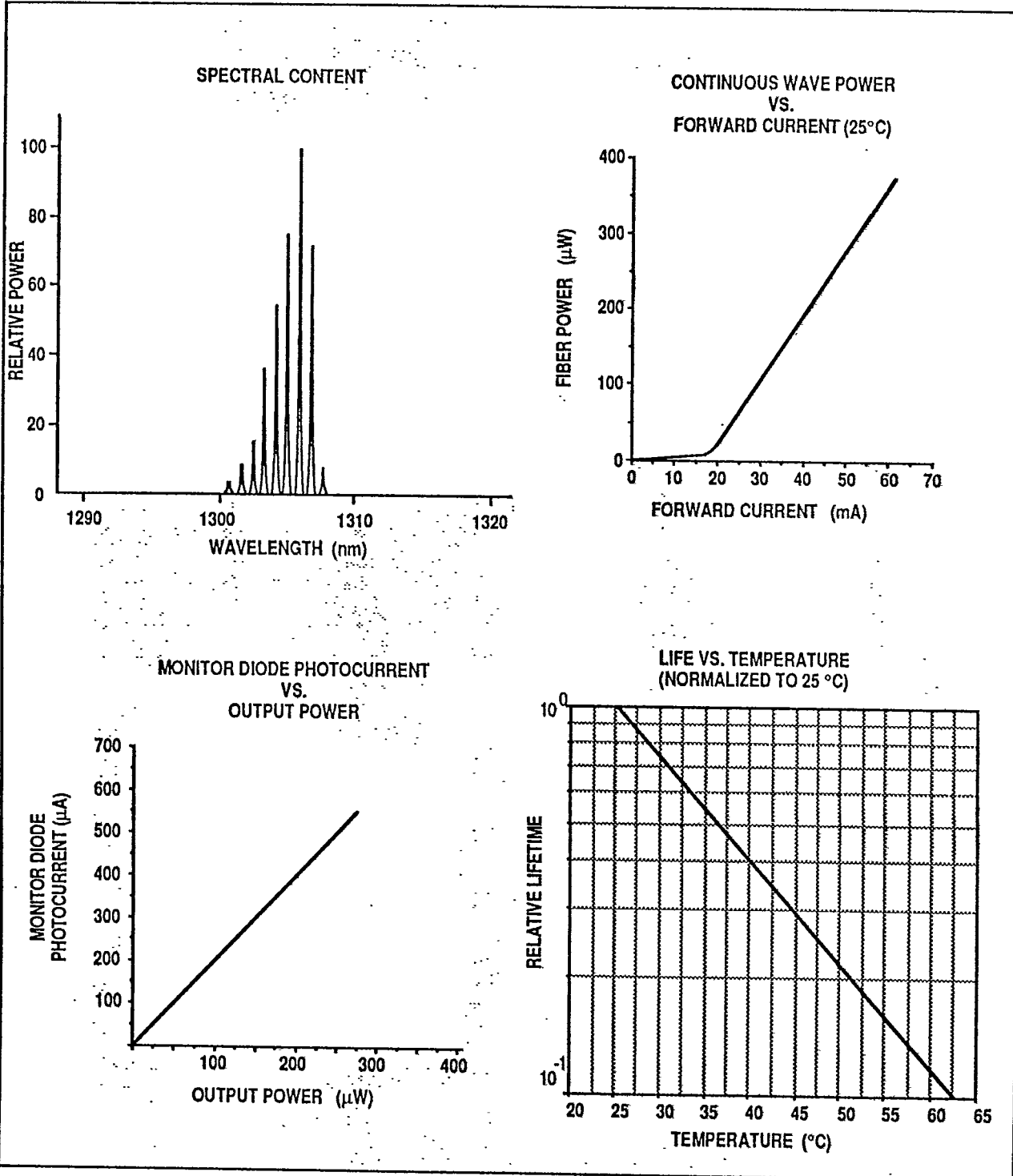


T-41-90


LSC1300



LASER DIODE TYPICAL OPERATING CHARACTERISTICS



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LSC1300	
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SPECIFICATIONS

Absolute Maximum Ratings (at 25°C)

PARAMETER	MIN	TYP	MAX	UNITS
Laser Forward Current	—	—	100	mA
Laser Reverse Current	—	—	100	μA
Laser Reverse Voltage	—	—	2.0	V
Photodiode Forward Current	—	—	1	mA
Photodiode Reverse Voltage (Vr)	—	—	-10	V
Fiber Pull Strength	—	—	10	N
Operating Temperature (case)	-20	—	+65	°C
Storage Temperature	-40	—	+70	°C
Relative Humidity	0	—	noncondensing	% RH
Mechanical Shock	MIL, STD, 883, Method 2002, Test condition B			
Vibration	MIL, STD, 883, Method 2007, Test condition A			

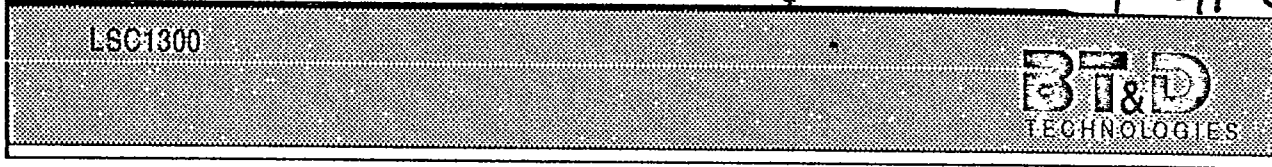
PERFORMANCE SPECIFICATIONS -- LASER ¹

PARAMETER	MIN	TYP	MAX	UNITS
Threshold Current (Ith)	5	20	35	mA
Temperature Coefficient of Threshold Current (-25°C to +65°C)	—	—	+2.5	%/°C
Differential Resistance	—	—	10	Ω (dV/dI)
Spectral Width (FWHM)	—	3	10	nm
Fiber Output Optical Power (Pf) at Ith + 25mA	100 -10	200 -7	400 -4	μW dBm
Temp. Coefficient of Laser Output Power ²	—	—	-1.0	%/°C
Optical Power at 2 mA below Threshold	—	—	6.6 -22	μW dBm
Rise Time; 10% to 90%; Ith to Ith + 25mA	—	—	0.5	ns
Fall Time; 90% to 10%; Ith + 25mA to Ith	—	—	0.5	ns
Center Wavelength	1280	1300	1330	nm
Temperature Dependence of Peak Wavelength	—	—	+0.6	nm/°C
Small Signal Frequency Response (-3dB point)	—	1.0	—	GHz
Mode Hopping and Mode Partition Noise ³	Adequately low to allow 5×10^{-11} BER at 565 Mbits/s			
MTTF ⁴	—	450,000	—	Hrs

Notes:

- 1 At 25°C and Pf = 200μW unless otherwise specified.
- 2 Change in laser drive current above threshold for constant monitor output current.
- 3 Assuming 2¹⁵-1 data pattern, optically dispersive medium of 150 ps/nm and return loss of ≥ .25 dB.
- 4 MTTF is defined as the total hours of operation before the device fails to meet the above specifications, or when the threshold current rises more than 100% above its original value, or when the monitor detector responsivity changes by ± 1.5 dB.

T-41-90



MONITOR PHOTODIODE

PARAMETER	MIN	TYP	MAX	UNITS
Photocurrent (Im) at Ith +25mA	0.2	—	0.7	mA
Responsivity ($\Delta I_m / \Delta P_f$) at Vr = -5v	0.5	—	7.0	A/W
Temperature Dependence of Responsivity 1 (from -20°C to +65°C, with respect to 25°C)	—	—	±1.5	dB
Dark Current (Vr = -5V)	at 25°C	—	0.1	μA
	at 65°C	—	1.0	μA
Photocurrent Linearity (from Pf = 10μW to 200μW)	—	—	±0.5	dB

PN TEMPERATURE SENSOR (OPTIONAL)

Forward Voltage (100μA forward current)	0.6	0.7	0.75	V
Temperature Coefficient (-20°C to +65°C)	—	-1.8	—	mV/°C

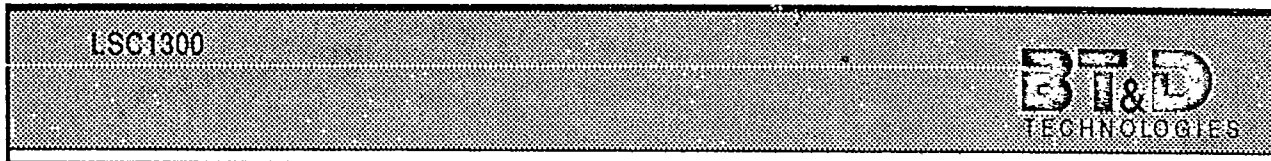
FIBER PIGTAIL

Type	Tight jacketed, self-mode-stripping, single mode fiber			
Length 2	1.5	—	—	m
Spot Size (mode radius)	4.5	—	5.5	μm
Cladding Diameter	122	—	128	μm
Core / Cladding Concentricity	—	—	1.0	μm
Secondary Jacket Diameter	0.8	0.9	1.0	mm
Effective Cutoff Wavelength (1 meter straight)	1150	—	1200	nm

Notes:

- 1 Fiber output power change for constant monitor output current.
- 2 Fiber length of 1.5 meters is standard without connector. Length will be reduced during connectorization.

T-41-90



ORDERING INFORMATION

Please order part number L S C 1 3 0 0 - X X

Style: FC/PC = FP
 ST = ST
 SMA = SA
 Biconic = BI
 None = NA

Products are available with custom connectors;
 call your account representative for details.

SAFETY PRECAUTIONS

DANGER

Invisible LASER Radiation -
 Avoid direct exposure to beam

Peak power	10 mW
Wavelength	1300 nm

Class III b LASER Product

EMISSION
 DIRECTION

WARNING!
 LASER RADIATION -- This device in operation produces
 invisible electromagnetic radiation which may be harmful
 to the human eye.

HANDLING PRECAUTIONS

1. Normal handling precautions for electrostatic sensitive devices should be taken
2. Semiconductor lasers can be damaged by overloading or by current surges.
 Appropriate transient protection precautions should be taken.

To place an order or to obtain more
 information, contact:

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 BT&D Technologies
 Delaware Corporate Center II
 Suite 200
 2 Righter Parkway
 Wilmington, DE 19803
 Tel: (800) 545-4306 USA only
 (302) 479-0300
 Fax: (302) 479-9560

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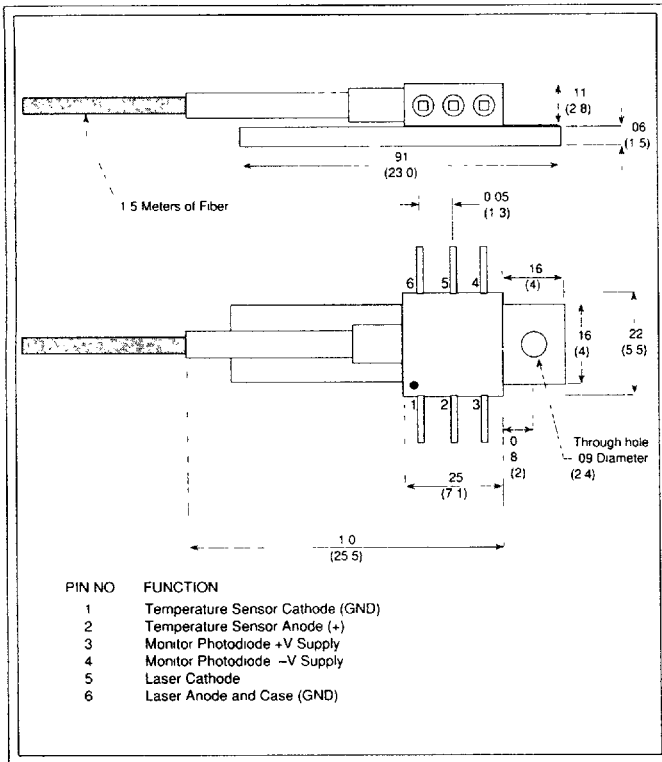
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Package Dimensions

F-16-21 **BT&D**

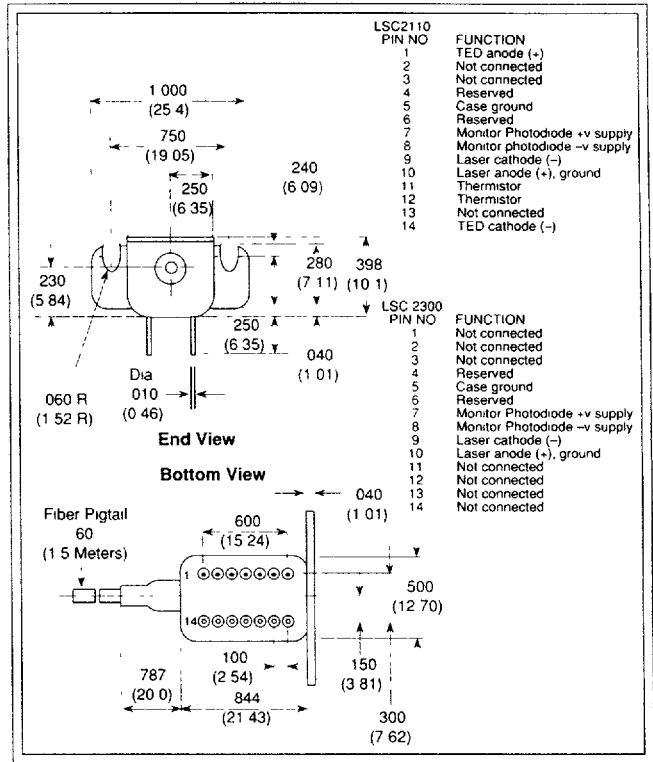
LSC1300 PACKAGE DIMENSIONS

Dimensions in inches (millimeters)



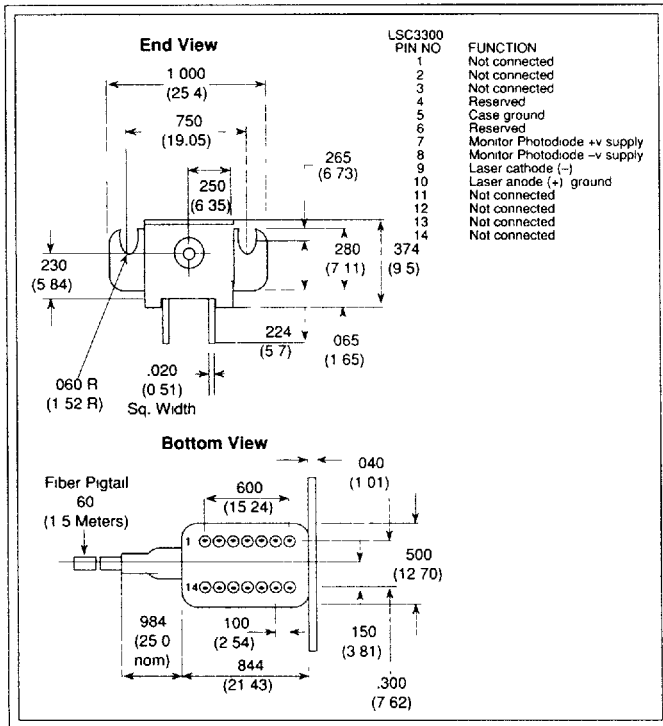
LSC2110 AND LSC2300 PACKAGE DIMENSIONS

Dimensions in inches (millimeters)



LSC3300 (plastic package) PACKAGE DIMENSIONS

Dimensions in inches (millimeters)



LST0605 and LST0705 PACKAGE DIMENSIONS

Dimensions in inches (millimeters)

