2.5 Gb/s SMQW Pigtailed Laser Modules

Technical Data

HFCT-3024
SMQW Mini DIL

Features

- **Strained Multi Quantum Well (SMQW) Fabry Perot Laser Chip**
- **Low Threshold and Operating Current**
- **Wide Operating Temperature Range**
- **Optical Power up to 1 mW**
- **Modulation Capability up to 2.5 Gb/s**
- **No TEC Required**

Applications

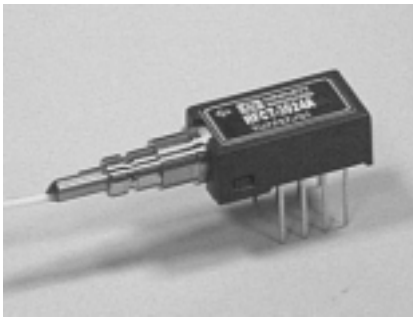
- **Telecommunications**
- **Fiber in the L oop**
- **Inter/Intra Office**
- **SONET/SDH**
- **Data Communications**
- **Switches**

Description

The HFCT-3024 consists of an 8 pin DIL package laser transmitter operating in the 1300 nm wavelength region and coupling light to single mode fiber. It is designed for use in short (<2 km) networks with bit rates up to 2.5 Gb/s

The product features a high reliability SMQW Fabry Perot laser diode and rear facet monitor photodiode.

Environmental performance is designed to be compatible with the requirements of Bellcore's TA-NWT-000983 document.



If the specific arrangement or performance you require is not listed, please contact your local representative, as our highly flexible design and manufacturing processes allow both physical and electro-optical customization to meet your needs.

A reference transmitter design board HFCT-3000 is available for evaluating the basic performance of the 8 pin DIL package.

Laser Safety Warning

This device is a Class IIIa (3a) Laser Product. It may emit invisible laser radiation if operated with the fiber pigtail disconnected.
To avoid possible eye damage do not look into an unconnected fiber pigtail during laser operation. Do not exceed specified operating limits.

Absolute Maximum Ratings

Absolute limiting (maximum) ratings mean that no catastrophic damage will occur if the product is subjected to these ratings for short periods, provided that each limiting parameter is in isolation and all other parameters have values within the performance specification. It should not be assumed that limiting values of more than one parameter can be applied to the product at the same time.

Parameter	Symbol	Test Condition	Limits		Unit
			Min.	Max.	
Laser Forward Current	If	DC		120	mA
Laser Reverse Voltage	Vlr	DC		2	V
Photodiode Reverse Voltage	Vr	DC		20	V
Photodiode Forward Current	Ipf	DC		1	mA
Operating Temperature (SMQW)	Tc	Temperature measured at case	-40	+85	°C
Storage Temperature	Ts		-40	+85	°C
Relative Humidity	RH		noncondensing		%RH
Fiber Pull Strength		Three times; 10 sec.		10	N
Mechanical Shock		MIL-STD-883E, Method 2002, Condition A		500	G
Vibration		MIL-STD-883E, Method 2007, Condition A		20	G

Performance Specifications

Parameter	Symbol	Test Condition	SMQW		Unit
			Min.	Max.	
LASER		CW (peak), Tc = over operating temperature range, Po as noted below unless otherwise stated and -20 dB ORL			
Rated optical power (1)	Po	Tc = over operating temperature range, CW	1		mW
Threshold current	Ith	Tc = +25°C	3.5	10	mA
Threshold current	Ith	Over operating temperature range	1.5	30	mA
Coupled Power in "Off" state	Pth	If = Ith - 2 mA	0	10	µW
Slope efficiency	η	Tc = +25°C	28	43	µW/mA
Drive current above Ith, for Im = Im (Po, +25°C)	Id	Tc = +25°C	23	35	mA
		Tc = over operating temperature range	10	60	mA
Forward voltage	Vf			3.6	V
Centre wavelength	λ	Tc = +25°C	1290	1330	nm
		Tc = over operating temperature range	1260	1360	nm
Wavelength/temperature coefficient	Δλ/ΔT			0.45	nm/°C
Spectral width	σ	One sigma, RMS		2.5	nm
Eye Mask		STM16/OC48	Compliant		

Note:

1. Power shown is standard product. Other O/P powers are available, contact your local HP sales office for details.

Performance Specifications (Continued)

Parameter	Symbol	Test Condition	SMQW		Unit
			Min.	Max.	
MONITOR PHOTODIODE		Tc = +25°C Vr = 5 V, Po = Rated Power			
Photocurrent	Im	Vr = 5 V	200	1000	µA
Dark current	Id	Po = 0 µW		20	nA
Capacitance	C	1 MHz		10	pF
Tracking Error	ΔR	Im = Im (Po, +25°C) Tc + -40°C to +85°C		±1	dB

Fiber Pigtail

Parameter	Minimum	Maximum	Unit
Fiber Pigtail Length	1000		mm
Spot Size (Mode Radius)	4.5	5.5	µm
Cladding Diameter	122	128	µm
Core/Cladding Concentricity		1	µm
Secondary Jacket Diameter	0.8	1	mm
Effective Cutoff Wavelength	1150	1240	nm

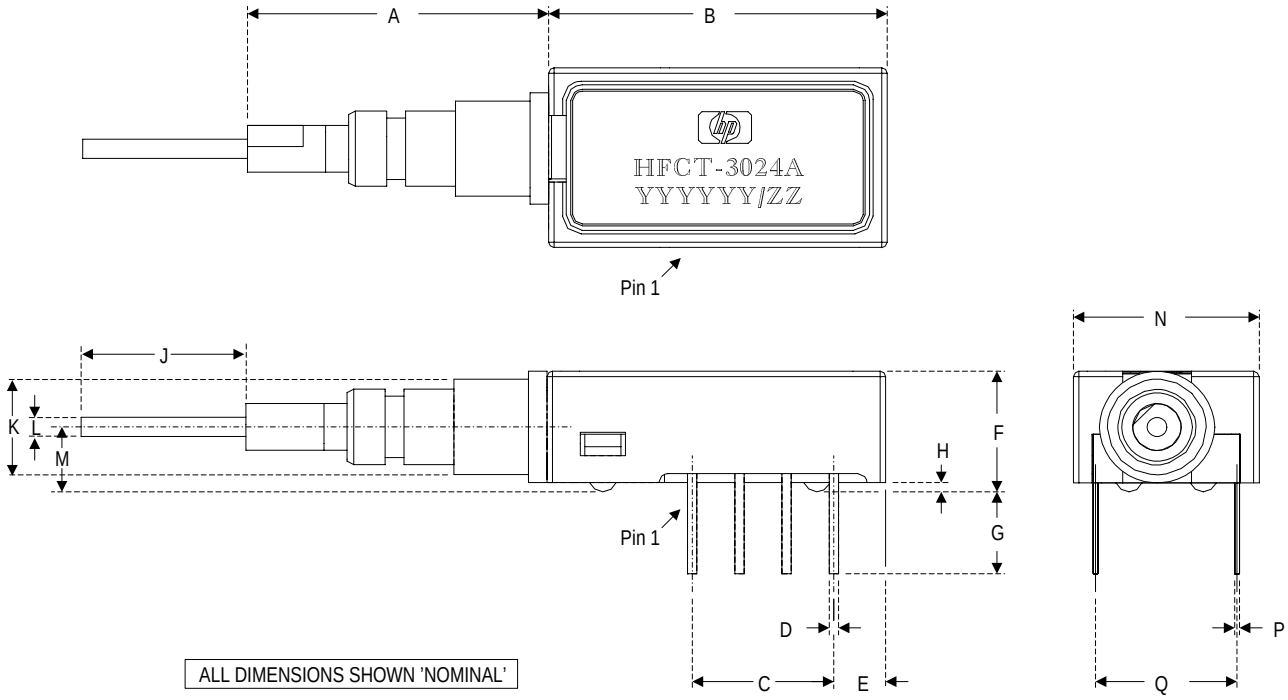
Reliability

Parameter	Condition	Minimum	Maximum	Unit
Median Life	50% inc. in total drive current, Tc = +25°C	2 x 10^5		hours

Other documentation

SMQW Laser Diode Reliability Datasheet	Publication number 5965-1293E
HFCT-3xxx	
Application Note 1169	Publication number 5968-4808E
Characterization Report	Available April, 1999
Interim Qualification Report	Publication number 5968-3019E
LST282x/LST292x/LST3821/LST3921	
Qualification Report	Publication number 5965-8894E

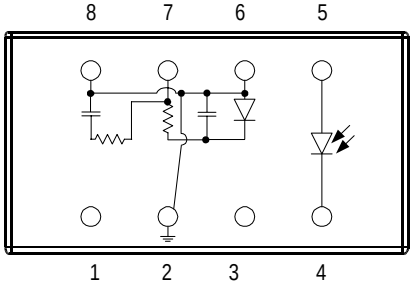
HFCT-3024 Specification - All dimensions in mm.



Dimension	Typical	Dimension	Typical	Dimension	Typical
A	16.2	F	6.7	L	0.9
B	18.2	G	4.6	M	3.6
C	7.62	H	0.5	N	10.0
D	0.5	J	1000	P	0.25
E	2.75	K	5.3	Q	7.62

Note: These dimensions are subject to minor changes.

HFCT-3024



Pin	Function
1	Not Connected/Reserved
2	Case Ground
3	Not Connected/Reserved
4	Photodiode Cathode (-)
5	Photodiode Anode (+)
6	Laser Diode Anode (+)
7	Laser RF Input Cathode (-)
8	Case Ground

Ordering Information

HFCT-3024Axx

Connector:
Blank = No Connector
FP = FC/PC
SC = SC
ST = ST®
DN = DIN (4106.66)

Available options:
HFCT-3024A
HFCT-3024AFP
HFCT-3024ASC
HFCT-3024AST
HFCT-3024ADN

ST® is a Registered Trademark of AT&T

INVISIBLE LASER RADIATION
DO NOT STARE INTO BEAM OR VIEW
DIRECTLY WITH OPTICAL INSTRUMENTS
CLASS 3A LASER PRODUCT
Peak Power 15 mW
Wavelength 1300 nm

IEC825-1 1993

Laser Warning

DANGER

Invisible LASER Radiation -
Avoid direct exposure to beam
Peak power 15 mW
Wavelength 1300 nm
Class III a LASER product

If the drive current is limited to less than 90 mA then the product is Class 1 (IEC825-1)

CDRH Certification

Hewlett-Packard Ltd.
Whitehouse Road
Ipswich, Suffolk IP1 5PB
England

Manufactured: _____ Serial No:_____

Model No: _____

This product conforms to the applicable requirements of 21 CFR 1040 at the date of manufacture.

www.hp.com/go/fiber

For technical assistance or the location of your nearest Hewlett-Packard sales office, distributor or representative call:

Americas/Canada: 1-800-235-0312 or 408-654-8675

Far East/Australasia: Call your local HP sales office.

Japan: (81 3) 3335-8152

Europe: Call your local HP sales office.

Data subject to change.

5968-4789E (4/99)