

# 1550nm DFB Laser Diode Module

**FOL15DDBJ-\*\*\*\* (1550nm 10mW Peak 2.5Gb/s DM DFB-LD Module)**

## Applications

- OC-48/STM-16 DWDM Transmission Systems

## Features

- Low Driving Current, High Slope Efficiency
- High Side Mode Suppression Ratio
- Selected Wavelength According to ITU-T Grid available
- 50GHz Spacing Available
- Flame retardant, Conformable to UL1581 (VW-1)

## Optical Characteristics (TLD=Tset, Tc=25°C, unless otherwise specified)

Parameter	Sym	Min	Typ	Max	Unit	Conditions
Optical Output Power	Pf	10	-	-	mW	CW
LD Forward Current	If	-	60	70	mA	Pf=10mW,CW,BOL
Submount Temperature	Tset	20	-	35	°C	Pf=5mW,CW
LD Forward Voltage	Vf	-	-	1.8	V	Pf=10mW,CW
Threshold Current	I <sub>Th</sub>	-	10	20	mA	BOL
Slope Efficiency	$\eta$	0.18	0.20	0.35	mW/mA	Pf=10mW,CW
Input Impedance	Zin	-	25	-	$\Omega$	
Wavelength	$\lambda$	1527.22	-	1563.86	nm	Pf=5mW,CW
Line Width (-20dB fullwidth)	$\Delta\lambda$	-	0.3	1	nm	<Pf>=5mW,2.5Gb/s NRZ
Side Mode Suppression Ratio	SMSR	35	45	-	dB	Pf=5mW,CW
Dispersion Penalty	DP	-	-	2	dB	<Pf>=5mW,2.5Gb/s NRZ, 1800ps/nm
Cut off Frequency (-1.5dB Optical)	fc	2	-	-	GHz	<Pf>=5mW
Rise and Fall Time(10-90%)	tr,tf	-	-	150	ps	<Pf>=5mW,2.5Gb/s NRZ
Optical Isolation	Iso	25	-	-	dB	Tc=-5 to 70°C
Relative Intensity Noise	RIN	-	-	-145	dB/Hz	Pf=5mW,CW O <sub>pRL</sub> <-25dB,f=2.5GHz
Monitor Current	Im	0.05	-	1	mA	Pf=5mW,CW, V <sub>rPD</sub> =5V
Monitor Dark Current	Id	-	-	100	nA	V <sub>rPD</sub> =5V
Tracking Error	TE	-0.5	-	0.5	dB	Im=constant, Tc=-5 to 70°C,
TEC Current	Itec	-	-	1.2	A	Tc=70°C, Pf=5mW,CW
TEC Voltage	Vtec	-	-	2.4	V	Tc=70°C, Pf=5mW,CW
Thermistor B constant	B	-	3900	-	K	Tset=25°C
Thermistor Resistance	R	9.5	-	10.5	k $\Omega$	Tset=25°C

**BOL**: Beginning of Life; **OpRL**: Optical Return Loss; <Pf>=Average Power

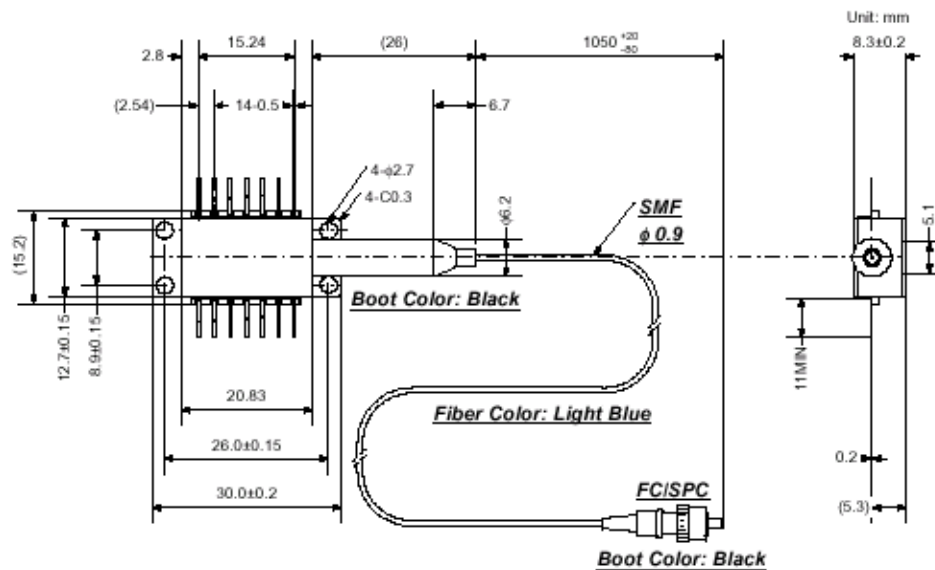
## Absolute Maximum Ratings

Parameter	Sym	Min	Typ	Max	Unit	Conditions
Storage Temperature	Tstg	-40	-	85	°C	-
Operating Case Temperature	Tc	-5	-	70	°C	-
LD Reverse Voltage	V <sub>rLD</sub>	-	-	2	V	-
LD Forward Current	I <sub>fLD</sub>	-	-	200	mA	-
PD Reverse Voltage	V <sub>rPD</sub>	-	-	20	V	-
PD Forward Current	I <sub>fPD</sub>	-	-	5	mA	-
TEC Current	I <sub>tec</sub>	-	-	1.6	A	-
TEC Voltage	V <sub>tec</sub>	-	-	2.6	V	-

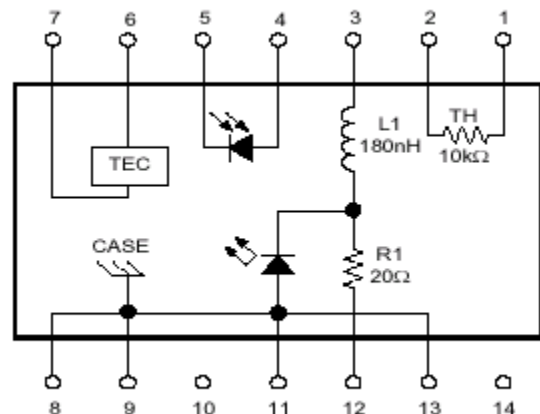
## Optical Fiber Pigtail Specifications

Parameter	Specification	Unit
Fiber Type	SP 08/HFR (Furukawa) Polyester elastomer coating (0.9 mm $\phi$ )	-
Fiber Color	Light Blue	-
Boot Color	Black	-
Nominal Fiber Length	1050 +20 -80 (Boot edge (fiber side) to connector edge)	mm
Connector Type	FC / SPC Connector	-

## Dimensions and Pin Assignments



PIN No.	Object	PIN No.	Object
1	Thermistor	8	Case Ground
2	Thermistor	9	Case Ground
3	LD Cathode(-)	10	No Connect
4	Monitor Anode(-)	11	Laser Anode(+), Case Ground
5	Monitor Cathode(+)	12	Laser RF
6	TEC(+)	13	Laser Anode(+), Case Ground
7	TEC(-)	14	No Connect



**Table 1**

$\lambda$ [nm]	ITU Frequency [THz]	FITEL Code
1527.22	196.30	19630
1527.60	196.25	19625
1527.99	196.20	19620
1528.38	196.15	19615
1528.77	196.10	19610
1529.16	196.05	19605
1529.55	196.00	19600
1529.94	195.95	19595
1530.33	195.90	19590
1530.72	195.85	19585
1531.12	195.80	19580
1531.51	195.75	19575
1531.90	195.70	19570
1532.29	195.65	19565
1532.68	195.60	19560
1533.07	195.55	19555
1533.47	195.50	19550
1533.86	195.45	19545
1534.25	195.40	19540
1534.64	195.35	19535
1535.04	195.30	19530
1535.43	195.25	19525
1535.82	195.20	19520
1536.22	195.15	19515
1536.61	195.10	19510
1537.00	195.05	19505
1537.40	195.00	19500
1537.79	194.95	19495
1538.19	194.90	19490
1538.58	194.85	19485
1538.98	194.80	19480
1539.37	194.75	19475

$\lambda$ [nm]	ITU Frequency [THz]	FITEL Code
1539.37	194.75	19475
1539.77	194.70	19470
1540.16	194.65	19465
1540.56	194.60	19460
1540.95	194.55	19455
1541.35	194.50	19450
1541.75	194.45	19445
1542.14	194.40	19440
1542.54	194.35	19435
1542.94	194.30	19430
1543.33	194.25	19425
1543.73	194.20	19420
1544.13	194.15	19415
1544.53	194.10	19410
1544.92	194.05	19405
1545.32	194.00	19400
1545.72	193.95	19395
1546.12	193.90	19390
1546.52	193.85	19385
1546.92	193.80	19380
1547.32	193.75	19375
1547.72	193.70	19370
1548.11	193.65	19365
1548.51	193.60	19360
1548.91	193.55	19355
1549.32	193.50	19350
1549.72	193.45	19345
1550.12	193.40	19340
1550.52	193.35	19335
1550.92	193.30	19330
1551.32	193.25	19325
1551.72	193.20	19320

$\lambda$ [nm]	ITU Frequency [THz]	FITEL Code
1551.72	193.20	19320
1552.12	193.15	19315
1552.52	193.10	19310
1552.93	193.05	19305
1553.33	193.00	19300
1553.73	192.95	19295
1554.13	192.90	19290
1554.54	192.85	19285
1554.94	192.80	19280
1555.34	192.75	19275
1555.75	192.70	19270
1556.15	192.65	19265
1556.55	192.60	19260
1556.96	192.55	19255
1557.36	192.50	19250
1557.77	192.45	19245
1558.17	192.40	19240
1558.58	192.35	19235
1558.98	192.30	19230
1559.39	192.25	19225
1559.79	192.20	19220
1560.20	192.15	19215
1560.61	192.10	19210
1561.01	192.05	19205
1561.42	192.00	19200
1561.83	191.95	19195
1562.23	191.90	19190
1562.64	191.85	19185
1563.05	191.80	19180
1563.45	191.75	19175
1563.86	191.70	19170

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