

## Select Wavelength Laser Diodes Datasheet

### 1. Product Information

**Part Number:** SWLD-XXXX100122-02

**Product Description:** The SWLD series laser diodes cover customer selection of large wavelengths range from 1530nm to 1610nm which are fabricated in a hermetically sealed 14-pin butterfly package. The laser diodes contains thermoelectric cooler (TEC), thermistor, monitor photodiode, optical isolator to secure high quality laser performance. The Laser Diodes wavelength of  $XXXX \pm 0.2\text{nm}$ , Output power:  $\geq 10\text{mW}$ , Pigtail Type: SMF-28e fiber with 900um loose tube, 1.0m, FC/APC connector. Our laser products are Telcordia GR-468 qualified, and in compliance with RoHS Directives.

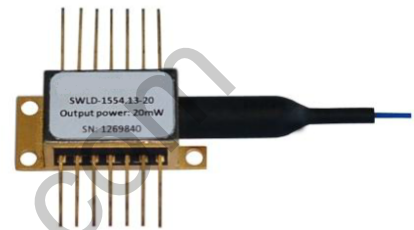
#### Applications:

- DWDM systems
- Fiberoptic sensors
- Laser sources
- CATV systems

#### Features:

- High output power ( $\geq 10\text{mW}$ )
- High-performance, multiquantum well (MQW) distributed-feedback (DFB) laser chip
- Industry-standard, 14-pin butterfly package. Built-in TEC and optical isolator
- $\lambda_c$  of  $XXXX \pm 0.2\text{nm}$

**Reliability:** Telcordia GR-468. RoHS



### 2. Revision History

Rev.	Notes	Prepared by	Audited by	Approved by	Date
V0	Initial release	Larry Song	Xing Gao	YuanShi	2023-03-01

### 3. Performance Specifications

#### Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Storage Temperature	$T_S$	-	-40	-	+85	$^{\circ}\text{C}$
Operating Case Temperature	$T_{op}$	-	-20	-	+65	$^{\circ}\text{C}$
Laser Forward Current	$I_F$	CW	-	-	200	mA
Laser Reverse Voltage	$V_{LR}$	-	-	-	2	V
PD Forward Current	$I_{FPD}$	-	-	-	5	mA
PD Reverse Voltage	$V_{RPD}$	-	-	-	10	V
TEC Current	$I_{TEC}$	-	-1.5	-	+1.5	A
TEC Voltage	$V_{TEC}$	-	-3.5	-	+3.5	V

#### Optical Characteristics (at 25 $^{\circ}\text{C}$ laser temperature)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
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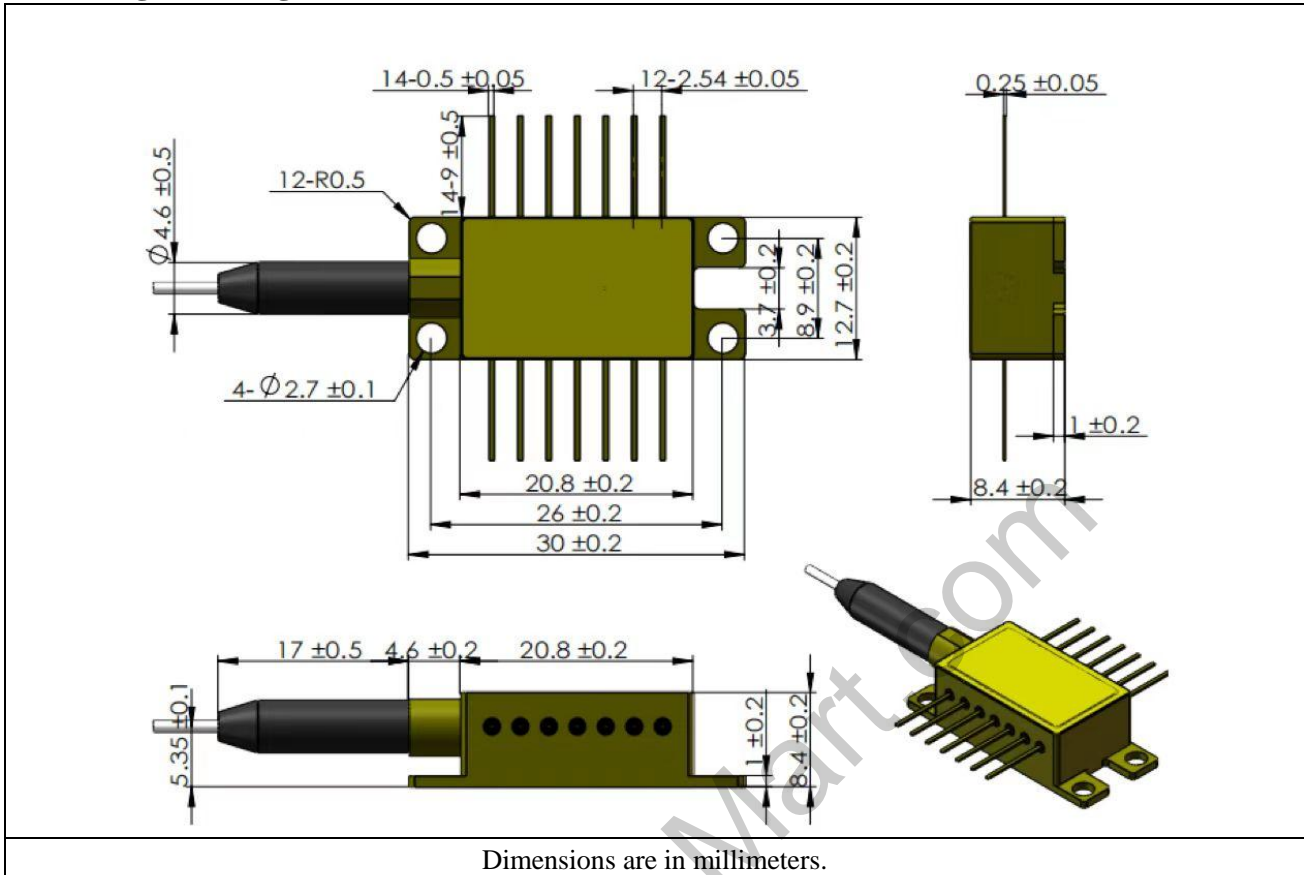
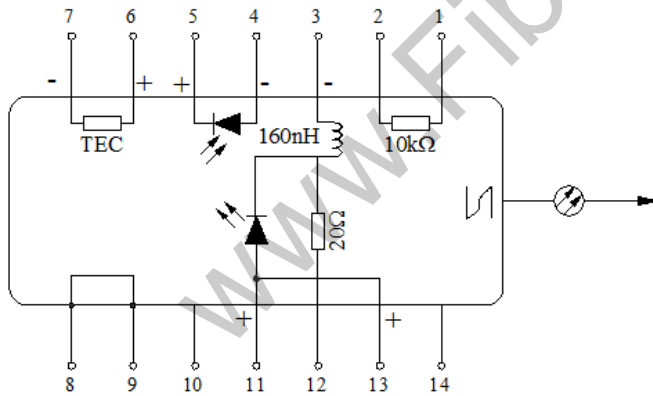
Center Wavelength	$\lambda_c$	TL=15~35°C, CW	Shown in Section 6			nm
Peak Optical Output Power	$P_o$	-	10	-	-	mW
Spectral Linewidth	LW	FWHM	-	3	5	MHz
Side-mode Suppression Ratio	SMSR	CW	40	50	-	dB
Optical Isolation	-	-	30	-	-	dB
Relative Intensity Noise	RIN	20-1000MHz	-	-	-145	dB/Hz
Wavelength Drift (EOL)	$\Delta\lambda$	Tested over 25-year lifetime	-	-	$\pm 0.1$	nm
Wavelength Temperature Coefficient	$\Delta\lambda/\Delta T$	TEC temperature at 15°C to 35°C	-	0.09	-	nm/°C
Wavelength Current Coefficient	$\Delta\lambda/\Delta I$	-	-	0.01	-	nm/mA

**Electrical Characteristics (at 25 °C laser temperature)**

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Threshold Current	$I_{th}$	-	-	10	35	mA
Slope Efficiency	$\eta$	$P_o=10mW(CW)$	0.05	0.13	0.2	mW/mA
Operating Current	$I_{op}$	$P_o=10mW(CW)$	-	100	150	mA
TEC Set Temperature	$T_s$	-	15	-	35	°C
Laser Forward Voltage	$V_F$	$P_o=10mW(CW)$	-	1.2	3.0	V
Monitor PD Current	$I_{MPD}$	$P_o=10mW(CW)$	10	-	2500	$\mu A$
Monitor Dark Current	$I_D$	$I_F=0mA, V_{RPD}=5V$	-	-	0.1	$\mu A$
Thermistor Current	$I_{TC}$	-	10	-	100	$\mu A$
Thermistor Resistance	$R_{TH}$	$T_L=25^\circ C$	9.5	10	10.5	K $\Omega$
TEC Current	$I_{TEC}$	$T_L=25^\circ C, T_C=65^\circ C$	-1.5	-	+1.5	A
TEC Voltage	$V_{TEC}$	$T_L=25^\circ C, T_C=65^\circ C$	-3.5	-	+3.5	V
TEC Capacity	$\Delta T$	$T_C=65^\circ C$	-	-	50	°C
Thermistor Temperature	-	-	-	-	100	°C

**Fiber Pigtail Specifications**

Parameters	Description	Parameters	Description
Fiber Type	SMF-28e	Pigtail Length	1.0 $\pm$ 0.1m
Jacket Type	900 $\mu m$ loose tube	Connector Type	FC/APC

**4. Package Drawing (Mechanical Dimensions):**

**5. Pin Assignments:**


1	Thermistor
2	Thermistor
3	Laser dc Bias (Cathode) (-)
4	Monitor PD Anode (-)
5	Monitor PD Cathode (+)
6	Thermoelectric Cooler (+)
7	Thermoelectric Cooler (-)
8	Case Ground
9	Case Ground
10	NC
11	Laser Anode (+)
12	Laser RF Cathode (-)
13	Laser Anode (+)
14	NC

**6. Part Number and Laser Center Wavelength list as below:**

Channel	Part Number	Center Wavelength			Unit
		Min.	Typical	Max.	
H62	SWLD-9625100122-02	1527.40	1527.60	1527.80	nm
C62	SWLD-9620100122-02	1527.79	1527.99	1528.19	nm

H61	SWLD-9615100122-02	1528.18	1528.38	1528.58	nm
C61	SWLD-9610100122-02	1528.57	1528.77	1528.97	nm
H60	SWLD-9605100122-02	1528.96	1529.16	1529.36	nm
C60	SWLD-9600100122-02	1529.35	1529.55	1529.75	nm
H59	SWLD-9595100122-02	1529.74	1529.94	1530.14	nm
C59	SWLD-9590100122-02	1530.13	1530.33	1530.53	nm
H58	SWLD-9585100122-02	1530.52	1530.72	1530.92	nm
C58	SWLD-9580100122-02	1530.92	1531.12	1531.32	nm
H57	SWLD-9575100122-02	1531.31	1531.51	1531.71	nm
C57	SWLD-9570100122-02	1531.70	1531.90	1532.10	nm
H56	SWLD-9565100122-02	1532.09	1532.29	1532.49	nm
C56	SWLD-9560100122-02	1532.48	1532.68	1532.88	nm
H55	SWLD-9555100122-02	1532.87	1533.07	1533.27	nm
C55	SWLD-9550100122-02	1533.27	1533.47	1533.67	nm
H54	SWLD-9545100122-02	1533.66	1533.86	1534.06	nm
C54	SWLD-9540100122-02	1534.05	1534.25	1534.45	nm
H53	SWLD-9535100122-02	1534.44	1534.64	1534.84	nm
C53	SWLD-9530100122-02	1534.84	1535.04	1535.24	nm
H52	SWLD-9525100122-02	1535.23	1535.43	1535.63	nm
C52	SWLD-9520100122-02	1535.62	1535.82	1536.02	nm
H51	SWLD-9515100122-02	1536.02	1536.22	1536.42	nm
C51	SWLD-9510100122-02	1536.41	1536.61	1536.81	nm
H50	SWLD-9505100122-02	1536.80	1537.00	1537.20	nm
C50	SWLD-9500100122-02	1537.20	1537.40	1537.60	nm
H49	SWLD-9495100122-02	1537.59	1537.79	1537.99	nm
C49	SWLD-9490100122-02	1537.99	1538.19	1538.39	nm
H48	SWLD-9485100122-02	1538.38	1538.58	1538.78	nm
C48	SWLD-9480100122-02	1538.78	1538.98	1539.18	nm
H47	SWLD-9475100122-02	1539.17	1539.37	1539.57	nm
C47	SWLD-9470100122-02	1539.57	1539.77	1539.97	nm
H46	SWLD-9465100122-02	1539.96	1540.16	1540.36	nm
C46	SWLD-9460100122-02	1540.36	1540.56	1540.76	nm
H45	SWLD-9455100122-02	1540.75	1540.95	1541.15	nm
C45	SWLD-9450100122-02	1541.15	1541.35	1541.55	nm
H44	SWLD-9445100122-02	1541.55	1541.75	1541.95	nm
C44	SWLD-9440100122-02	1541.94	1542.14	1542.34	nm
H43	SWLD-9435100122-02	1542.34	1542.54	1542.74	nm
C43	SWLD-9430100122-02	1542.74	1542.94	1543.14	nm
H42	SWLD-9425100122-02	1543.13	1543.33	1543.53	nm
C42	SWLD-9420100122-02	1543.53	1543.73	1543.93	nm
H41	SWLD-9415100122-02	1543.93	1544.13	1544.33	nm
C41	SWLD-9410100122-02	1544.33	1544.53	1544.73	nm

H40	SWLD-9405100122-02	1544.72	1544.92	1545.12	nm
C40	SWLD-9400100122-02	1545.12	1545.32	1545.52	nm
H39	SWLD-9395100122-02	1545.52	1545.72	1545.92	nm
C39	SWLD-9390100122-02	1545.92	1546.12	1546.32	nm
H38	SWLD-9385100122-02	1546.32	1546.52	1546.72	nm
C38	SWLD-9380100122-02	1546.72	1546.92	1547.12	nm
H37	SWLD-9375100122-02	1547.12	1547.32	1547.52	nm
C37	SWLD-9370100122-02	1547.52	1547.72	1547.92	nm
H36	SWLD-9365100122-02	1547.91	1548.11	1548.31	nm
C36	SWLD-9360100122-02	1548.31	1548.51	1548.71	nm
H35	SWLD-9355100122-02	1548.71	1548.91	1549.11	nm
C35	SWLD-9350100122-02	1549.12	1549.32	1549.52	nm
H34	SWLD-9345100122-02	1549.52	1549.72	1549.92	nm
C34	SWLD-9340100122-02	1549.92	1550.12	1550.32	nm
H33	SWLD-9335100122-02	1550.32	1550.52	1550.72	nm
C33	SWLD-9330100122-02	1550.72	1550.92	1551.12	nm
H32	SWLD-9325100122-02	1551.12	1551.32	1551.52	nm
C32	SWLD-9320100122-02	1551.52	1551.72	1551.92	nm
H31	SWLD-9315100122-02	1551.92	1552.12	1552.32	nm
C31	SWLD-9310100122-02	1552.32	1552.52	1552.72	nm
H30	SWLD-9305100122-02	1552.73	1552.93	1553.13	nm
C30	SWLD-9300100122-02	1553.13	1553.33	1553.53	nm
H29	SWLD-9295100122-02	1553.53	1553.73	1553.93	nm
C29	SWLD-9290100122-02	1553.93	1554.13	1554.33	nm
H28	SWLD-9285100122-02	1554.34	1554.54	1554.74	nm
C28	SWLD-9280100122-02	1554.74	1554.94	1555.14	nm
H27	SWLD-9275100122-02	1555.14	1555.34	1555.54	nm
C27	SWLD-9270100122-02	1555.55	1555.75	1555.95	nm
H26	SWLD-9265100122-02	1555.95	1556.15	1556.35	nm
C26	SWLD-9260100122-02	1556.35	1556.55	1556.75	nm
H25	SWLD-9255100122-02	1556.76	1556.96	1557.16	nm
C25	SWLD-9250100122-02	1557.16	1557.36	1557.56	nm
H24	SWLD-9245100122-02	1557.57	1557.77	1557.97	nm
C24	SWLD-9240100122-02	1557.97	1558.17	1558.37	nm
H23	SWLD-9235100122-02	1558.38	1558.58	1558.78	nm
C23	SWLD-9230100122-02	1558.78	1558.98	1559.18	nm
H22	SWLD-9225100122-02	1559.19	1559.39	1559.59	nm
C22	SWLD-9220100122-02	1559.59	1559.79	1559.99	nm
H21	SWLD-9215100122-02	1560.00	1560.20	1560.40	nm
C21	SWLD-9210100122-02	1560.41	1560.61	1560.81	nm
H20	SWLD-9205100122-02	1560.81	1561.01	1561.21	nm
C20	SWLD-9200100122-02	1561.22	1561.42	1561.62	nm

H19	SWLD-9195100122-02	1561.63	1561.83	1562.03	nm
C19	SWLD-9190100122-02	1562.03	1562.23	1562.43	nm
H18	SWLD-9185100122-02	1562.44	1562.64	1562.84	nm
C18	SWLD-9180100122-02	1562.85	1563.05	1563.25	nm
H17	SWLD-9175100122-02	1563.25	1563.45	1563.65	nm
C17	SWLD-9170100122-02	1563.66	1563.86	1564.06	nm
H16	SWLD-9165100122-02	1564.07	1564.27	1564.47	nm
C16	SWLD-9160100122-02	1564.48	1564.68	1564.88	nm
H15	SWLD-9155100122-02	1564.89	1565.09	1565.29	nm
C15	SWLD-9150100122-02	1565.30	1565.50	1565.70	nm
H14	SWLD-9145100122-02	1565.70	1565.90	1566.10	nm
C14	SWLD-9140100122-02	1566.11	1566.31	1566.51	nm
H13	SWLD-9135100122-02	1566.52	1566.72	1566.92	nm
C13	SWLD-9130100122-02	1566.93	1567.13	1567.33	nm
H12	SWLD-9125100122-02	1567.34	1567.54	1567.74	nm
C12	SWLD-9120100122-02	1567.75	1567.95	1568.15	nm
H11	SWLD-9115100122-02	1568.16	1568.36	1568.56	nm
C11	SWLD-9110100122-02	1568.57	1568.77	1568.97	nm
H10	SWLD-9105100122-02	1568.98	1569.18	1569.38	nm
C10	SWLD-9100100122-02	1569.39	1569.59	1569.79	nm
H09	SWLD-9095100122-02	1569.81	1570.01	1570.21	nm
C09	SWLD-9090100122-02	1570.22	1570.42	1570.62	nm
H08	SWLD-9085100122-02	1570.63	1570.83	1571.03	nm
C08	SWLD-9080100122-02	1571.04	1571.24	1571.44	nm
H07	SWLD-9075100122-02	1571.45	1571.65	1571.85	nm
C07	SWLD-9070100122-02	1571.86	1572.06	1572.26	nm
H06	SWLD-9065100122-02	1572.28	1572.48	1572.68	nm
C06	SWLD-9060100122-02	1572.69	1572.89	1573.09	nm
H05	SWLD-9055100122-02	1573.10	1573.30	1573.50	nm
C05	SWLD-9050100122-02	1573.51	1573.71	1573.91	nm
H04	SWLD-9045100122-02	1573.93	1574.13	1574.33	nm
C04	SWLD-9040100122-02	1574.34	1574.54	1574.74	nm
H03	SWLD-9035100122-02	1574.75	1574.95	1575.15	nm
C03	SWLD-9030100122-02	1575.17	1575.37	1575.57	nm
H02	SWLD-9025100122-02	1575.58	1575.78	1575.98	nm
C02	SWLD-9020100122-02	1576.00	1576.20	1576.40	nm
H01	SWLD-9015100122-02	1576.41	1576.61	1576.81	nm
C01	SWLD-9010100122-02	1576.83	1577.03	1577.23	nm
Q00	SWLD-9005100122-02	1577.24	1577.44	1577.64	nm
L00	SWLD-9000100122-02	1577.66	1577.86	1578.06	nm
Q99	SWLD-8995100122-02	1578.07	1578.27	1578.47	nm
L99	SWLD-8990100122-02	1578.49	1578.69	1578.89	nm

Q98	SWLD-8985100122-02	1578.90	1579.10	1579.30	nm
L98	SWLD-8980100122-02	1579.32	1579.52	1579.72	nm
Q97	SWLD-8975100122-02	1579.73	1579.93	1580.13	nm
L97	SWLD-8970100122-02	1580.15	1580.35	1580.55	nm
Q96	SWLD-8965100122-02	1580.57	1580.77	1580.97	nm
L96	SWLD-8960100122-02	1580.98	1581.18	1581.38	nm
Q95	SWLD-8955100122-02	1581.40	1581.60	1581.80	nm
L95	SWLD-8950100122-02	1581.82	1582.02	1582.22	nm
Q94	SWLD-8945100122-02	1582.24	1582.44	1582.64	nm
L94	SWLD-8940100122-02	1582.65	1582.85	1583.05	nm
Q93	SWLD-8935100122-02	1583.07	1583.27	1583.47	nm
L93	SWLD-8930100122-02	1583.49	1583.69	1583.89	nm
Q92	SWLD-8925100122-02	1583.91	1584.11	1584.31	nm
L92	SWLD-8920100122-02	1584.33	1584.53	1584.73	nm
Q91	SWLD-8915100122-02	1584.75	1584.95	1585.15	nm
L91	SWLD-8910100122-02	1585.16	1585.36	1585.56	nm
Q90	SWLD-8905100122-02	1585.58	1585.78	1585.98	nm
L90	SWLD-8900100122-02	1586.00	1586.20	1586.40	nm
Q89	SWLD-8895100122-02	1586.42	1586.62	1586.82	nm
L89	SWLD-8890100122-02	1586.84	1587.04	1587.24	nm
Q88	SWLD-8885100122-02	1587.26	1587.46	1587.66	nm
L88	SWLD-8880100122-02	1587.68	1587.88	1588.08	nm
Q87	SWLD-8875100122-02	1588.10	1588.30	1588.50	nm
L87	SWLD-8870100122-02	1588.53	1588.73	1588.93	nm
Q86	SWLD-8865100122-02	1588.95	1589.15	1589.35	nm
L86	SWLD-8860100122-02	1589.37	1589.57	1589.77	nm
Q85	SWLD-8855100122-02	1589.79	1589.99	1590.19	nm
L85	SWLD-8850100122-02	1590.21	1590.41	1590.61	nm
Q84	SWLD-8845100122-02	1590.63	1590.83	1591.03	nm
L84	SWLD-8840100122-02	1591.06	1591.26	1591.46	nm
Q83	SWLD-8835100122-02	1591.48	1591.68	1591.88	nm
L83	SWLD-8830100122-02	1591.90	1592.10	1592.30	nm
Q82	SWLD-8825100122-02	1592.32	1592.52	1592.72	nm
L82	SWLD-8820100122-02	1592.75	1592.95	1593.15	nm
Q81	SWLD-8815100122-02	1593.17	1593.37	1593.57	nm
L81	SWLD-8810100122-02	1593.59	1593.79	1593.99	nm
Q80	SWLD-8805100122-02	1594.02	1594.22	1594.42	nm
L80	SWLD-8800100122-02	1594.44	1594.64	1594.84	nm
Q79	SWLD-8795100122-02	1594.86	1595.06	1595.26	nm
L79	SWLD-8790100122-02	1595.29	1595.49	1595.69	nm
Q78	SWLD-8785100122-02	1595.71	1595.91	1596.11	nm
L78	SWLD-8780100122-02	1596.14	1596.34	1596.54	nm

Q77	SWLD-8775100122-02	1596.56	1596.76	1596.96	nm
L77	SWLD-8770100122-02	1596.99	1597.19	1597.39	nm
Q76	SWLD-8765100122-02	1597.42	1597.62	1597.82	nm
L76	SWLD-8760100122-02	1597.84	1598.04	1598.24	nm
Q75	SWLD-8755100122-02	1598.27	1598.47	1598.67	nm
L75	SWLD-8750100122-02	1598.69	1598.89	1599.09	nm
Q74	SWLD-8745100122-02	1599.12	1599.32	1599.52	nm
L74	SWLD-8740100122-02	1599.55	1599.75	1599.95	nm
Q73	SWLD-8735100122-02	1599.97	1600.17	1600.37	nm
L73	SWLD-8730100122-02	1600.40	1600.60	1600.80	nm
Q72	SWLD-8725100122-02	1600.83	1601.03	1601.23	nm
L72	SWLD-8720100122-02	1601.26	1601.46	1601.66	nm
Q71	SWLD-8715100122-02	1601.68	1601.88	1602.08	nm
L71	SWLD-8710100122-02	1602.11	1602.31	1602.51	nm
Q70	SWLD-8705100122-02	1602.54	1602.74	1602.94	nm
L70	SWLD-8700100122-02	1602.97	1603.17	1603.37	nm
Q69	SWLD-8695100122-02	1603.40	1603.60	1603.80	nm
L69	SWLD-8690100122-02	1603.83	1604.03	1604.23	nm
Q68	SWLD-8685100122-02	1604.26	1604.46	1604.66	nm
L68	SWLD-8680100122-02	1604.68	1604.88	1605.08	nm
Q67	SWLD-8675100122-02	1605.11	1605.31	1605.51	nm
L67	SWLD-8670100122-02	1605.54	1605.74	1605.94	nm
Q66	SWLD-8665100122-02	1605.97	1606.17	1606.37	nm
L66	SWLD-8660100122-02	1606.40	1606.60	1606.80	nm
Q65	SWLD-8655100122-02	1606.84	1607.04	1607.24	nm
L65	SWLD-8650100122-02	1607.27	1607.47	1607.67	nm
Q64	SWLD-8645100122-02	1607.70	1607.90	1608.10	nm
L64	SWLD-8640100122-02	1608.13	1608.33	1608.53	nm
Q63	SWLD-8635100122-02	1608.56	1608.76	1608.96	nm
L63	SWLD-8630100122-02	1608.99	1609.19	1609.39	nm
Q62	SWLD-8625100122-02	1609.42	1609.62	1609.82	nm
L62	SWLD-8620100122-02	1609.86	1610.06	1610.26	nm
Q61	SWLD-8615100122-02	1610.29	1610.49	1610.69	nm
L61	SWLD-8610100122-02	1610.72	1610.92	1611.12	nm

**7. Test Report:** The test report should be provided when the products are delivered. Following characteristic test data should be included: Optical Output Power, Center Wavelength, Spectrum Chart, P-I Curve, Pin Assignments.

**8. Packaging:** Vacuumize anti-static plastic package. Following items should be indicated on the outer packaging surface: Product Name, Product Number, Serial Number.



**9. Ordering Information:**

Ordering Information						
SWLD-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Wavelength	Power	Fiber type	Pigtail Type	Pigtail length	Connector
SWLD-	1270: 1270nm	01:1mW	0: SMF-28e	0: 250um bare fiber	1: 50cm	0: None
	... ..	05:5mW	1:PMF-1310	1:900um loose tube	2: 100cm	1: FC/UPC
	1610: 1610nm	10:10mW	2:PMF-1550	2:900um tight tube	3: 150cm	2: FC/APC
	1273:1273.55nm	20:20mW	C: Customized	C: Customized	4: 200cm	3: SC/UPC
	... ..	40:40mW			C: Customized	4: SC/APC
	1309: 1309.14nm	60:60mW				5: LC/UPC
	8610: 1610.92nm	80:80mW				6: LC/APC
	... ..	1H:100mW				C: Customized
9630: 1527.22nm	CC: Customized					
<b>Example of Ordering Form: SWLD-1273100222-L1</b>						
SWLD-	1273	10	0	2	2	2
	1273.55nm	10mW	SMF-28e	900um tight tube	100cm	FC/APC

-----End-----

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