



## Laser

### Chip on Submount

#### Key Features

Distributed Feed Back (DFB)  
Laser

InGaAsP Strained Quantum  
Well Laser Structure on InP

Buried Ridge Stripe (BRS)

Low Beam Divergence  
(FWHM) of  $22^\circ \times 28^\circ$

Output Power: 20mW, 40mW  
and 60mW

C -Band  
(1529nm – 1570nm)  
50 GHz Wavelength Spacing

#### Applications

CW & PW Operation

Telecom TDM and DWDM

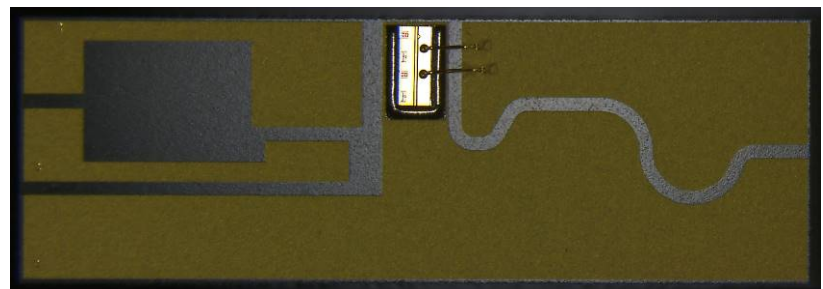
Instrumentation

## 1953LCV1

### Laser Chip on Submount

1953LCV1 chip is a high-performance DFB chip incorporating a Gas Source Molecular Beam Epitaxy (GS-MBE) strained layer multiple quantum well (SLMQW) vertical structure on an InP substrate and a Buried Ridge Stripe (BRS) structure. The BRS structure, achieved with Metal Organic Vapour Phase Deposition (MOVPE) regrowth is performed on 2" wafers whereas facet coatings are made on bars.

This product is available on the whole C-band (1529nm – 1570nm)



## For moreInfo

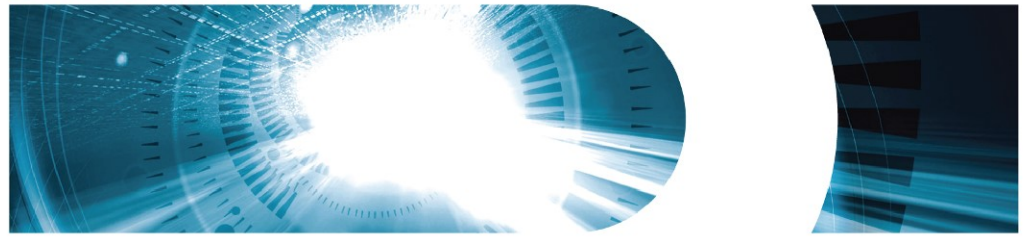
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## ELECTRO-OPTICAL CHARACTERISTICS

All parameters are specified at 25°C Submount Temperature, BOL

| Parameters                    | Conditions   | Symbol                  | Min  | Max | Unit  |
|-------------------------------|--|-------------------------|------|-----|-------|
| Drive Current Threshold       | Intersection point with the x-axis of the P <sub>I</sub> linear fit curve between 0.2mW and 0.8 mW | I <sub>th</sub>         | -    | 30  | mA    |
| External Efficiency           |  | Eta                     | 0.22 | -   | mW/mA |
| Nominal Optical output Power  | 200 mA   | P <sub>200</sub>        | 40   | -   | mW    |
| Maximum Optical Output Power  |  | P <sub>max</sub>        | 63   | -   | mW    |
| Current without kink          |  | I <sub>f w/o kink</sub> | 300  | -   | mA    |
| Serial Resistance             | V <sub>I</sub> linear fit curve between 2mW and 15 mW  | R <sub>s</sub>          | -    | 2.5 | Ohm   |
| Peak Emission Wavelength      | P <sub>f</sub> =40 mW  | L <sub>da P</sub>       | (*)  | (*) | nm    |
| Side Mode Suppression ratio   | P <sub>f</sub> =40 mW  | SMSR                    | 35   |     | dB    |
| Parallel Beam Divergence      | I <sub>f</sub> =200mA  | θ <sub>//</sub>         |      | 22  | °     |
| Perpendicular Beam Divergence | I <sub>f</sub> =200mA  | θ <sub>⊥</sub>          |      | 28  | °     |

(\*)  
 Peak Emission Wavelength is defined in “Ordering Information” section.

## ABSOLUTE MAXIMUM RATINGS

Exposing the device to stresses above those listed in this section could cause permanent damage. The device is not meant to operate under conditions outside the operational limits described in subsequent sections. Exposure to absolute maximum rating conditions for extended periods may adversely affect device reliability.

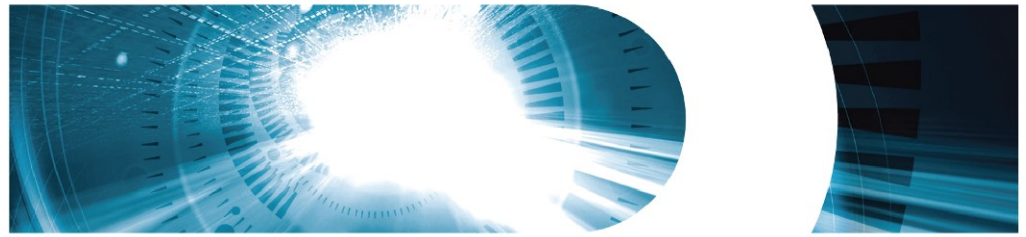
| Parameter Conditions   | Symbol             | Min | Max   | Unit |
|------------------------|--------------------|-----|-------|------|
| Storage Temperature    | T <sub>stg</sub>   | -40 | +85   | °C   |
| Operating temperature  | T <sub>op</sub>    | -40 | +85   | °C   |
| Forward Drive Current  | I <sub>f max</sub> | -   | 500   | mA   |
| Reverse Voltage        | V <sub>r max</sub> | -   | 2     | V    |
| ESD (Human Body Model) | V <sub>ESD</sub>   |     | 1 000 | V    |

# 1953LCV1 DFB Laser

Chip on Submount

# 3SP Technologies

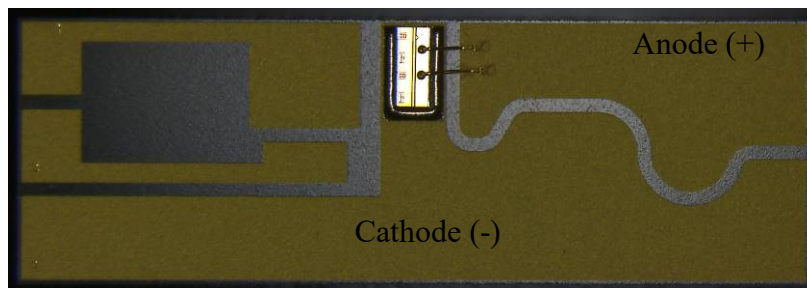
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## DIMENSIONS AND WIRING

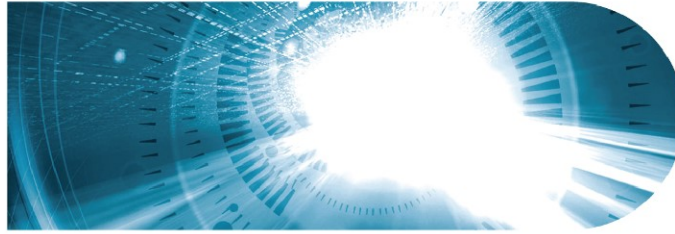
| Parameter          | Test Conditions | Min  | Typ  | Max  | Unit          |
|--------------------|-----------------|------|------|------|---------------|
| Chip length        |                 | 580  | 600  | 620  | $\mu\text{m}$ |
| Chip width         |                 | 230  | 250  | 270  | $\mu\text{m}$ |
| Chip thickness     |                 | 65   | 85   | 105  | $\mu\text{m}$ |
| Submount length    |                 | 5880 | 6000 | 6020 | $\mu\text{m}$ |
| Submount width     |                 | 1980 | 2000 | 2020 | $\mu\text{m}$ |
| Submount thickness |                 | 615  | 635  | 655  | $\mu\text{m}$ |

- CW & PW application



# 1953LCV1 DFB Laser Chip on Submount

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## QUALIFICATION and RELIABILITY

1953 LCV1 laser chip is qualified based on Telcordia GR-468-Core recommendations.

Wear Out Failure In Time is lower than 100 FIT

- for 15 years duration
- at chip conditions of :
  - . 40 mW Output Power
  - . and 25°C temperature

## LASER SAFETY INFORMATION

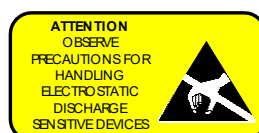
Appropriate precautions should be taken to prevent undue exposure to naked eye.  
This product is classified Class 3B Laser Chip according to IEC 60825-1.

## HANDLING

This product is to be used in a class 10.000 clean room (ISO 7 standard) at the following recommended conditions : 19~23°C and 40~60% HR

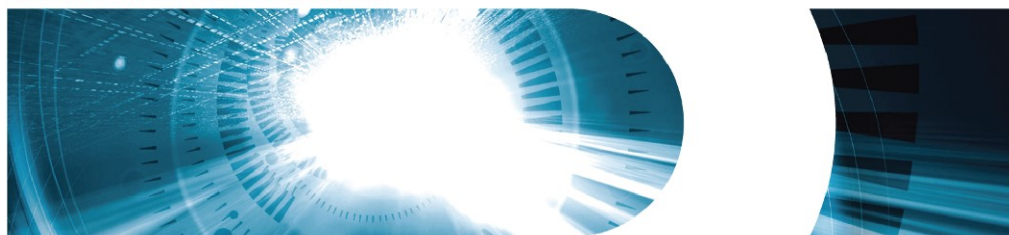
This product is sensitive to electrostatic discharge and should not be handled except at a static free workstation. Appropriate precautions should be taken to prevent ESD : use wrist straps, grounded work surfaces and anti-static techniques when handling the device.

Care should be taken to avoid supply transient and over voltage that can cause electrical overstress damage to the chip. Over voltage above the maximum specified in absolute maximum rating section may cause permanent damage to the device.



# 1953LCV1 DFB Laser

Chip on Submount



## ORDERING INFORMATION

Chip on Submount (CoS) generic part number:

|                            |
|----------------------------|
| <b>CoS<br/>Part Number</b> |
| 3CN01541XX                 |

Code related to wavelength (XX) is defined as follow : for example, part number 3CN01541CB is for a 1953LCv1 CoS with wavelength between 1533.52 and 1534.32nm

| Lda Code (XX) | Lda Min (nm) | Lda Max (nm) |
|---------------|--------------|--------------|
| BP            | 1528.82      | 1529.62      |
| BQ            | 1529.21      | 1530.01      |
| BR            | 1529.60      | 1530.40      |
| BS            | 1530.00      | 1530.79      |
| BT            | 1530.39      | 1531.18      |
| BU            | 1530.78      | 1531.57      |
| BV            | 1531.17      | 1531.96      |
| BW            | 1531.56      | 1532.35      |
| BX            | 1531.95      | 1532.75      |
| BY            | 1532.34      | 1533.14      |
| BZ            | 1532.74      | 1533.53      |
| CA            | 1533.13      | 1533.92      |
| CB            | 1533.52      | 1534.32      |
| CC            | 1533.91      | 1534.71      |
| CD            | 1534.31      | 1535.10      |
| CE            | 1534.70      | 1535.49      |
| CF            | 1535.09      | 1535.89      |
| CG            | 1535.49      | 1536.28      |
| CH            | 1535.88      | 1536.67      |
| CJ            | 1536.27      | 1537.07      |
| CK            | 1536.67      | 1537.46      |
| CL            | 1537.06      | 1537.86      |
| CM            | 1537.46      | 1538.25      |
| CN            | 1537.85      | 1538.65      |
| CP            | 1538.25      | 1539.04      |
| CQ            | 1538.64      | 1539.44      |

| Lda Code (XX) | Lda Min (nm) | Lda Max (nm) |
|---------------|--------------|--------------|
| CR            | 1539.04      | 1539.83      |
| CS            | 1539.43      | 1540.23      |
| CT            | 1539.83      | 1540.62      |
| CU            | 1540.22      | 1541.02      |
| CV            | 1540.62      | 1541.41      |
| CW            | 1541.02      | 1541.81      |
| CX            | 1541.41      | 1542.21      |
| CY            | 1541.81      | 1542.60      |
| CZ            | 1542.21      | 1543.00      |
| DA            | 1542.60      | 1543.40      |
| DB            | 1543.00      | 1543.80      |
| DC            | 1543.40      | 1544.19      |
| DD            | 1543.80      | 1544.59      |
| DE            | 1544.19      | 1544.99      |
| DF            | 1544.59      | 1545.39      |
| DG            | 1544.99      | 1545.79      |
| DH            | 1545.39      | 1546.18      |
| DJ            | 1545.79      | 1546.58      |
| DK            | 1546.19      | 1546.98      |
| DL            | 1546.59      | 1547.38      |
| DM            | 1546.99      | 1547.78      |
| DN            | 1547.39      | 1548.18      |
| DP            | 1547.78      | 1548.58      |
| DQ            | 1548.19      | 1548.98      |
| DR            | 1548.59      | 1549.38      |
| DS            | 1548.99      | 1549.78      |

| Lda Code (XX) | Lda Min (nm) | Lda Max (nm) |
|---------------|--------------|--------------|
| DT            | 1549.39      | 1550.18      |
| DU            | 1549.79      | 1550.58      |
| DV            | 1550.19      | 1550.98      |
| DW            | 1550.59      | 1551.38      |
| DX            | 1550.99      | 1551.79      |
| DY            | 1551.39      | 1552.19      |
| DZ            | 1551.79      | 1552.59      |
| EA            | 1552.20      | 1552.99      |
| EB            | 1552.60      | 1553.39      |
| EC            | 1553.00      | 1553.80      |
| ED            | 1553.40      | 1554.20      |
| EE            | 1553.81      | 1554.60      |
| EF            | 1554.21      | 1555.01      |
| EG            | 1554.61      | 1555.41      |
| EH            | 1555.02      | 1555.81      |
| EJ            | 1555.42      | 1556.22      |
| EK            | 1555.83      | 1556.62      |
| EL            | 1556.23      | 1557.02      |
| EM            | 1556.63      | 1557.43      |
| EN            | 1557.04      | 1557.83      |
| EP            | 1557.44      | 1558.24      |
| EQ            | 1557.85      | 1558.64      |
| ER            | 1558.25      | 1559.05      |
| ES            | 1558.66      | 1559.45      |
| ET            | 1559.06      | 1559.86      |
| EU            | 1559.47      | 1560.27      |

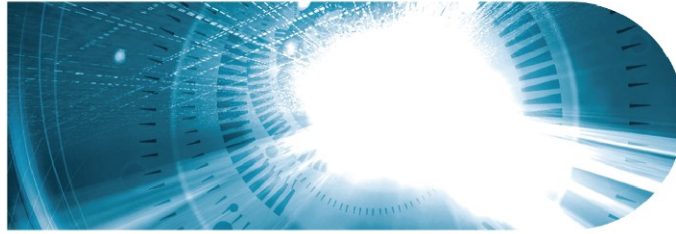
| Lda Code (XX) | Lda Min (nm) | Lda Max (nm) |
|---------------|--------------|--------------|
| EV            | 1559.88      | 1560.67      |
| EW            | 1560.28      | 1561.08      |
| EX            | 1560.69      | 1561.48      |
| EY            | 1561.10      | 1561.89      |
| EZ            | 1561.50      | 1562.30      |
| FA            | 1561.90      | 1562.71      |
| FB            | 1562.32      | 1563.11      |
| FC            | 1562.73      | 1563.52      |
| FD            | 1563.13      | 1563.93      |
| FE            | 1563.54      | 1564.34      |
| FF            | 1563.95      | 1564.74      |
| FG            | 1564.36      | 1565.15      |
| FH            | 1564.77      | 1565.56      |
| FJ            | 1565.17      | 1565.97      |
| FK            | 1565.58      | 1566.38      |
| FL            | 1565.99      | 1566.79      |
| FM            | 1566.40      | 1567.20      |
| FN            | 1566.81      | 1567.61      |
| FP            | 1567.22      | 1568.02      |
| FR            | 1567.63      | 1568.43      |
| FS            | 1568.04      | 1568.84      |
| FT            | 1568.45      | 1569.25      |
| FU            | 1568.86      | 1569.66      |

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Chip on Submount

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