

# TSD-8B12-673

## 850nm 25Gb/s Multimode Dual Top Contact VCSEL

*Preliminary*

### FEATURES:

- Data rate up to 25 Gbps.
- P and N bonding pad on top surface.
- Low threshold and operation current.
- 850nm multimode emission.



### ELECTRO-OPTICAL CHARACTERISTICS:

| PARAMETERS               | SYMBOL           | MIN  | TYP  | MAX  | UNIT     | TEST CONDITIONS                      |
|--------------------------|------------------|------|------|------|----------|--------------------------------------|
| Threshold Current        | $I_{th}$         |      | 0.5  | 0.65 | mA       |                                      |
| Output Power             | $P_o$            |      | 2.2  | 2.5  | mW       | $I_F=6$ mA                           |
| Slope Efficiency         | $\eta$           | 0.35 | 0.45 |      | mW/mA    | $I_F=6$ mA                           |
| Wavelength               | $\lambda_p$      | 840  |      | 860  | nm       | $I_F=6$ mA                           |
| Forward Voltage          | $V_F$            |      | 2.0  | 2.1  | V        | $I_F=6$ mA                           |
| Series Resistance        | $R_S$            |      | 65   | 75   | $\Omega$ | $I_F=6$ mA                           |
| Beam Divergence          | $\theta$         |      | 28   | 33   | degree   | $I_F=6$ mA (1/e <sup>2</sup> )       |
| Spectral width (RMS)     | $\Delta \lambda$ |      |      | 0.6  | nm       | $I_F=6$ mA                           |
| Rise Times (20%~80%)     | $T_r$            |      | 18   |      | ps       | $I_F=6$ mA                           |
| Fall Times (20%~80%)     | $T_f$            |      | 21   |      | Ps       | $I_F=6$ mA                           |
| 3dB Bandwidth            | BW               | 12.5 | 14.5 |      | GHz      | $I_F=6$ mA                           |
| Relative intensity noise | RIN              |      | -130 | -128 | dB/Hz    | $I_F=7$ mA, ER=4dB, 19GHz BW, T=80°C |

Notes:

All parameters except mentioned are measured at  $I_F=6$  mA, 25°C, CW operation.

### ABSOLUTE MAXIMUM RATINGS:

| PARAMETERS                 | MIN | MAX | UNIT | CONDITIONS |
|----------------------------|-----|-----|------|------------|
| Storage Temperature        | -40 | 100 | °C   |            |
| Operating Temperature      | -10 | 80  | °C   |            |
| Peak Forward Current       |     | 12  | mA   |            |
| Continuous Reverse Voltage |     | 3   | V    | 10μA       |

Fig. 1 Typical Optical Characteristics

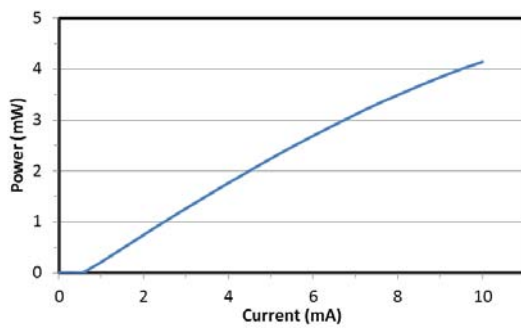
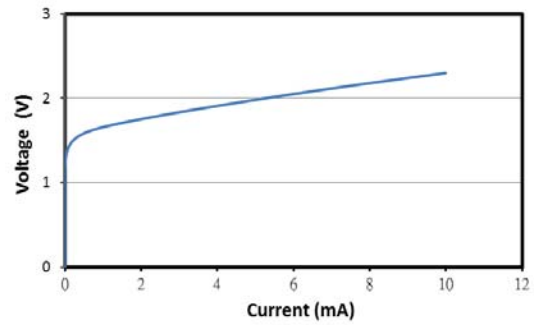
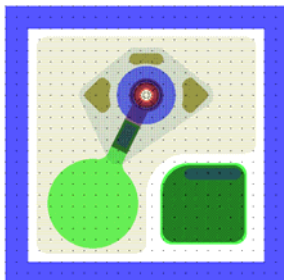


Fig. 2 Typical Electrical Characteristics



### OUTLINE DIAGRAM:

- Chip length: 250  $\mu\text{m}$
- Chip width: 250  $\mu\text{m}$
- Chip thickness:  $150 \pm 12.5 \mu\text{m}$



### WARNING:

The VCSEL is a class 3B laser in the safety standard IEC60825-1:2014 and should be treated to avoid exposure to beam.

