

**$\lambda = 940 \text{ nm}$ ,  $P = 300 \text{ mW}$ , Single Mode Axcel M9-940-0300**Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

| CHARACTERISTIC             | SYMBOL      | MAX RATING                |
|----------------------------|-------------|---------------------------|
| Optical Output Power (CW)  | $P_o$       | 300 mW                    |
| LD Reverse Voltage         | $V_{R(LD)}$ | 2 V                       |
| PD Reverse Voltage         | $V_{R(PD)}$ | 30 V                      |
| Operation Case Temperature | $T_c$       | -20 to $50^\circ\text{C}$ |
| Storage Temperature        | $T_{stg}$   | -40 to $80^\circ\text{C}$ |

Characteristics ( $T_c = 25^\circ\text{C}$ ,  $P = 300 \text{ mW}$ )

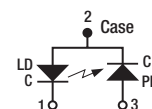
| CHARACTERISTIC         | SYMBOL           | MIN       | TYP.       | MAX        |
|------------------------|------------------|-----------|------------|------------|
| Lasing Wavelength      | $\lambda_p$      | 935 nm    | 940 nm     | 945 nm     |
| Threshold Current      | $I_{th}$         | —         | 20 mA      | 40 mA      |
| Operating Current      | $I_{op}$         | —         | 400 mA     | 450 mA     |
| Operating Voltage      | $V_{op}$         | —         | 1.9 V      | 2.2 V      |
| Beam Divergence (FWHM) | $\theta_{//}$    | —         | $8^\circ$  | $10^\circ$ |
|                        | $\theta_{\perp}$ | —         | $28^\circ$ | $32^\circ$ |
| Slope Efficiency       | $\eta_s$         | 0.8 mW/mA | 0.9 mW/mA  | —          |
| Monitor Current        | $I_m$            | —         | 0.180 mA   | —          |

Note: All data are presented as typical unless otherwise specified.

CAUTION:  
ELECTROSTATIC  
SENSITIVENEW  
product

**Pin Description**

- 1 laser cathode
- 2 common case
- 3 monitor diode anode



PIN CODE A

- $\varnothing 9 \text{ mm}$  Package
- 940 nm (Typical) Wavelength
- 300 mW Output Power (CW)
- 20 mA (Typical) Threshold Current

| ITEM #      | £*<br>1-5 PCS | €*<br>1-5 PCS | RMB*<br>1-5 PCS |
|-------------|---------------|---------------|-----------------|
| M9-940-0300 | £ 1,891.83    | € 2,285.96    | ¥ 20,941.50     |

\*For quantities over 5 pieces, please call our local office for pricing.

| ITEM #      | PRICE<br>1-5 PCS | PRICE<br>6-10 PCS | PRICE<br>11-20 PCS | DESCRIPTION          |
|-------------|------------------|-------------------|--------------------|----------------------|
| M9-940-0300 | \$2,627.54       | \$2,496.16        | \$2,364.79         | Axcel 940 nm, 300 mW |

 **$\lambda = 975 \text{ nm}$ ,  $P = 1 \text{ W}$ , Multimode Thorlabs L975P1WJ**Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

| CHARACTERISTIC             | SYMBOL      | MAX RATING                |
|----------------------------|-------------|---------------------------|
| Optical Output Power (CW)  | $P_o$       | 1 W                       |
| LD Reverse Voltage         | $V_{R(LD)}$ | 2 V                       |
| PD Reverse Voltage         | $V_{R(PD)}$ | 20 V                      |
| Operation Case Temperature | $T_c$       | -20 to $50^\circ\text{C}$ |
| Storage Temperature        | $T_{stg}$   | -40 to $85^\circ\text{C}$ |

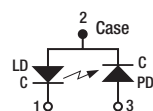
Characteristics ( $T_c = 25^\circ\text{C}$ ,  $P = 1 \text{ W}$ )

| CHARACTERISTIC         | SYMBOL           | MIN        | TYP.       | MAX        |
|------------------------|------------------|------------|------------|------------|
| Lasing Wavelength      | $\lambda_p$      | 965 nm     | 975 nm     | 985 nm     |
| Threshold Current      | $I_{th}$         | —          | 0.4 A      | 0.6 A      |
| Operating Current      | $I_{op}$         | —          | 1.5 A      | 1.8 A      |
| Operating Voltage      | $V_{op}$         | —          | 1.5 V      | 1.8 V      |
| Beam Divergence (FWHM) | $\theta_{//}$    | $3^\circ$  | $5^\circ$  | $7^\circ$  |
|                        | $\theta_{\perp}$ | $26^\circ$ | $31^\circ$ | $36^\circ$ |
| Slope Efficiency       | $\eta_s$         | 0.8 mW/mA  | 0.95 mW/mA | —          |
| Monitor Current        | $I_m$            | 0.05 mA    | —          | 10 mA      |

Note: All data are presented as typical unless otherwise specified.

Pin Description

- 1 laser cathode
- 2 common case
- 3 monitor diode anode



PIN CODE A

- $\varnothing 9 \text{ mm}$  Package
- Multimode
- $1 \times 100 \mu\text{m}$  Emitter Size
- Patented Device Structure, F000038US01

| ITEM #   | £*<br>1-5 PCS | €*<br>1-5 PCS | RMB*<br>1-5 PCS |
|----------|---------------|---------------|-----------------|
| L975P1WJ | £ 280.01      | € 338.35      | ¥ 3,099.54      |

\*For quantities over 5 pieces, please call our local office for pricing.

| ITEM #   | PRICE<br>1-5 PCS | PRICE<br>6-10 PCS | PRICE<br>11-20 PCS | DESCRIPTION          |
|----------|------------------|-------------------|--------------------|----------------------|
| L975P1WJ | \$388.90         | \$369.46          | \$350.01           | Thorlabs 975 nm, 1 W |

 **$\lambda = 980 \text{ nm}$ ,  $P = 1.85 \text{ mW}$ , Multimode VCSEL-980**Maximum Ratings ( $T_c = 25^\circ\text{C}$ )

| CHARACTERISTIC                                 | SYMBOL    | MAX RATING                 |
|------------------------------------------------|-----------|----------------------------|
| Optical Output Power (CW)                      | $P_o$     | 1.85 mW                    |
| Continuous Forward Current                     | —         | 10 mA                      |
| Continuous Reverse Voltage *@ 10 $\mu\text{A}$ | —         | 5 V*                       |
| Operation Case Temperature                     | $T_c$     | 0 to $85^\circ\text{C}$    |
| Storage Temperature                            | $T_{stg}$ | -40 to $100^\circ\text{C}$ |

Characteristics ( $T_c = 25^\circ\text{C}$ )

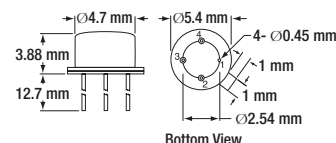
| SPECIFICATION          | SYMBOL              | MIN                | TYP.               | MAX                | TEST CONDITION                                       |
|------------------------|---------------------|--------------------|--------------------|--------------------|------------------------------------------------------|
| Peak Wavelength        | $\lambda_p$         | 970 nm             | 980 nm             | 990 nm             | $I_f = 8 \text{ mA} @ RT$                            |
| Spectral Width (FWHM)  | $\Delta\lambda$     | —                  | —                  | 0.85 nm            | $I_f = 8 \text{ mA} @ RT$                            |
| Beam Divergence (FWHM) | $\theta_{//}$       | —                  | $25^\circ$         | $30^\circ$         | Full Width at $1/e^2$ ;<br>$I_f = 8 \text{ mA} @ RT$ |
|                        | $\theta_{\perp}$    | —                  | $25^\circ$         | $30^\circ$         |                                                      |
| Forward Voltage        | $V_f$               | 1.7 V              | 1.9 V              | 2.2 V              | $I_f = 8 \text{ mA} @ RT$                            |
| Threshold Current      | $I_{th}$            | —                  | 2.2 mA             | 3 mA               | —                                                    |
| Slope Efficiency       | $\Delta P/\Delta I$ | 0.12 W/A           | 0.32 W/A           | 0.4 W/A            | $I_f = 8 \text{ mA} @ RT$                            |
| Optical Output Power   | $P_{out}$           | —                  | 1.85 mW            | —                  | $I_f = 8 \text{ mA} @ RT$                            |
| Dynamic Resistance     | $\Delta V/\Delta I$ | 20 $\Omega$        | 40 $\Omega$        | 65 $\Omega$        | $I_f = 8 \text{ mA} @ RT$                            |
| Rise / Fall Time       | $t_r / t_f$         | —                  | 50 ps              | 100 ps             | 20-80%                                               |
| Operating Temp. Range  | $T_{op}$            | $-5^\circ\text{C}$ | $25^\circ\text{C}$ | $80^\circ\text{C}$ | —                                                    |
| Monitor Current        | $I_m$               | 100 $\mu\text{A}$  | —                  | —                  | $I_f = 8 \text{ mA} @ RT$                            |
| Dark Current           | $I_r$               | —                  | 0.2 nA             | 1 nA               | $V_r = 10 \text{ V}$                                 |
| Shunt Resistance       | $R_p$               | 100 G $\Omega$     | 200 G $\Omega$     | —                  | —                                                    |
| Breakdown Voltage      | $V_{br}$            | —                  | 50 V               | —                  | —                                                    |
| Junction Capacitance   | $C_p$               | —                  | 40 pF              | —                  | @ $V_r = 10 \text{ V}$ , 10 kHz                      |

Note: All data are presented as typical unless otherwise specified.

975 nm  
Pigtailed  
Laser DiodesAvailable in a  
14-Pin Butterfly  
Package with SM  
or PM FiberSee page  
1257

Pin Description

- 1 Case
- 2 LD anode
- 3 LD cathode/PD anode
- 4 PD cathode



Bottom View

- Multimode
- Flat Window
- Monitor Photodiode
- 2.5 Gbps Speed

Please refer to our website for complete  
models and drawings.

| ITEM #    | £*<br>1-5 PCS | €*<br>1-5 PCS | RMB*<br>1-5 PCS |
|-----------|---------------|---------------|-----------------|
| VCSEL-980 | £ 18.51       | € 22.36       | ¥ 204.83        |

\*For quantities over 5 pieces, please call our local office for pricing.

| ITEM #    | PRICE<br>1-5 PCS | PRICE<br>6-10 PCS | PRICE<br>11-20 PCS | DESCRIPTION           |
|-----------|------------------|-------------------|--------------------|-----------------------|
| VCSEL-980 | \$ 25.70         | \$ 24.93          | \$ 24.42           | 980 nm VCSEL, 1.85 mW |