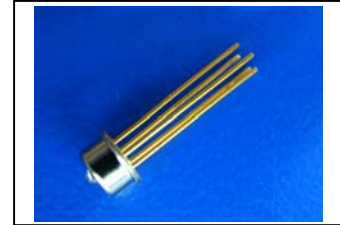


# TMC-1C59-728

## 10Gbps InGaAs PIN plus Pre-amplifier

### FEATURES:

- Industry standard TO-46 package with short cap lens and tab-less.
- Optimized for fiber optic application.
- Supports up to 11.3Gbps application.
- Photocurrent monitoring available.
- Single power supply +3.3V.



### ELECTRO-OPTICAL CHARACTERISTICS: ( $T_A = 25^\circ\text{C}$ )

| PARAMETERS                    |                 | SYMBOL    | MIN  | TYP | MAX   | UNIT              | TEST CONDITIONS                                                                         |
|-------------------------------|-----------------|-----------|------|-----|-------|-------------------|-----------------------------------------------------------------------------------------|
| Power Supply                  |                 | $V_{CC}$  | 3.0  | 3.3 | 3.6   | V                 |                                                                                         |
| Supply Current                |                 | $I_{CC}$  |      | 27  | 34    | mA                | no loads                                                                                |
| Differential Responsivity     |                 | $R_d$     | 2.0  | 3.2 | 5.0   | mV/ $\mu\text{W}$ | $R_{load} = 100\text{ohm}$ ,<br>$P = -15\text{dBm}$ , $\lambda = 1310\text{nm}$         |
| Single Ended Responsivity     |                 | $R_s$     | 1.0  | 1.6 | 2.5   | mV/ $\mu\text{W}$ | $R_{load} = 50\text{ohm}$ ,<br>$P = -15\text{dBm}$ , $\lambda = 1310\text{nm}$          |
| TIA RSSI                      | Slope           |           | 0.9  | 1.0 | 1.1   | mA/mA             |                                                                                         |
|                               | Offset          |           |      |     | 100   | nA                |                                                                                         |
|                               | Linearity Limit |           |      |     | 1.6   | mA                |                                                                                         |
| Small-Signal Bandwidth        |                 | BW        | 7.0  |     |       | GHz               | $P = -15\text{dBm}^{(1)}$                                                               |
| Low-Frequency Cut off         |                 | LF        |      |     | 30    | kHz               |                                                                                         |
| Rise / Fall Time(20 % ~ 80 %) |                 | tr/tf     |      |     | 50    | ps                | $P = -15\text{dBm}$ , $\lambda = 1310\text{nm}^{(1)}$                                   |
| Saturation Power              |                 | $P_{Sat}$ | 0.5  |     |       | dBm               |                                                                                         |
| Single Ended Output Impedance |                 | $R_O$     |      | 50  |       | ohm               |                                                                                         |
| Wavelength                    |                 | $\lambda$ | 1260 |     | 1620  | nm                |                                                                                         |
| Sensitivity                   |                 |           |      |     | -17.0 | dBm               | $\lambda = 1310\text{nm}$ , @10.3125Gbps <sup>(1)</sup><br>PRBS 31, ER=7dB, BER=1E-12   |
|                               |                 |           |      |     | -15.5 | dBm               | $\lambda = 1310\text{nm}$ , @10.3125Gbps <sup>(1)</sup><br>PRBS 31, ER=4.5dB, BER=1E-12 |

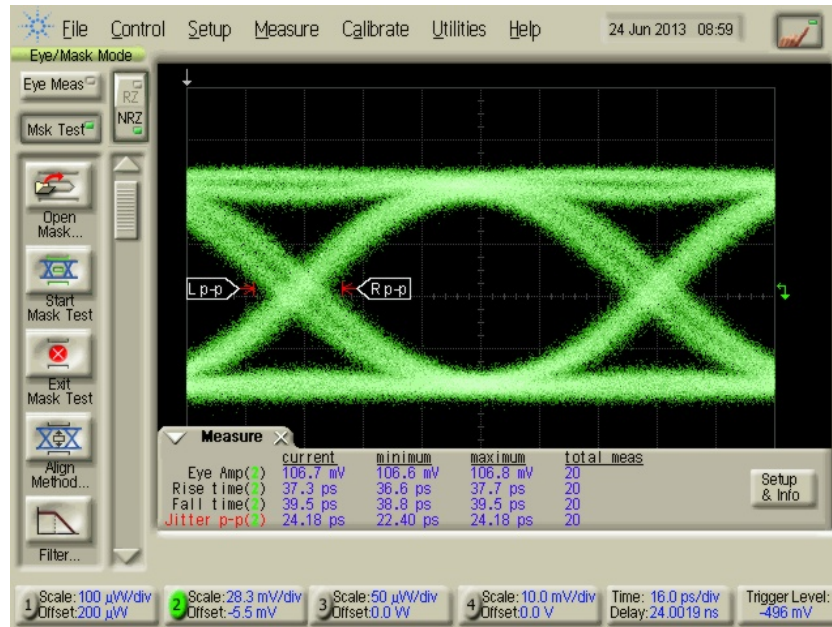
Notes:

1. The spec and tested data are subject to ROSM level (flexible circuit attached) measurement.

### ABSOLUTE MAXIMUM RATINGS:

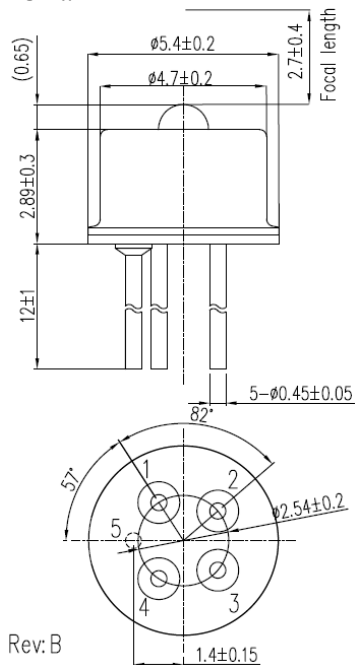
| PARAMETERS              | MIN | MAX | UNIT             | TEST CONDITIONS |
|-------------------------|-----|-----|------------------|-----------------|
| Storage Temperature     | -40 | 100 | $^\circ\text{C}$ |                 |
| Operating Temperature   | -40 | 85  | $^\circ\text{C}$ |                 |
| Lead Solder Temperature |     | 260 | $^\circ\text{C}$ | 10 seconds      |

### Eye Diagram :

$$R_{\text{load}} = 50\Omega, P = -15\text{dBm}@10.3125\text{Gbps}, 1310\text{nm}, \text{PRBS } 31. \quad (1)$$
| tr=37.3ps, tf=39.5ps, Jitter p-p=24.18ps |

### OUTLINE DIMENSIONS:

- Unit: mm



### Pinout:

| Pin no. | TMC-1C59-728 |
|---------|--------------|
|         | Function     |
| 1       | Dout(+)      |
| 2       | Vcc          |
| 3       | Isource      |
| 4       | Dout(-)      |
| 5       | Gnd          |