NOVEL 107 Gbit/s BIAS-FEEDING PHOTODETECTOR

AT A GLANCE

- High sensitivity receivers
- Direct DC-coupling to DEMUX
- 107 Gbit/s operation

Features

- Two integrated biasing networks
- DC-coupling with e.g. post-amplifiers or demux-ICs possible
- Better overall insertion loss
- O/E RZ conversion up to 107 Gbit/s
- Wavelength range 1480 – 1620 nm
- packaged into modules with fibre pigtail (FC/PC) and a female 1mm connector

Applications

- Telecom
- Datacom
- DEMUX driving w/o bias-T
- Input biasing of subsequent electronics via this detector
Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responsivity</td>
<td>&gt; 0.53 A/W</td>
</tr>
<tr>
<td>3 dB bandwidth</td>
<td>90 GHz</td>
</tr>
<tr>
<td>PDL</td>
<td>&lt; 0.4 dB</td>
</tr>
<tr>
<td>Power linearity</td>
<td>12 dBm (at 1 dB compression)</td>
</tr>
<tr>
<td>Pulse width</td>
<td>7.3 ps</td>
</tr>
<tr>
<td>50 Ω termination</td>
<td>integrated</td>
</tr>
<tr>
<td>Optical return loss</td>
<td>&gt; 27 dB</td>
</tr>
</tbody>
</table>

Equivalent circuit

Circuit and chip of novel bias-feeding photodetector OEIC, suitable for direct dc-coupling to subsequent electronics, and capable of feed-through of input bias control of e.g. TWAs or DEMUX-ICs.

Bandwidth  Pulse Behaviour  Eye pattern at different bias offsets

Red line: Chip  FWHM: 7.2 ps  OTDM MUXed input pulse
Green line: Module  RZ: 2.6 ps, 107 Gbit/s, $2^{31}-1$

The Fraunhofer HHI

One of the prime research and development foci of the Fraunhofer Heinrich Hertz Institute lies in photonic networks, components and systems and their application in fields such as digital media.

Contact

Dr.-Ing. Patrick Runge
Photonic Components
Fraunhofer Heinrich Hertz Institute
Einsteinufer 37 | 10587 Berlin | Germany
Tel   +49 30 31002-498
Mobil +49 151 46148172
patrick.runge@hhi.fraunhofer.de