ULTRA LOW-POWER 32 GBd 2-bit DAC FOR MACH-ZEHNDER MODULATOR

AT A GLANCE
32 GBd 2-bit DAC for Mach-Zehnder Modulator

Features
- Differential inputs and differential output
- Ultra-Low Power, 145 mW
- Eye-level control in PAM-4
- 1.7 V_{pp} differential output with 2 x 25 Ω loads
- Supports NRZ, PAM-4 output signals

Applications
- Telecom and Datacom
- Broadband signal amplification
- PAM-4 / NRZ driver for Mach-Zehnder modulator

Ultra low-power 2-bit DAC
Ultra low-power SiGe 2-bit DAC generates either NRZ or PAM-4 electrical signal to driver InP Mach-Zehnder modulator. The output stage is designed to include 2 x 25 Ω for the impedance matching with the modulator. 2-bit DAC with 2 x 50 Ω output impedance is also available as laboratory sample upon request.
Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
<th>Unit</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bandwidth</td>
<td>145</td>
<td></td>
<td></td>
<td>mW</td>
<td></td>
</tr>
<tr>
<td>Data Rate</td>
<td></td>
<td>32</td>
<td></td>
<td>Gb/s</td>
<td></td>
</tr>
<tr>
<td>Differential Input Signal</td>
<td>500</td>
<td>mV</td>
<td></td>
<td>pp</td>
<td>AC-coupled, differential</td>
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<tr>
<td>Differential Output Signal</td>
<td>1700</td>
<td>mV</td>
<td></td>
<td>pp</td>
<td>2 x 2.5 Ω load, differential</td>
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<tr>
<td>Power Supply</td>
<td>2,2</td>
<td>V</td>
<td></td>
<td></td>
<td>Supply at 25 Ω: 2.0 V</td>
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<tr>
<td>Operation Temperature</td>
<td>40</td>
<td>°C</td>
<td></td>
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</tr>
</tbody>
</table>

Electrical DAC configuration with Mach-Zehnder Modulator

Electrical 28 GBd Eye with eye-level control

Electro-Optical 28 GBd Eye  Electro-Optical 32 GBd Eye