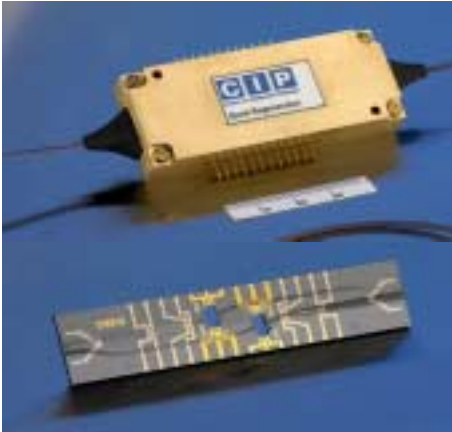


Quad 40Gb/s 2R Optical Regenerator



Features

- High-speed 40Gb/s operation
- Low switching energies (<100fJ per pulse per SOA)
- Low insertion loss (<5dB fibre to fibre)
- High output power (>0dBm)
- C Band operation (1530-1565nm)
- Single stage 2R regeneration for 4 independent data channels
- Dual stage regeneration for two data channels

Applications

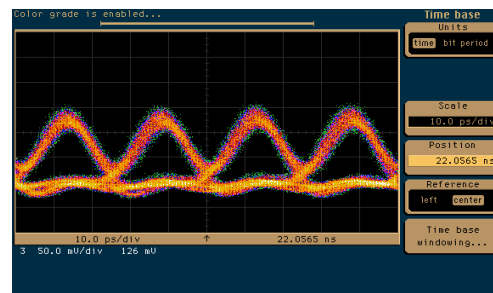
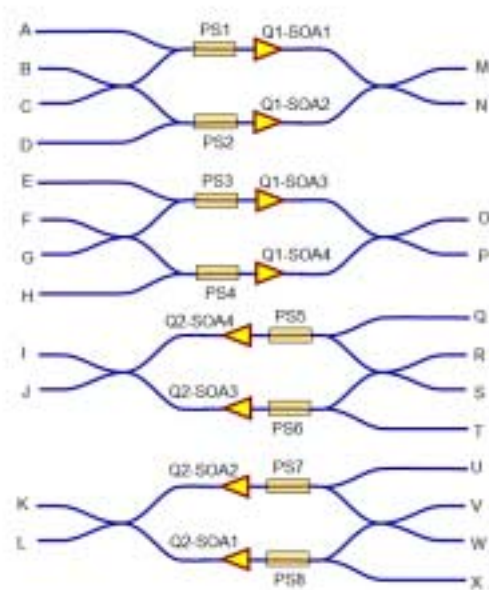
- Transmission impairment mitigation
- Wavelength conversion
- Cascaded two stage 2R regeneration with/without wavelength conversion
- Optical logic element

Description

CIP Technologies quad optical regenerator provides the capability for 2R regeneration (Re-shaping and Re-amplifying) of degraded data at rates of up to 40Gb/s and is bit rate and protocol transparent. The package houses four 40Gb/s regenerators in a similar footprint as that previously required for a single regenerator device (40G-2R-ORP) and can regenerate four independent channels simultaneously. In addition, the four regenerators can be looped back to provide cascaded two stage regeneration for 2 channels and allow the output wavelength to be the same as the input wavelength.

The device can support applications in long-haul, metro and access networks. In addition, the device performs a variety of optical logic functions and can be used in optical processing applications.

The optical module is a hybrid integrated device consisting of four planar silica Mach-Zehnder interferometers with two quad arrays of non-linear SOAs in the interferometer arms. Independent thermo-optic phase shifters are incorporated to allow precise phase control of the interferometers. The module includes Peltier and thermistor for temperature control, electrical pins for SOA bias currents and phase shifters, 12 way fibre ribbon input (12x FC/APC connectors), and 12 way fibre ribbon output (12x FC/APC connectors). The package dimensions are 90mm x 31mm x 12mm.



Operation

Measured eye diagram at 40Gb/s showing operation of the 2R regenerator as a wavelength converter. Device was operating in push-pull mode with co-propagating clock and data with a 12.5ps switching window. Average switching powers at 40Gb/s were 3dBm



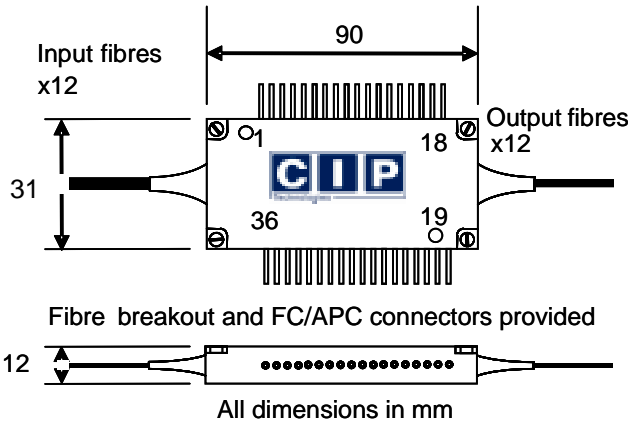
Absolute maximum ratings

Parameter	Rating	Unit
SOA bias current (per SOA)	400	mA
Average switching data power	+13	dBm
Average CW wavelength power	+13	dBm
Peltier Current	2.5	A
Operating Temperature	30	°C

Ordering Information— Part Number 40G-2R4-ORP

For custom products please contact CIP Sales on +44 1473 663210 or e-mail sales@ciphotonics.com. For details of your local agent, visit www.ciphotonics.com

Pin out and Dimensions



1	Thermistor	19	NC
2	Thermistor	20	NC
3	PS2	21	PS7
4	PS1	22	PS8
5	PS1	23	PS8
6	PS2	24	PS7
7	Q1 SOA 1 (+ve)	25	Q2 SOA 1 (+ve)
8	Q1SOA 1&2 (-ve)	26	Q2 SOA 1&2 (-ve)
9	Q1 SOA 2 (+ve)	27	Q2 SOA 2 (+ve)
10	Q2 SOA 4 (+ve)	28	Q1 SOA 4 (+ve)
11	Q2 SOA 3&4 (-ve)	29	Q1 SOA 3&4 (-ve)
12	Q2 SOA 3 (+ve)	30	Q1 SOA 3 (+ve)
13	PS6	31	PS3
14	PS5	32	PS4
15	PS5	33	PS4
16	PS6	34	PS3
17	NC	35	Peltier (-ve)
18	NC	36	Peltier (+ve)



in#1 is marked with a milled line on side of package (under pin#1)

Phase Shifters

The resistance of all the phase shifters is approx 100 ohms. The phase shifters are resistive heaters and should be powered from a voltage source. The current applied to each phase shifter should not exceed 150mA. Each phase shifter is electrically isolated

CIP Technologies is the trading name of The Centre for Integrated Photonics Ltd
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 VAT Reg No: 824 6260 36 GB

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