

100G integrated Coherent Receiver (ICR)

Features

- C-Band or L-Band operation
- Auto gain control amplifier
- OIF compliant
- ROHS compliant
- Bell core GR-468-Core compliant

Applications

- 100Gbit/s DP-QPSK optical communication systems
Data rate optimization
- Submarine long haul transmission

Operating condition

Parameter	Condition	Min	Typ	Max	Unit
Amplifier bias voltage	5%	3.135	3.3	3.465	V
Photodiode bias voltage	5%	3.135	3.3	3.465	V
Total power consumption			1000		mW
Supply current			300		mA
Operating case temperature		-5		75	° C
Relative humidity	Non condensation	5		85	%
Operating frequency range	C-Band	191.35		196.2	THz
	L-Band	186.0		191.5	
Average optical input power local oscillator	CW		12		dBm
Average optical input power DP-QPSK signal	DP-QPSK	-18		0	dBm

Electrical Specifications

Parameter	Condition	Min	Typ	Max	Unit
Bit rate	DP-QPSK		4x28		Gb/s
Photodiode responsivity	CW Single-input	0.06	0.09	0.12	A/W
Single ended coherent power conversion gain	Min Gain: f=1GHz, V _{GC} <0.5V		15		V/W
	Max Gain f=1GHz, V _{GC} >2.4V		150		V/W
Nominal single-ended output voltage in automatic gain mode	AGC mode, V _{OA} =1V		150		mVpp
	AGC mode, V _{OA} =1.1V		250		mVpp
	AGC mode, V _{OA} =1.4V		450		mVpp
Maximum single-ended output swing			1300		mVpp
Total harmonic distortion	V _{out} = 250mV		<2.5		%
	V _{out} < 500mV		<4.5		
3dB cut-off frequency	Assuming full VGA range		22		GHz
Group delay variation	0.045~14GHz		+/-7		ps
	14GHz – f _{3dB}		+/-14		
Electrical output reflection coefficient (S ₂₂)	F<16GHz		-10		dB
	16GHz – 24GHz		-6		
Bandwidth of gain control input			1		MHz
Low frequency cut off	AC-Coupling		100		kHz
Photodiode dark current	T=25° C		5		nA

Optical Specifications

Parameter	Condition	Min	Typ	Max	Unit
Common mode rejection ratio (CMMR) ¹	LO: DC f=16GHz		-12 -10		dBe
	SIG: DC f=16GHz		-20 -16		dBe
I/Q imbalance	f < 20 GHz		+/-1		dBo
LO/SIG imbalance	f < 20 GHz			+/-0.5	dBo
Phase deviation			-5	+5	Deg
Optical return loss	1550nm		27		dBo
Skew p,n				2	ps

Note1: $CMMR = 20 \log \left(\frac{|I1-I2|}{|I1+I2|} \right)$

Mechanical Dimensions

