HC29202 — Preliminary

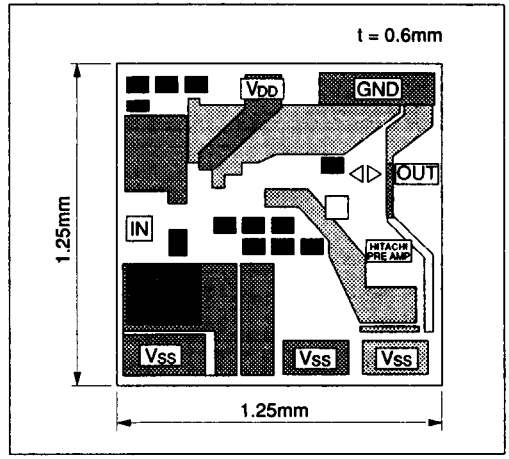
Preamplifier for Optical Communication

The HC29202 is high-speed transimpeadance GaAs preamplifier for Fiber optic system. The preamp transforms small current signal received by photodiode into voltage signal. Its power supply voltage is –5.2 V and +5 V.

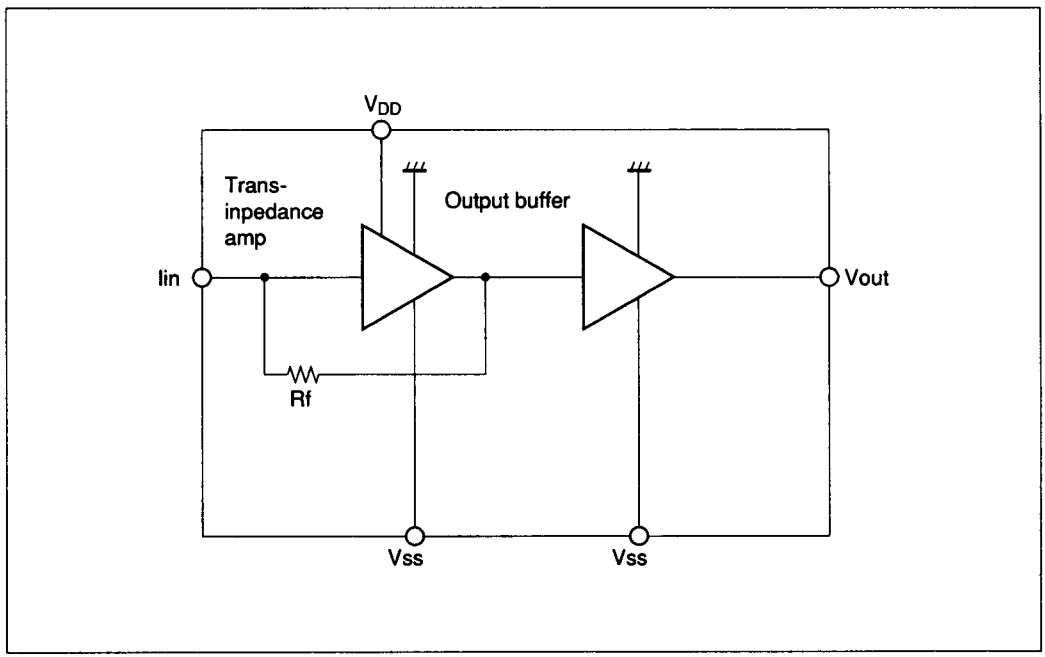
Features

- Bare chip
- Transimpedance; 1 kΩ
- Bandwidth of 2.5 GHz
- Equivalent input noise current; 5 pA/$\sqrt{Hz}$
- Power supply of –5.2 V/+5.0 V

Pad Arrangement



Block Diagram



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Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply voltage	V_{SS} (–)	–7.5 to +0.5	V
Supply voltage	V_{DD} (+)	+0.5 to +7.5	V
Input current	Iin	0.5	mA
Supply current	I_{SS}	40	mA
Storage temperature	Tstg	–55 to +125	°C

Recommended Operating Conditions

Item	Symbol	Min	Typ	Max	Unit
Supply voltage	V_{SS} (–)	–5.46	–5.2	–4.94	V
Supply voltage	V_{DD} (+)	4.75	5.0	5.25	V
Operating temperature	Ta	0	—	+65	°C

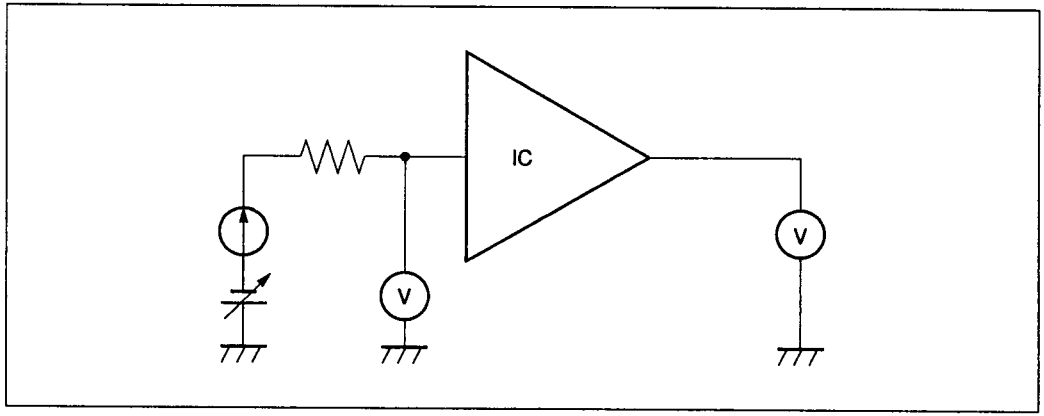
DC Characteristics (V_{SS} = –5.2 V ±5%)

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Output voltage	Vout	—	–1.5	—	V	Vin open
Input current	I_L max	—	250	—	μA	
Power dissipation	Pd	—	150	—	mW	

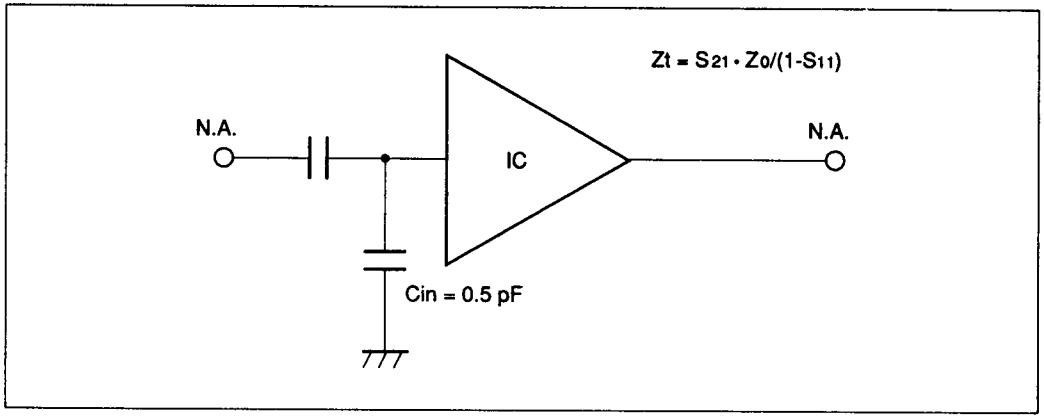
AC Characteristics

Item	Symbol	Min	Typ	Max	Unit	Test Condition
Trans-impedance	Z_T	—	1,000	—	Ω	
Bandwidth	f_B	—	2.4	—	GHz	3 dB down
Equivalent input noise current	In	—	5	—	pA/$\sqrt{Hz}$	at 100 MHz

DC Test Circuit



AC Test Circuit



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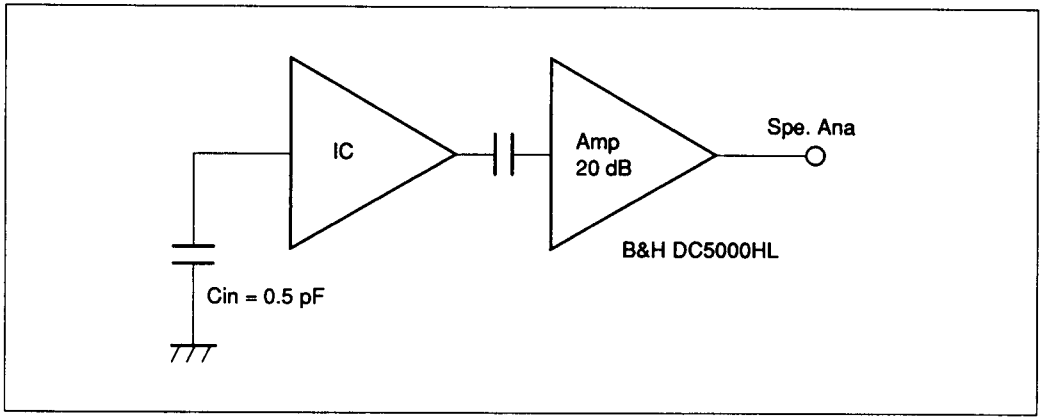
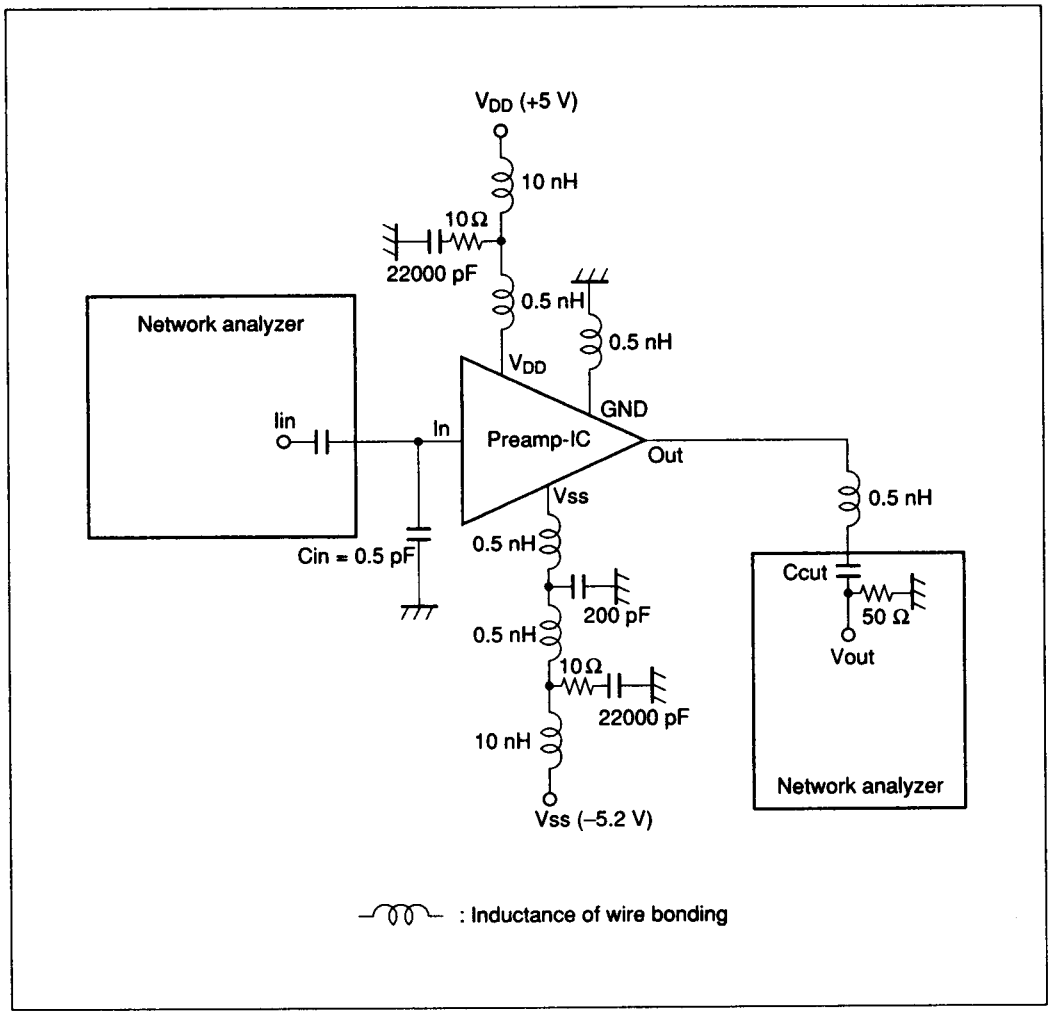
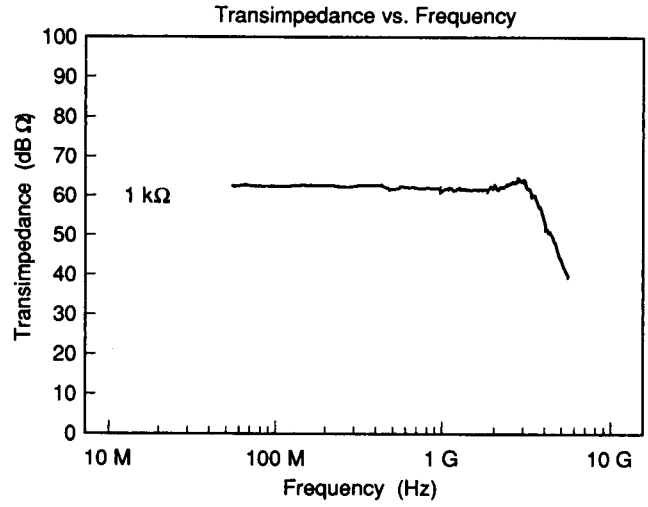
Input Noise Current Test Circuit

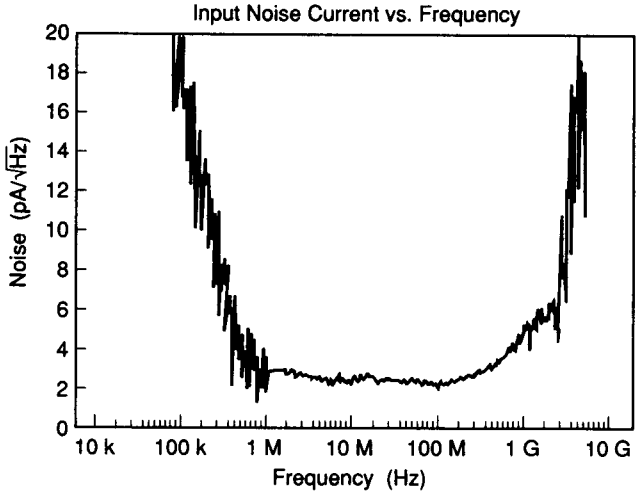


AC Test Circuit Including External Parts



Typical Performance (Ta = 25°C, V_{SS} = –5.2 V, V_{DD} = 5 V)





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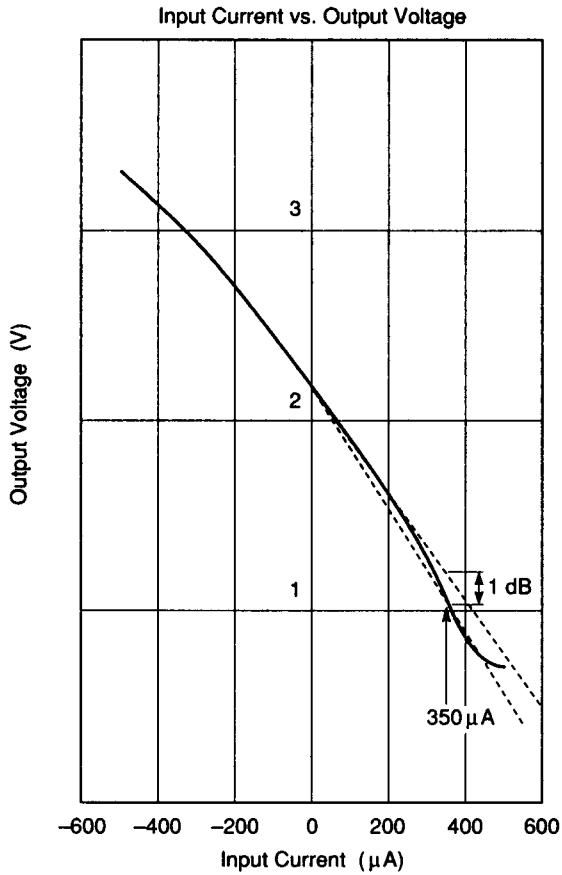
Input Current vs. Output Voltage
Output Voltage (V)
3
2
1
1 dB
350 µA
–600
–400
–200
0
200
400
600
Input Current (µA)