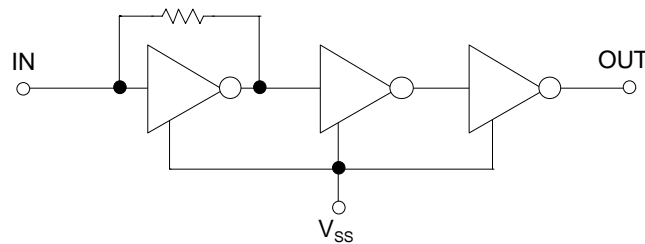


KGA4121**Preliminary****10 Gbps Transimpedance Amplifier IC****DESCRIPTION**

Oki's 10 Gbps transimpedance amplifier is fabricated 0.1 μm gate length P-HEMTs for high-speed optical communication. The IC has a large transimpedance, high sensitivity and a wide dynamic range.

FEATURES

- High Transimpedance : 60 dB Ω
- Wide Dynamic Range : 18 dB
- Ultra-Broadband Amplifier : >8 GHz
- Ultra-Low Noise Current : <8 pA/ $\sqrt{\text{Hz}}$ (T.B.D)
- Single -5 V Power Supply

FUNCTION DIAGRAM**ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)**

Parameters	Symbol	Units	Rating
Supply Voltage	V_{SS}	V	-7 to 0
Input Current	$I_{(IN)}$	mA	4
Storage Temperature Range	T_{ST}	°C	-40 to 125

RECOMMENDED OPERATING CONDITIONS (Ta = 25°C)

Parameters	Symbol	Units	Min.	Typ.	Max.
Supply Voltage	V_{SS}	V	-5.25	-5	-4.75

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{SS} = -5\text{ V}$, $C_{(\text{diode})} + C_{(\text{stray})} = 0.3\text{ pF}$)

Parameters	Units	Min.	Typ.	Max.
Transimpedance (<100 μA)	$\text{k}\Omega$	—	1.2	—
Bandwidth (-3 dB)	GHz	8	8.5	—
Transimpedance Flatness (300 kHz to 6 GHz)	$\text{dB}\Omega$	—	—	± 1
Equivalent Input Noise Current *1)	$\text{pA}/\sqrt{\text{Hz}}$	—	T.B.D	—
Optical Sensitivity *2)	dBm	—	-19	—
Optical Overload *2)	dBm	—	-1	—
Input Resistance	Ω	—	125	—
Input Offset Voltage	V	—	-3.3	—
Output Return Loss (<10 GHz)	dB	—	—	10
Power Consumption	W	—	0.36	—
Operating Temperature Range *3)	$^\circ\text{C}$	0	—	+85

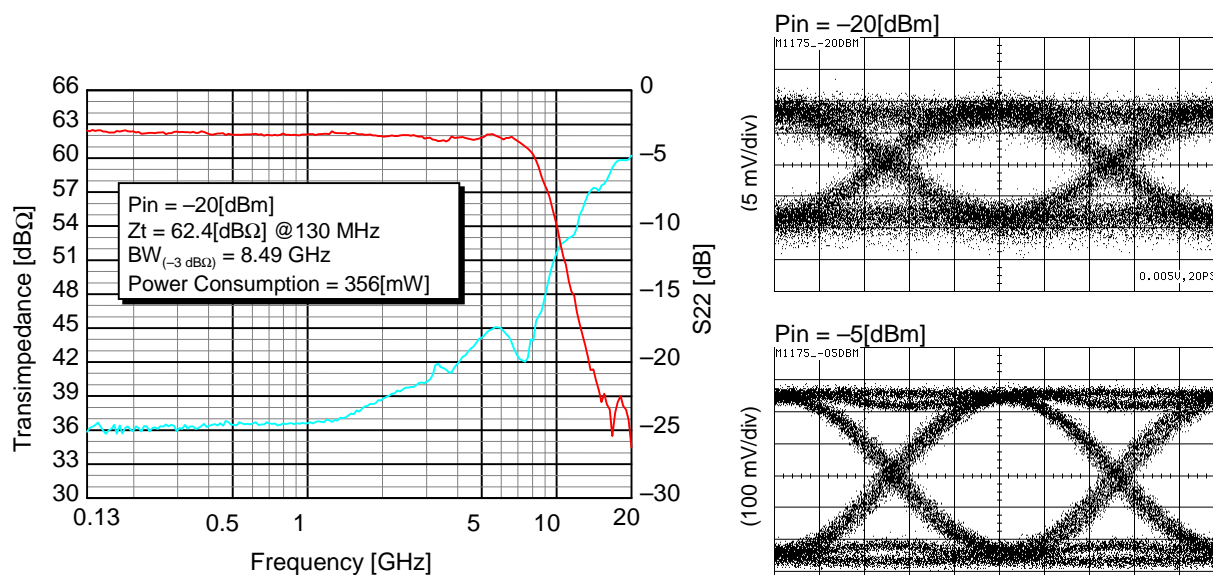
*1) Averaged Equivalent Input Noise Current from 130 MHz to 7.5 GHz.

*2) Value of optical sensitivity is guaranteed by design, assuming responsivity of photo diode of 0.8 A/W.

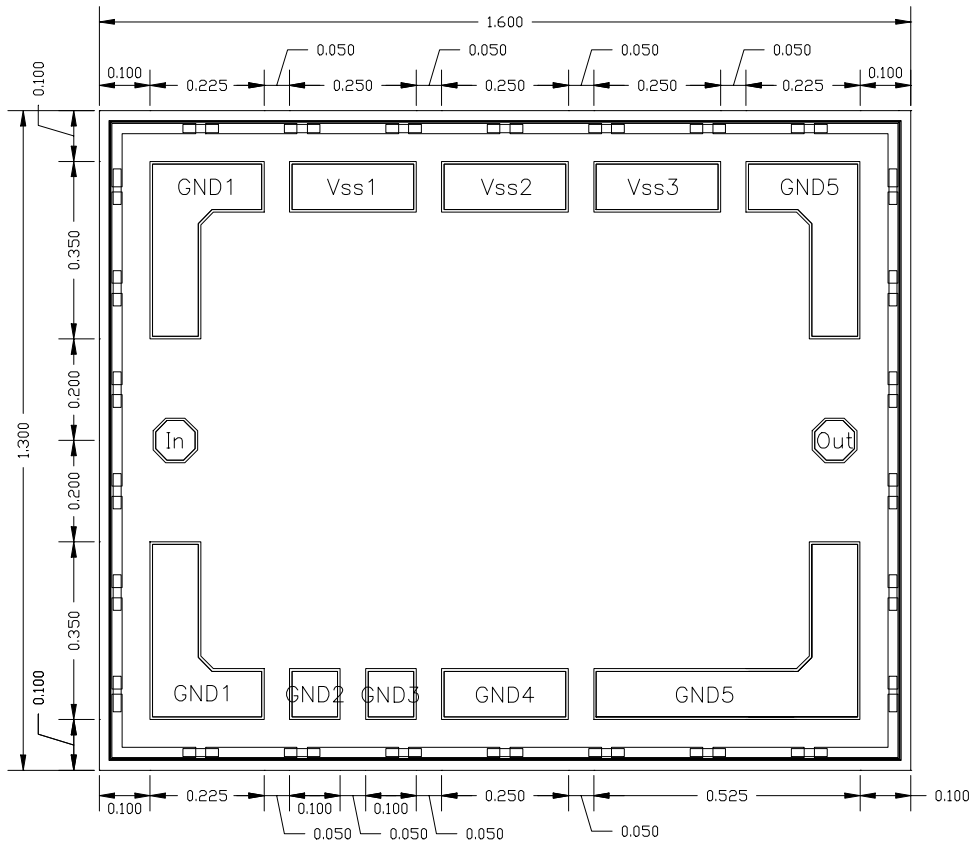
*3) At backside die.

TYPICAL FREQUENCY RESPONSE AND EYE DIAGRAMS

($V_{SS} = -5\text{ V}$, $T_a = 25^\circ\text{C}$, $C_{(\text{PD})} \approx 0.25\text{ pF}$, Responsivity of PD = 0.82 A/W)



PAD LAYOUT



(Dimensions in mm)

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