

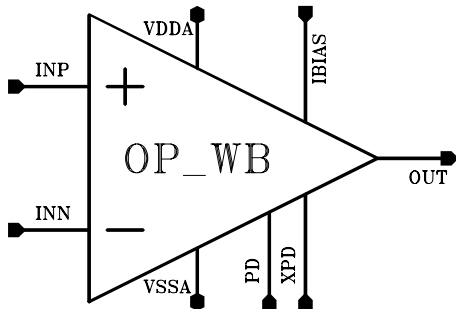
## Process

C35 (0.35 $\mu$ m)

## Key Features

- Small Area 0.023 mm<sup>2</sup>
- Size x = 117  $\mu$ m, y = 195.4  $\mu$ m
- Supply Voltage 3.0 to 3.6V
- Temperature Range -40 to 125°C
- High Gain Bandwidth
- High Capacitive Load

## Symbol



## Description

The OP\_WB is an internally compensated operational amplifier for high capacitive loads (40pF to 120pF).

A bias current of 7 $\mu$ A to 19 $\mu$ A must be provided externally.

For biasing the cell BBIAS can be used. OP\_WB provides a power down mode.

## Pinlist

Pin	Description	Type
OUT	Output Voltage	Analog
INP	Pos. Input Voltage	Analog
INN	Neg. Input Voltage	Analog
XPD	Power Down not	Digital
PD	Power Down	Digital
VDDA	Positive Analog Supply Voltage	Supply
VSSA	Negative Analog Supply Voltage	Supply
IBIAS	Input Current	Analog

**TECHNICAL DATA FOR 3.3V SUPPLY**(T<sub>junction</sub> = -40 to 125°C, VDDA=+3.0V to +3.6V, C<sub>L</sub>=40pF, R<sub>L</sub>=10MΩ, unless otherwise specified)**GENERAL PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
T <sub>junction</sub>	Junction Temperature		-40	27	125	°C
X	x – Size of macro cell			117		μm
Y	y – Size of macro cell			195.4		μm

**DC PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>os</sub>	Input Offset Voltage		-6		6	mV
IBIAS <sup>1)</sup>	Bias Current		7.3	11.4	19.5	μA
CMIR-L	Com. Mode Input Range Low		0	0.22	0.78	V
CMIR-H	Com. Mode Input Range High (VDDA – CMIR-H)		0.54	0.83	1.04	V
Vout-L	Output Range Low		0.17	0.25	0.40	V
Vout-H	Output Range High (VDDA – Vout-H)		0.20	0.33	0.55	V

**OUTPUT PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I <sub>source</sub> <sup>2)</sup>	Output Source Current		1.41	2.35	4.19	mA
I <sub>sink</sub> <sup>2)</sup>	Output Sink Current		9.38	25.27	57.42	mA

**AC PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
R <sub>out</sub> <sup>3)</sup>	Output Resistance	1 kHz	0.22	0.34	0.56	Ω
A <sub>0</sub>	Open Loop Gain		77	86	92	dB
GBW	Gain Bandwidth		34.58	49.78	75.37	MHz
Φ <sub>m</sub>	Phase Margin		62	73	81	deg
GBW	Gain Bandwidth	120pF 1MΩ	18.75	26.20	39.10	MHz
Φ <sub>m</sub>	Phase Margin	120pF 1MΩ	47	51	56	deg
CMRR <sup>4)</sup>	Common Mode Rej. Ratio	1 kHz	85	92	95	dB
PSRRV <sub>dd</sub>	Pos. Power Supply Rej. Ratio	1 kHz	88	105	127	dB
PSRRV <sub>ss</sub>	Neg. Power Supply Rej. Ratio	1 kHz	85	93	96	dB
THD <sup>4)</sup>	Total Harmonic Distortion	1 kHz	-130	-120	-79	dB
THD <sup>4)</sup>	Total Harmonic Distortion	100 kHz	-105	-95	-63	dB

- 1) The bias current was produced with the cell BBIAS
- 2) The power consumption will vary with the output current
- 3) In closed loop configuration
- 4) The input voltage was 1V<sub>pp</sub>

**NOISE PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
En10Hz	Equiv. Input Noise	10Hz	-	0.613	-	$\mu\text{V}/\sqrt{\text{Hz}}$
En100kHz	Equiv. Input Noise	100kHz	-	8.28	-	$\text{nV}/\sqrt{\text{Hz}}$

**POWER REQUIREMENTS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VDDA	Pos. Analog Supply Voltage		3.0	3.3	3.6	V
VSSA	Neg. Analog Supply Voltage		0	0	0	V
IDDA	Supply Current Analog		1.13	1.84	3.30	mA
Pdiss_tot	Total Power Consumption		3.41	6.06	11.87	mW

**TRANSIENT PARAMETERS**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
SRP	Slew Rate Rise		12.81	23.60	48.05	$\text{V}/\mu\text{s}$
SRN	Slew Rate Fall		43.57	70.77	113.27	$\text{V}/\mu\text{s}$
TSP	Settling Time Rise		0.04	0.07	0.11	$\mu\text{s}$
TSN	Settling Time Fall		0.02	0.04	0.06	$\mu\text{s}$
Twakeup	Wakeup Time		0.09	0.23	0.44	$\mu\text{s}$

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