

Analog IP Cell/Block

Modular Rail-to-Rail OPV with Class-AB OUTPUT Stage – XH018

General Description

This block is a modular Rail-to-Rail OPV (2 stage Folded-Cascode amplifier) with Class-AB output.

Ratings, Parameters and Conditions

| Absolute Maximum Ratings | | | | | | |
|--------------------------|-----------|------|-----|--------------|------|---------|
| Parameter / Condition | Symbol | Min | Typ | Max | Unit | Comment |
| Operating Temperature | T_{OP} | -40 | | 120 | °C | |
| Supply Voltage | V_{DD} | -0.3 | | 5.5 | V | |
| Input Voltage | V_{IN} | -0.3 | | $V_{DD}+0.7$ | V | |
| Output Voltage | V_{OUT} | -0.3 | | $V_{DD}+0.7$ | V | |

| Electrical Parameters | | | | | | | |
|---|------------|-----|-----|----------|------|-------------------------------|--|
| Parameter / Condition | Symbol | Min | Typ | Max | Unit | Comment | |
| Operating Temperature | T_{OP} | -40 | | 85 | °C | | |
| Supply Voltage | V_{DD} | 3.0 | 3.3 | 3.6 | V | | |
| Cross current | I_{CD} | | 2.5 | | mA | with output stage and no load | |
| Supply Current (w/o output stage), adjustable by Bias | I_{DD} | | 140 | | µA | | |
| Standby Current | I_{SB} | | | 10 | nA | | |
| Open Loop Gain (with output stage) | A_{OL} | 80 | | | dB | | |
| Open Loop Gain (without output stage) | A_{OL} | | 50 | | dB | | |
| Phase Margin | PM | 75 | | | deg | | |
| Gain Bandwidth | GBW | 4 | | | MHz | | |
| Common Mode Range | V_{CM} | 0 | | V_{DD} | | | |
| Output Load | C_{LOAD} | | 50 | | pF | | |
| Output Load | R_{LOAD} | | 50 | | Ohm | | |

Interface and Symbol

| IO-Description | | | |
|----------------|--------|--------------------------|---------|
| Interface | I/O | Function | Comment |
| VDD, VSS | Power | supply voltage | |
| IB | Input | Bias current | |
| vp | Input | Amplifier positive input | |
| vm | Input | Amplifier negative input | |
| Out | Output | Amplifier output | |
| STDBY | Input | Standby | |

