Analog IP Cell
Reference and Bias Source
Vref_Bias – XFAB XC10

General Description

This cell is a low power voltage reference and bias source. The output current can be set with an external connected resistor. The voltage reference is fixed to a bandgap voltage. All outputs are buffered with a small OTA.
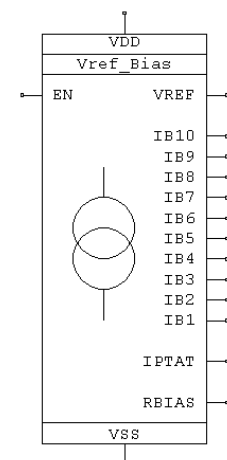
$$I_{BIAS} = \frac{1.24V}{R_{BIAS}}$$

Ratings, Parameters and Conditions

Absolute Maximum Ratings						
Parameter / Condition	Symbol	Min	Typ	Max	Unit	Comment
Operating Temperature	T_{OP}	-40		120	℃	
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}	0		80	℃	
Supply Voltage	V_{DD}	3.0	3.5	4.5	V	
Current Consumption	I_{DD}		120		µA	w/o bias outputs
Standby Current	I_{SB}			1	nA	
Output Current	I_{BIAS}	1	5	20	µA	$I_{BIAS} = 1.24V / R_{BIAS}$
Reference Voltage	V_{REF}	1.225	1.235	1.245	V	
StartUp Time	T_{setup}		200		µs	After EN high

Interface and Symbol

IO-Description			
Interface	I/O	Function	Comment
EN	Input	Enable	
IBx	Output	Bias current output (p-MOS source)	
IPTAT	Output	Temperature proportional current	
VREF	Output	Voltage reference output	
VDD, VSS	Power	Supply voltage	

Layout Size

950 µm x 650 µm = 0.62 mm²