Desert Microtechnology Associates, Inc.

Excellence in Semiconductor Development, Production & Technology

D17IP06 – Configurable Reference

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Features

- Digitally configurable current
- Operation from 2V to 3.6V
- Balanced voltage reference
- Low power operation
- Standby mode
- Push-Pull output

Applications

- Bias for ADC or DAC
- Sensor bias
- general purpose bias

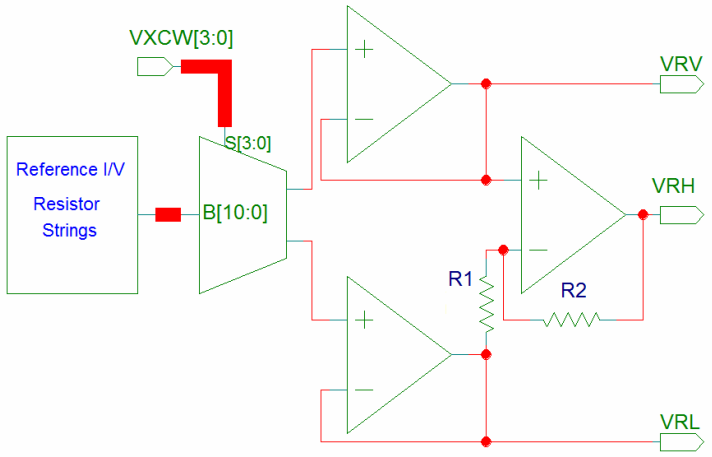
Technology

- XH035 ISMOS

Deliverables

- Schematic
- Netlist, upon request
- GDSII

Functional Block Diagram



Description

The D17IP06 is a digitally configurable current and voltage generator. The reference includes a temperature compensated current and voltage source. At power up, the reference sources are enabled and consume little current, 3uA. During active mode, the current drain is 153uA average. The output of the amplifiers can drive capacitive modes and settle within 16 bit accuracy within 500ns. The reference voltages are configurable for low supply voltages, down to 2V, and various operation modes.

Pin Description

Name	Functional Description	Type	Default
SLIS[1:0]	Selects the current level for the output current ISEP, 200nA, 400nA, 800nA, or 1uA	Digital	00'b
VXCW[3:0]	4 bits of voltage selection for VRH, VRV, and VRL, see table	Digital	0010'b
EN[1:3]	Bias enables	Digital	Active High
EN[4]	Special bias enable forces VRH=1.8V, VRV=1.4V, and VRL=1V	Digital	0'b
ACTIV	Enable Quiescent current for buffer amplifiers	Digital	Active High
VBTM	Resistor string bias, can be set to supply voltage, VCCA	Bias	3V
VCCA	Analog positive supply voltage, can be connected to VCC	Supply	3V
VCC	Digital Supply voltage	Supply	3V
VSSA	Analog negative supply voltage, can be connected to VSS	Supply	0V
VSS	Digital negative supply voltag	Supply	0V
IBTP	Fixed output current 2uA sinking	Current	2uA
IBVM	Output current, 6uA, sourcing ISEP*30	Current	6uA
IUM	Output current, 1.2uA, sourcing ISEP*6	Current	1.2uA
VRV	Output buffer, rail to rail push pull, medium voltage	Voltage	1.2V
VRH	Output buffer, rail to rail push pull, high voltage	Voltage	2.1V
VRL	Output buffer, rail to rail push pull, low voltage	Voltage	0.3V
VR70	High impedance reference voltage, fixed at 1.4V, Always on	Voltage	1.4V
VREF	Band gap voltage output, Always on	Voltage	1.18V

VXCW[3:0] Selection

Bit	Value	VRL	VRH	VRV	Range
[2:0]	000	0.1	2.3	1.2	2.2
[2:0]	001	0.2	2.2	1.2	2
[2:0]	010	0.3	2.1	1.2	1.8
[2:0]	011	0.4	2	1.2	1.6
[2:0]	100	0.5	1.9	1.2	1.4
[2:0]	101	0.6	1.8	1.2	1.2
[2:0]	110	0.7	1.7	1.2	1
[2:0]	111	0.8	1.6	1.2	0.8
[3]	0	VBTM/10	VBTM/2	VBTM*9/10	VBTM*9/10

*Note the supply voltage must be set at least 0.1V higher than the selected VRH voltage.