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CactusIC Low Power Programmable Voltage Reference

Functional Description

The DVREF [Digitally Programmable Voltage Reference] is designed for low power applications where a precise voltage reference is required. The DVREF has two 7 bit digital input busses that allow users to precisely program slope and output voltage levels. This allows digital trimming to correct for process skew or simply to make the voltage reference more useful in a wide range of applications.

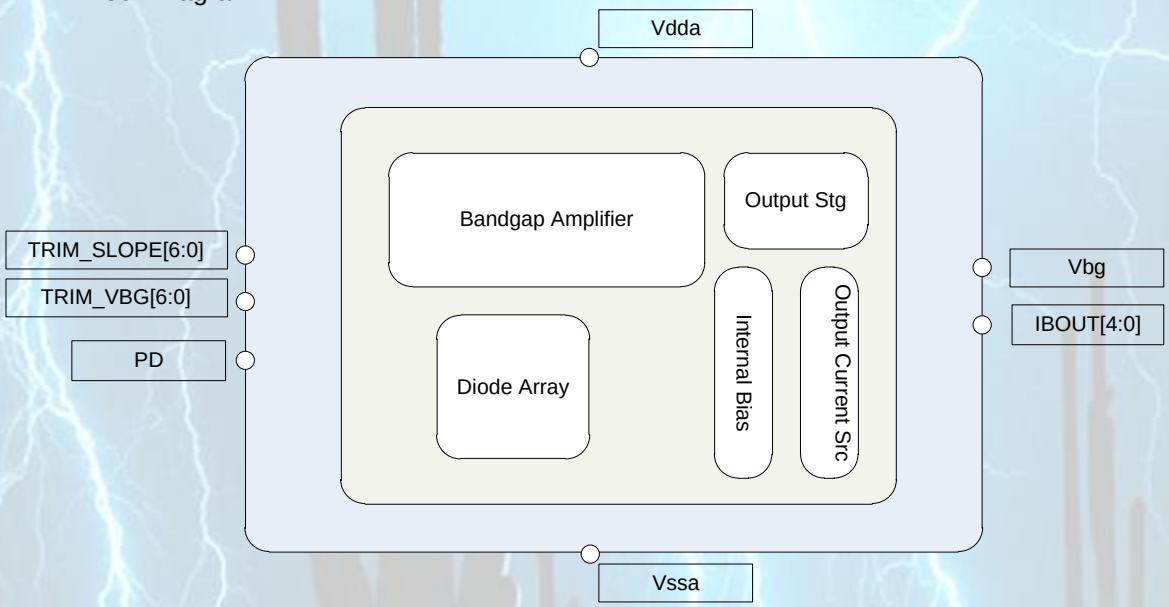
Digital voltage level trimming allows the voltage reference to operate over a wide range. For example it is possible to program a 1.0V output or a traditional 1.2V, or even 1.4V

The voltage reference requires a single power supply from 1.6V to 3.3V (other voltage ranges are available) and typically consumes only 700nA supply current. Cactus also has ULP voltage reference circuits that consume less power if required, and that operate over a wider range of supply voltages.

The DVREF block also has current source outputs that can be used as bias currents or for any other purpose requiring current references. These current outputs are proportional to absolute temperature.

The DVREF is designed in IBM 0.18 processes and is compatible with other general 0.18um CMOS processes as well as other process nodes such as Tower and TSMC.

VREF Block Diagram



Operating Conditions

Symbol	Parameter	Min	Typ	Max	Unit
V_{DD}	Positive Supply Voltage	1.6	1.8	3.3	V
V_{SS}	Negative Supply Voltage		0.0		V
T	Temperature	-40	27	100	°C