

### General Description

Creating reference voltages and currents is of major importance in nearly every mixed signal circuit for biasing, voltage regulation or comparative purposes.

Because of the ambient temperature's impact on most of the circuit's properties, the Bandgap reference makes use of two temperature dependencies having opposite characteristic:

- a pn junction voltage having a temperature coefficient of appr. -2 mV/K
- a multiple of the temperature voltage  $V_t$  having a temperature coefficient of appr. +0.085 mV/K

Combination of both allows achieving a zero first order temperature dependency. This analogue IP cell generates a reference voltage of 1.22V. The voltage is trimmable by 3 control inputs.

Additionally, bias and cascade voltages for N-channel and P-channel MOS transistors are generated.

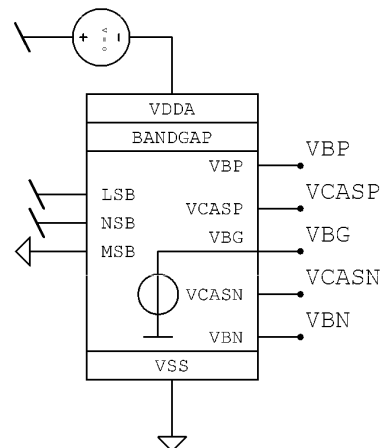
### Ratings, Parameters and Conditions

Parameter / Condition	Symbol	Min	Typ.	Max	Unit	Comment
<b>Electrical Parameters:</b>						
Supply Voltage	$V_{dd}$	4.75	5	5.25	V	
Active Supply Current	$I_{dd}$		18		$\mu A$	
Supply Voltage Rejection	$PSRR_{VDD}$	50			dB	
N Cascode Voltage	$V_{CASN}$		1.18		V	
N Bias Voltage	$V_{BN}$		1		V	
P Cascode Voltage	$V_{CASP}$		$V_{dd}-1.3$		V	
P Bias Voltage	$V_{BP}$		$V_{dd}-1.1$		V	
Trimm Range	$V_{BG}$	1.19	1.22	1.26	V	
<b>Absolute Maximum Ratings:</b>						
Operating Temperature	$T_{range}$	-40		140	$^{\circ}C$	
Supply Voltage	$V_{dd}$	-0.3		6	V	
Input Voltage	$V_{in}$	-0.3		$V_{dd}+0.7$		
Output Voltage	$V_{out}$	-0.3		$V_{dd}+0.7$		
<b>Operating Conditions:</b>						
Ambient Temperature	$T_{amb}$	-20	27	80	$^{\circ}C$	

### IO-Description

Interface	I/O	Function	Comment
GND	input	Supply	
VDDA	Input	Supply	
LSB, NSB, MSB	Input	Trim-Inputs	
VBG	Output	Reference Voltage	
VCASN, VBN	Output	N Bias voltages	
VCASP, VBP	Output	P Bias voltages	

### Block schematic, ext. component diagram



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