Analog IP Cell
Low Voltage Bandgap Reference
LVBG XC10LV

SERMA
PRODUCTIVITY ENGINEERING

General Description

Creating reference voltages and currents is of major importance in nearly every mixed signal circuit for biasing and 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.

Combination of both allows achieving a zero first order temperature dependency. This analogue IP cell generates a reference voltage of 606mV. Trimming is not required.

The design is optimized for power consumption and is useable with very low supply voltages. An enable signal can be used to power down the circuit.
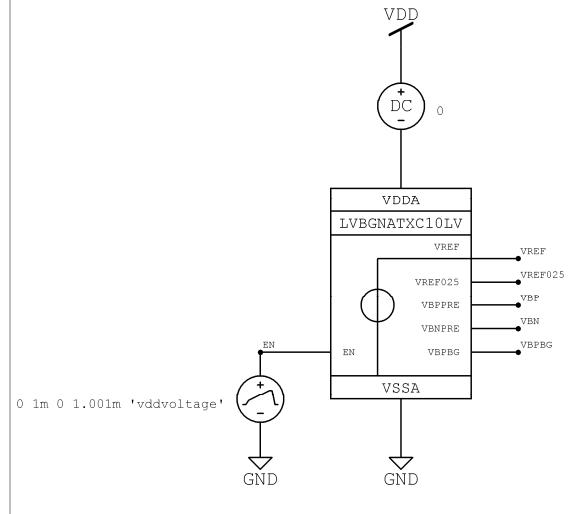
Ratings, Parameters and Conditions

Parameter / Condition	Symbol	Min	Typ.	Max	Unit	Comment
Electrical Parameters:						
Supply Voltage	V_{dd}	1.3	1.55	1.6	V	
Active Supply Current	I_{dd}	3	5	12	µA	
Inactive Supply Current	I_{ddidle}			25	nA	
Reference Voltage	V_{ref}	602	606	608	mV	
StartUp Time	T_{SU}		400		µs	
Vref Temperature Coefficient	V_{refTK}			40	ppm	
Supply Voltage Rejection	V_{refSRR}	65			dB	
Absolute Maximum Ratings:						
Operating Temperature	T_{range}	-40		140	℃	
Supply Voltage	V_{dd}	-0.3		6	V	
Input Voltage	V_{in}	-0.3		$V_{dd}+0.7$		
Output Voltage	V_{out}	-0.3		$V_{dd}+0.7$		
Operating Conditions:						
Ambient Temperature	T_{amb}	-20	27	80	℃	

IO-Description

Interface	I/O	Function	Comment
VSSA	input	Supply	
VDDA	Input	Supply	
EN	Input	Enable Signal	
VREF	Output	Reference Voltage Output	
VREF025	Output	25% Reference Voltage Output	
VBP	Output	Bias P Voltage (const. Gm)	
VBN	Output	Bias N Voltage (const. Gm)	
VBPBG	Output	Bias P Voltage Bnadgap	

Block schematic, ext. component diagram