Analog IP Cell
Triangular Waveform Generator
TRIGEN XB06

General Description

The Triangular Waveform Generator standard cell is a current mode high speed oscillator. Its operating frequency is mainly determined by a resistor (internal / external; if required digitally controlled). The oscillator itself is not depending on any external reference voltage, its switching thresholds are defined by the supply voltage level. Besides a triangular output waveform, a rectangular signal is generated as well.
The waveform source can be used for sensor stimulation for example. Other fields of application are the generation of high frequency pulse width modulated signals.

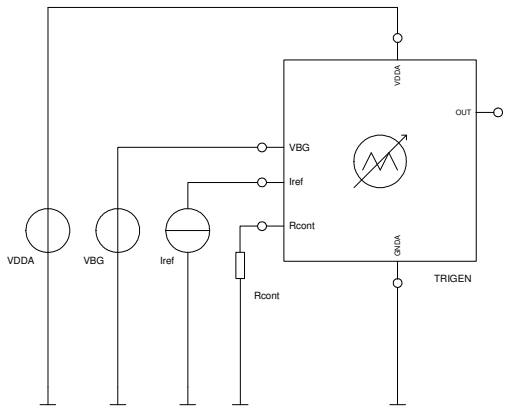
Ratings, Parameters and Conditions

Parameter / Condition	Symbol	Min	Typ.	Max	Unit	Comment
Electrical Parameters:						
Supply Voltage	V_{dd}	4.75	5	5.25	V	
Supply Current	I_{dd}	500		1200	µA	depending on working frequency
Control Resistance	R_{cont}	5		25	kOhm	
Output Maximum Level	V_{outmax}	3.9		4.1	V	@ V_{VDDA}=5V
Output Minimum Level	V_{outmin}	0.9		1.1	V	@ V_{VDDA}=5V
Oscillation Frequency	F_{osc}	4		16	MHz	
Absolute Maximum Ratings:						
Operating Temperature	T_{range}	-20		80	℃	
Supply Voltage	V_{dd}	-0.3		7	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
GNDA	Input	Supply	ground
VDDA	Input	Supply	supply voltage
VBG	Input	reference voltage input	used for reference current generation
IREF	Input	reference current input	
RCONT	Output	port frequency determining resistor	
OUT	Output	waveform output	

Symbol / external schematic



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Simulation Results:

Output frequency and supply current under typical conditions: