

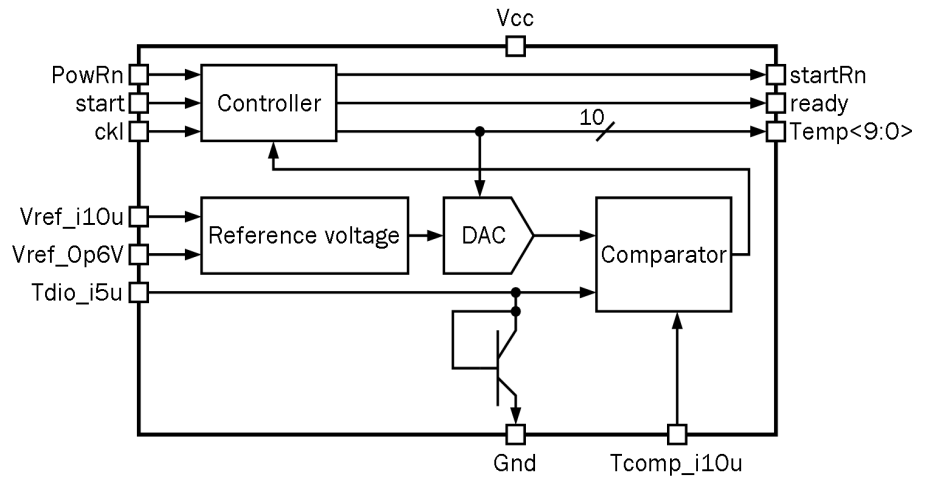
-45 ... +85°C Temperature sensor
OVERVIEW

180TSMC_TS_01 consists of built-in 10-bit R-2R DAC, diode and own reference voltage former. When requested, controller performs conversion of diode voltage level, which depends on temperature linearly. After conversion is done it sets “ready” flag to “1” and outputs 10-bit code. Die temperature is calculated with the following expression: $Temp = (code - 407) * 0.625$. The conversion time is 640 μs . With small size, usability and low current consumption, this device is ideal for use in controlling of the die temperature.

IP technology: TSMC 180nm SiGe BiCMOS.

IP status: silicon proven.

Area: 0.061mm².


ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Supply voltage	V_{cc}	-	2.8	3.0	3.6	V
Temperature range	T	-	-45	+27	+85	°C
Input reference current	I_{REF}	-	-	10	-	μA
Input reference voltage	V_{REF}	-	-	0.6	-	V
Clock frequency	F_{CLK}	-	-	50	-	kHz
DAC resolution	K	-	-	10	-	bit
Accuracy step	N	-	-	± 0.8	-	°C
Absolute accuracy	δ	-	-	± 5	-	°C
Current consumption	I_{CC}	-	-	58	100	μA
Standby current	I_{STB}	-	-	0.01	0.1	nA
Input high-logic level	V_{IH}	For digital inputs	$0.7 V_{cc}$	-	$V_{cc} + 0.25$	V
Input low-logic level	V_{IL}		-0.25	-	0.3	V