

Temperature sensor

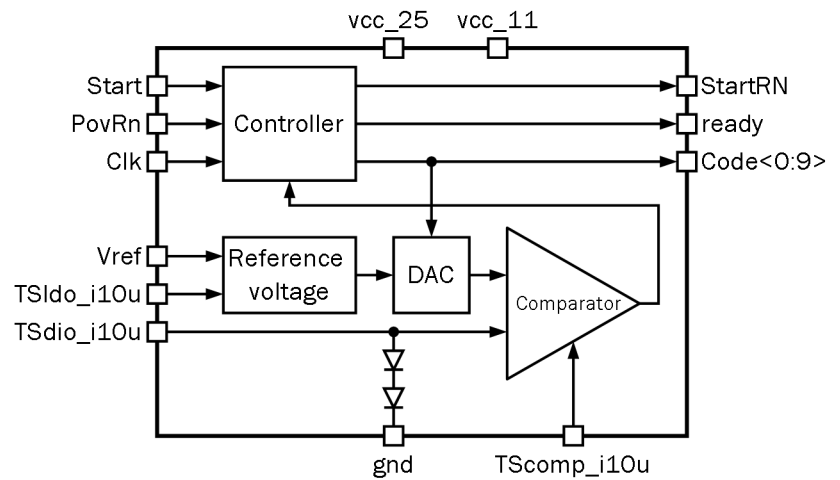
OVERVIEW

040TSMC_TS_03 consists of built-in 10-bit R-2R DAC powered with fixed supply voltage level from low drop-out voltage regulator, two serial connected diodes and own reference voltage former. Controller converts diodes voltage level, which depends on temperature linearly to digital code. After conversion is done it sets “ready” flag to “1” and outputs 10-bit code. The sensor can operate in two modes: single measurement and continuous measurement.

IP technology: TSMC CMOS 40nm.

IP status: pre-silicon verification.

Area: 0.07mm².



ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Conditions	Value			Units
			min	typ.	max	
Supply voltage	V_{cc_25}	-	2.4	2.5	2.6	V
Supply voltage	V_{cc_11}	-	1.0	1.1	1.2	V
Temperature range	T	-	-40	85	125	°C
Clock frequency	F_{clk}	-	1	50	50	kHz
DAC resolution	K	-	-	10	-	bit
Accuracy step	N	-	-	0.5	-	±°C
Absolute accuracy	δ	-	-	4.9	-	±°C
Current consumption	I_{cc}	-	-	95	105	uA
Stand-by current	I_{stb}	-	-	-	0.1	nA
Input logic-high level	V_{IH}	For digital inputs	$0.7 V_{cc}$	-	$V_{cc}+0.25$	V
Input logic-low level 2.5V	V_{IL_25}	For digital inputs 2.5 V	-0.25	-	0.3	V
Input logic-low level 1.1 V	V_{IL_11}	For digital inputs 1.1 V	-0.1	-	0.15	V