

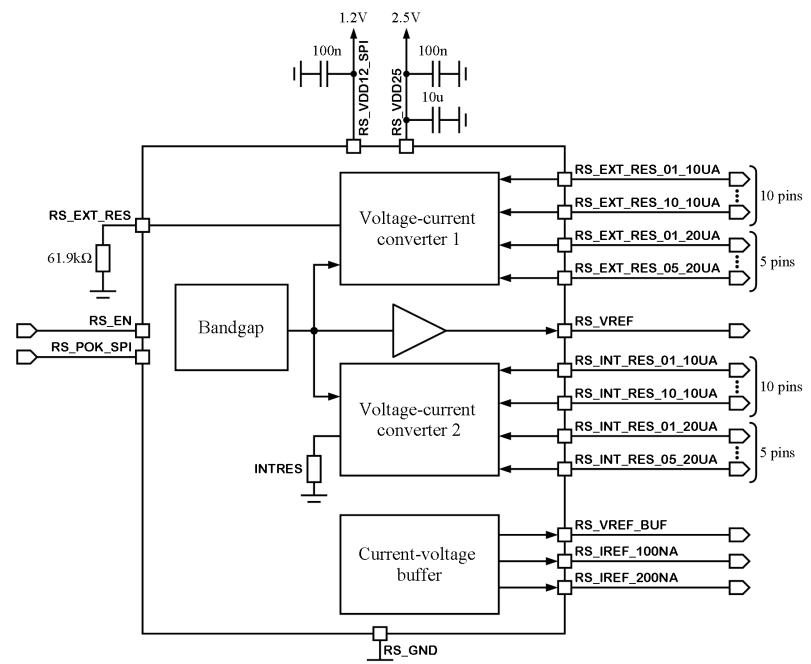
**0.6V/10u, 20uA, 100nA, 200nA Reference voltage and current source**
**OVERVIEW**

055TSMC\_RS\_05 is a reference voltage and current source that consists of bandgap voltage reference, two voltage-to-current converters and current-voltage buffer. One of voltage-to-current converter is based on external resistor and thus could be considered as process and temperature independent current reference; the another is based on internal resistor and follows its process and temperature variations.

IP technology: TSMC 55nm EF technology.

IP status: pre-silicon verification.

Silicon area: 0.27mm<sup>2</sup>.


**ELECTRICAL CHARACTERISTICS**

Parameter	Symbol	Conditions	Value			Units
			Min	Typ.	Max	
Supply voltage	VDD25	-	2.25	2.5	2.75	V
	VDD12	-	1.08	1.2	1.32	
Operating temperature range	T <sub>j</sub>	-	-40	27	+85	°C
Current consumption in operating mode	I <sub>DD25</sub>	-	24.7	28.5	32.2	μA
	I <sub>DD12</sub>	-	-	3	15	nA
Current consumption in standby mode	I <sub>DD25_STBY</sub>	-	-	0.03	0.15	nA
	I <sub>DD12_STBY</sub>	-	-	2	7	
Reference voltage	VREF	-	582	606	621	mV
Reference voltage deviation	ΔVREF	-	-3	-	3.5	%
10μA output reference current	I <sub>INT10u</sub>	external resistor	9.5	10	10.2	μA
	I <sub>EXT10u</sub>	internal resistor	8.3	10	11.8	μA
20μA output reference current	I <sub>INT20u</sub>	external resistor	19.1	20	21.1	μA
	I <sub>EXT20u</sub>	internal resistor	16.7	20	23.7	μA
100nA output reference current	I <sub>100n</sub>	-	86.6	100	120.9	nA
200nA output reference current	I <sub>200n</sub>	-	174	200	241	nA