6.3.10 Internal clock source characteristics

The parameters given in *Table 41* and *Table 42* are derived from tests performed under ambient temperature and V_{DD} supply voltage conditions summarized in *Table 16*.

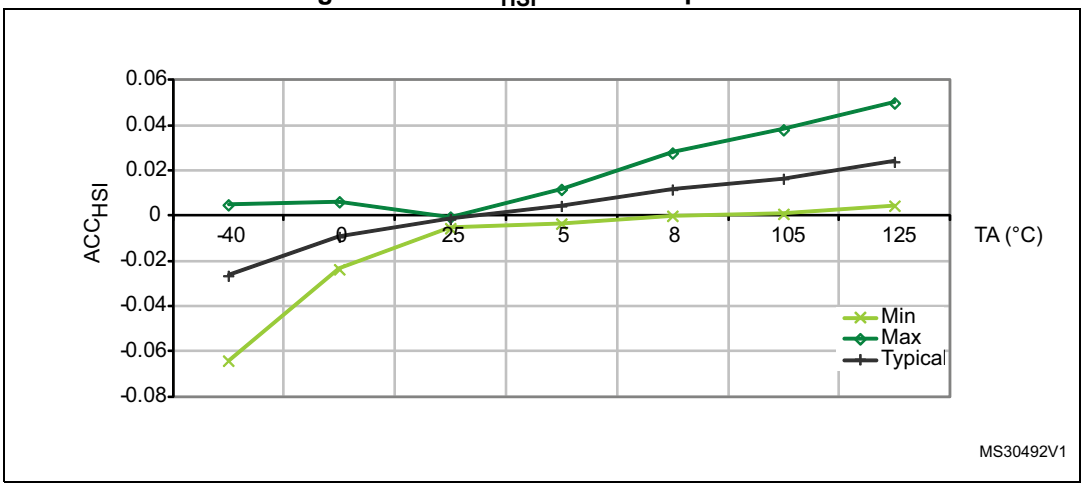
High-speed internal (HSI) RC oscillator

Table 41. HSI oscillator characteristics (1)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f_{HSI}	Frequency	-	-	16	-	MHz
ACC_{HSI}	Accuracy of the HSI oscillator	User-trimmed with the RCC_CR register(2)	-	-	1	%
		T_A = - 40 to 105 °C(3)	- 8	-	4.5	%
		T_A = - 10 to 85 °C(3)	- 4	-	4	%
		T_A = 25 °C(4)	- 1	-	1	%
$t_{su(HSI)}$(2)	HSI oscillator startup time	-	-	2.2	4	µs
$I_{DD(HSI)}$(2)	HSI oscillator power consumption	-	-	60	80	µA

1. V_{DD} = 3.3 V, PLL off, T_A = –40 to 105 °C unless otherwise specified.
2. Guaranteed by design.
3. Guaranteed based on test during characterization.
4. Factory calibrated, parts not soldered.

Figure 27. $LACC_{HSI}$ versus temperature



1. Guaranteed based on test during characterization.

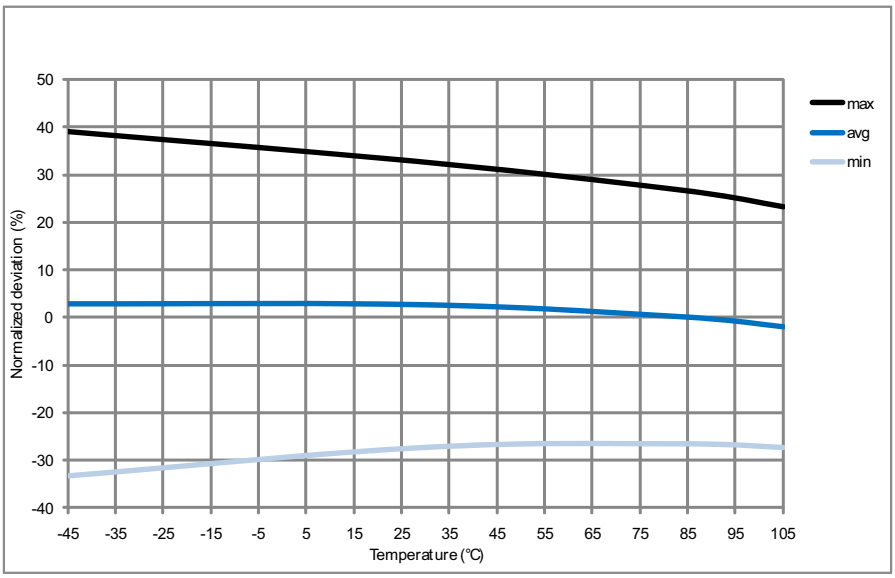
Low-speed internal (LSI) RC oscillator

Table 42. LSI oscillator characteristics (1)

Symbol	Parameter	Min	Typ	Max	Unit
f_{LSI}(2)	Frequency	17	32	47	kHz
$t_{su(LSI)}$(3)	LSI oscillator startup time	-	15	40	µs
$I_{DD(LSI)}$(3)	LSI oscillator power consumption	-	0.4	0.6	µA

1. V_{DD} = 3 V, T_A = –40 to 105 °C unless otherwise specified.
2. Guaranteed based on test during characterization..
3. Guaranteed by design.

Figure 28. ACC_{LSI} versus temperature



MS19013V1

6.3.11 PLL characteristics

The parameters given in *Table 43* and *Table 44* are derived from tests performed under temperature and V_{DD} supply voltage conditions summarized in *Table 16*.

Table 43. Main PLL characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
f_{PLL_IN}	PLL input clock(1)	-	0.95(2)	1	2.10	MHz
f_{PLL_OUT}	PLL multiplier output clock	-	12.5	-	180	MHz
f_{PLL48_OUT}	48 MHz PLL multiplier output clock	-	-	48	75	MHz
f_{VCO_OUT}	PLL VCO output	-	100	-	432	MHz