

6.8.2 Analog to Digital Converter Characteristics

This section describes the Analog to Digital Converter electrical characteristics required to ensure proper device operation.

6.8.2.1 Analog-to-Digital Converter (ADC)

over operating junction temperature range (unless otherwise noted)

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
V _{REFHI}		1.71	1.8	1.89	V
Input Conversion Range (Vin+, Vin-)	Must be < VDDA33	0		32/18 × V _{REFHI}	V
Power-up time				500	μs
Gain error		−5	±3	5	LSBs
Offset error		−4	±2	4	LSBs
Channel-to-channel gain error			±4		LSBs
Channel-to-channel offset error			±2		LSBs
ADC-to-ADC gain error	Same reference group		±4		LSBs
ADC-to-ADC offset error	Same reference group		±2		LSBs
DNL	Controlled environment to minimize input noise	−1	±0.5	1	LSBs
INL	Controlled environment to minimize input noise	−2	±1.0	2	LSBs
SNR	Controlled environment to minimize input noise		68		dB
ENOB (Synchronous Operation)			11		bits
ENOB (Asynchronous Operation)			9.7		bits
ADC-to-ADC isolation	Synchronous operation	−10		10	LSBs
V _{REFHI} input current			400		μA
Conversion time				250	ns
Parasitic Input Capacitance (C _p) ⁽¹⁾			7		pF
Sample/Hold Resistance (R _{on}) ⁽¹⁾				1.2	kΩ
Sample/Hold Capacitance (C _h) ⁽¹⁾				8	pF
Input Leakage		−1.2	0.1	1.2	μA
Power supply (VDDA33)		3.13	3.3	3.46	V
Power supply (VDDA18)		1.71	1.8	1.89	V
Power Consumption (VDDA33)			200		μA
Power Consumption (VDDA18)			700		μA
Maximum ADCCLK frequency	With 50% duty cycle. Minimum pulse width must be maintained at 7.5ns		50	66.667	MHz
Sample time		75			ns

(1) See ADC Input Model