4 Module specifications

4.1 Mechanical characteristics

@ Vdd = 1.8 V, T = 25 °C, unless otherwise noted.

Table 2. Mechanical characteristics

Symbol	Parameter	Test conditions	Min.[1]	Typ.[2]	Max.[1]	Unit
LA_FS	Linear acceleration measurement range			±2		_g_
				±4		
				±8		
				±16		
G_FS	Angular rate measurement range			±125		dps
				±250		
				±500		
				±1000		
				±2000		
LA_So	Linear acceleration sensitivity[3]	FS = ±2 _g_		0.061		m_g_/LSB
		FS = ±4 _g_		0.122		
		FS = ±8 _g_		0.244		
		FS = ±16 _g_		0.488		
G_So	Angular rate sensitivity[3]	FS = ±125 dps		4.375		mdps/LSB
		FS = ±250 dps		8.75		
		FS = ±500 dps		17.50		
		FS = ±1000 dps		35		
		FS = ±2000 dps		70		
G_So%	Sensitivity tolerance[4]	at component level, T = 25 °C		±1		%
LA_So%	Sensitivity tolerance[4]	at component level, T = 25 °C		±1		%
LA_SoDr	Linear acceleration sensitivity change vs. temperature[5]	from -40° to +85°		±0.01		%/°C
G_SoDr	Angular rate sensitivity change vs. temperature[5]	from -40° to +85°		±0.01		%/°C
LA_TyOff	Linear acceleration zero-_g_ level offset accuracy[4]	T = 25 °C		±40		m_g_
G_TyOff	Angular rate zero-rate level[4]	T = 25 °C		±3		dps
LA_OffDr	Linear acceleration zero-_g_ level change vs. temperature[5]	from -40° to +85°		±0.1		m_g_/ °C
G_OffDr	Angular rate typical zero-rate level change vs. temperature[5]	from -40° to +85°		±0.015		dps/°C
Rn	Rate noise density in high-performance mode[6]			3.4		mdps/√Hz
RnRMS	Gyroscope RMS noise in low-power mode[7]			75		mdps
An	Acceleration noise density in high-performance mode[8]	FS = ±2 _g_		70		µ_g_/√Hz
		FS = ±4 _g_		75		
		FS = ±8 _g_		85		
		FS = ±16 _g_		110		
RMS	Acceleration RMS noise in low-power mode[9][10]	FS = ±2 _g_		1.8		m_g_(RMS)
		FS = ±4 _g_		2.0		
		FS = ±8 _g_		2.4		

Symbol	Parameter	Test conditions	Min.[1]	Typ.[2]	Max.[1]	Unit
RMS	Acceleration RMS noise in low-power mode[9][10]	FS = ±16 g		3.0		mg(RMS)
LA_ODR	Linear acceleration output data rate			1.6[11]		Hz
				12.5		
				26		
				52		
				104		
				208		
				416		
				833		
				1667		
				3333		
				6667		
G_ODR	Angular rate output data rate			12.5		
				26		
				52		
				104		
				208		
				416		
				833		
				1667		
				3333		
				6667		
Vst	Linear acceleration self-test output change[12][13][14]		50		1700	mg
	Angular rate self-test output change[15][16]	FS = ±250 dps	20		80	dps
		FS = ±2000 dps	150		700	dps
Top	Operating temperature range		-40		+85	°C

1. *Min/Max values are based on characterization results at 3σ on a limited number of samples, not tested in production and not guaranteed.*
2. *Typical specifications are not guaranteed.*
3. *Sensitivity values after factory calibration test and trimming.*
4. *Values after factory calibration test and trimming.*
5. *Measurements are performed in a uniform temperature setup and they are based on characterization data in a limited number of samples. Not measured during final test for production.*
6. *Gyroscope rate noise density in high-performance mode is independent of the ODR and FS setting.*
7. *Gyroscope RMS noise in low-power mode is independent of the ODR and FS setting.*
8. *Accelerometer noise density in high-performance mode is independent of the ODR.*
9. *Accelerometer RMS noise in low-power mode is independent of the ODR.*
10. *Noise RMS related to BW = ODR/2.*
11. *This ODR is available when the accelerometer is in low-power mode.*
12. *The sign of the linear acceleration self-test output change is defined by the STx_XL bits in a dedicated register for all axes.*
13. *The linear acceleration self-test output change is defined with the device in stationary condition as the absolute value of: OUTPUT[LSb] (self-test enabled) - OUTPUT[LSb] (self-test disabled). 1LSb = 0.061 mg at ±2 g full scale.*
14. *Accelerometer self-test limits are full-scale independent.*
15. *The sign of the angular rate self-test output change is defined by the STx_G bits in a dedicated register for all axes.*
16. *The angular rate self-test output change is defined with the device in stationary condition as the absolute value of: OUTPUT[LSb] (self-test enabled) - OUTPUT[LSb] (self-test disabled). 1LSb = 70 mdps at ±2000 dps full scale.*