Table 3-25 Time Response at 1g Ramp Acceleration

Settling Time to 1 LSB with 1g Ramp Acceleration (µsec)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.0	0.0						
-9	1	0.0	0.0	0.0					
-11	2	0.0	0.0	0.0	0.0				
-13	3			0.0	0.0	0.0			
-15	4				0.0	0.0	0.0		
-17	5					51.3	26.0	15.9	
-19	6						241.1	112.7	48.7
-21	7							756.4	348.4

Overshoot with 1g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.1	0.1						
-9	1	0.1	0.1	0.1					
-11	2	0.2	0.1	0.1	0.1				
-13	3			0.1	0.1	0.1			
-15	4				0.1	0.1	0.1		
-17	5					0.1	0.1	0.2	
-19	6						0.1	0.1	0.5
-21	7							0.1	0.1

Following Error with 1g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	-0.1	-0.1						
-9	1	-0.1	0.0	0.0					
-11	2	0.0	0.0	0.0	0.0				
-13	3			0.1	0.1	0.1			
-15	4				0.6	0.6	0.6		
-17	5					2.5	2.5	2.5	
-19	6						10.3	10.3	10.3
-21	7							41.5	41.5

Table 3-26 Time Response at 10g Ramp Acceleration

Settling Time to 1 LSB with 10g Ramp Acceleration (µsec)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.0	0.0						
-9	1	0.0	0.0	0.0					
-11	2	0.0	0.0	0.0	0.0				
-13	3			7.1	3.7	2.6			
-15	4				48.2	22.9	10.7		
-17	5					165.7	76.1	45.8	
-19	6						469.5	213.9	119.3
-21	7							1213.5	548.6

Overshoot with 10g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.1	0.1						
-9	1	0.1	0.1	0.1					
-11	2	0.1	0.1	0.1	0.1				
-13	3			0.1	0.1	0.1			
-15	4				0.1	0.1	0.3		
-17	5					0.1	0.1	1.2	
-19	6						0.1	0.1	4.6
-21	7							0.1	0.1

Following Error with 10g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.0	0.0						
-9	1	0.0	0.0	0.0					
-11	2	0.3	0.3	0.3	0.3				
-13	3			1.6	1.6	1.6			
-15	4				6.4	6.4	6.4		
-17	5					25.9	25.9	25.9	
-19	6						103.9	103.9	103.9
-21	7							415.9	415.9

Table 3-27 Time Response at 100g Ramp Acceleration

Settling Time to 1 LSB with 100g Ramp Acceleration (µsec)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.0	0.0						
-9	1	0.0	0.0	0.0					
-11	2	19.5	9.1	4.4	2.2				
-13	3			35.5	16.4	6.3			
-15	4				104.6	47.9	28.0		
-17	5					279.4	126.4	64.4	
-19	6						697.1	314.2	186.6
-21	7							1668.8	750.1

Overshoot with 100g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.2	0.1						
-9	1	0.2	0.1	0.1					
-11	2	0.2	0.1	0.1	0.3				
-13	3			0.1	0.1	0.8			
-15	4				0.1	0.1	2.9		
-17	5					0.1	0.1	11.4	
-19	6						0.1	0.1	45.1
-21	7							0.1	0.1

Following Error with 100g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.2	0.2						
-9	1	1.0	1.0	1.0					
-11	2	4.0	4.0	4.0	4.0				
-13	3			16.2	16.2	16.2			
-15	4				64.9	64.9	64.9		
-17	5					259.9	259.9	259.9	
-19	6						1039.9	1039.9	1039.9
-21	7							4159.4	4159.9

Table 3-28 Time Response at 1000g Ramp Acceleration

Settling Time to 1 LSB with 1000g Ramp Acceleration (µsec)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.6	0.3						
-9	1	7.4	3.3	1.3					
-11	2	48.4	23.3	10.4	6.2				
-13	3			64.2	28.9	15.2			
-15	4				162.4	73.1	43.3		
-17	5					394.0	176.9	100.2	
-19	6						925.8	414.9	213.2
-21	7							2117.2	951.2

Overshoot with 1000g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	0.2	0.2						
-9	1	0.2	0.1	0.5					
-11	2	0.2	0.1	0.1	1.9				
-13	3			0.1	0.1	7.3			
-15	4				0.1	0.1	28.5		
-17	5					0.1	0.1	113.1	
-19	6						0.1	0.1	450.9
-21	7							0.1	0.1

Following Error with 1000g Ramp Acceleration (LSB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	2.5	2.5						
-9	1	10.1	10.1	10.1					
-11	2	40.6	40.6	40.6	40.6				
-13	3			162.4	162.4	162.4			
-15	4				649.9	649.9	649.9		
-17	5					2599.9	2599.9	2599.9	
-19	6						10398.5	10400.0	10400.0
-21	7							41131.7	41597.9

Table 3-29 Digital Filter Frequency Response

-3dB Bandwidth of Digital Filter (kHz)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	2920.0	1585.4						
-9	1	2886.0	1397.3	697.0					
-11	2	2902.9	1332.5	562.5	317.9				
-13	3			514.1	246.5	152.1			
-15	4				226.4	118.2	75.0		
-17	5					108.9	58.1	38.1	
-19	6						51.9	28.9	18.2
-21	7							27.4	15.2

Gain Peaking of Digital Filter (dB)

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	3.9	3.9						
-9	1	3.0	1.0	2.7					
-11	2	2.8	0.3	0.8	2.4				
-13	3			0.2	0.8	2.2			
-15	4				0.2	0.7	2.1		
-17	5					0.2	0.7	2.1	
-19	6						0.2	0.7	2.0
-21	7							0.2	0.7

These plots of digital filter response do not include the effect of the DFT frequency response. The total magnitude response is the dB sum of the DFT response listed below, and the filter response.

Frequency MHZ	Amplitude dB
0.0	0
0.8	-1
1.1	-2
1.4	-3
2.4	-10
3.3	-20
4.3	-40
4.8	-60
5.0	-80

Table 3-30 Velocity Accuracy and Resolution

Velocity RMS Error in µm/sec

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	75	24						
-9	1	165	52	21					
-11	2	336	116	36	4.7				
-13	3			85	24	8.1			
-15	4				68	18	3.4		
-17	5					44	15	3.1	
-19	6						21	9.3	9.5
-21	7							10	4.4

Velocity Resolution, Bits

	Kp	-2	-3	-4	-5	-6	-7	-8	-9
Kv		0	1	2	3	4	5	6	7
-7	0	17	19						
-9	1	16	18	19					
-11	2	15	17	18	21				
-13	3			17	19	21			
-15	4				18	19	22		
-17	5					18	20	22	
-19	6						19	20	20
-21	7							20	22