Micro Metal Gearmotors

The Pololu Micro Metal Gearmotor family consists of small, bidirectional, brushed DC metal gearmotors with nitride-hardened martensitic stainless steel gears. They are available in a wide range of gear ratios, motor windings, brushes, and encoder configurations:

Gear ratio options	Motor winding/brush options	Encoder options
• 5:1 • 10:1 • 15:1 • 30:1 • 50:1 • 75:1 • 100:1 • 150:1 • 210:1 • 250:1 • 298:1 • 380:1 • 1000:1	• **HPCB 12V:** high-power 12V with long-life carbon brushes • **HPCB 6V:** high-power 6V with long-life carbon brushes • **HP 6V:** high-power 6V with precious metal brushes • **MP 6V:** medium power 6V with precious metal brushes • **LP 6V:** low-power 6V with precious metal brushes	• Integrated 12 CPR quadrature encoder with back connector • Integrated 12 CPR quadrature encoder with side connector • Encoder-compatible (extended motor shaft for adding an encoder) • No encoder

Motor winding and brush options

The 6V and 12V HPCB are high-power motors with long-life carbon brushes. They offer nearly the same performance at their respective nominal voltages, just with the 12 V motor drawing half the current of the 6 V motor.

The HP, MP, and LP motors are intended for operation around 6V and offer three different power levels, with the lowest-power LP versions drawing the least current and the highest-power HP versions drawing the most current. These motors have shorter-life precious metal brushes, which are lower-friction than carbon brushes and generally preferred for lower-current applications.

carbon brushes | **precious metal brushes**

The HPCB versions can be differentiated from versions with precious metal brushes by their copper-colored terminals. Note that the HPCB terminals are 0.5 mm wider than those on the HP/MP/LP versions (2 mm vs. 1.5 mm), and they are approximately 1 mm closer together (6 mm vs. 7 mm).

Encoder options

Each motor/gearbox combination is optionally available with an integrated incremental quadrature encoder on the motor shaft (i.e. the input to the gearbox). The two-channel Hall effect encoder senses the rotation of a 6-pole magnetic disc on a rear protrusion of the motor shaft, providing a resolution of 12 counts per revolution (CPR) of the motor shaft when counting both edges of both channels. To compute the gearbox output CPR, multiply 12 by the gearbox reduction factor. For example, for a 50:1 gearbox, the encoder would provide approximately 617 CPR of the gearbox output shaft (see exact gear ratios below).

The encoders are available in two styles—*Back Connector*, which has a connector oriented parallel to the motor, and *Side Connector*, which has a connector perpendicular to the motor—and work with Pololu's assortment of 6-pin JST SH-style cables and 6-pin JST SH-style connector boards. More generally, the encoder connectors are compatible with JST part number SHR-06V-S. A plastic snap-on housing covers the encoder disc and electronics.

Motor versions are also optionally available with an extended motor shaft but no encoder. These are intended for those who want to implement their own encoder solutions or who want to assemble them with separately available encoder modules.

No encoder

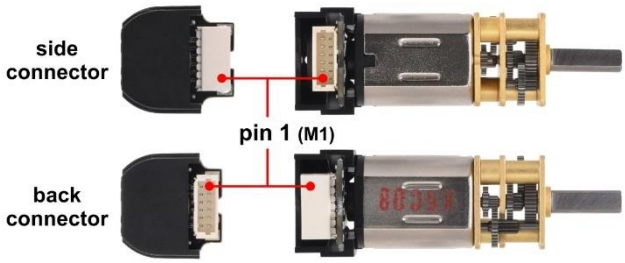
Encoder-compatible (extended motor shaft)

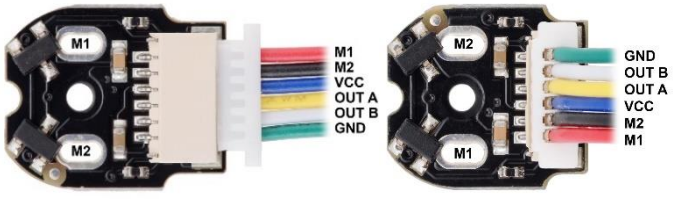
Encoder with back connector

Encoder with side connector

Using the encoder (for versions with encoders)

Pin	Cable Color	Function
1	Red	Motor power M1 ("+" terminal)
2	Black	Motor power M2
3	Blue	Encoder Vcc (2.7 V to 18 V)
4	Yellow	Encoder channel A output
5	White	Encoder channel B output
6	Green	Encoder GND

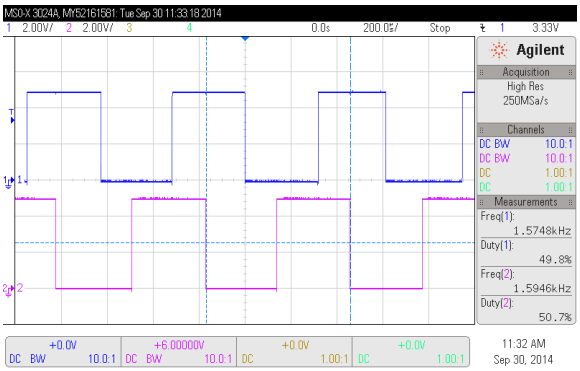




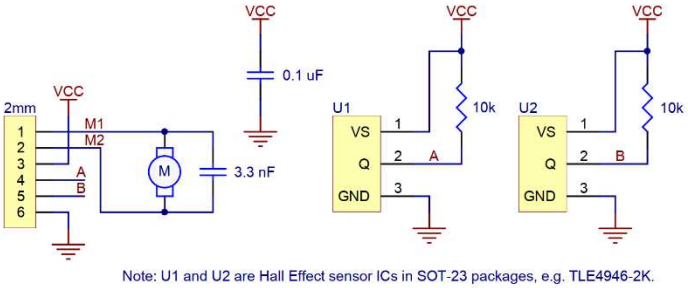
side connector **back connector**

The table above shows the encoder connector pinout and the corresponding cable colors when used with Pololu JST cables. Note that the connector side with pin 1 is different for the two different connector styles, but they are drop-in compatible with each other when using Pololu cables. For consistency, pin 1 always connects to the motor terminal marked with a "+" on the end cap. This mark gets covered by the encoder, but it can be seen on the versions without encoders. (Note that this is just an identifying mark, and the motor is intended to be operated in both directions by alternating the polarity of the power to the motor leads.)

The encoder is powered through the Vcc and GND pins. Vcc should be between 2.7 V and 18 V. The quadrature outputs A and B are digital signals that are either driven low (0 V) or pulled to Vcc through 10 kΩ pull-up resistors, depending on the orientation of the motor. The sensors' comparators have built-in hysteresis, which prevents spurious signals in cases where the motor is near a transition point. The A and B signals are square waves with roughly 50% duty cycles that are approximately 90° out of phase. The order of the A and B transitions indicates motor direction (B will always lead A when the positive supply is connected to M1 and trail A when polarity is flipped), and the frequency indicates motor speed.



Example of encoder A and B outputs with Vcc = 6V, HP 6V version running at 6V, no load.



Encoder schematic diagram.

Gearbox options

Nominal	Exact		Nominal	Exact	
5 : 1	$\frac{27 \times 37}{20 \times 10}$	$= 4.995 : 1$	150 : 1	$\frac{25 \times 32 \times 34 \times 35 \times 38}{12 \times 11 \times 14 \times 13 \times 10}$	$\approx 150.5828 : 1$
10 : 1	$\frac{35 \times 37}{13 \times 10}$	$\approx 9.9615 : 1$	210 : 1	$\frac{25 \times 34 \times 34 \times 35 \times 38}{12 \times 9 \times 13 \times 13 \times 10}$	$\approx 210.5906 : 1$
15 : 1	$\frac{25 \times 34 \times 31}{12 \times 9 \times 16}$	$\approx 15.2488 : 1$	250 : 1	$\frac{25 \times 34 \times 37 \times 35 \times 38}{12 \times 10 \times 10 \times 14 \times 10}$	$\approx 248.9792 : 1$
30 : 1	$\frac{31 \times 33 \times 35 \times 34}{16 \times 14 \times 13 \times 14}$	$\approx 29.8609 : 1$	298 : 1	$\frac{25 \times 34 \times 37 \times 35 \times 38}{12 \times 9 \times 10 \times 13 \times 10}$	$\approx 297.9238 : 1$
50 : 1	$\frac{32 \times 33 \times 35 \times 38}{15 \times 14 \times 13 \times 10}$	$\approx 51.4462 : 1$	380 : 1	$\frac{25 \times 35 \times 39 \times 36 \times 39}{12 \times 9 \times 9 \times 13 \times 10}$	$= 379.1\overline{6} : 1$
75 : 1	$\frac{34 \times 34 \times 35 \times 38}{13 \times 12 \times 13 \times 10}$	$\approx 75.8126 : 1$	1000 : 1	$\frac{25 \times 34 \times 35 \times 34 \times 34 \times 34 \times 27}{12 \times 9 \times 12 \times 14 \times 14 \times 14 \times 9}$	$\approx 986.4064 : 1$
100 : 1	$\frac{35 \times 37 \times 35 \times 38}{12 \times 11 \times 13 \times 10}$	$\approx 100.3700 : 1$			

The table above shows the exact gear ratios for the available options. All gearboxes have the same overall dimensions except for 1000:1, which is 3.5 mm longer than the others. Gearbox plates are brass on all versions except 380:1, which has steel plates for increased durability and resistance to wear from radial loads.

1000:1 gear ratio

380:1 gear ratio

Note that the highest gear ratios can generate enough torque to damage themselves if exposed to loads beyond what they are rated for (25 kg·mm for 1000:1 and 380:1, 20 kg·mm for everything else). The point of these highest gear ratios is not to deliver more overall torque but rather to allow for slower speeds at a given voltage and to draw less current for a given torque within its rated operating range.

Performance summary and graph table of contents

Motor Type	Rated Voltage	Pololu Item #[4] A B C D	Approx Gear Ratio	No Load		At Maximum Efficiency					Max Power	Stall Extrapolation[2]		Graph Page
				Speed	Current	Speed	Torque	Current	Output	Eff.		Torque	Current	
			:1	RPM (±20%)	mA (±50%)	RPM	kg·mm	A	W	%	W	kg·mm	A	
Low-Power (LP 6V)	6 V	1100, 2200, 5100, 5101	4.995	2500	50	- [1]	- [1]	- [1]	- [1]	- [1]	0.37	0.5		
		1099, 2201, 5102, 5103	9.96	1300	40	- [1]	- [1]	- [1]	- [1]	- [1]	0.37	1.0		
		4780, 4781, 5104, 5105	15.25	860		640	0.40	0.11	0.27	40	0.37	1.7		9
		993, 2202, 5106, 5107	29.86	450		320	0.66	0.11	0.22	34	0.31	2.9		10
		1098, 2203, 5108, 5109	51.45	270		200	1.0	0.10	0.20	34	0.29	4.4		11
		2360, 2209, 5110, 5111	75.81	180		140	1.3	0.10	0.19	33	0.29	6.4		12
		992, 2204, 5112, 5113	100.37	130		100	1.7	0.10	0.17	28	0.25	7.4	0.36	13
		1097, 2205, 5114, 5115	150.58	90		67	2.6	0.11	0.18	28	0.25	11		14
		1096, 2206, 5116, 5117	210.59	65		46	4.1	0.12	0.19	27	0.25	16		15
		1095, 2207, 5118, 5119	248.98	54		39	4.2	0.11	0.17	26	0.23	17		16
		1094, 2208, 5120, 5121	297.92	45		34	4.4	0.09	0.15	27	0.22	20		17
		4790, 4791, 5122, 5123	379.17	36		29	5.4	0.08	0.16	34	0.27	29		18
		1596, 3058, 5124, 5125	986.41	13		10	12	0.09	0.12	24	- [3]	55		19
Medium-Power (MP 6V)	6 V	2362, 2376, 5126, 5127	4.995	4400	80	- [1]	- [1]	- [1]	- [1]	- [1]	0.70	0.6		
		2363, 2377, 5128, 5129	9.96	2200	70	- [1]	- [1]	- [1]	- [1]	- [1]	0.70	1.1		
		4782, 4783, 5130, 5131	15.25	1400		1000	0.47	0.21	0.50	39	0.70	2.0		20
		2364, 2378, 5132, 5133	29.86	720		510	0.80	0.21	0.41	33	0.57	3.3		21
		2365, 2379, 5134, 5135	51.45	420		310	1.2	0.19	0.38	33	0.55	5.4		22
		2366, 2380, 5136, 5137	75.81	290		220	1.6	0.17	0.35	34	0.54	7.8		23
		2367, 2381, 5138, 5139	100.37	220		170	1.9	0.17	0.32	33	0.50	9.4	0.67	24
		2368, 2382, 5140, 5141	150.58	150		110	2.6	0.15	0.30	33	0.48	13		25
		2369, 2383, 5142, 5143	210.59	100		83	3.4	0.16	0.29	31	0.46	17		26
		2370, 2384, 5144, 5145	248.98	88		69	4.5	0.17	0.31	31	0.48	22		27
		2371, 2385, 5146, 5147	297.92	73		56	5.0	0.17	0.29	29	0.44	24		28
		4792, 4793, 5148, 5149	379.17	57		46	6.9	0.16	0.33	34	0.53	36		29
		2372, 3059, 5150, 5151	986.41	22		17	13	0.16	0.23	24	- [3]	67		30
High-Power (HP 6V)	6 V	1000, 2210, 5152, 5153	4.995	6100	120	- [1]	- [1]	- [1]	- [1]	- [1]	1.6	1.1		
		999, 2211, 5154, 5155	9.96	3100	100	2300	0.46	0.42	1.1	43	1.6	2.2		31
		4784, 4785, 5156, 5157	15.25	2000		1600	0.58	0.37	0.95	42	1.5	3.0		32
		1093, 2212, 5158, 5159	29.86	1000		830	1.0	0.36	0.89	41	1.5	5.7		33
		998, 2213, 5160, 5161	51.45	590		490	1.5	0.32	0.75	38	1.3	8.6		34
		2361, 2215, 5162, 5163	75.81	410		340	2.3	0.34	0.80	40	1.4	13		35
		1101, 2214, 5164, 5165	100.37	310		250	2.9	0.33	0.73	37	1.3	17	1.6	36
		997, 2386, 5166, 5167	150.58	210		170	3.9	0.31	0.68	37	1.2	24		37
		996, 2216, 5168, 5169	210.59	150		120	5.0	0.32	0.62	32	1.1	30		38
		995, 2217, 5170, 5171	248.98	120		100	5.5	0.30	0.59	32	1.1	34		39
		994, 2218, 5172, 5173	297.92	100		87	6.5	0.31	0.58	31	1.1	40		40
		4794, 4795, 5174, 5175	379.17	84		70	8.4	0.28	0.61	36	- [3]	55		41
		1595, 2373, 5176, 5177	986.41	31		26	20	0.32	0.53	28	- [3]	120		42
High-Power, Carbon Brushes (HPCB 6V)	6 V	3060, 3082, 5178, 5179	4.995	6500	170	- [1]	- [1]	- [1]	- [1]	- [1]	1.3	0.9		
		3061, 3071, 5180, 5181	9.96	3300	150	2300	0.42	0.51	1.0	33	1.3	1.7		43
		4786, 4787, 5182, 5183	15.25	2100		1500	0.60	0.49	0.94	32	1.3	2.5		44
		3062, 3072, 5184, 5185	29.86	1100		840	1.0	0.43	0.85	33	1.2	4.5		45
		3063, 3073, 5186, 5187	51.45	650		490	1.6	0.42	0.80	32	1.2	7.4		46
		3064, 3074, 5188, 5189	75.81	430		330	2.5	0.43	0.87	34	1.3	11		47
		3065, 3075, 5190, 5191	100.37	330		260	3.3	0.44	0.86	33	1.3	16	1.5	48
		3066, 3076, 5192, 5193	150.58	220		170	4.1	0.39	0.73	31	1.1	20		49
		3067, 3077, 5194, 5195	210.59	160		120	5.9	0.40	0.74	31	1.1	28		50
		3068, 3078, 5196, 5197	248.98	130		100	6.6	0.40	0.71	29	1.1	32		51
		3069, 3079, 5198, 5199	297.92	110		85	7.4	0.42	0.65	26	1.0	34		52
		4796, 4797, 5200, 5201	379.17	85		68	10	0.40	0.71	30	- [3]	50		53
		3070, 3080, 5202, 5203	986.41	33		26	22	0.39	0.59	25	- [3]	110		54
High-Power, Carbon Brushes (HPCB 12V)	12 V	3036, 3047, 5204, 5205	4.995	6800	100	- [1]	- [1]	- [1]	- [1]	- [1]	1.5	0.9		
		3037, 3048, 5206, 5207	9.96	3400	80	2500	0.43	0.25	1.1	37	1.5	1.7		55
		4788, 4789, 5208, 5209	15.25	2200		1700	0.59	0.23	1.0	37	1.4	2.5		56
		3038, 3049, 5210, 5211	29.86	1100		840	1.0	0.23	0.82	30	1.1	3.9		57
		3039, 3050, 5212, 5213	51.45	650		500	1.5	0.22	0.79	31	1.1	6.7		58
		3040, 3051, 5214, 5215	75.81	450		350	2.1	0.20	0.76	31	1.1	10		59
		3041, 3052, 5216, 5217	100.37	330		260	2.9	0.21	0.78	31	1.1	13	0.75	60
		3042, 3053, 5218, 5219	150.58	220		170	4.2	0.22	0.73	28	1.0	18		61
		3043, 3054, 5220, 5221	210.59	160		120	5.6	0.21	0.71	28	1.0	25		62
		3044, 3055, 5222, 5223	248.98	130		110	6.6	0.21	0.72	29	1.1	30		63
		3045, 3056, 5224, 5225	297.92	110		87	7.3	0.21	0.65	26	1.0	33		64
		4798, 4799, 5226, 5227	379.17	85		67	11	0.20	0.75	31	- [3]	50		65
		3046, 3057, 5228, 5229	986.41	35		27	21	0.19	0.59	25	- [3]	100		66

Notes:

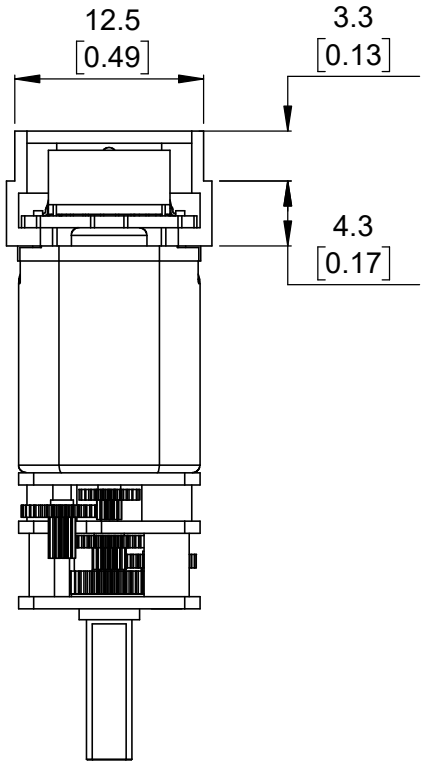
(1) Max efficiency data and performance graphs are currently unavailable for 5:1 gear ratios and LP and MP 10:1 gear ratios.

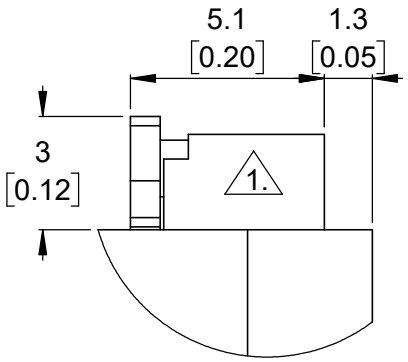
(2) Listed stall torques and currents are theoretical extrapolations; units will typically stall well before these points as the motors heat up. Stalling or overloading gearmotors can greatly decrease their lifetimes and even result in immediate damage. The recommended upper limit for instantaneous torque is 25 kg·mm for the 380:1 and 1000:1 gearboxes, and 20 kg·mm for all other gear ratios; we strongly advise keeping applied loads **well under** these limits. Stalls can also result in rapid (potentially on the order of seconds) thermal damage to the motor windings and brushes, especially for the versions that use high-power (HP and HPCB) motors; a general recommendation for brushed DC motor operation is 25% or less of the stall current.

(3) Operating these versions at maximum power is likely to damage the gearboxes.

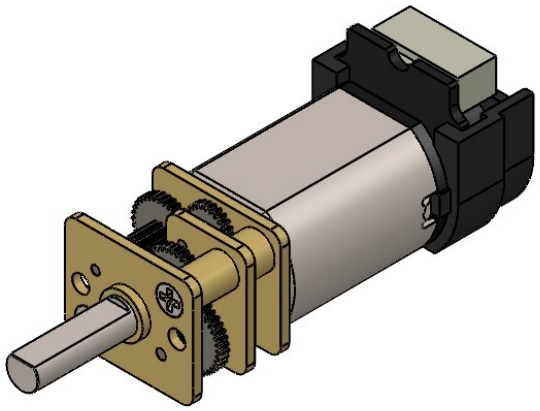
(4) A = no encoder; B = encoder-compatible (extended motor shaft); C = integrated encoder, back connector; D = integrated encoder, side connector.

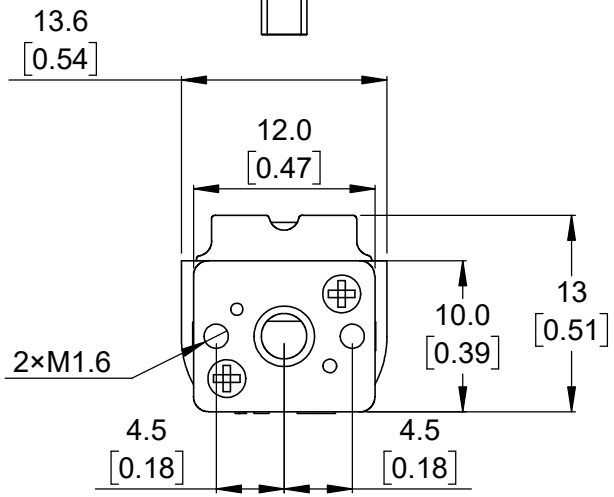
Gear Ratio	L	OL max. (overall length maximum)
1000:1	12.5 mm [0.5 in]	36 mm [1.42 in]
All others	9 mm [0.35 in]	32.5 mm [1.28 in]

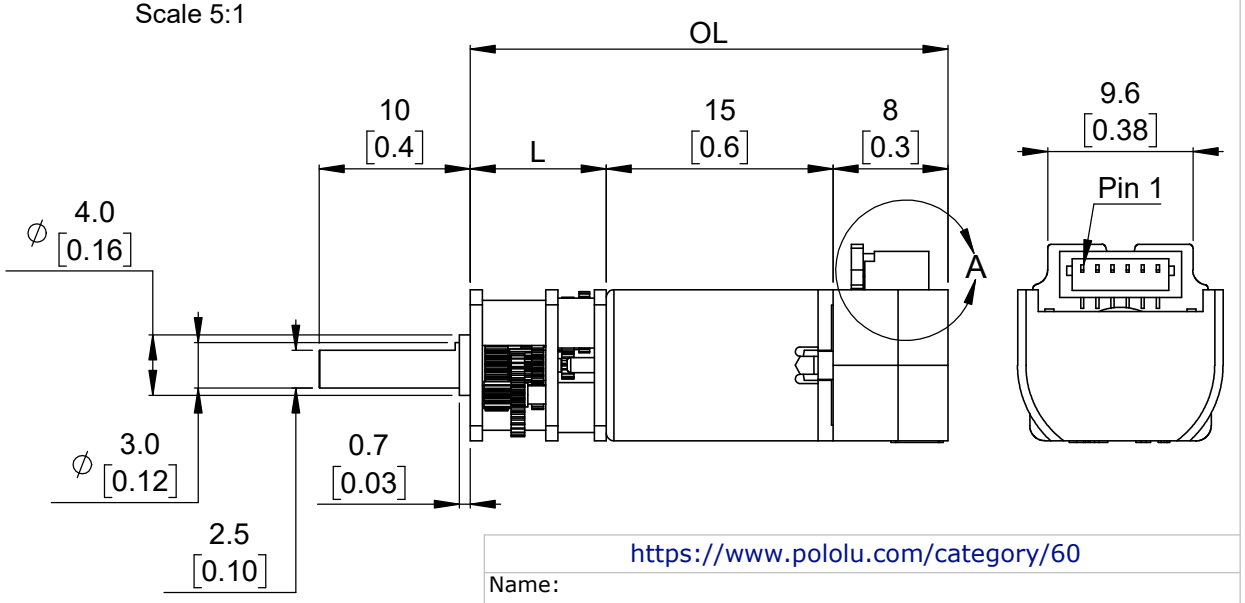




Detail A
Scale 5:1







1. This connector is compatible with JST part number SHR-06V-S and Pololu 6-Pin Female JST SH-Style Cables.
2. To get the specified scale, select 100% in print settings.

Scale 2:1

https://www.pololu.com/category/60

Name:
Micro Metal Gearmotors with 12 CPR Encoder, Back Connector

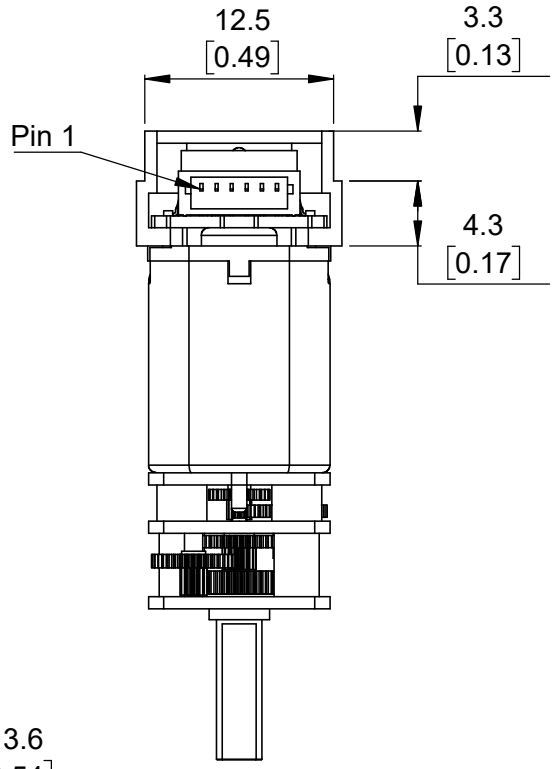
Drawing date:
02 April 2024

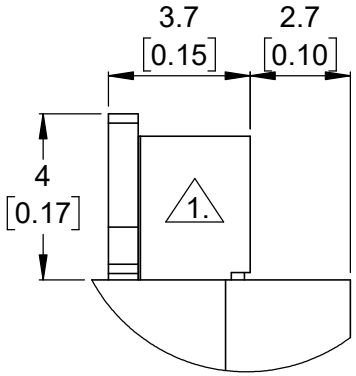
Units:
mm
[in]

Material:
mixed

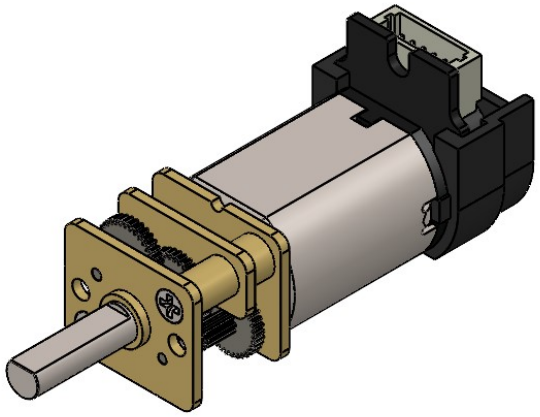
Pololu
Robotics & Electronics

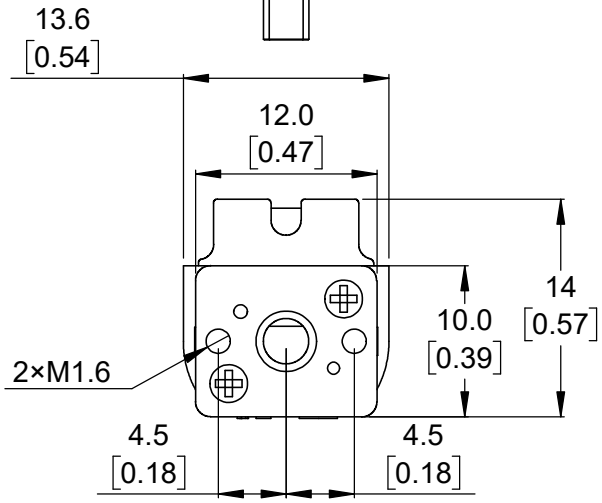
Gear Ratio	L	OL max. (overall length maximum)
1000:1	12.5 mm [0.5 in]	36 mm [1.42 in]
All others	9 mm [0.35 in]	32.5 mm [1.28 in]

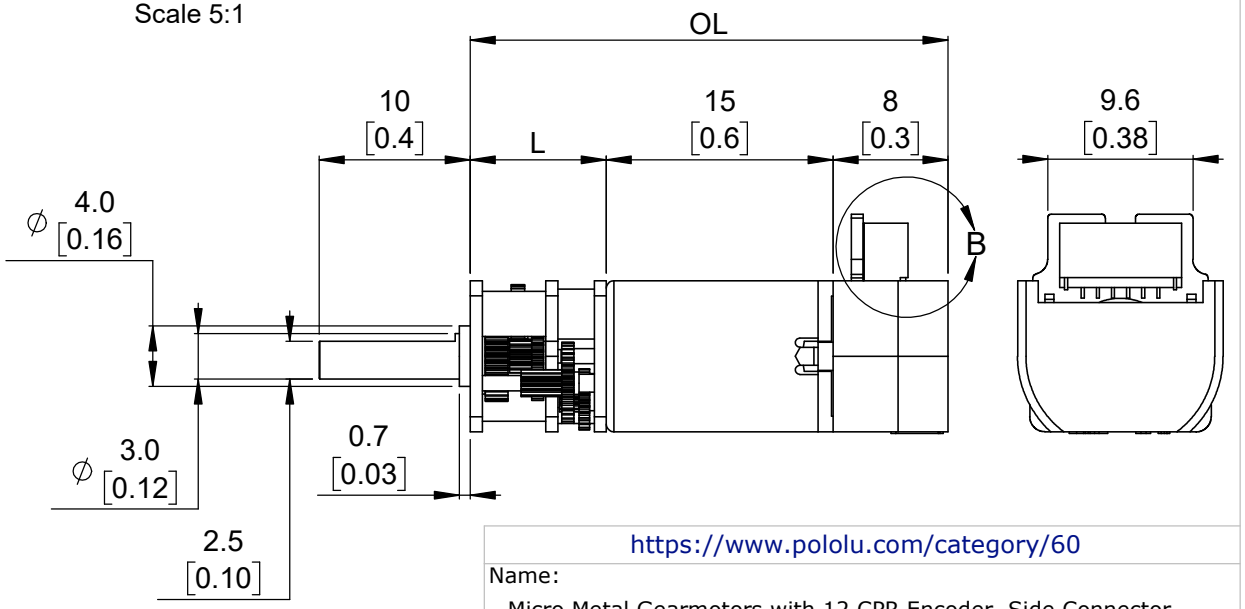




Detail B
Scale 5:1







1. This connector is compatible with JST part number SHR-06V-S and Pololu 6-Pin Female JST SH-Style Cables.
2. To get the specified scale, select 100% in print settings.

Scale 2:1

https://www.pololu.com/category/60

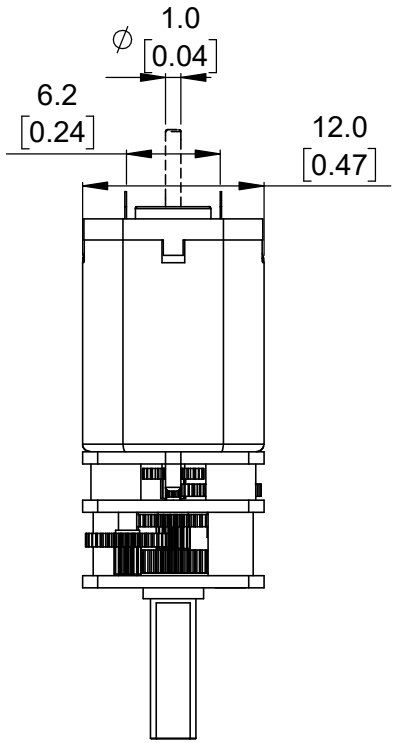
Name:
Micro Metal Gearmotors with 12 CPR Encoder, Side Connector

Drawing date:
02 April 2024

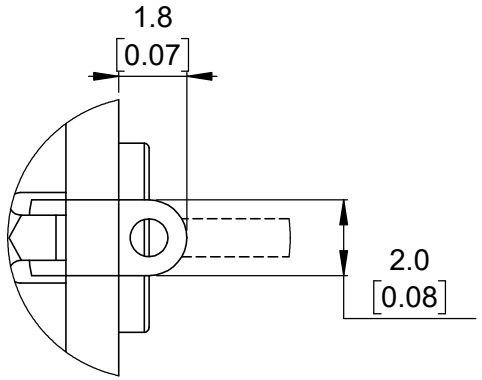
Units:
mm
[in]

Material:
mixed

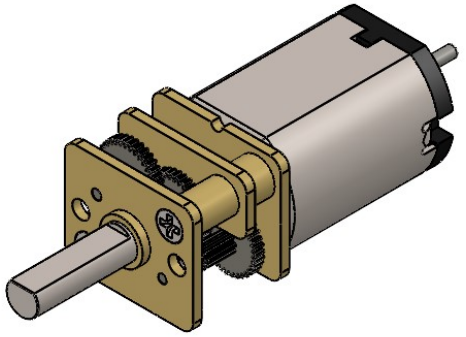
Pololu
Robotics & Electronics

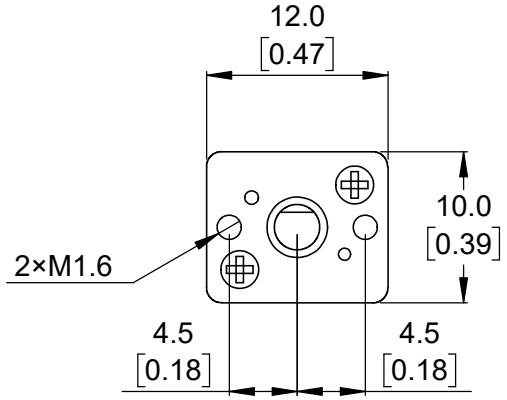


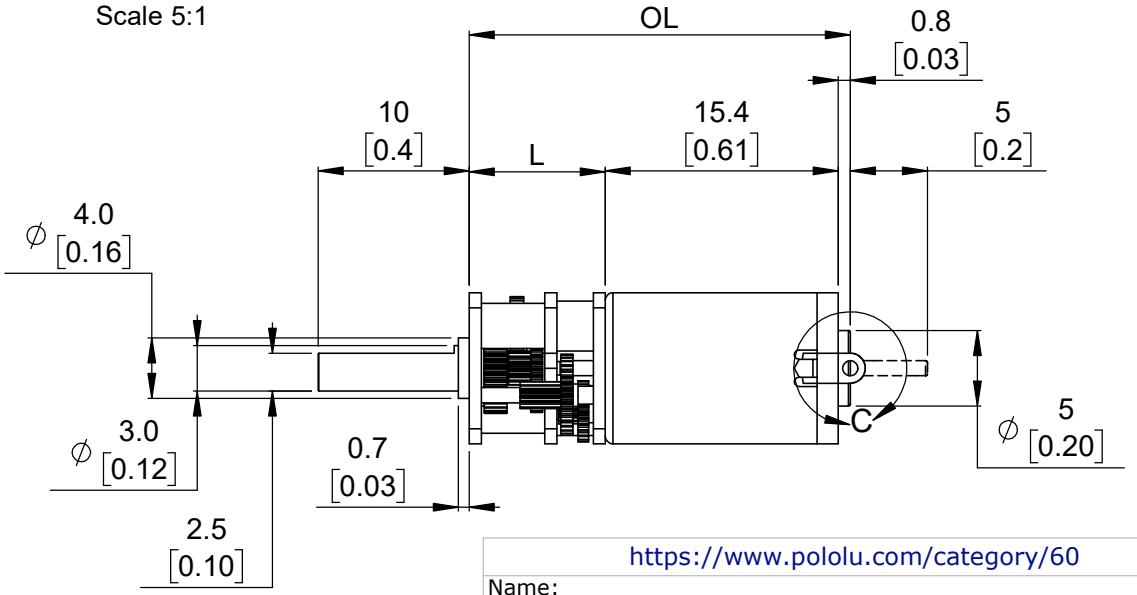
Gear Ratio	L	OL max. (overall length maximum)
1000:1	12.5 mm [0.5 in]	29.1 mm [1.15 in]
All others	9 mm [0.35 in]	25.6 mm [1.01 in]



Detail C
Scale 5:1







1. To get the specified scale, select 100% in print settings.
2. The dashed line indicates the location of the Rear motor Shaft which is present on "Extended Motor Shaft" versions.
3. These dimensions apply to all Micro Metal Gearmotors that are labeled "HPCB" (i.e. all ones with carbon brushes).

Scale 2:1

https://www.pololu.com/category/60

Name:
Micro Metal Gearmotors with carbon brushes (HPCB) and no encoder

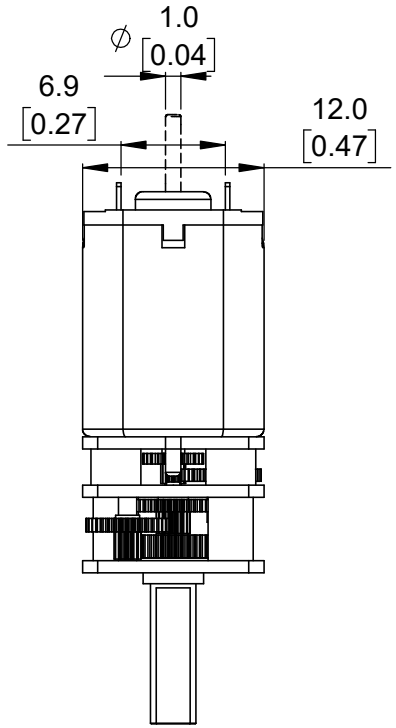
Drawing date:
02 April 2024

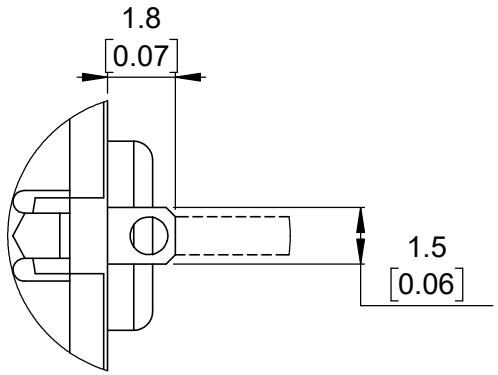
Units:
mm
[in]

Material:
mixed

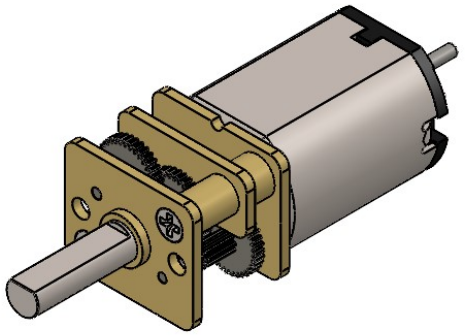
Pololu
Robotics & Electronics

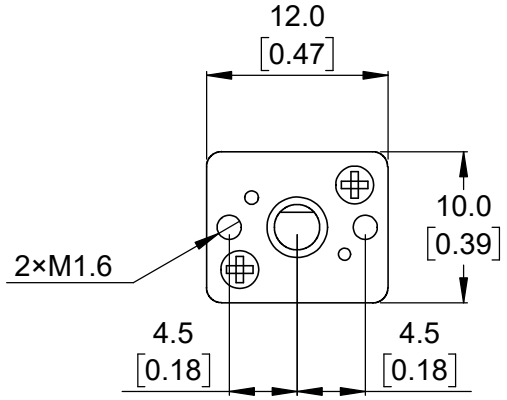
Gear Ratio	L	OL max. (overall length maximum)
1000:1	12.5 mm [0.5 in]	29.1 mm [1.15 in]
All others	9 mm [0.35 in]	25.6 mm [1.01 in]

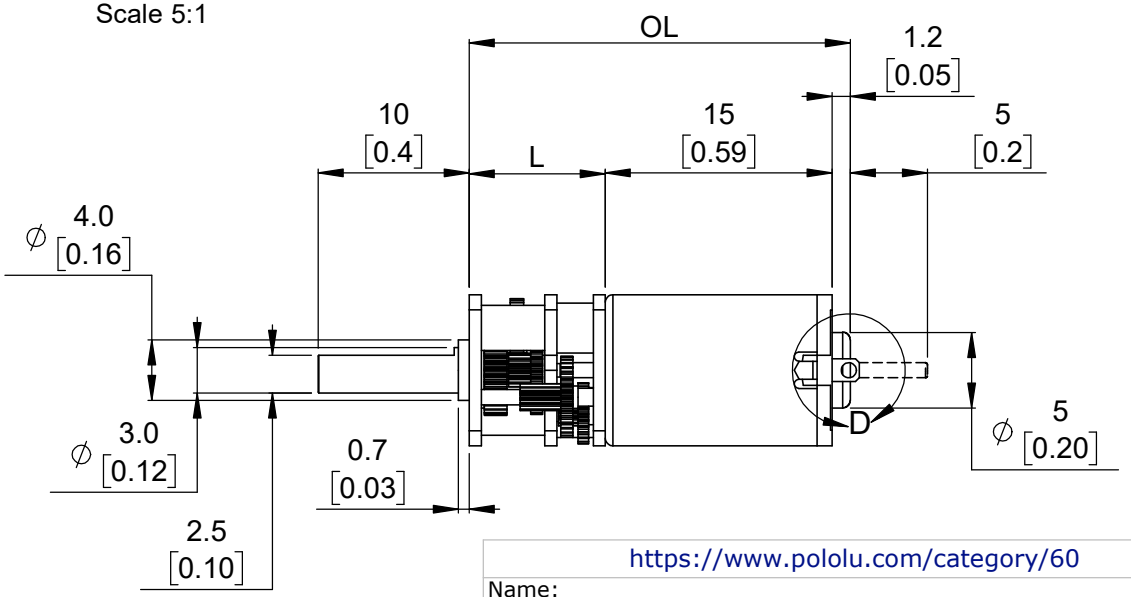




Detail D
Scale 5:1







1. To get the specified scale, select 100% in print settings.
2. The dashed line indicates the location of the Rear motor Shaft which is present on "Extended Motor Shaft" versions.
3. These dimensions apply to all Micro Metal Gearmotors that are not labeled "HPCB" (i.e. all ones with precious metal brushes).

Scale 2:1

https://www.pololu.com/category/60

Name:
Micro Metal Gearmotors with precious metal brushes (LP, MP, and HP) and no encoder

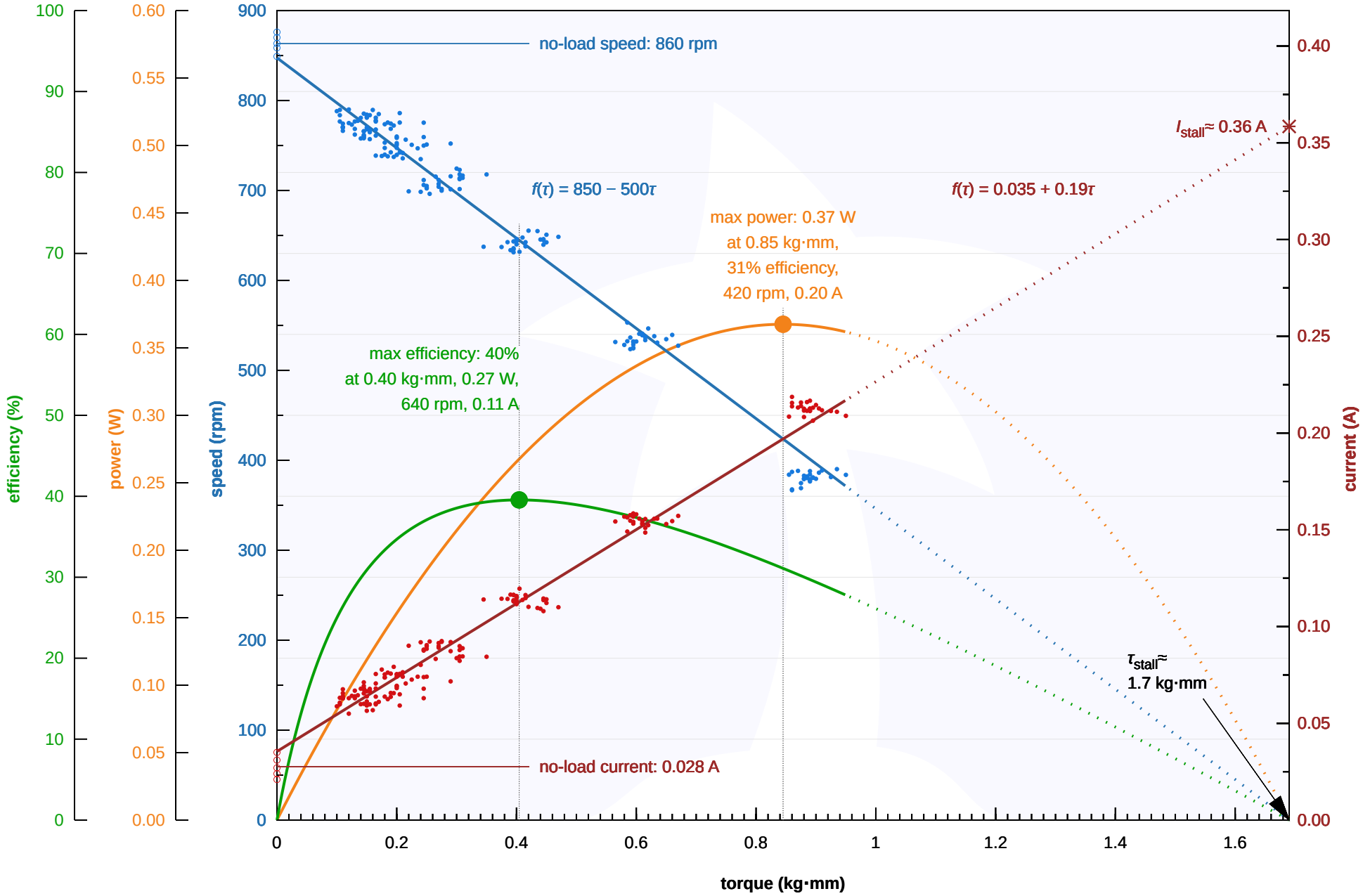
Drawing date:
02 April 2024

Units:
mm
[in]

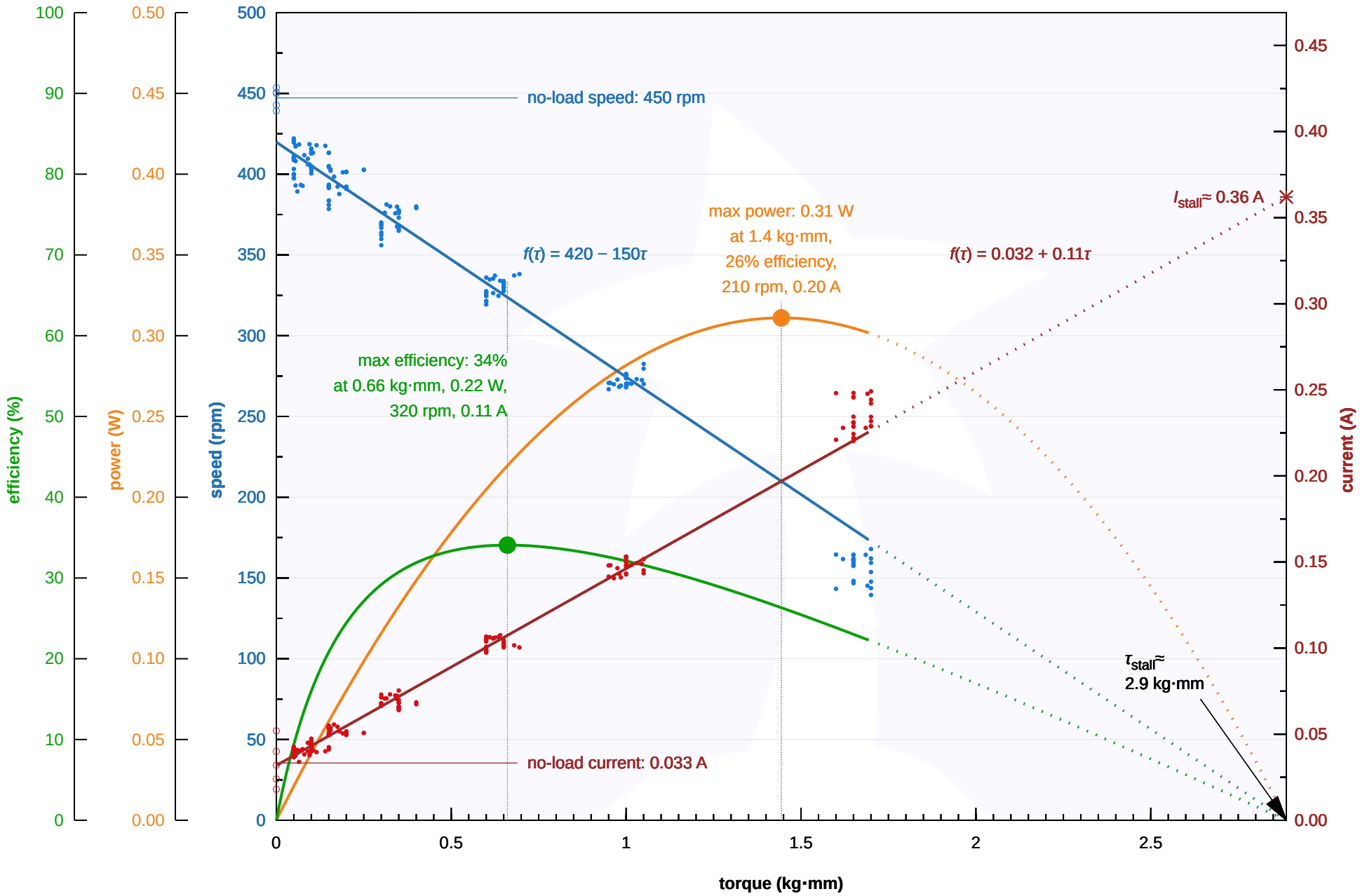
Material:
mixed

Pololu
Robotics & Electronics

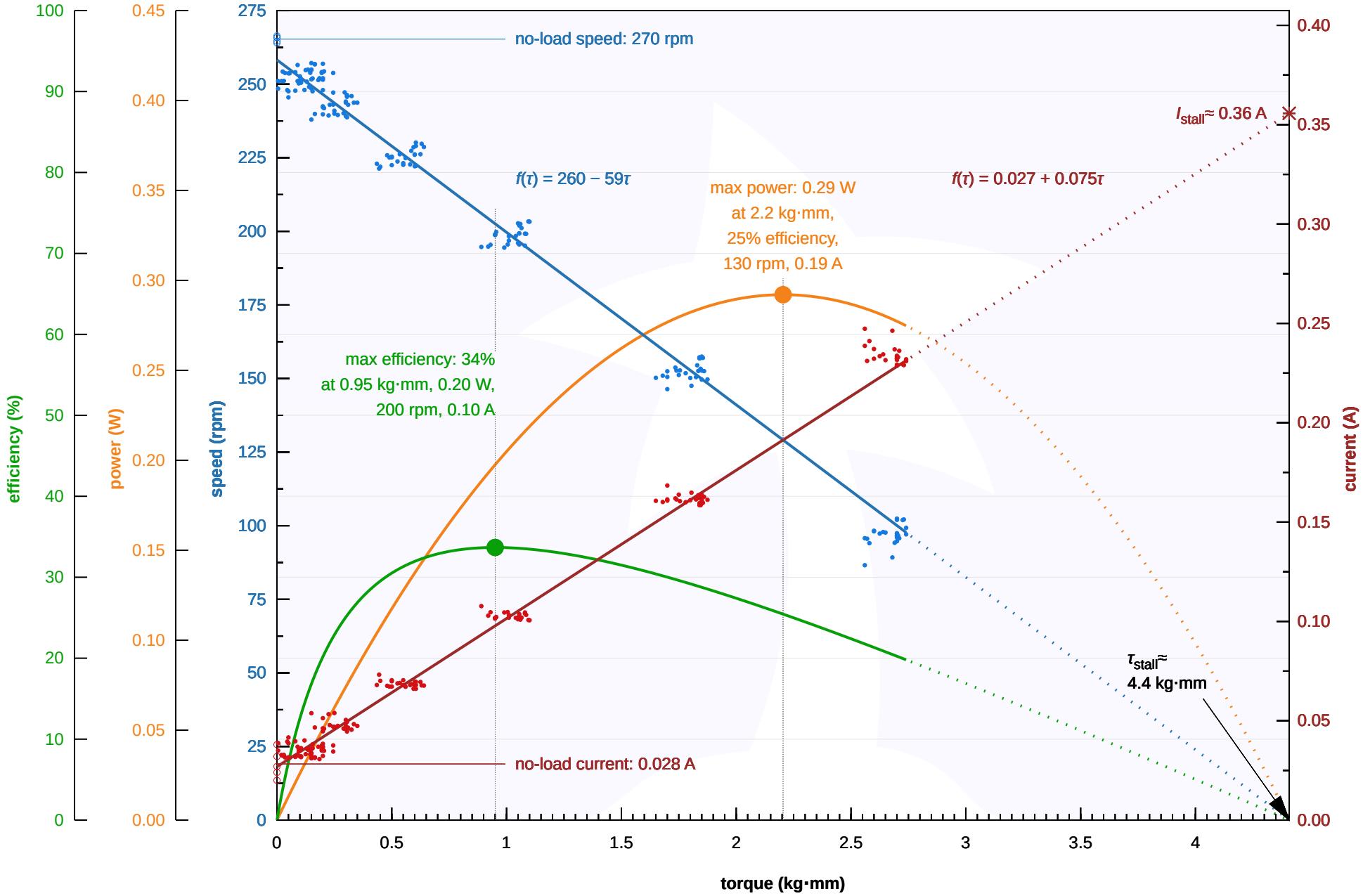
Pololu Items #4780, #4781, #5104, #5105 (15:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



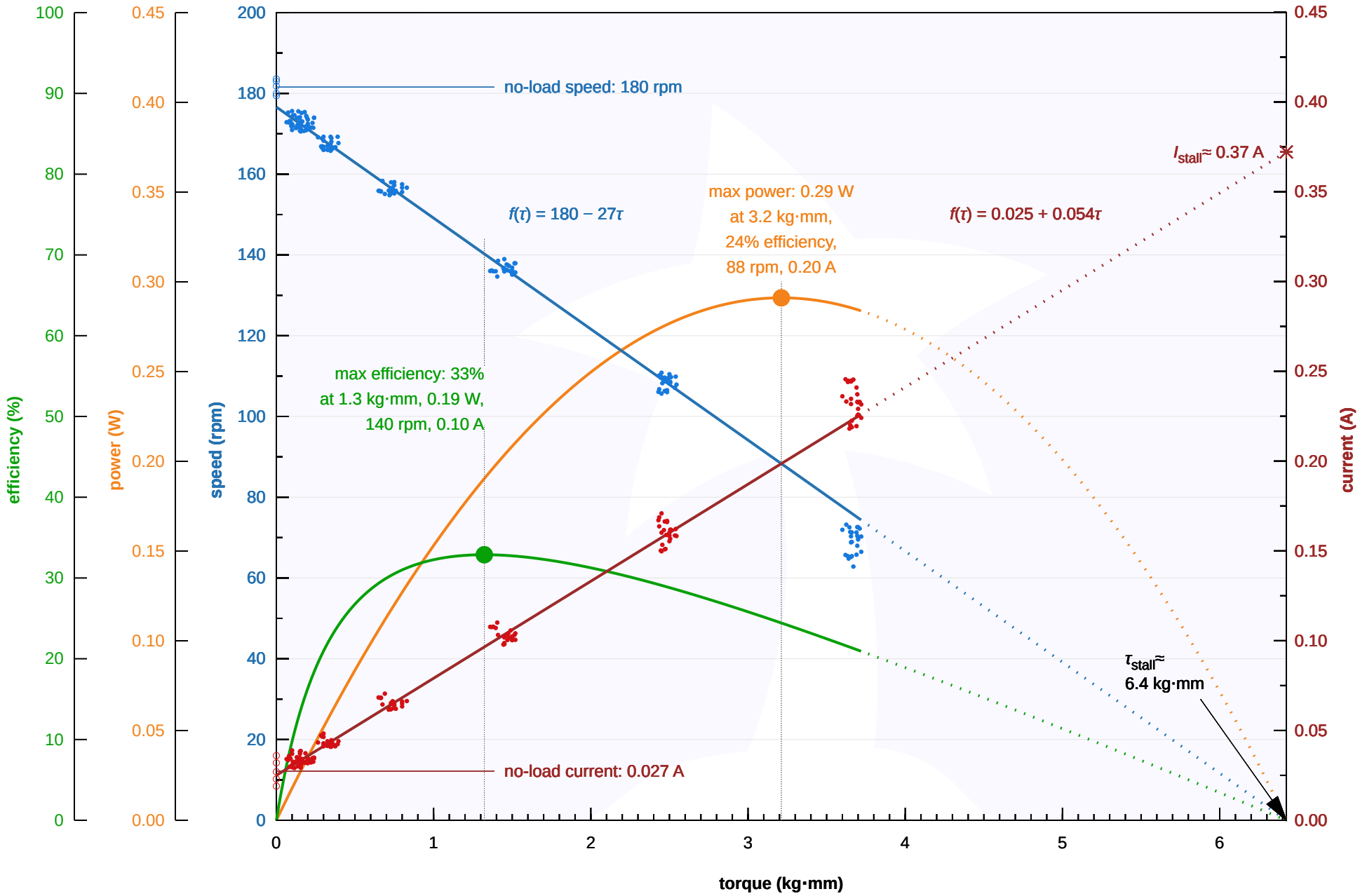
Pololu Items #993, #2202, #5106, #5107 (30:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



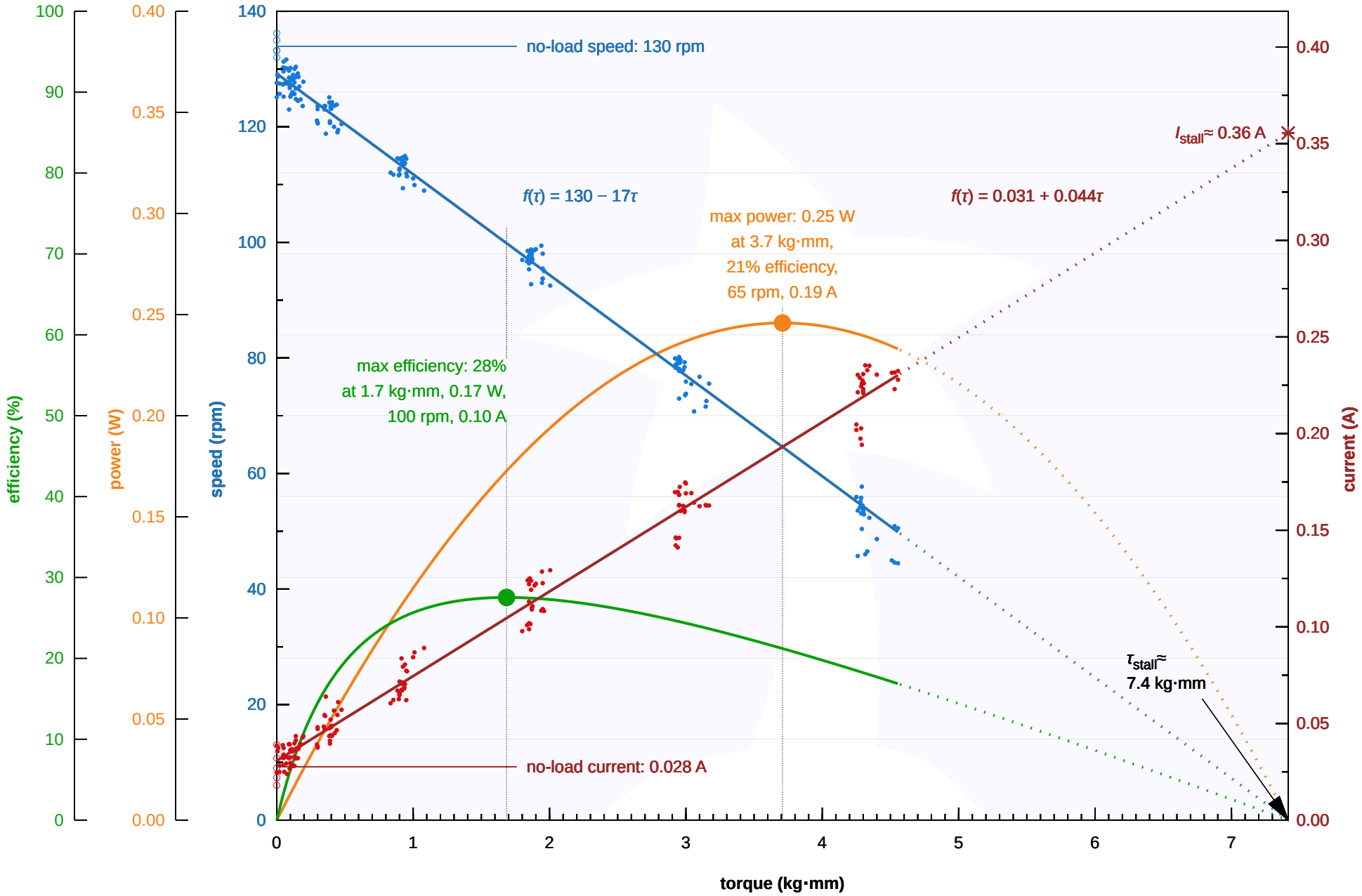
Pololu Items #1098, #2203, #5108, #5109 (50:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



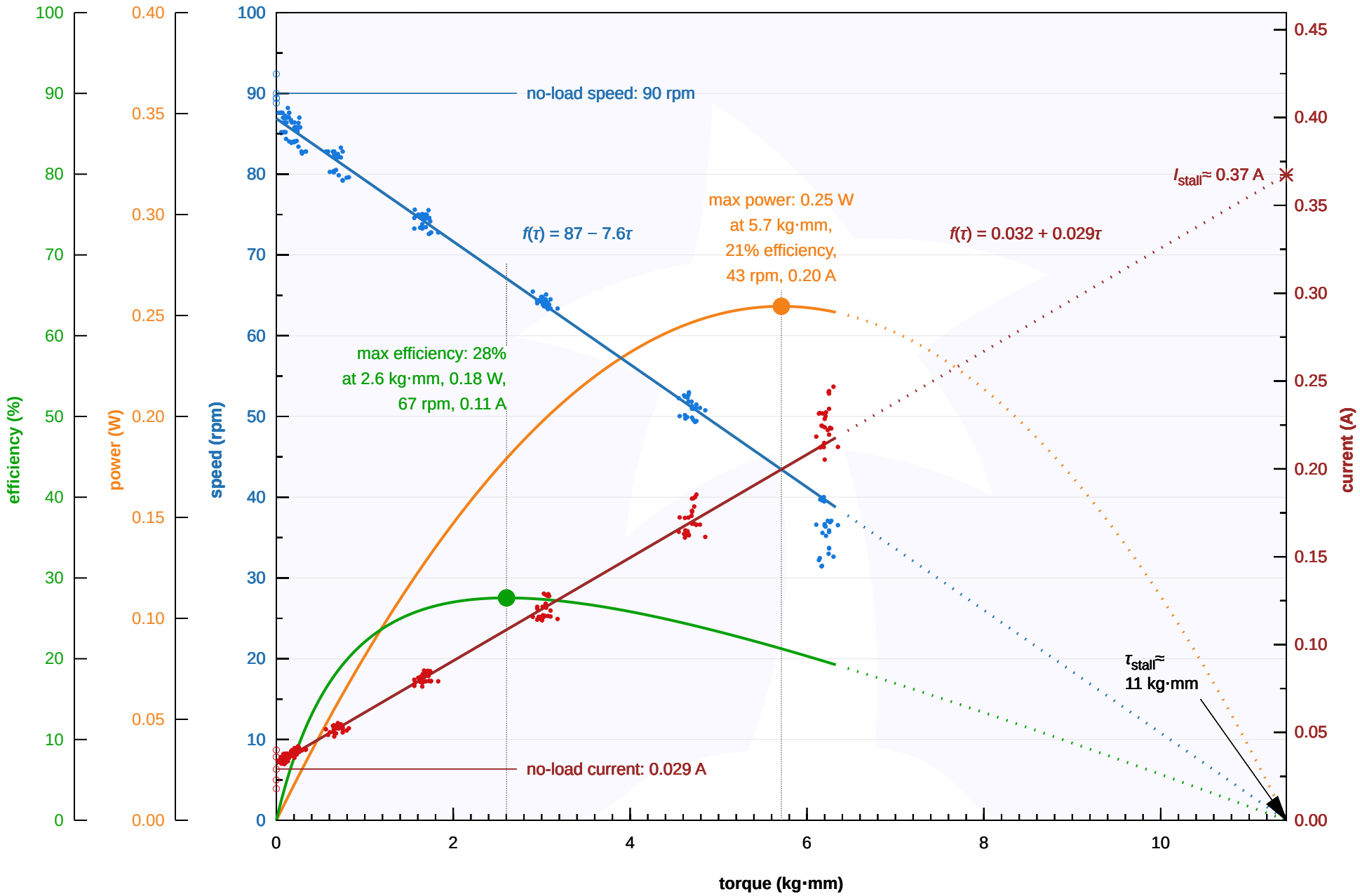
Pololu Items #2360, #2209, #5110, #5111 (75:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



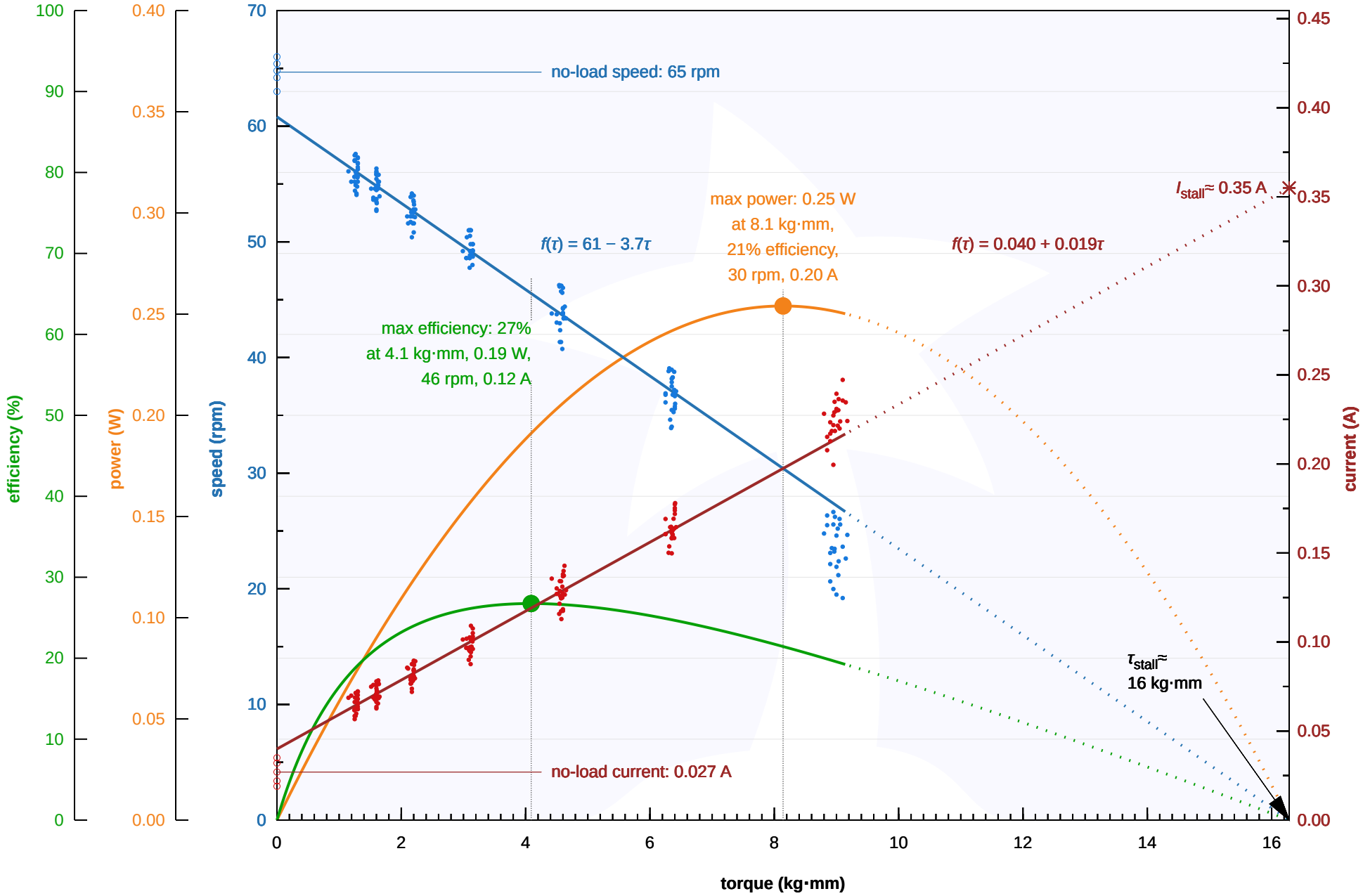
Pololu Items #992, #2204, #5112, #5113 (100:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



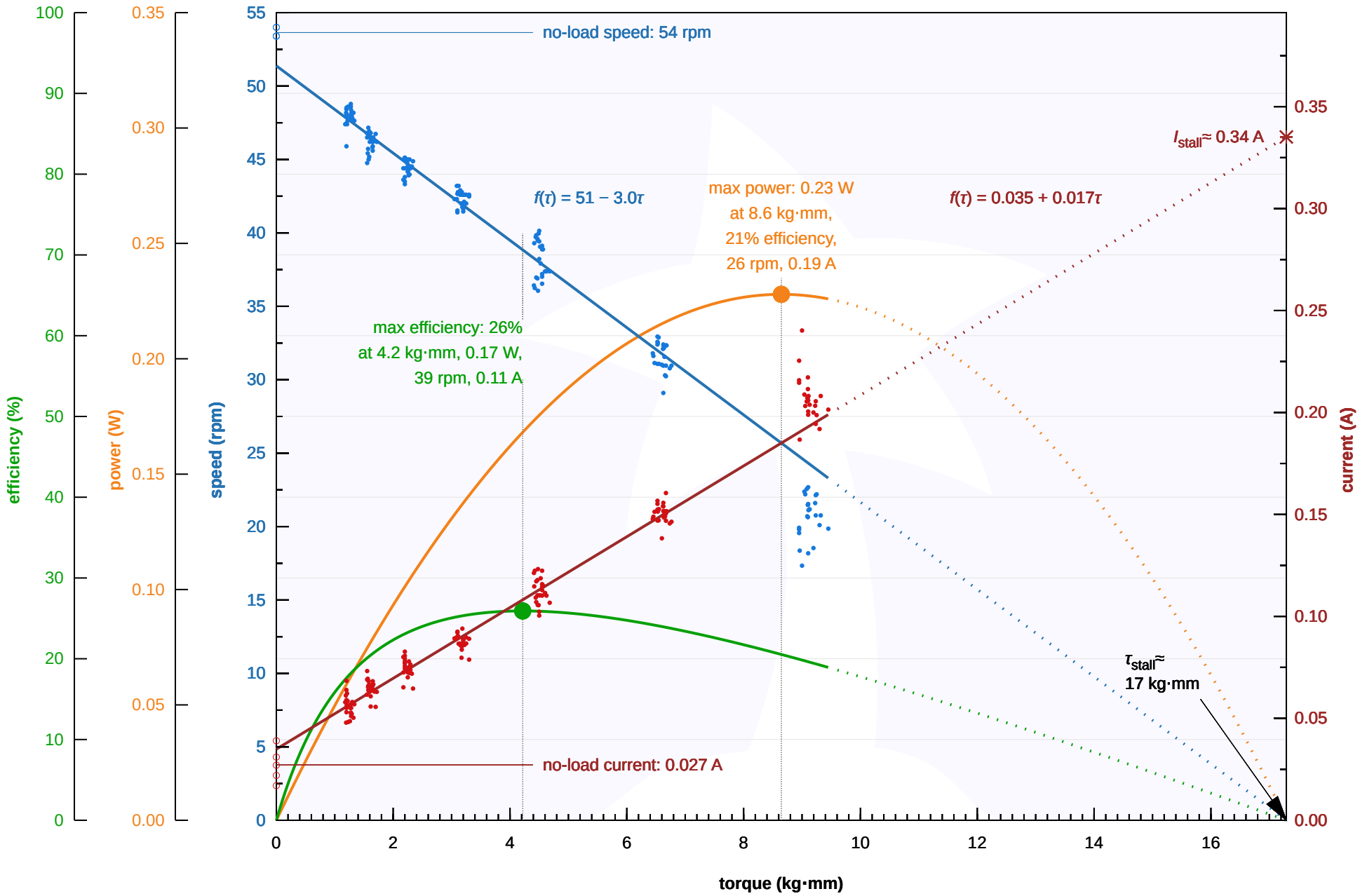
Pololu Items #1097, #2205, #5114, #5115 (150:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



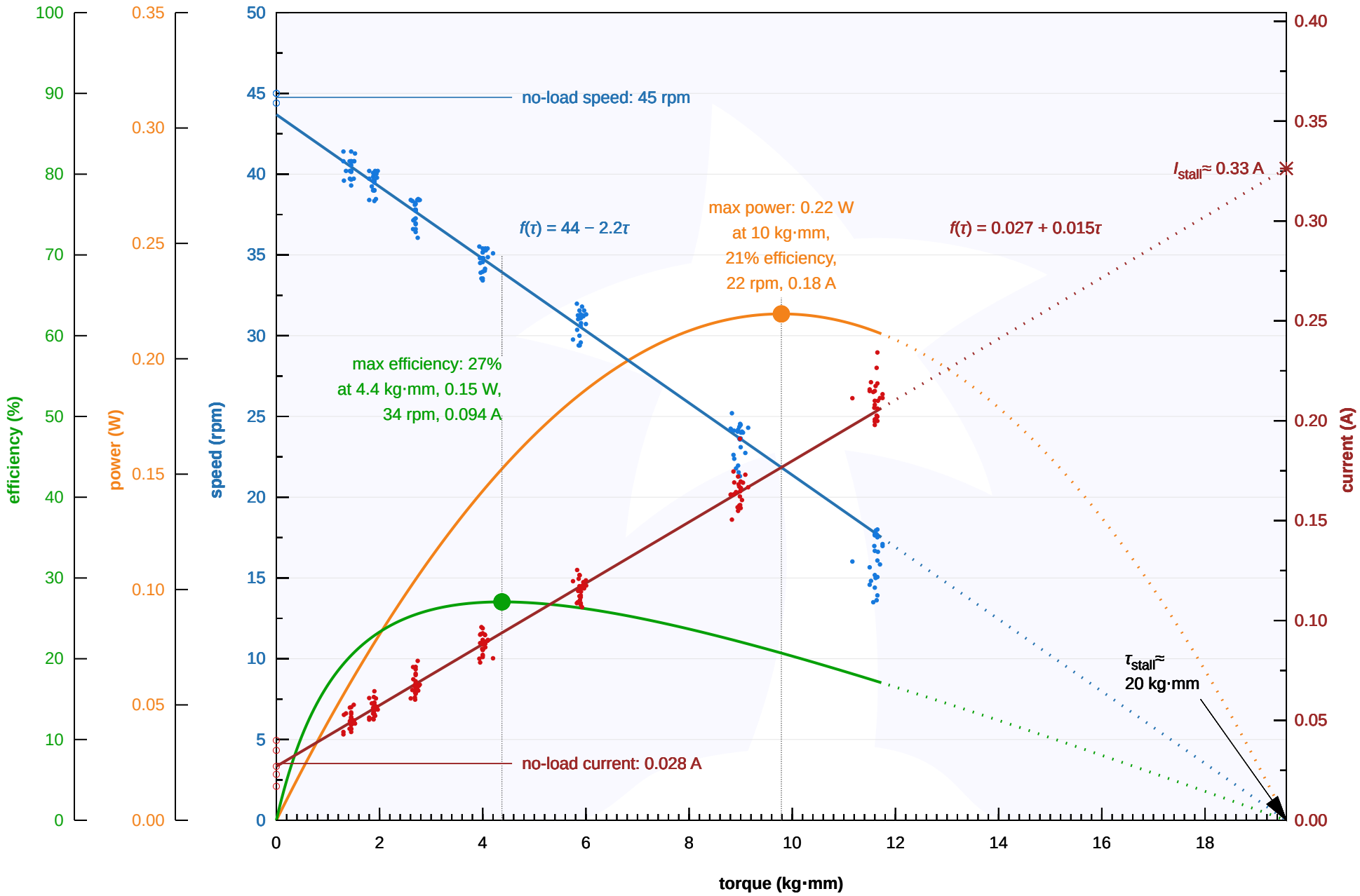
Pololu Items #1096, #2206, #5116, #5117 (210:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



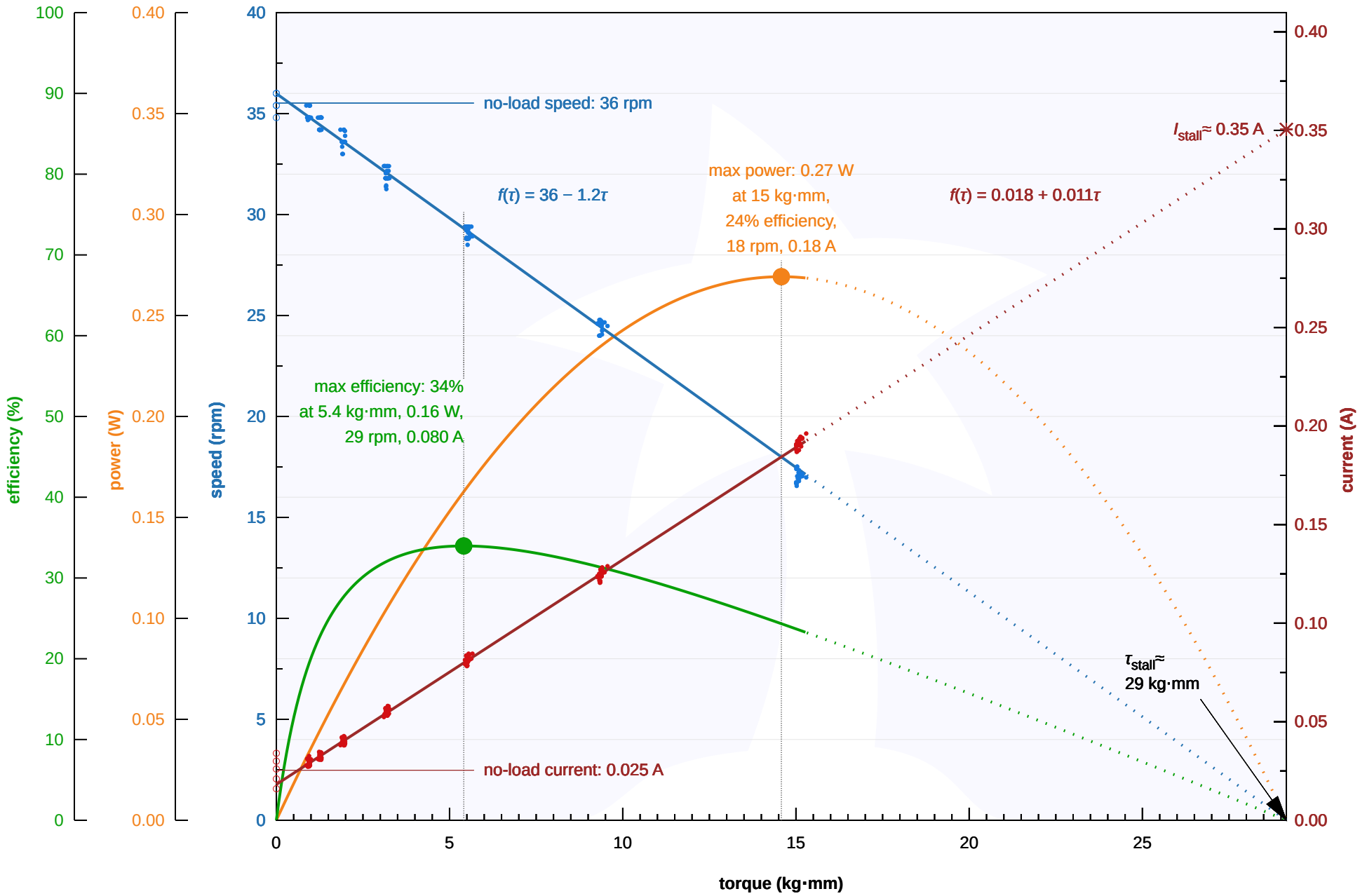
Pololu Items #1095, #2207, #5118, #5119 (250:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



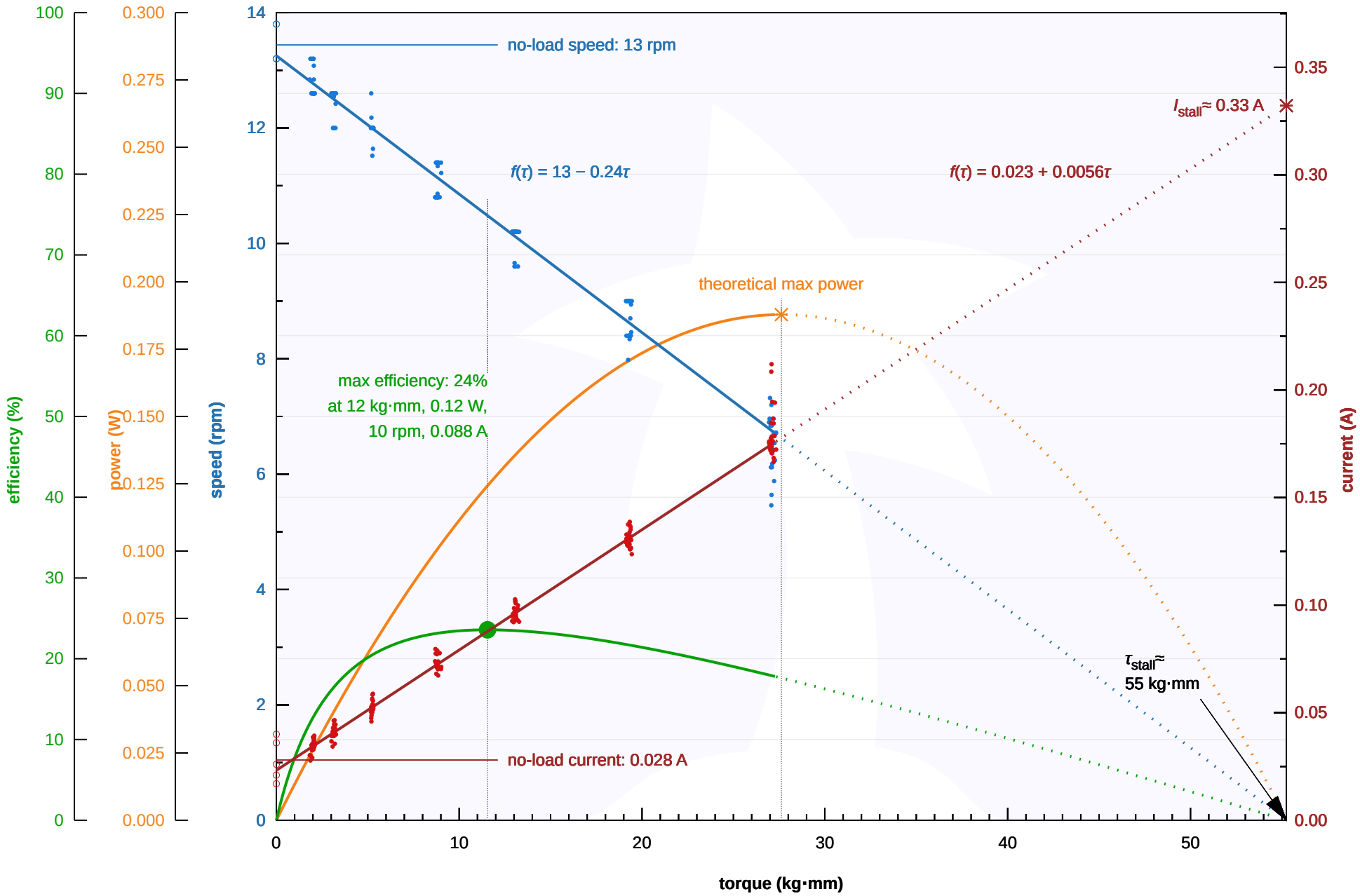
Pololu Items #1094, #2208, #5120, #5121 (298:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



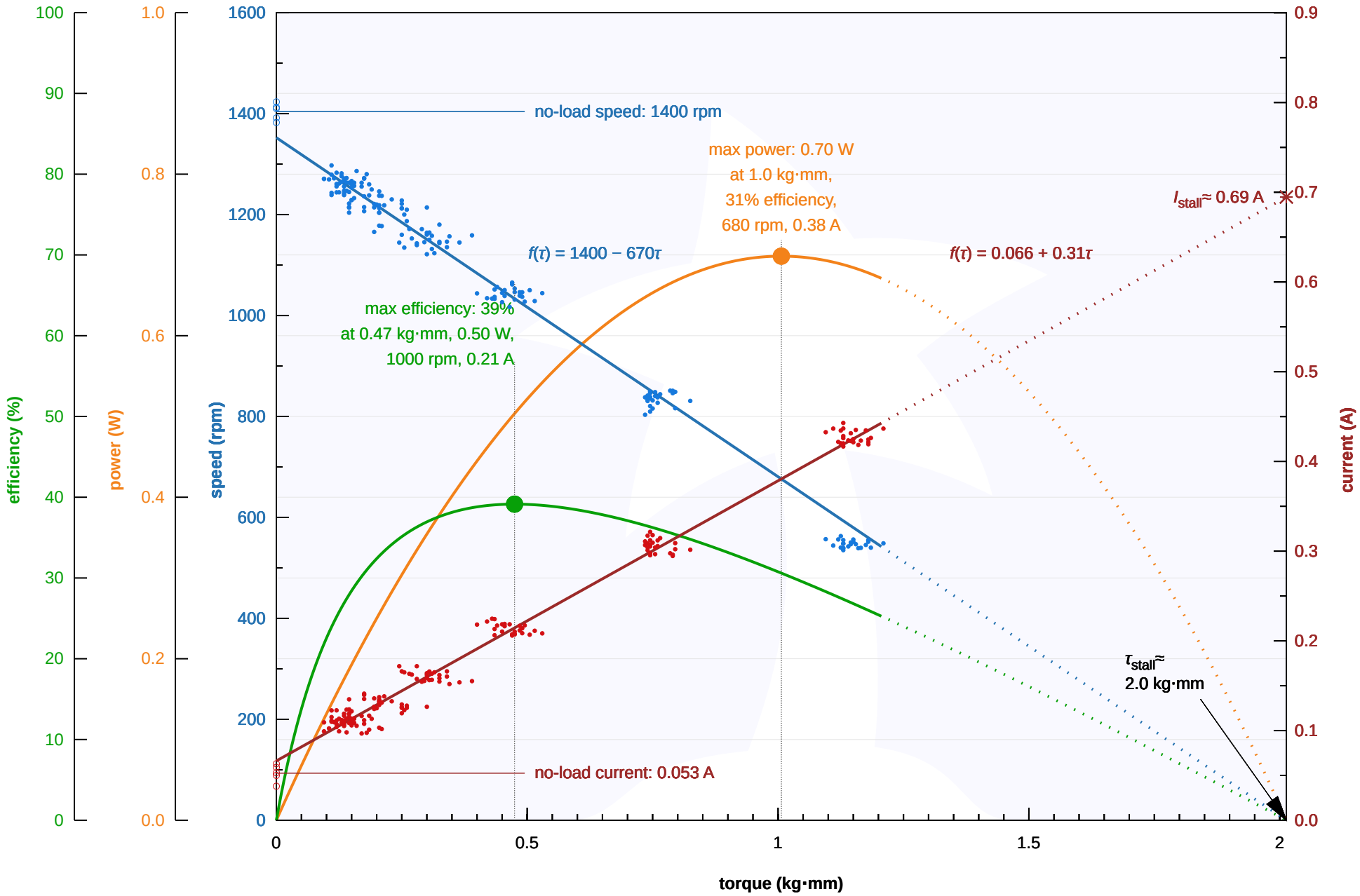
Pololu Items #4790, #4791, #5122, #5123 (380:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



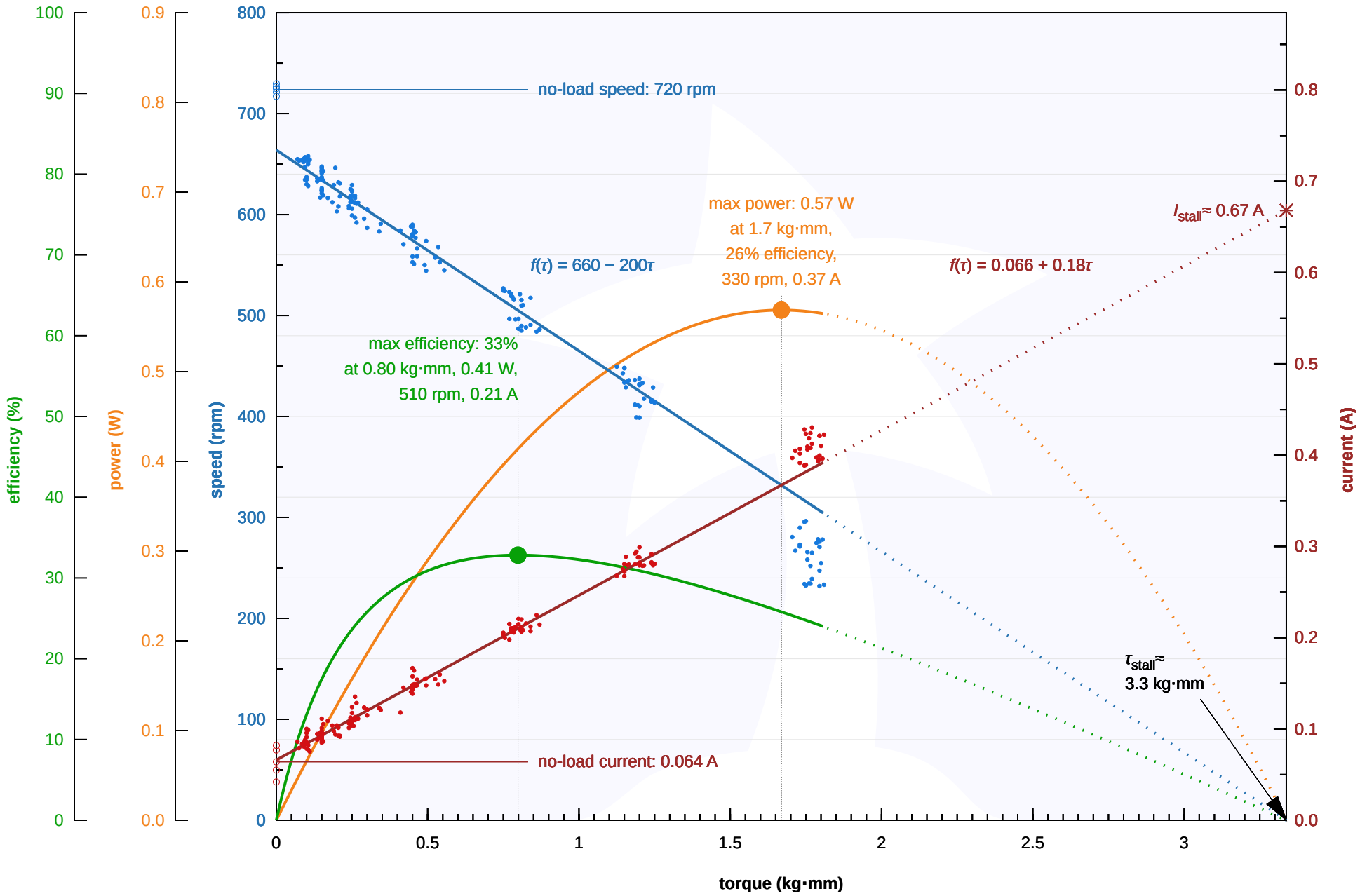
Pololu Items #1596, #3058, #5124, #5125 (1000:1 Micro Metal Gearmotor LP 6V) Performance at 6 V



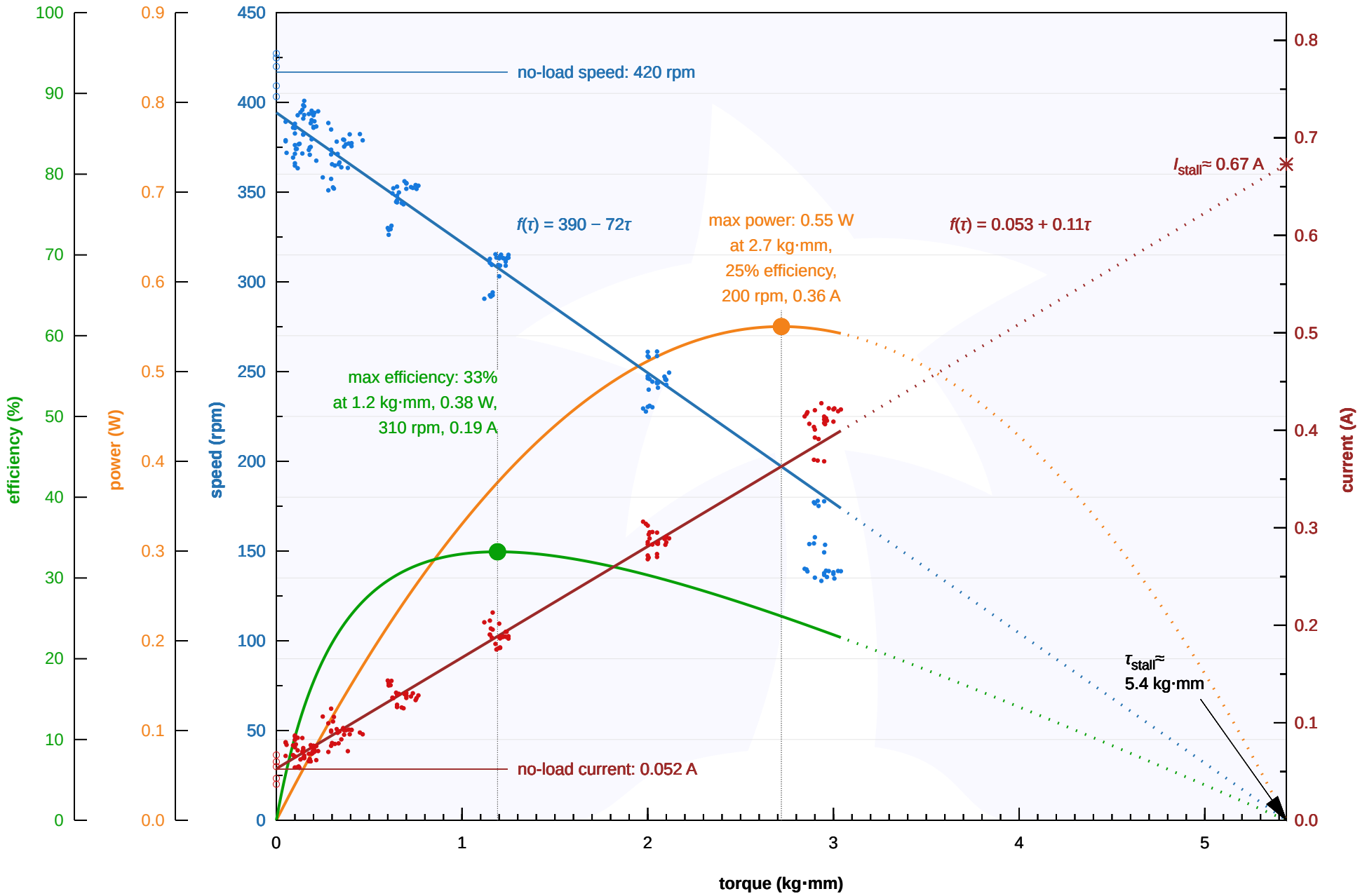
Pololu Items #4782, #4783, #5130, #5131 (15:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



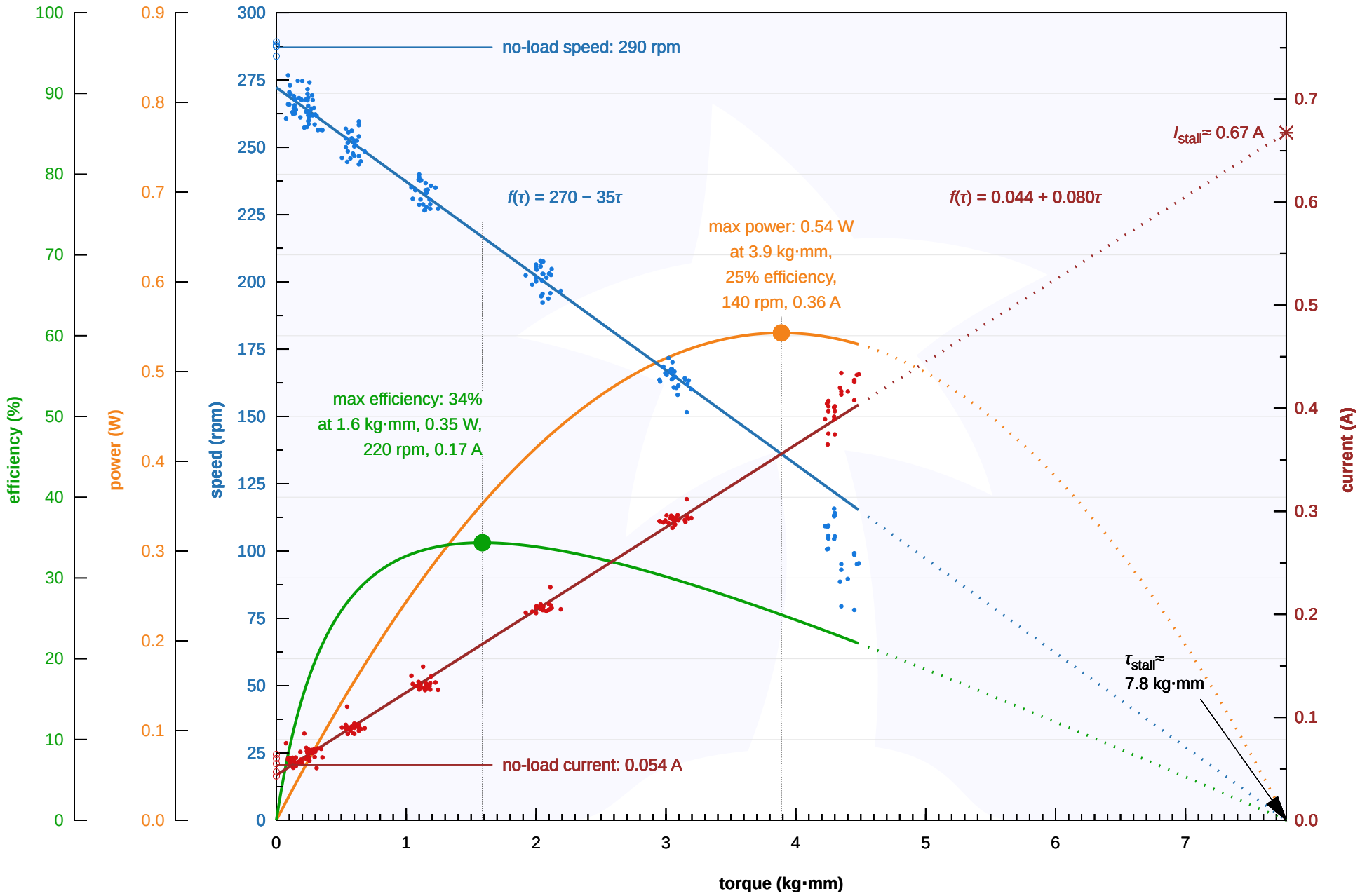
Pololu Items #2364, #2378, #5132, #5133 (30:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



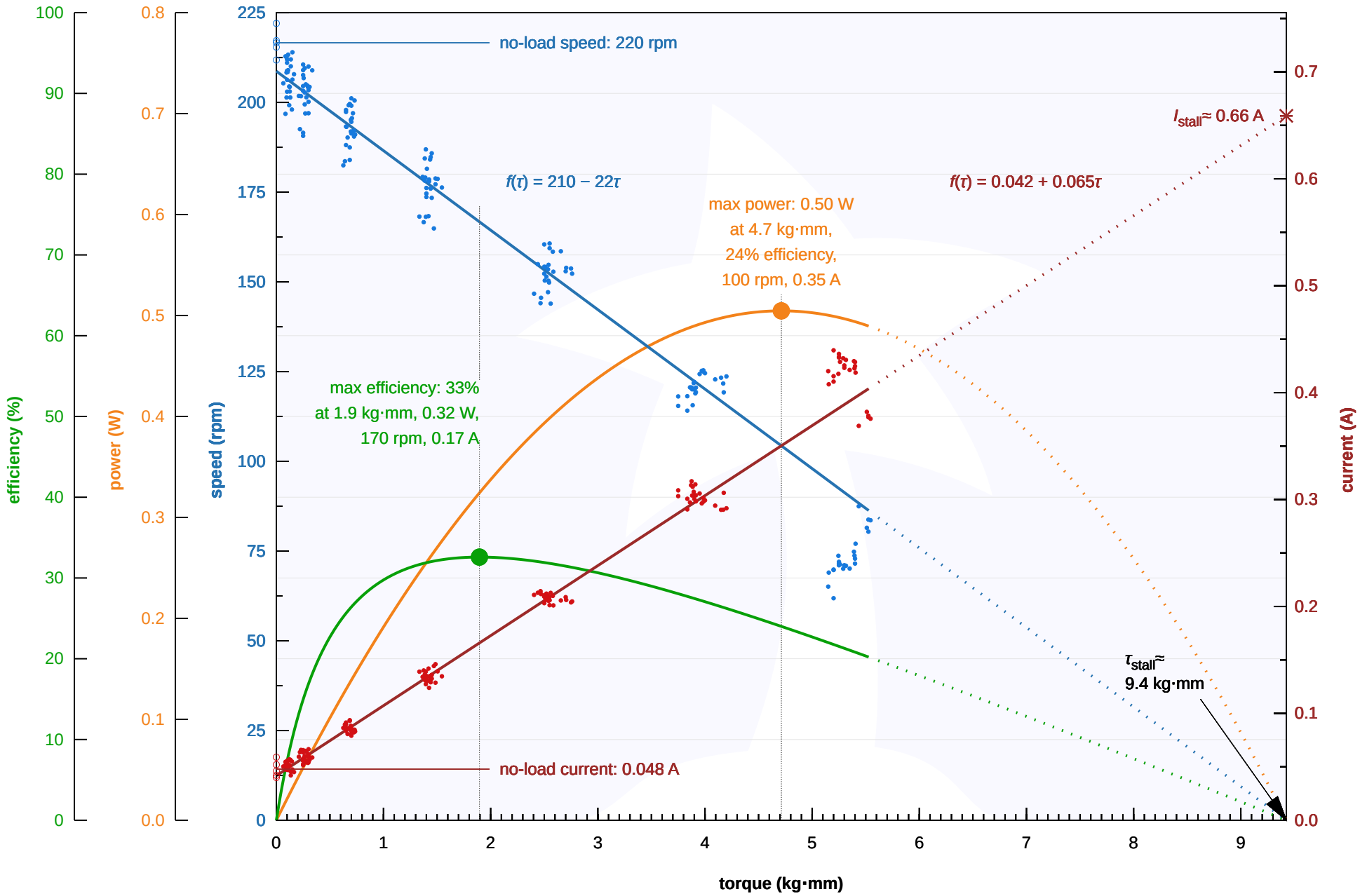
Pololu Items #2365, #2379, #5134, #5135 (50:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



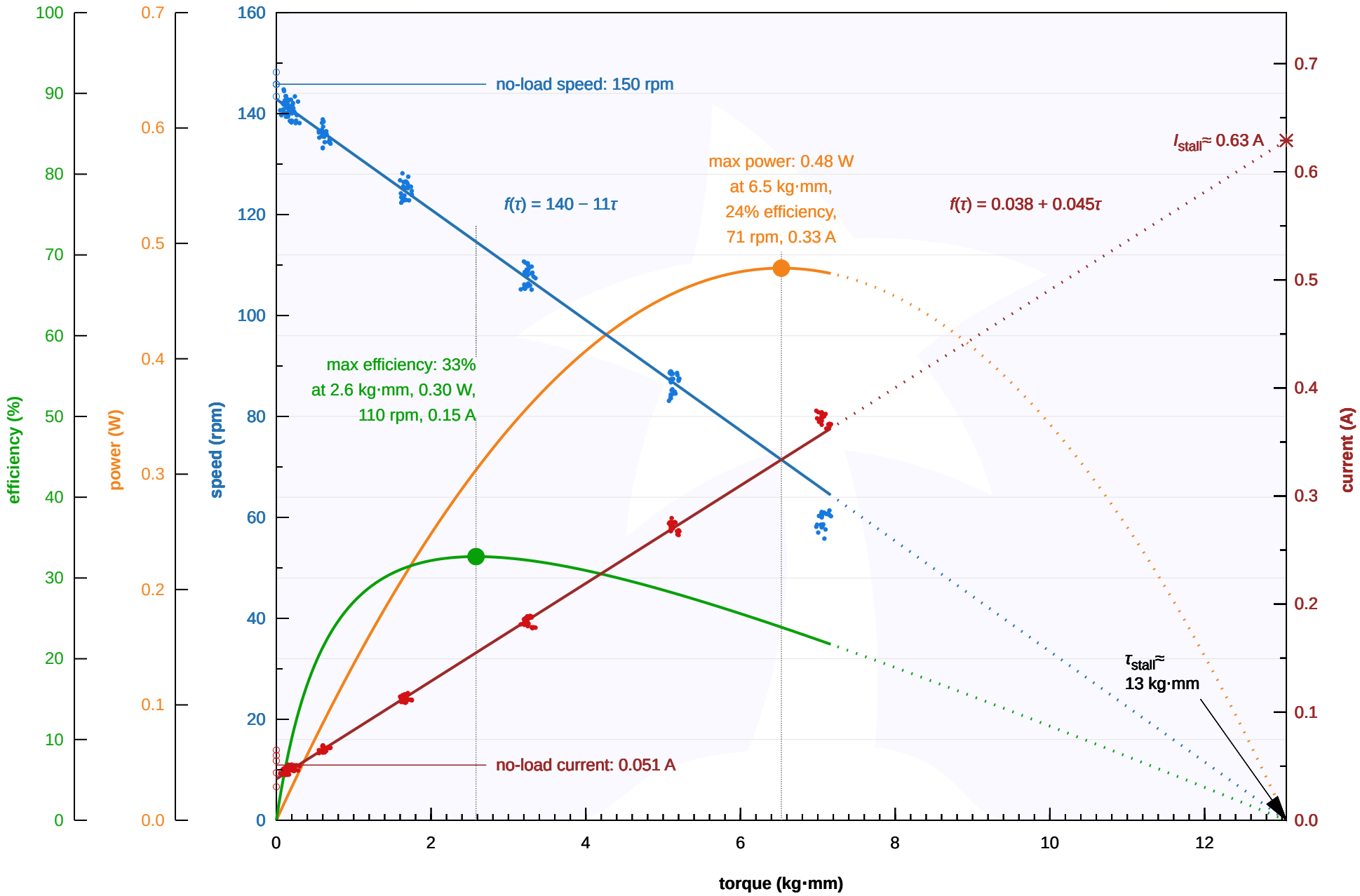
Pololu Items #2366, #2380, #5136, #5137 (75:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



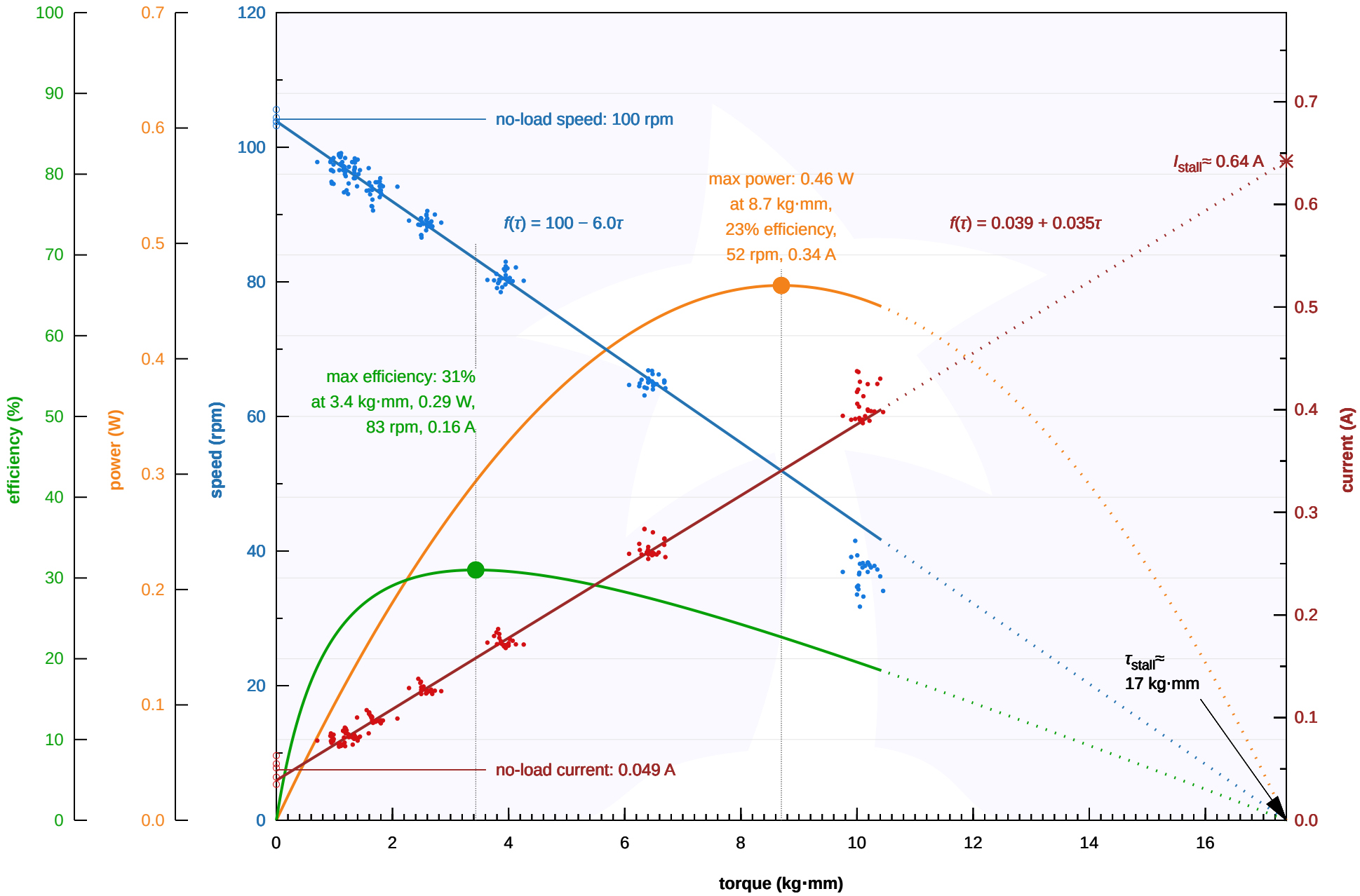
Pololu Items #2367, #2381, #5138, #5139 (100:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



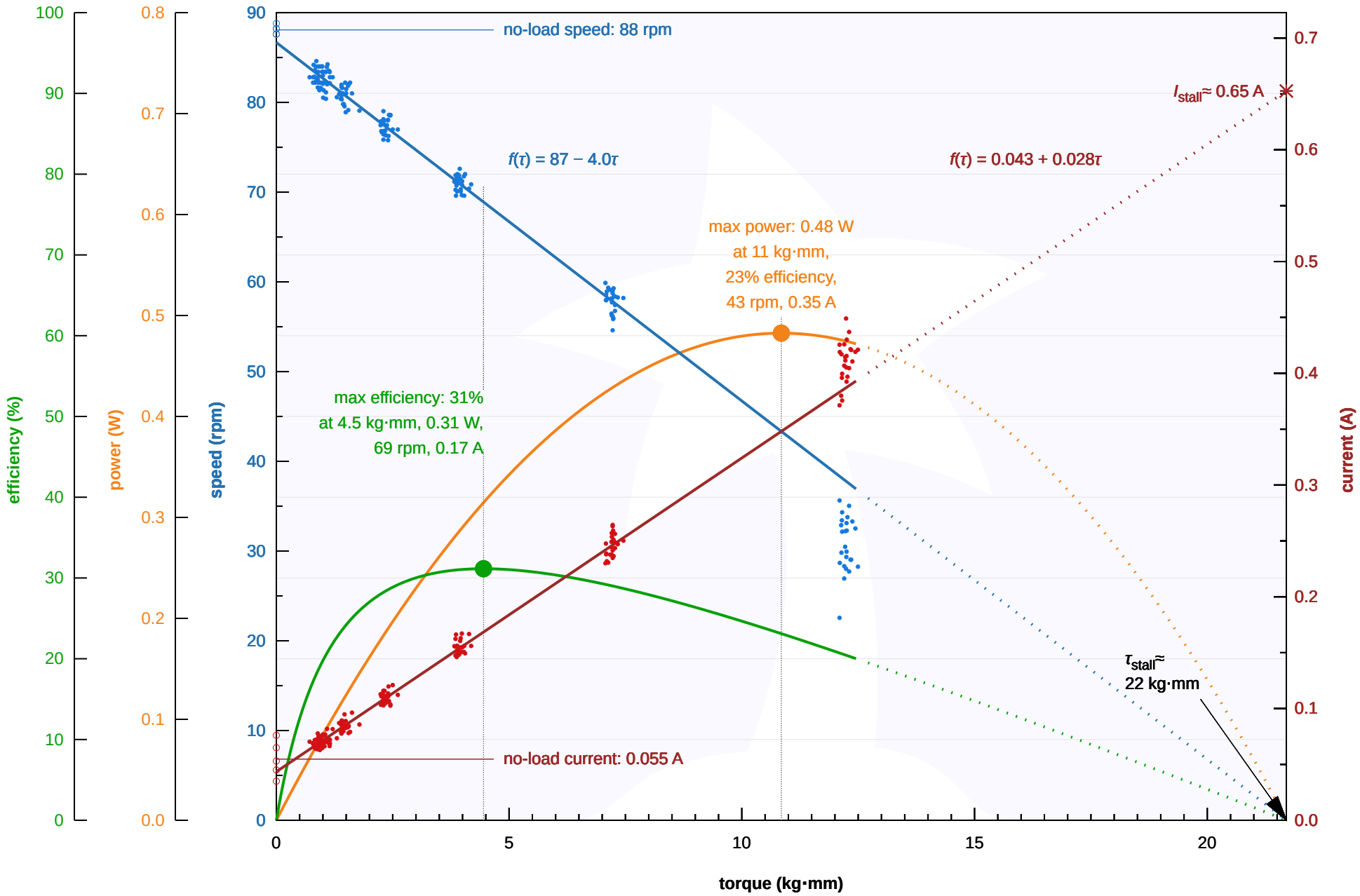
Pololu Items #2368, #2382, #5140, #5141 (150:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



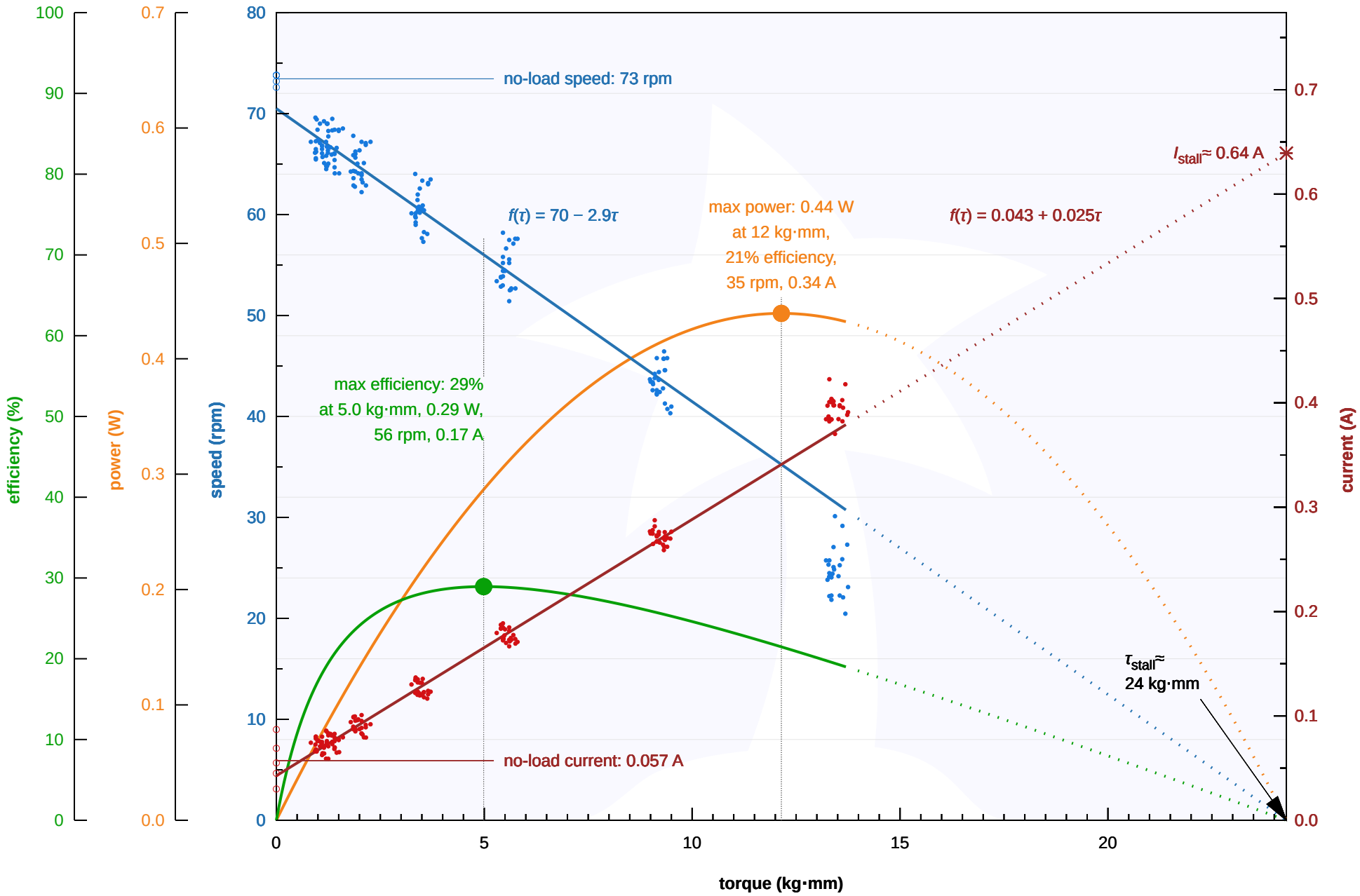
Pololu Items #2369, #2383, #5142, #5143 (210:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



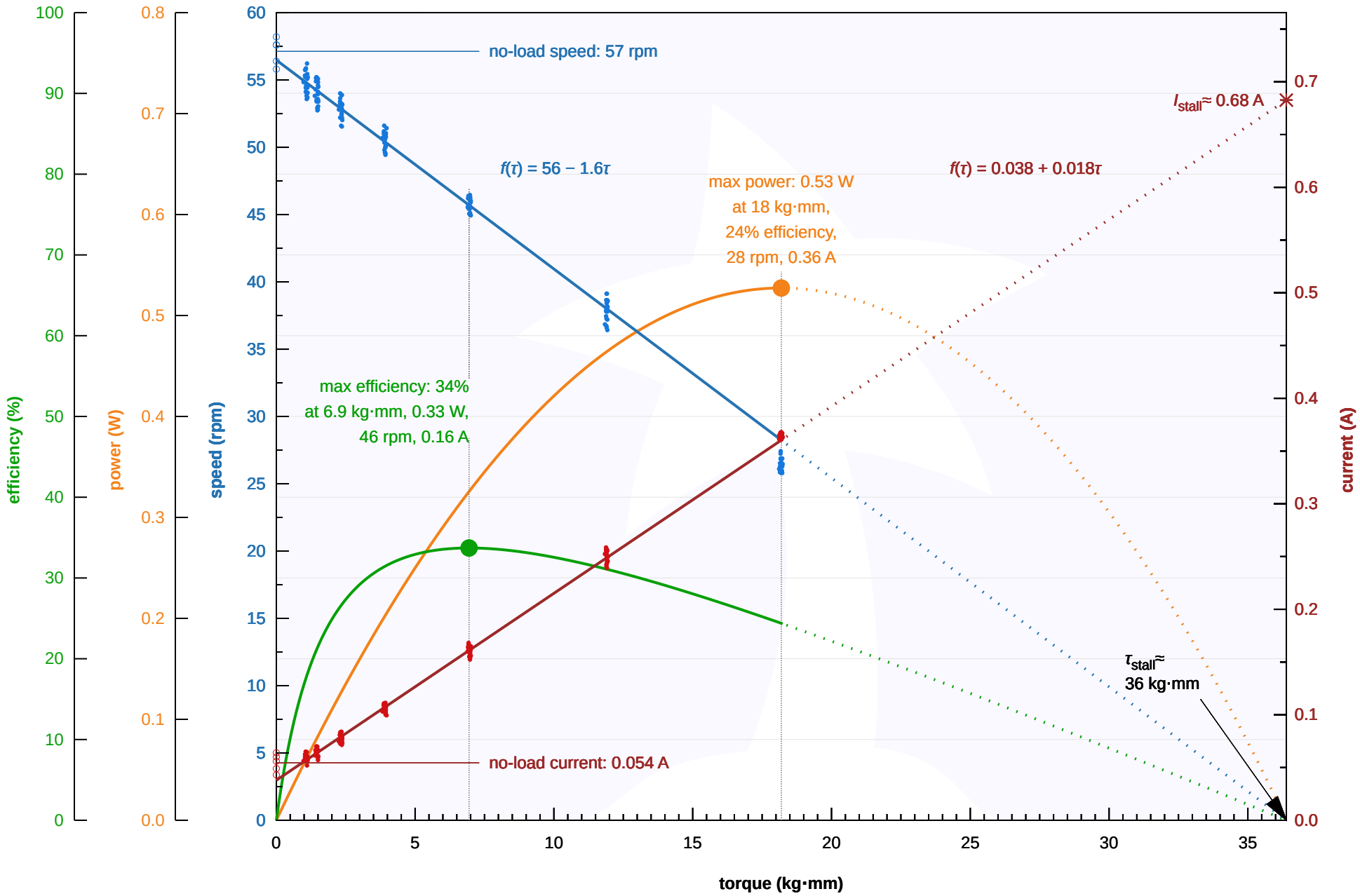
Pololu Items #2370, #2384, #5144, #5145 (250:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



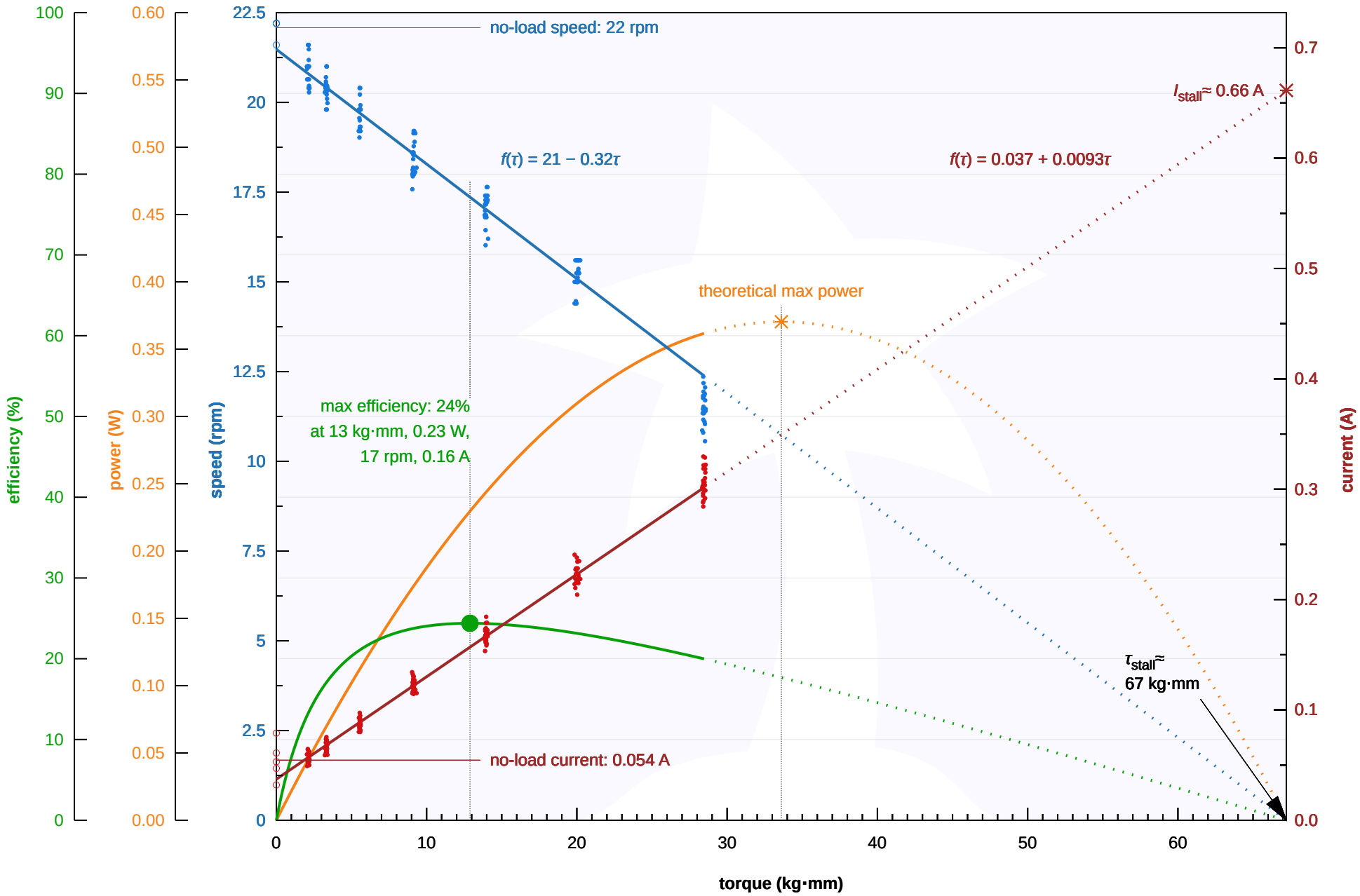
Pololu Items #2371, #2385, #5146, #5147 (298:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



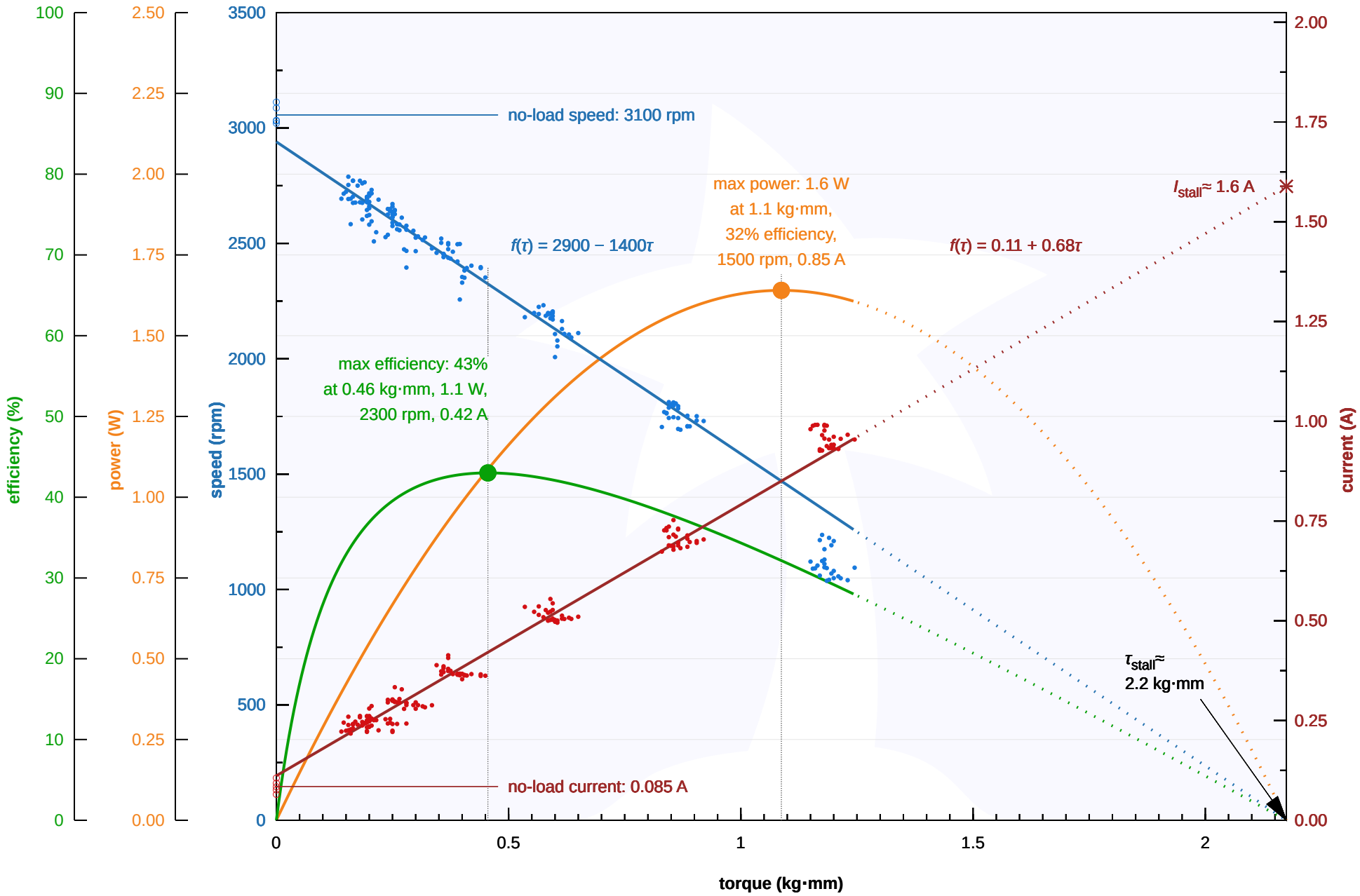
Pololu Items #4792, #4793, #5148, #5149 (380:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



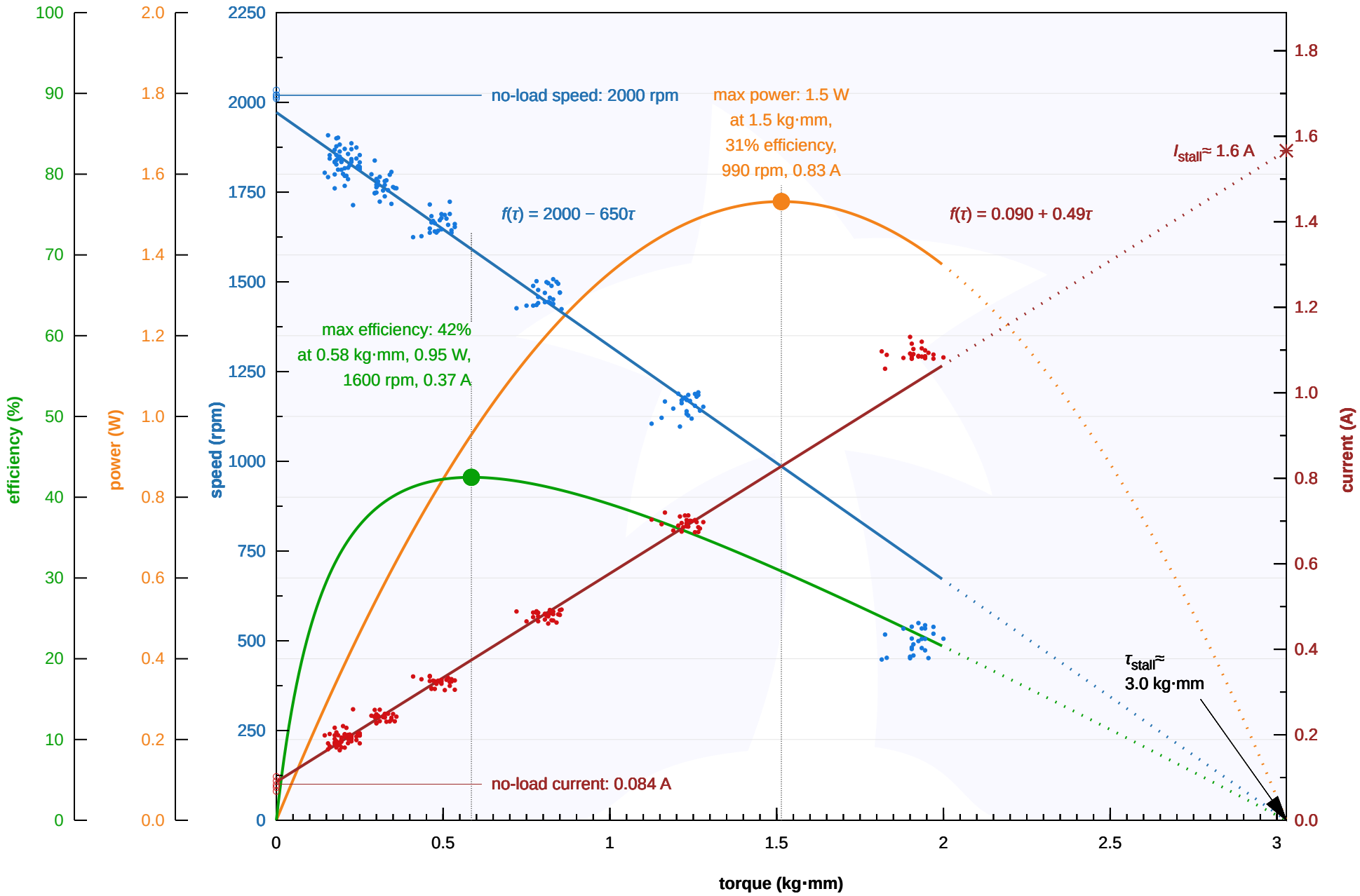
Pololu Items #2372, #3059, #5150, #5151 (1000:1 Micro Metal Gearmotor MP 6V) Performance at 6 V



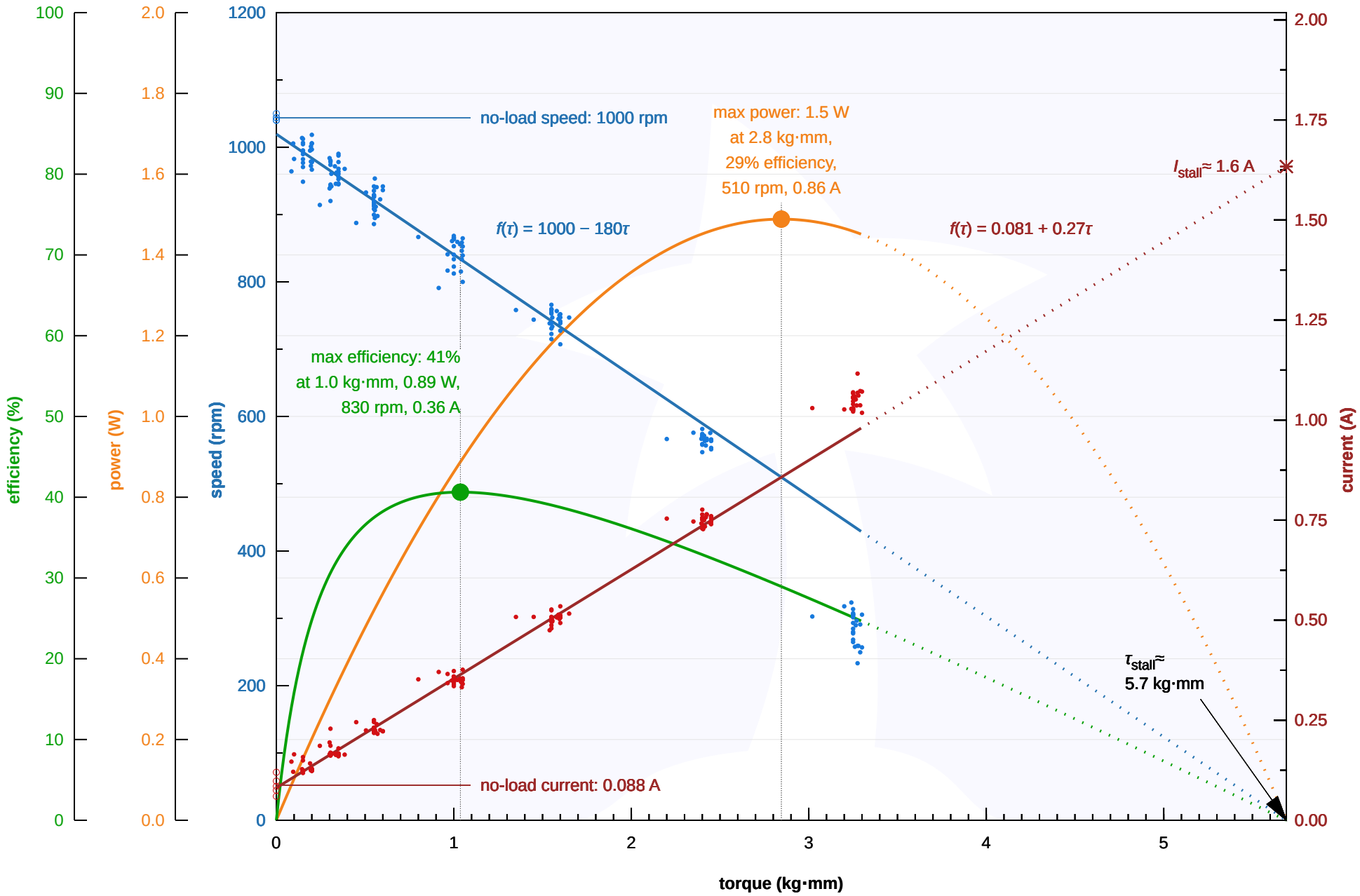
Pololu Items #999, #2211, #5154, #5155 (10:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



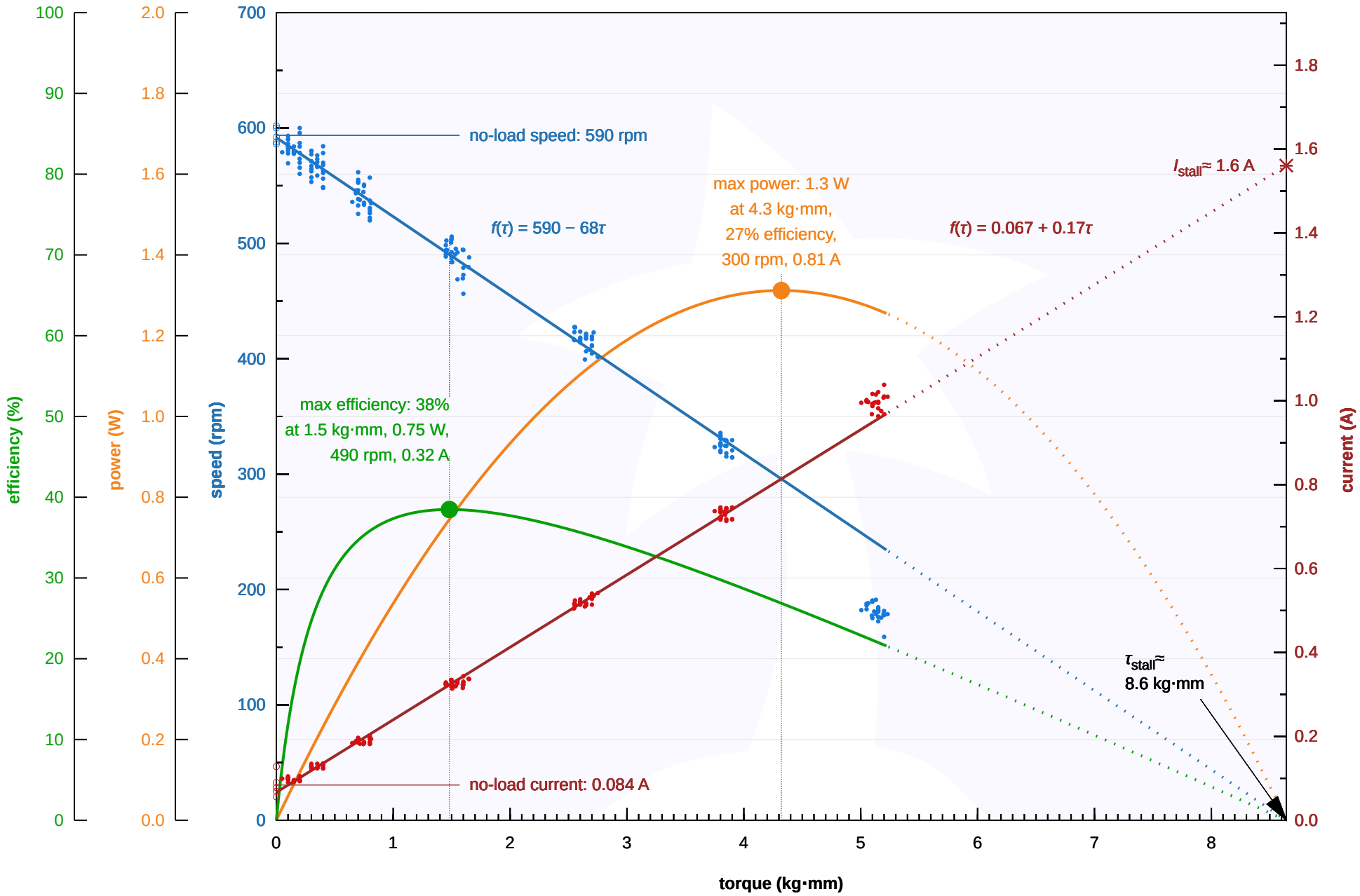
Pololu Items #4784, #4785, #5156, #5157 (15:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



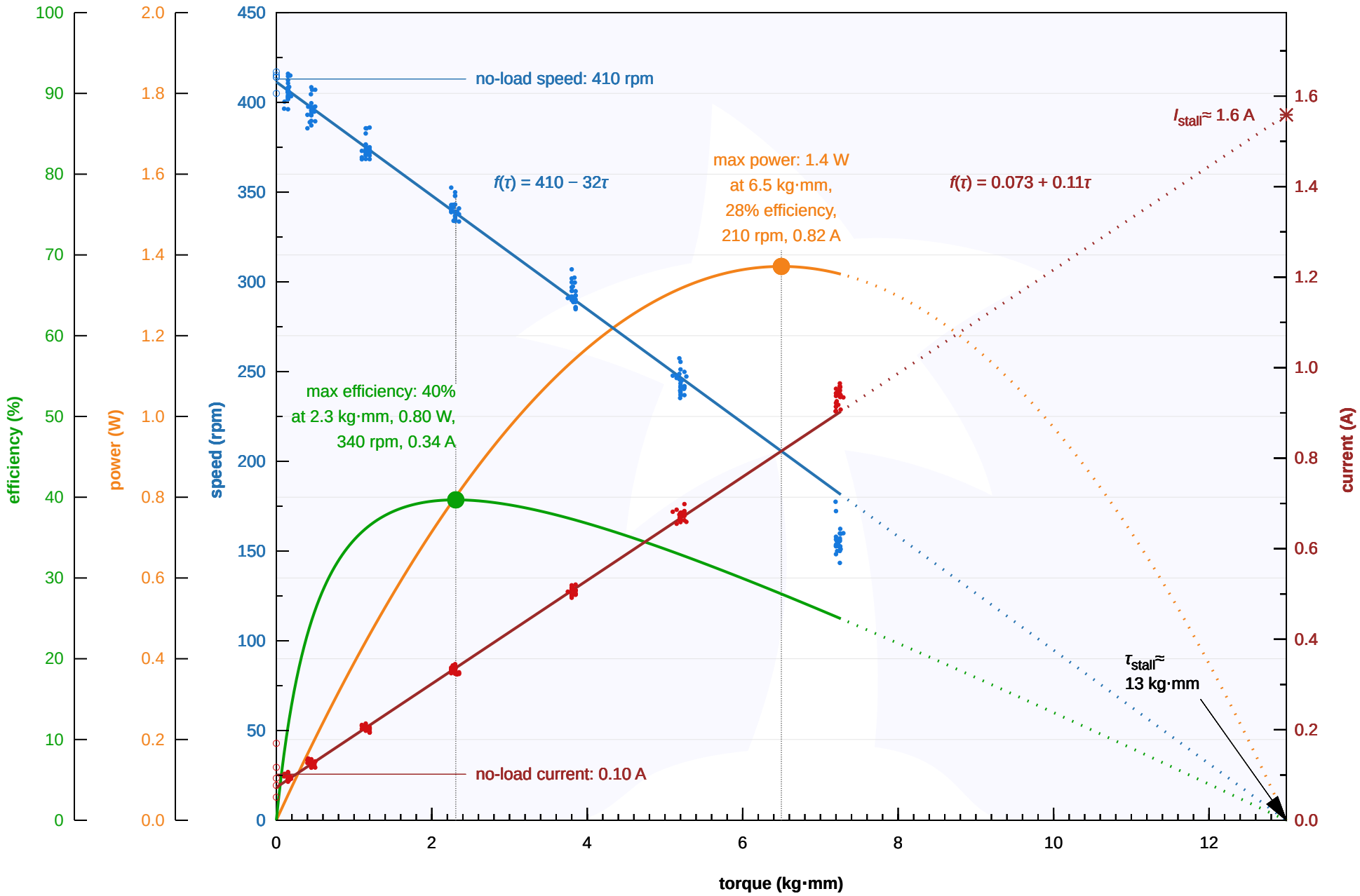
Pololu Items #1093, #2212, #5158, #5159 (30:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



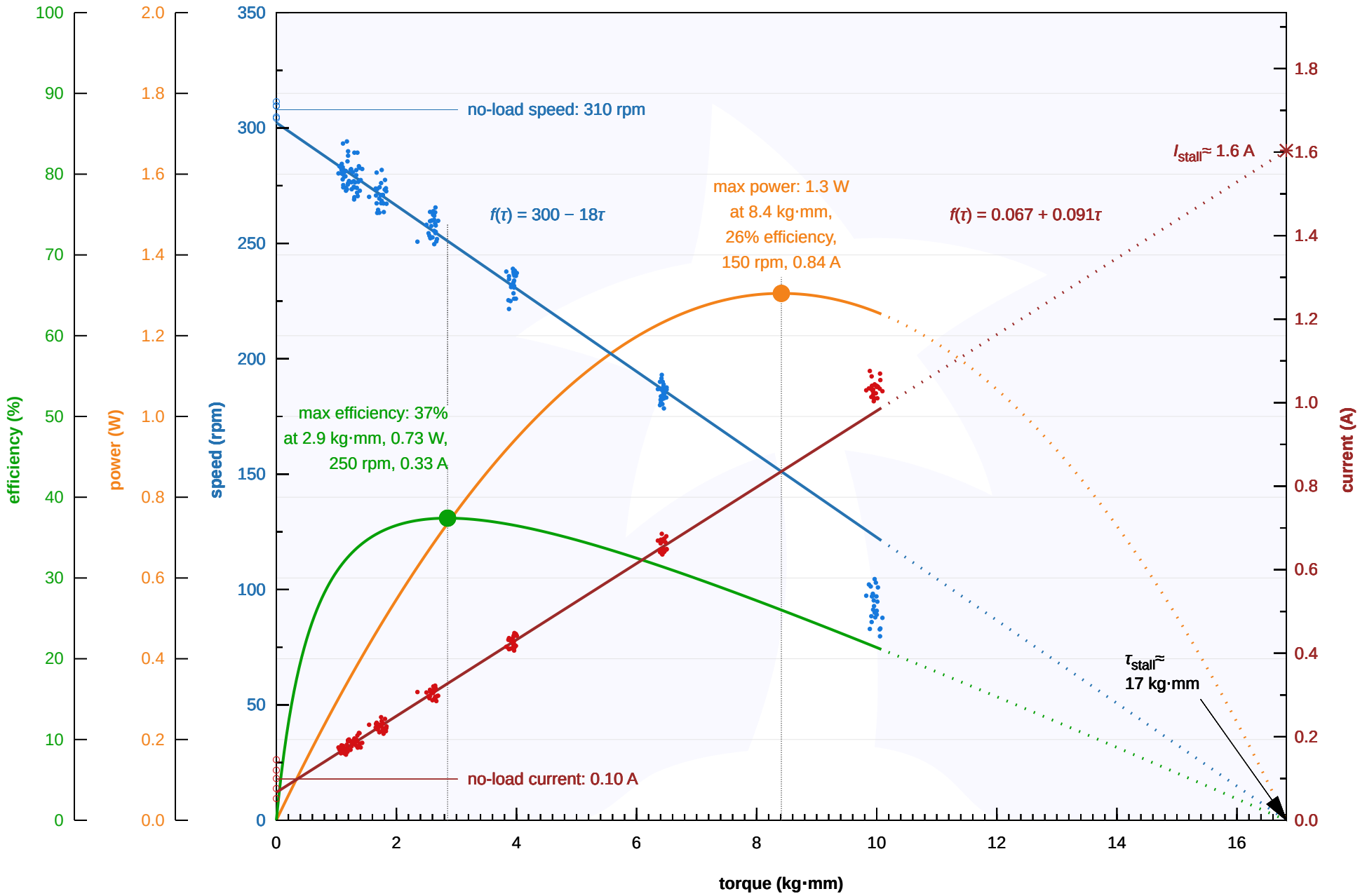
Pololu Items #998, #2213, #5160, #5161 (50:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



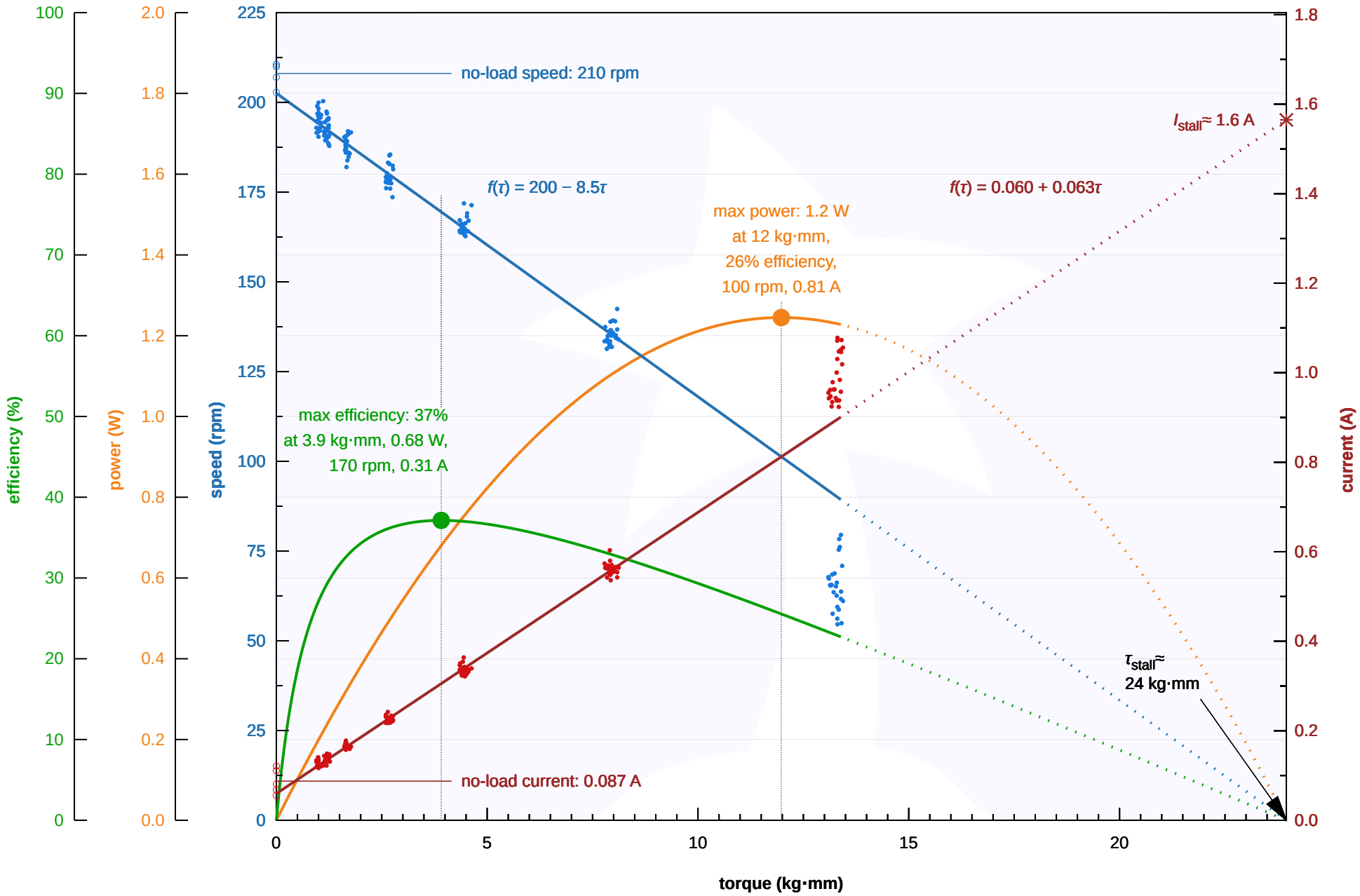
Pololu Items #2361, #2215, #5162, #5163 (75:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



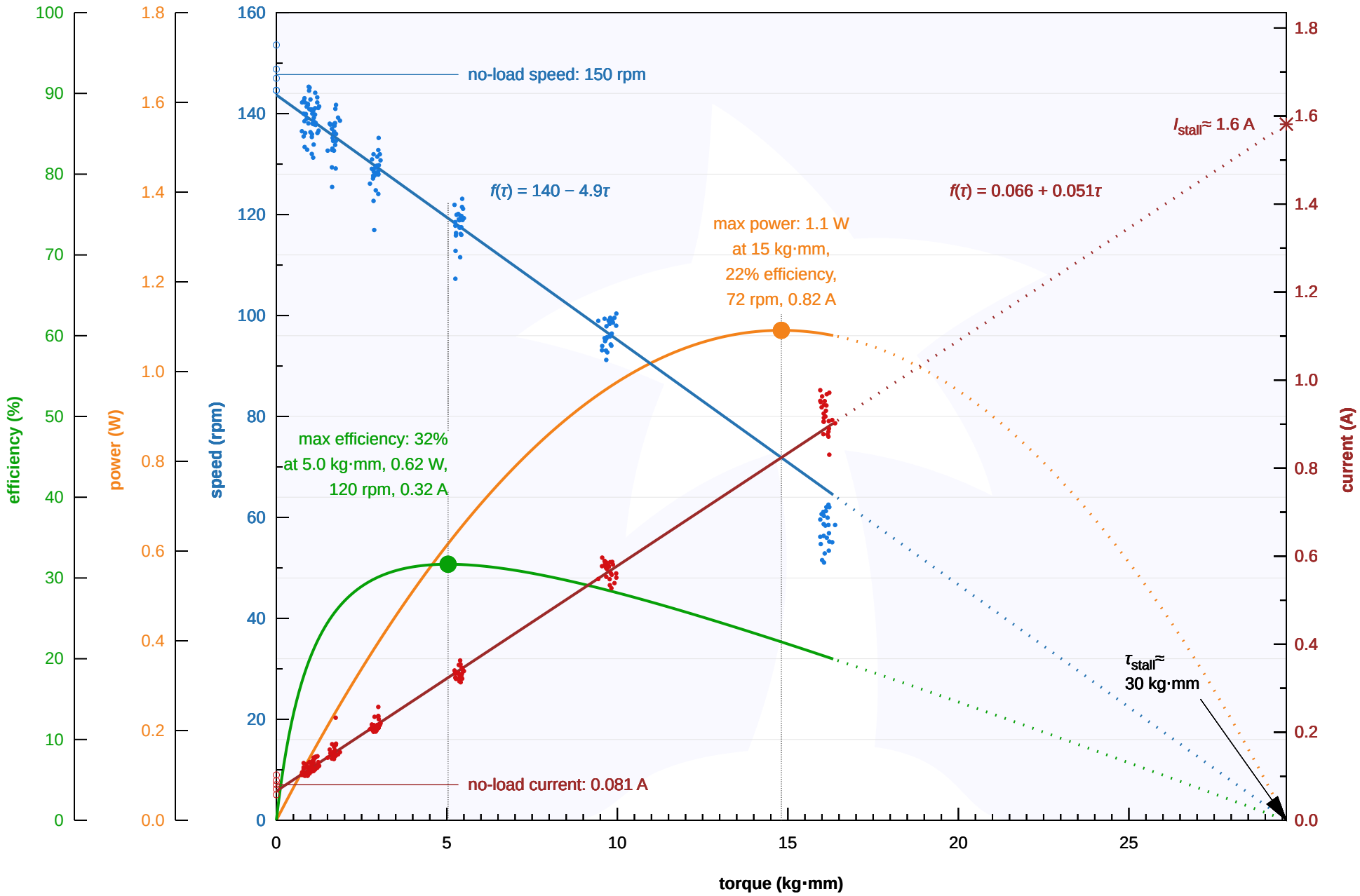
Pololu Items #1101, #2214, #5164, #5165 (100:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



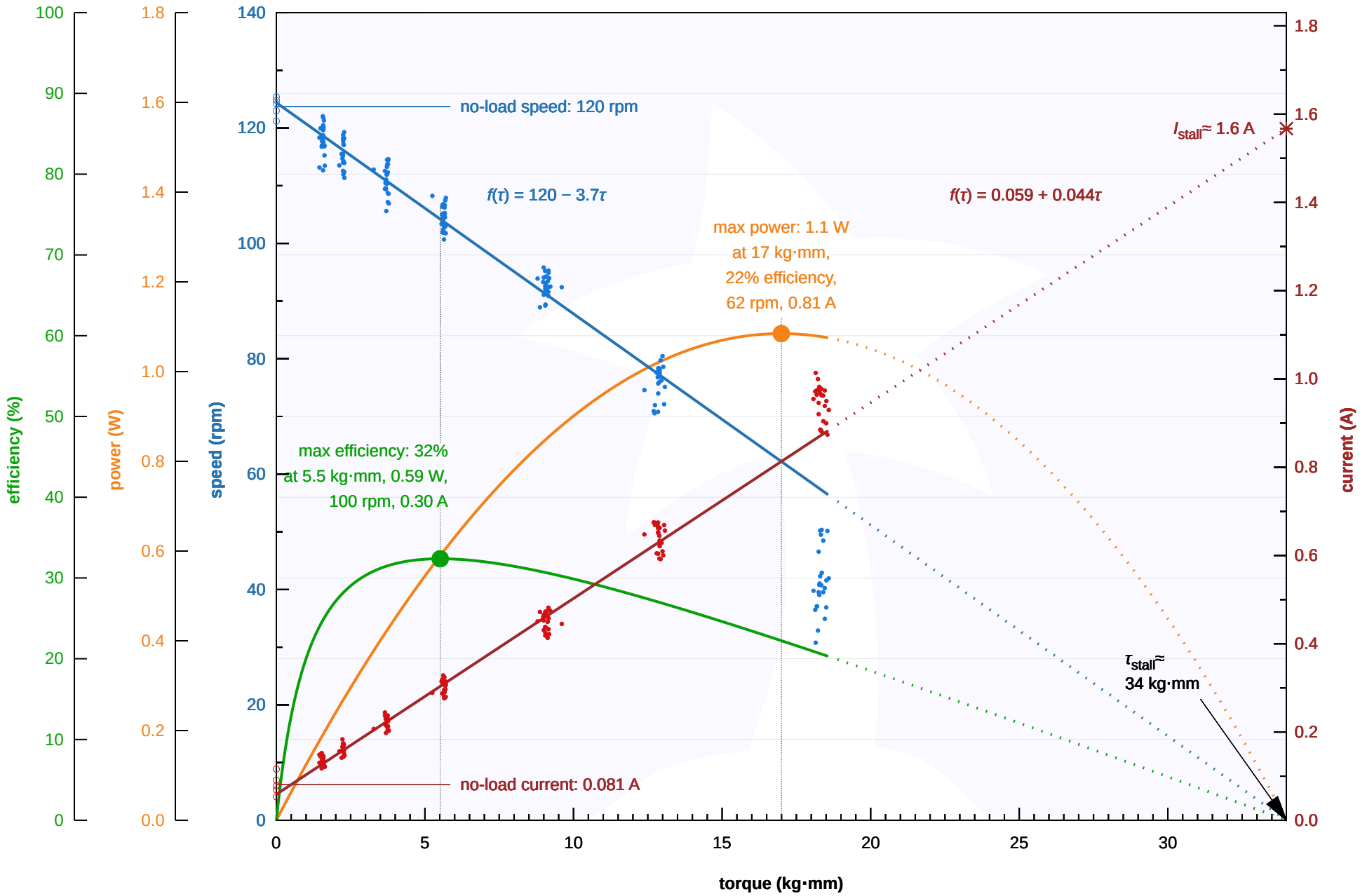
Pololu Items #997, #2386, #5166, #5167 (150:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



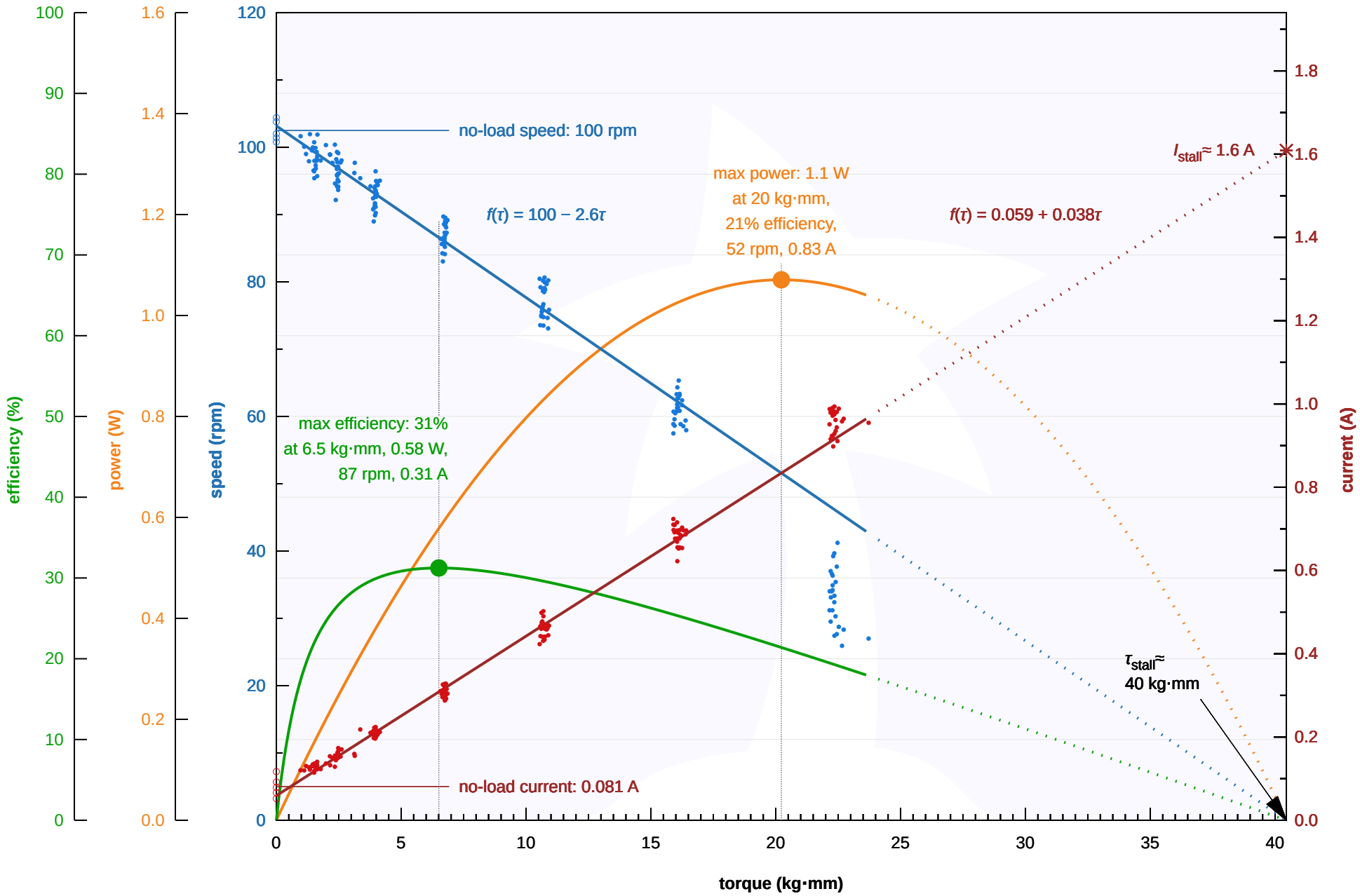
Pololu Items #996, #2216, #5168, #5169 (210:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



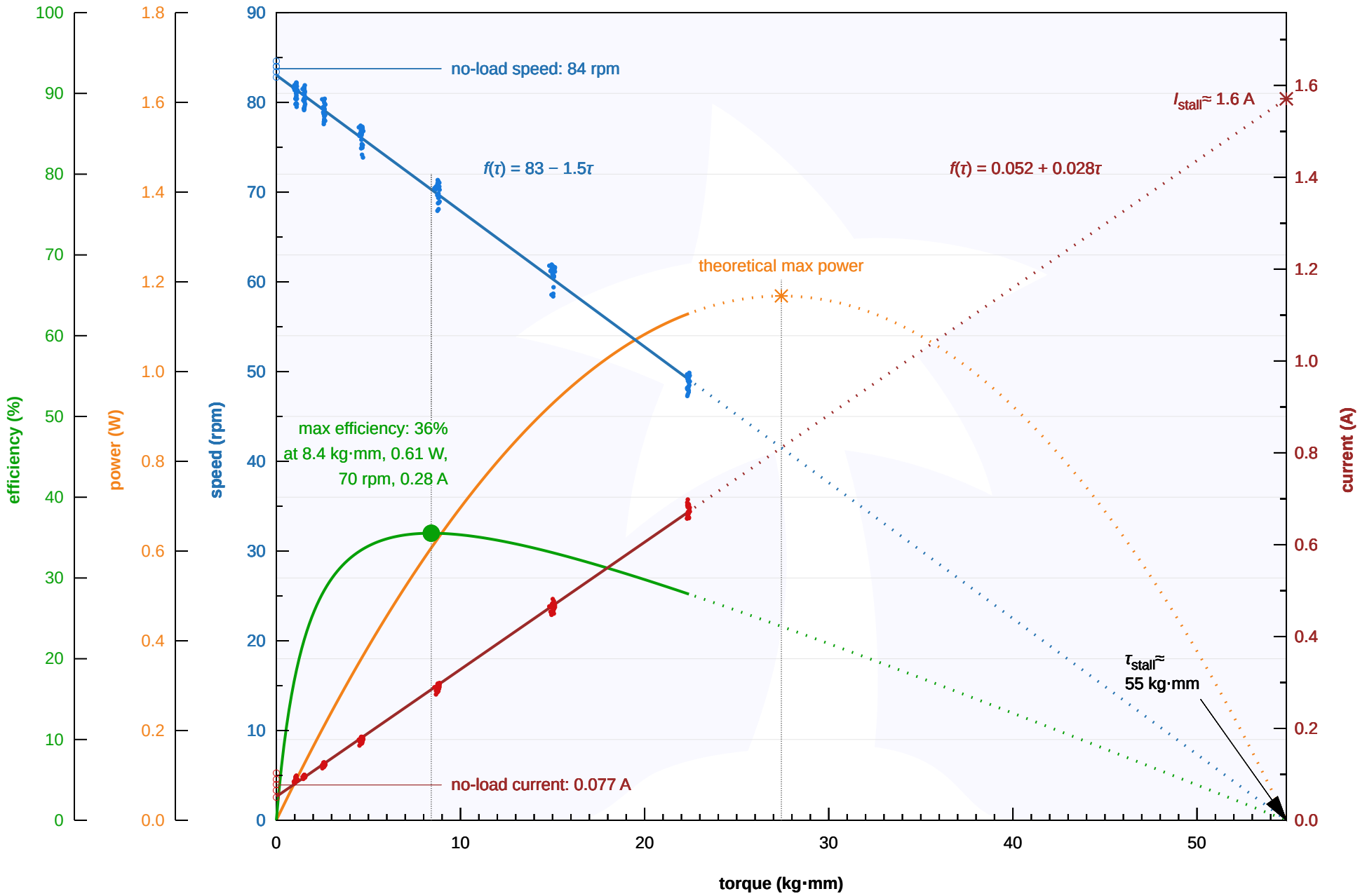
Pololu Items #995, #2217, #5170, #5171 (250:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



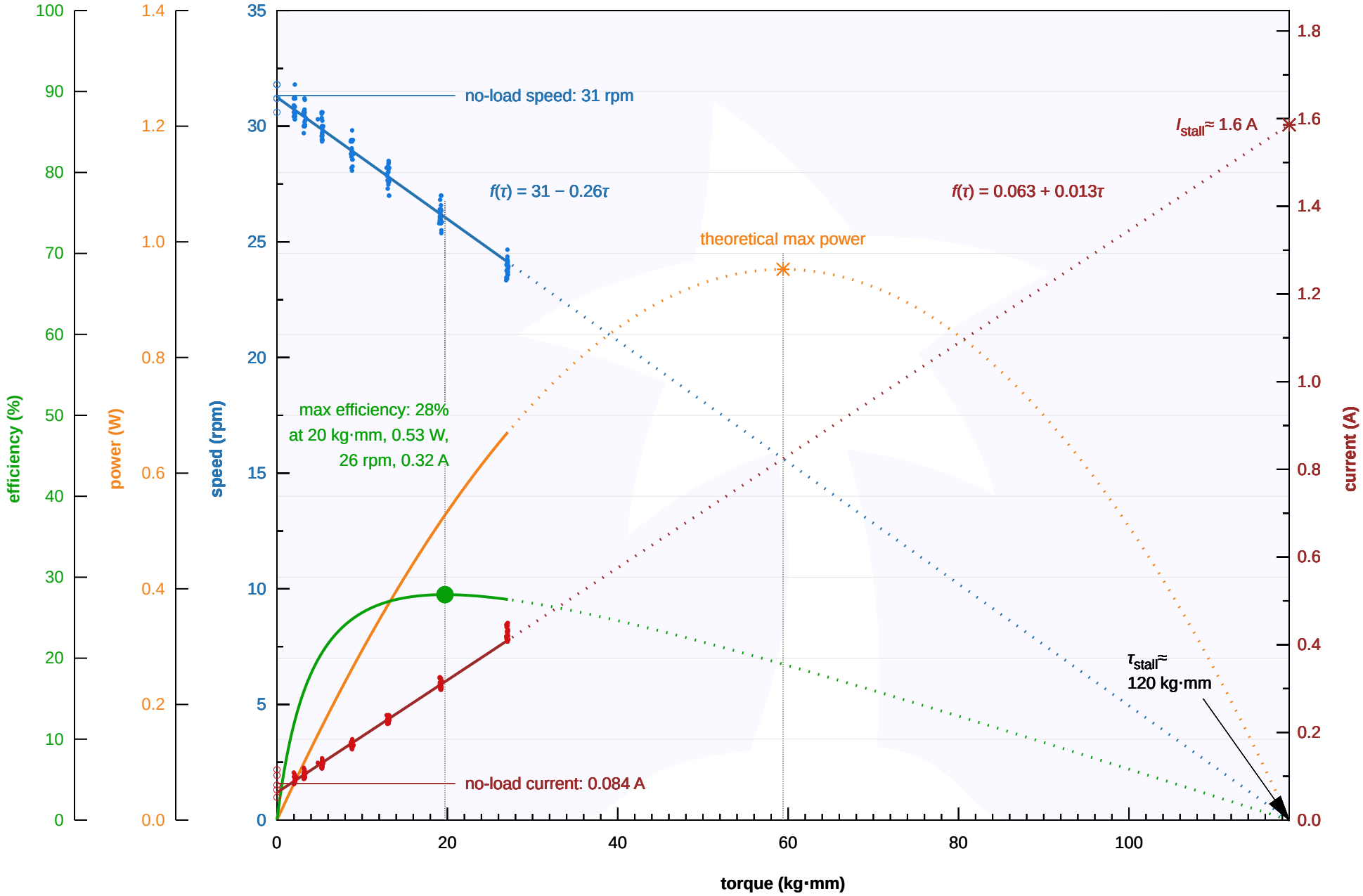
Pololu Items #994, #2218, #5172, #5173 (298:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



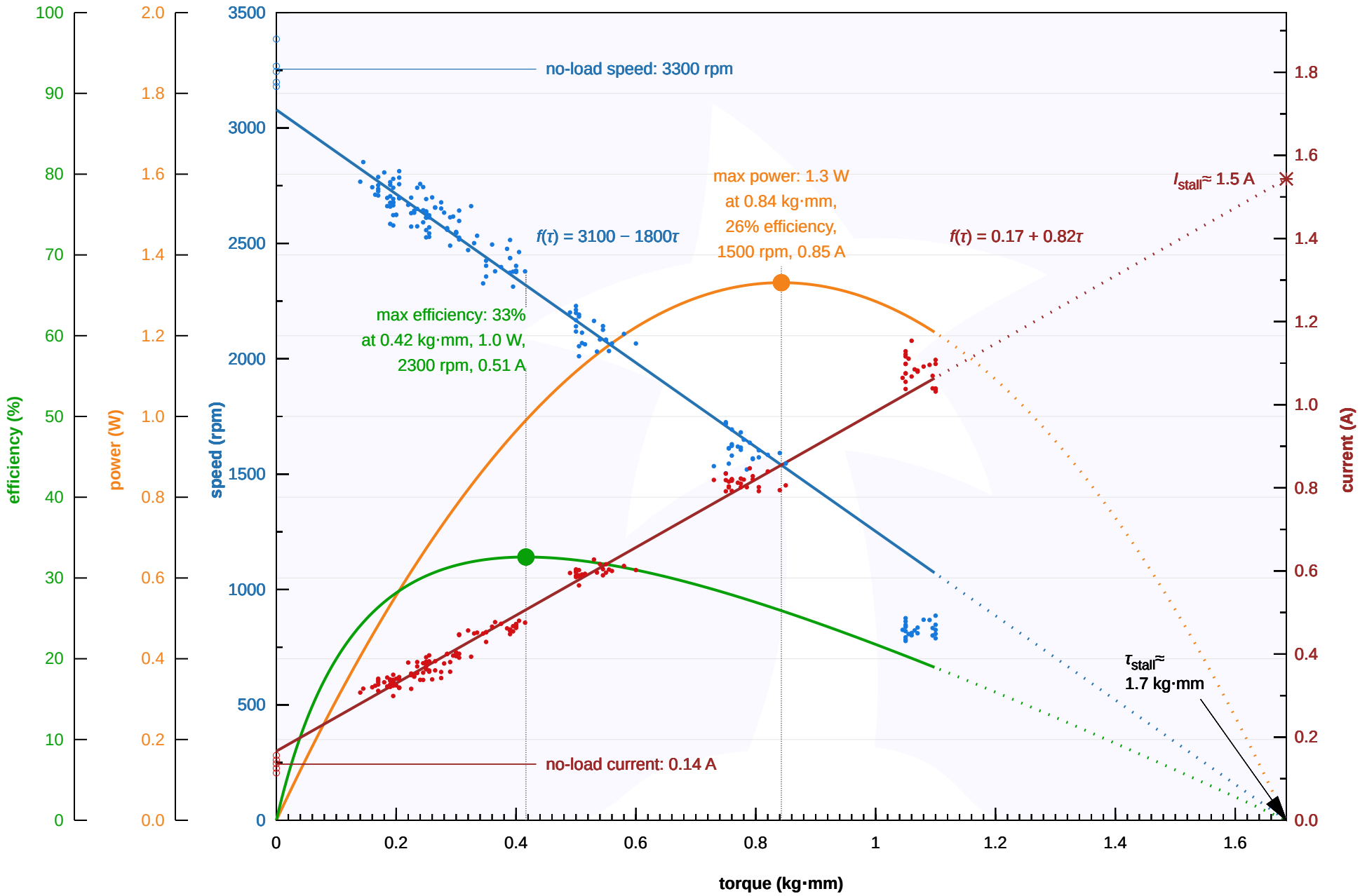
Pololu Items #4794, #4795, #5174, #5175 (380:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



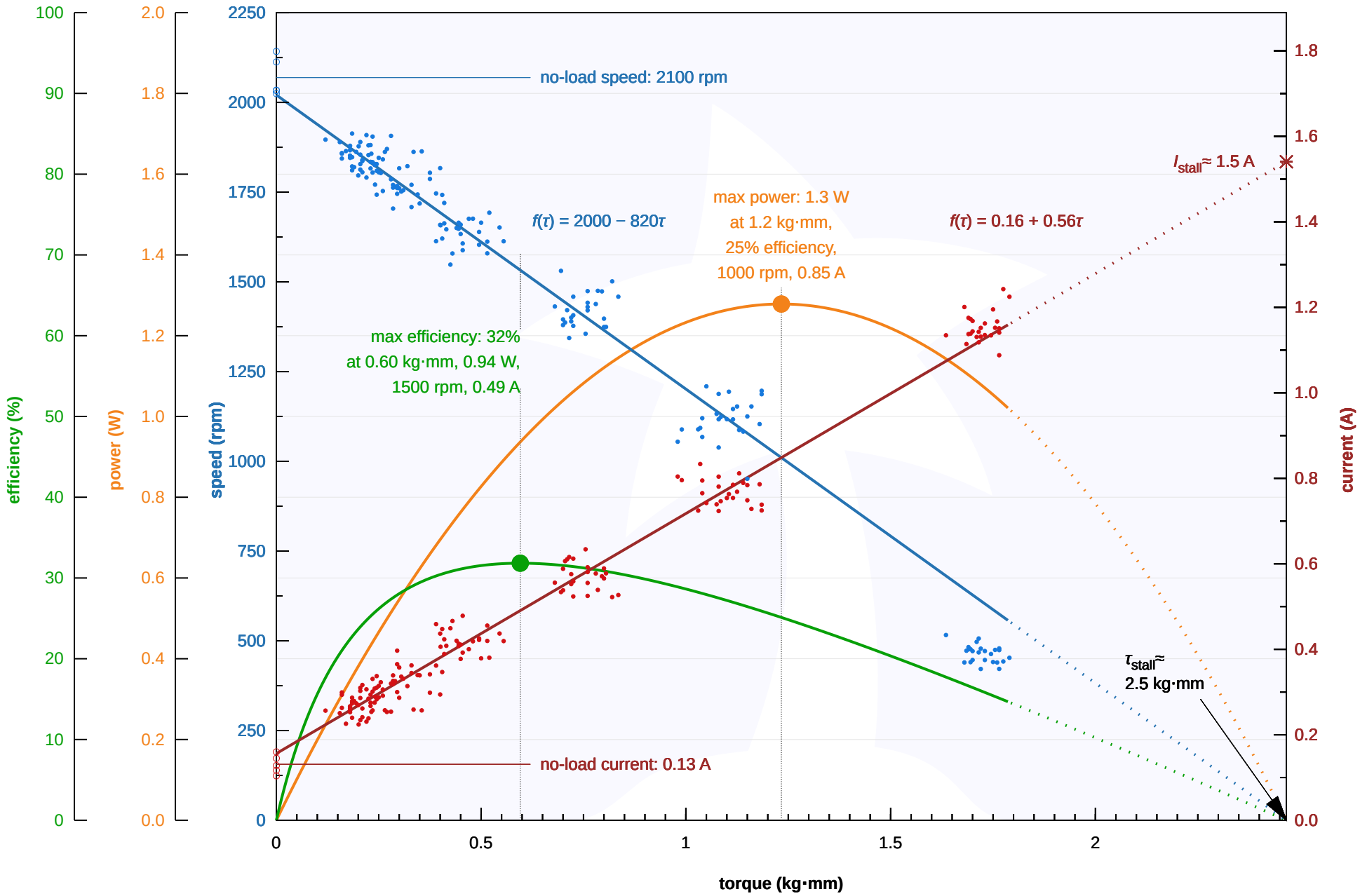
Pololu Items #1595, #2373, #5176, #5177 (1000:1 Micro Metal Gearmotor HP 6V) Performance at 6 V



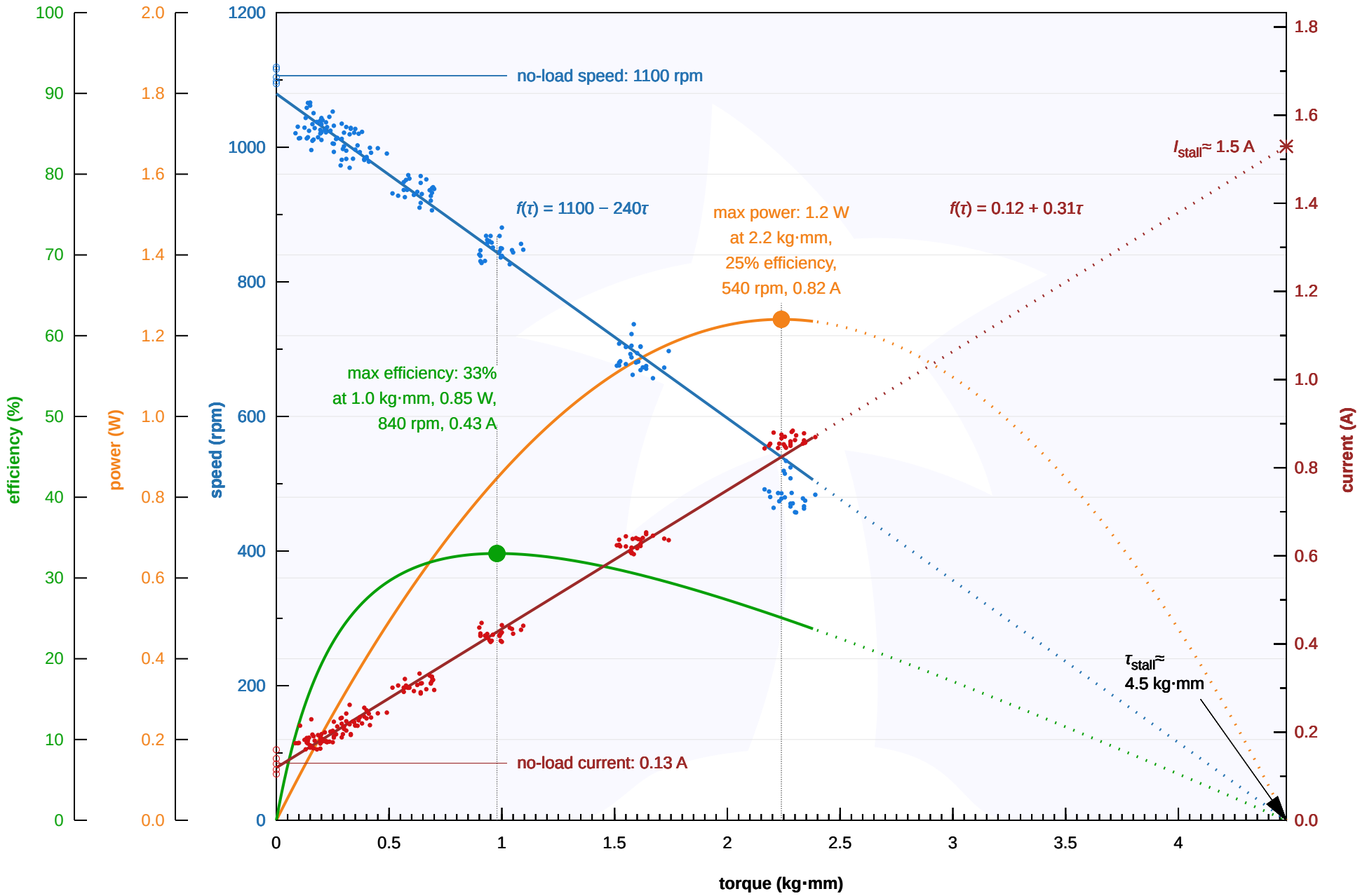
Pololu Items #3061, #3071, #5180, #5181 (10:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



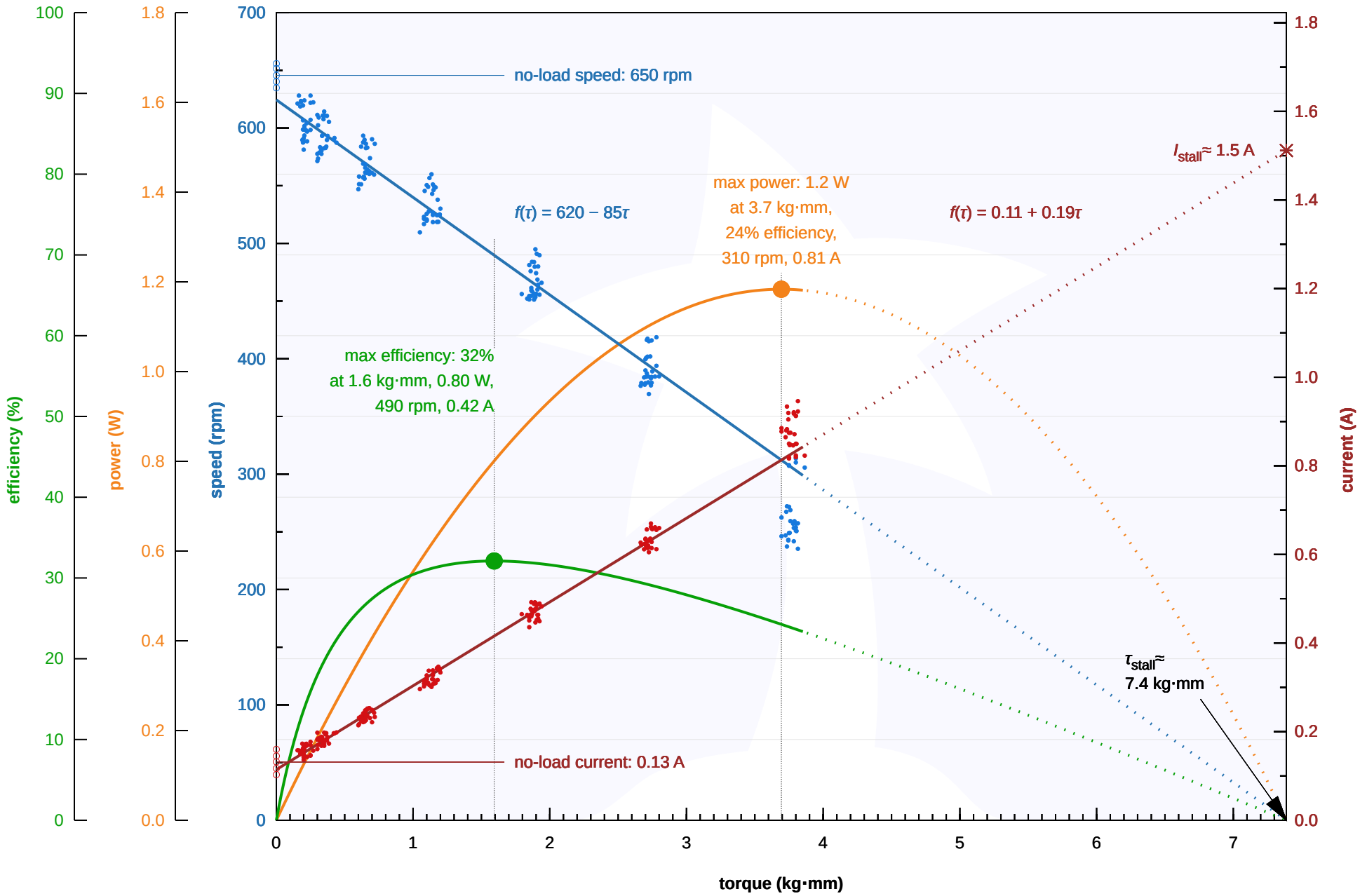
Pololu Items #4786, #4787, #5182, #5183 (15:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



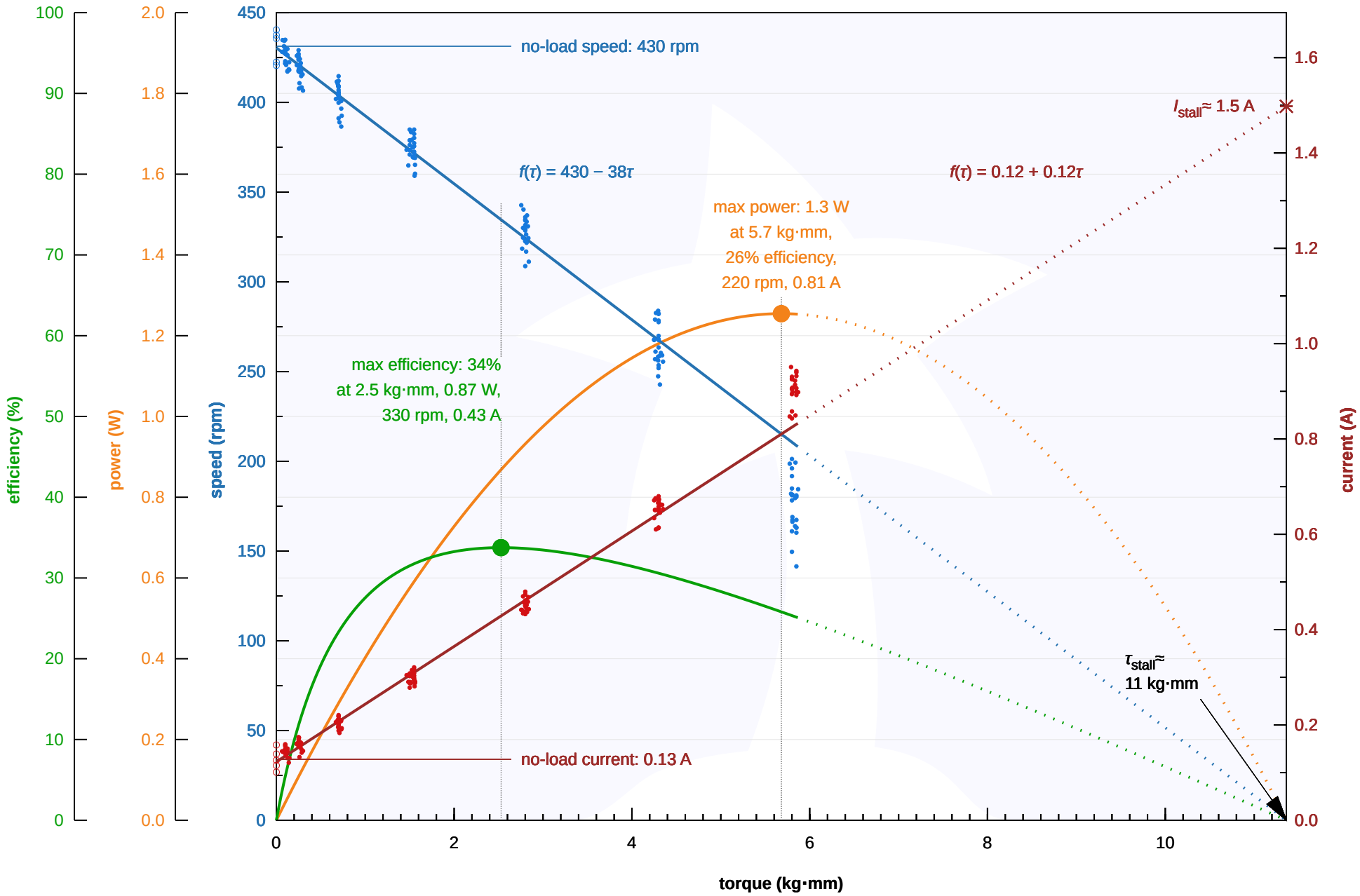
Pololu Items #3062, #3072, #5184, #5185 (30:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



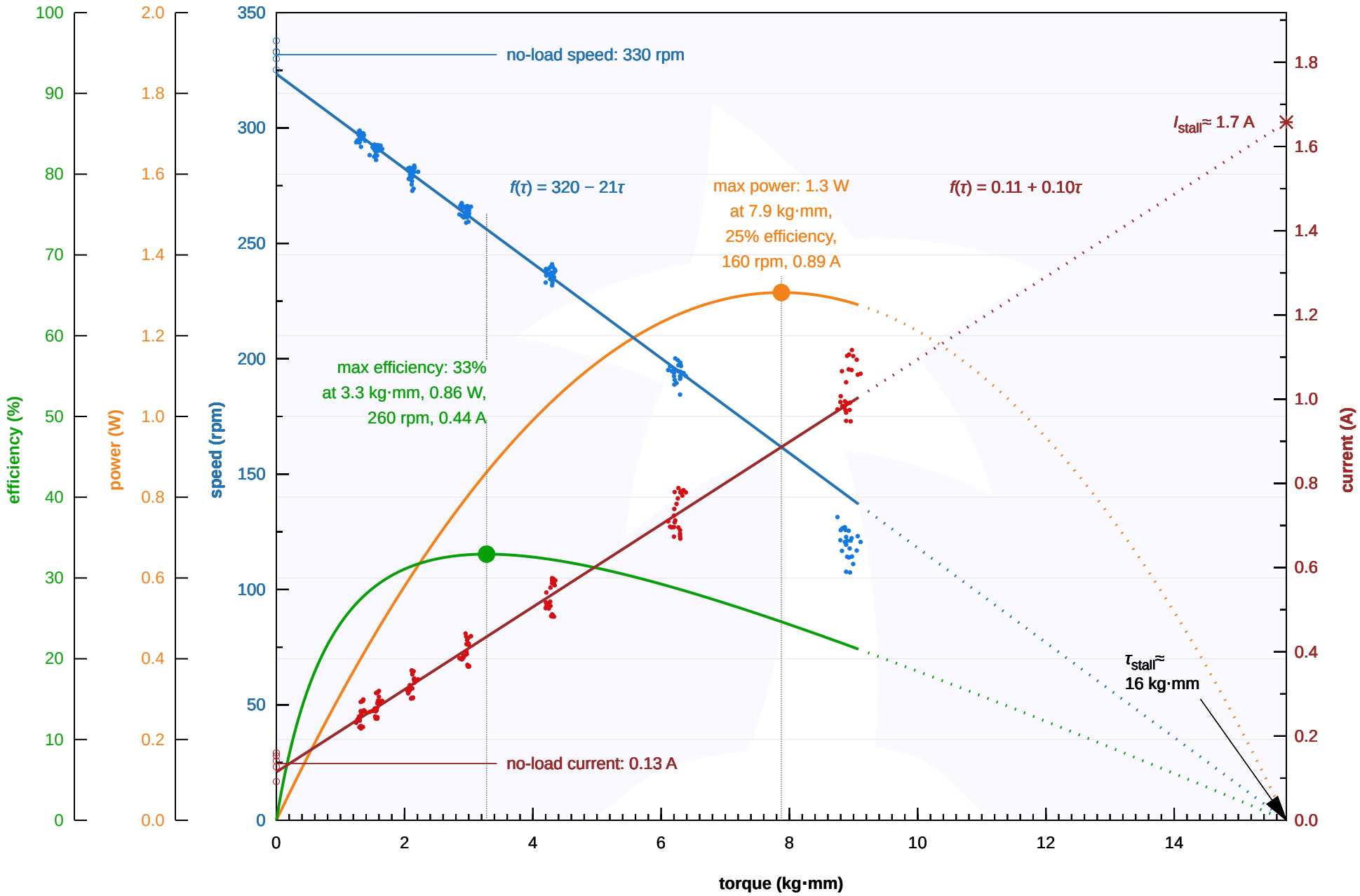
Pololu Items #3063, #3073, #5186, #5187 (50:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



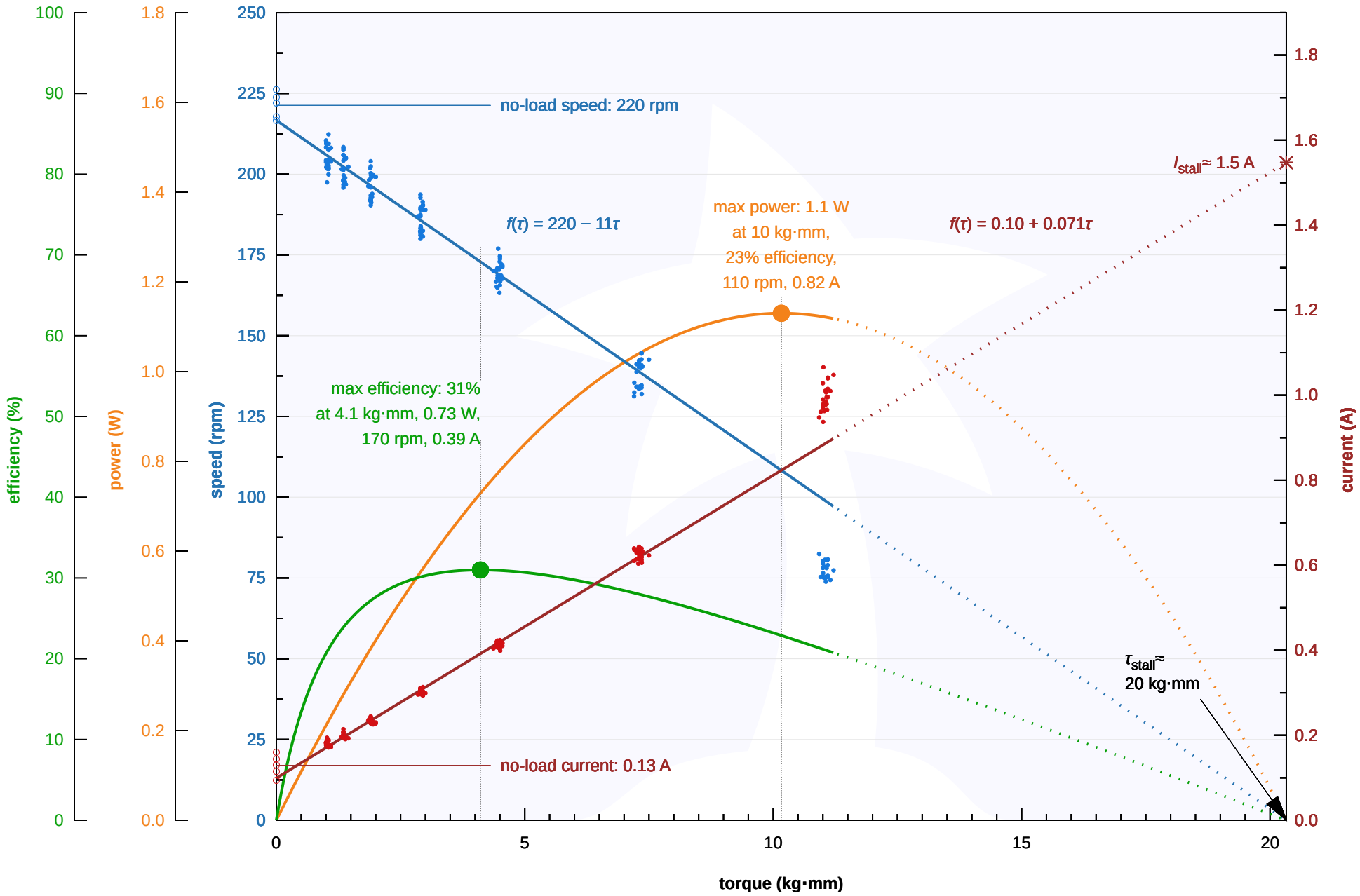
Pololu Items #3064, #3074, #5188, #5189 (75:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



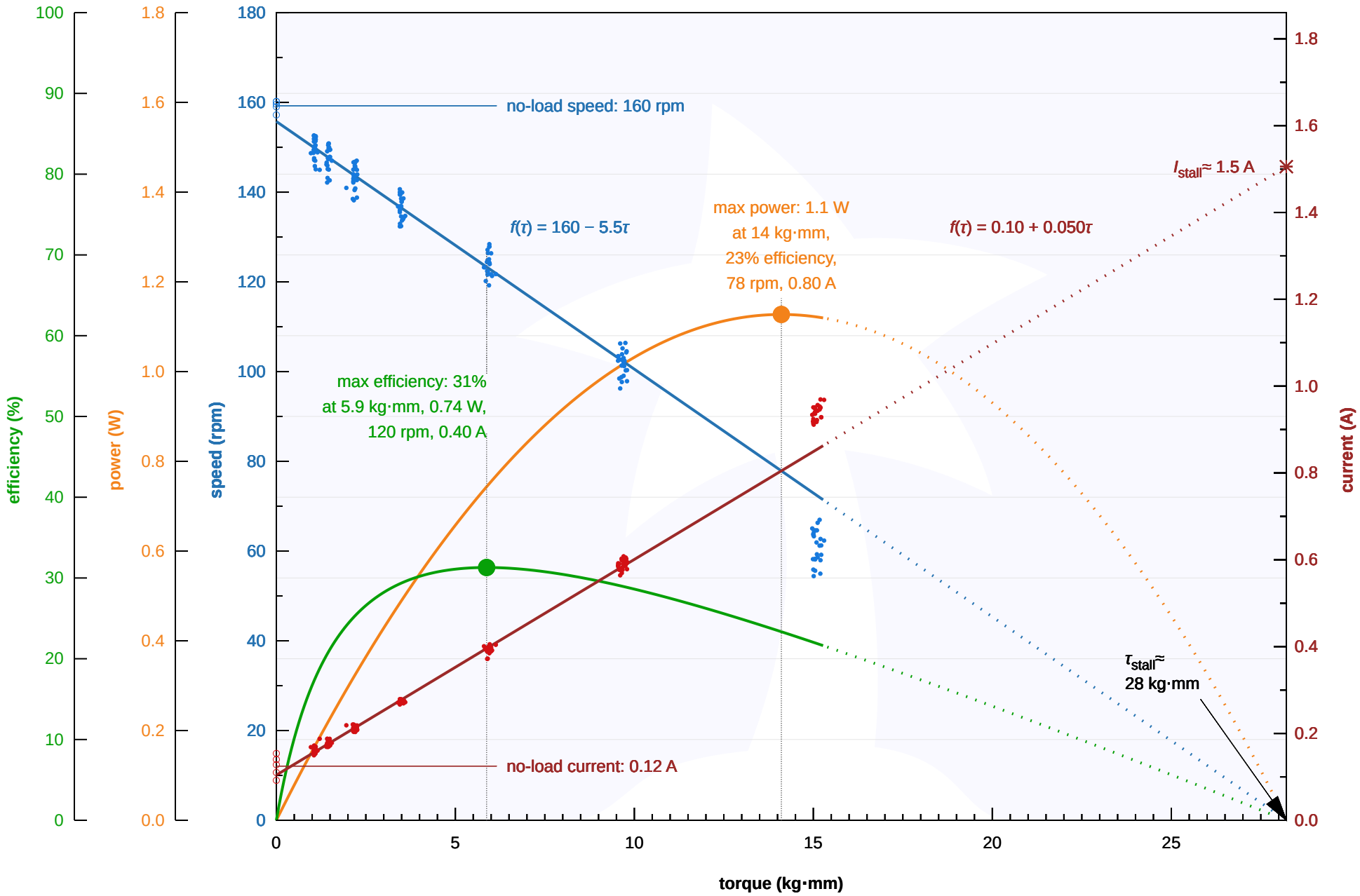
Pololu Items #3065, #3075, #5190, #5191 (100:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



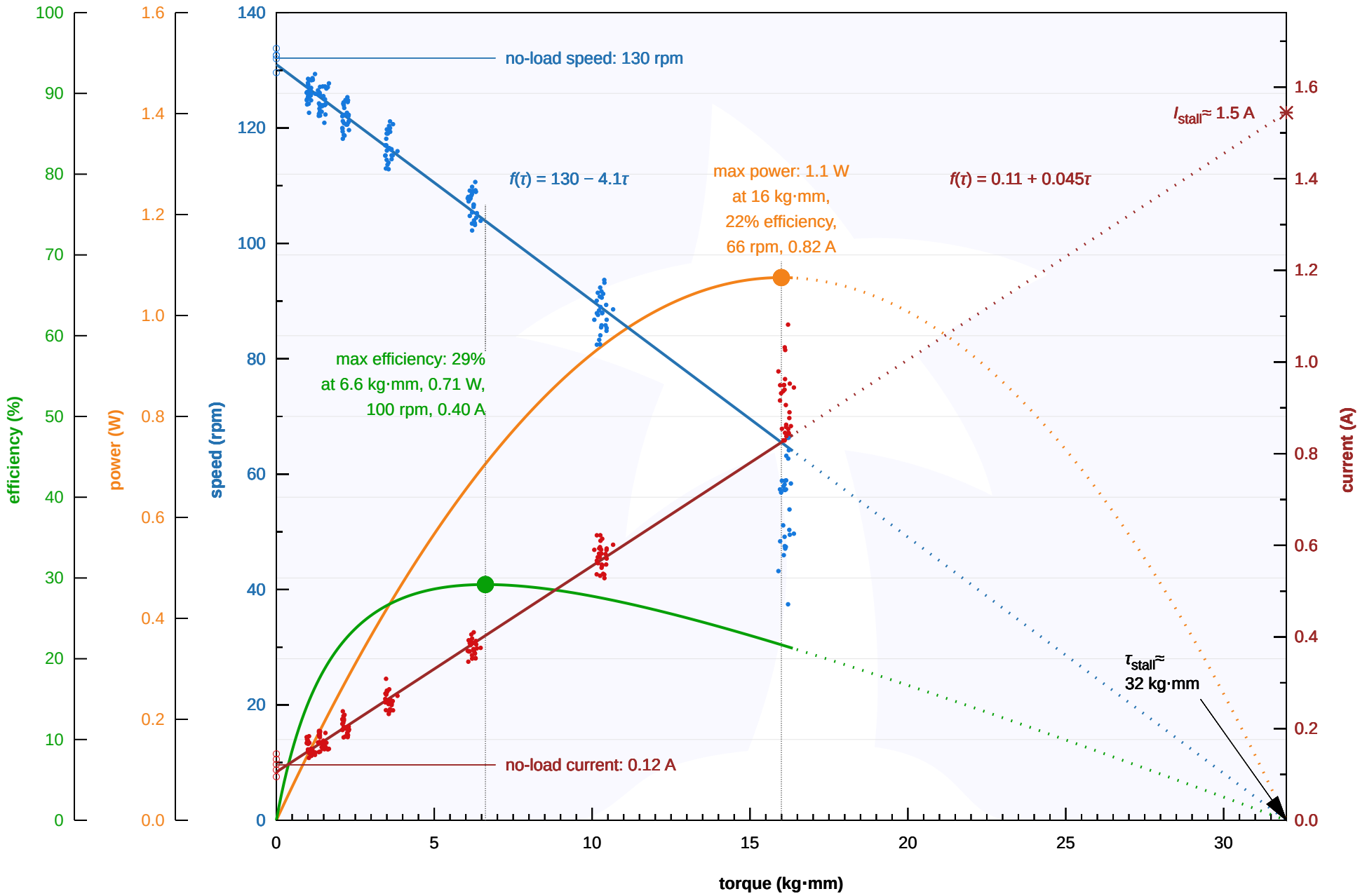
Pololu Items #3066, #3076, #5192, #5193 (150:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



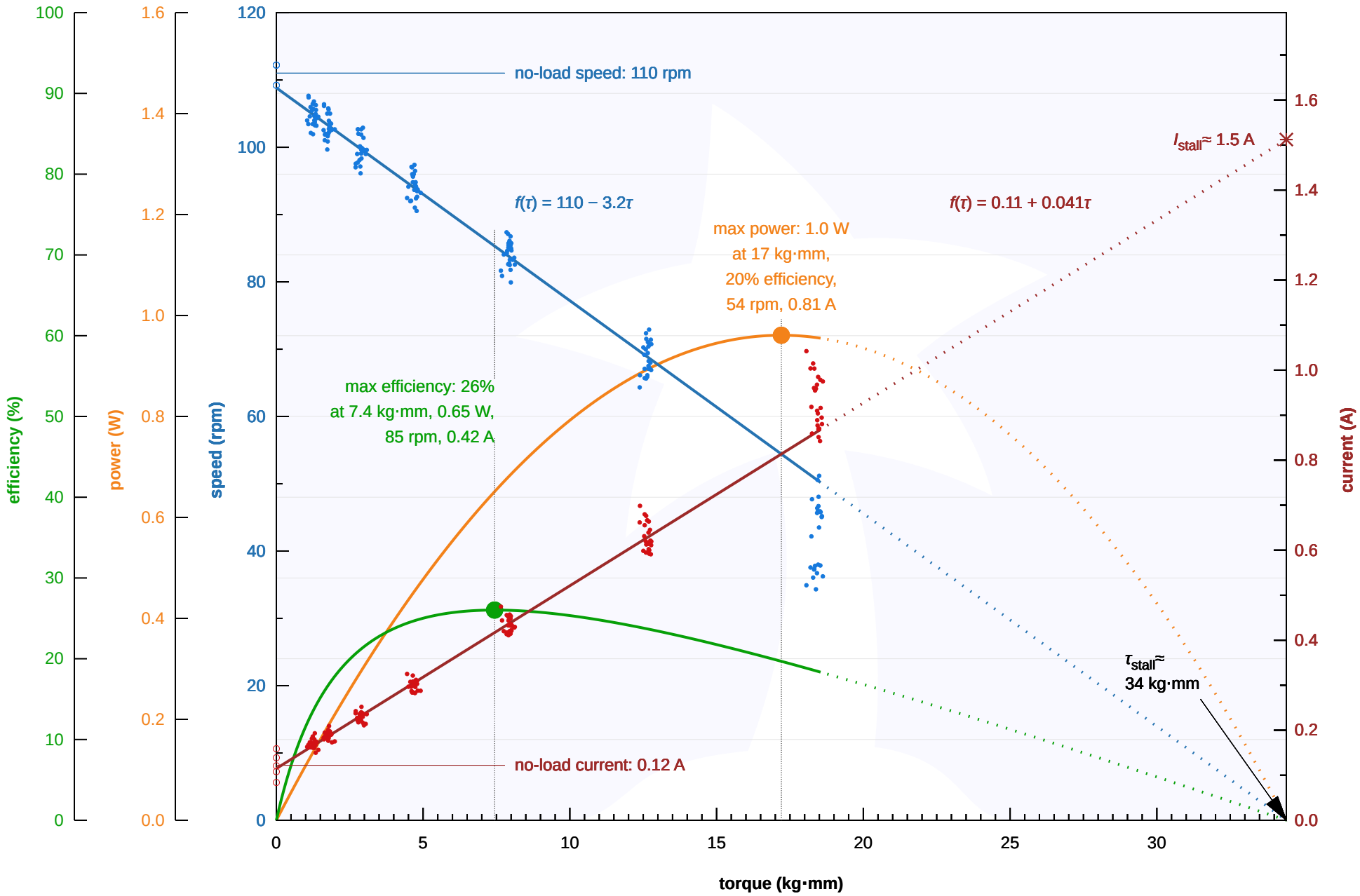
Pololu Items #3067, #3077, #5194, #5195 (210:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



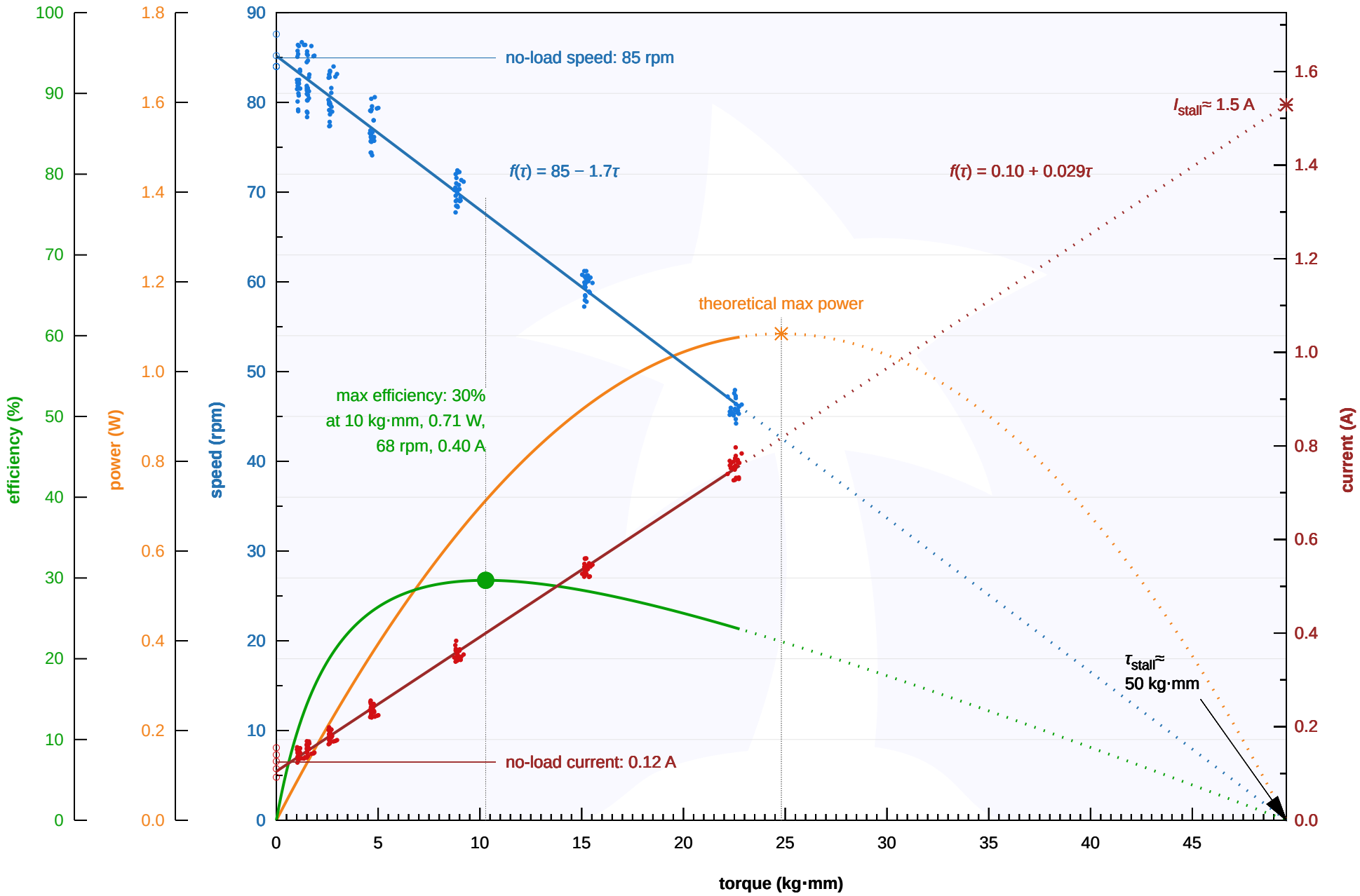
Pololu Items #3068, #3078, #5196, #5197 (250:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



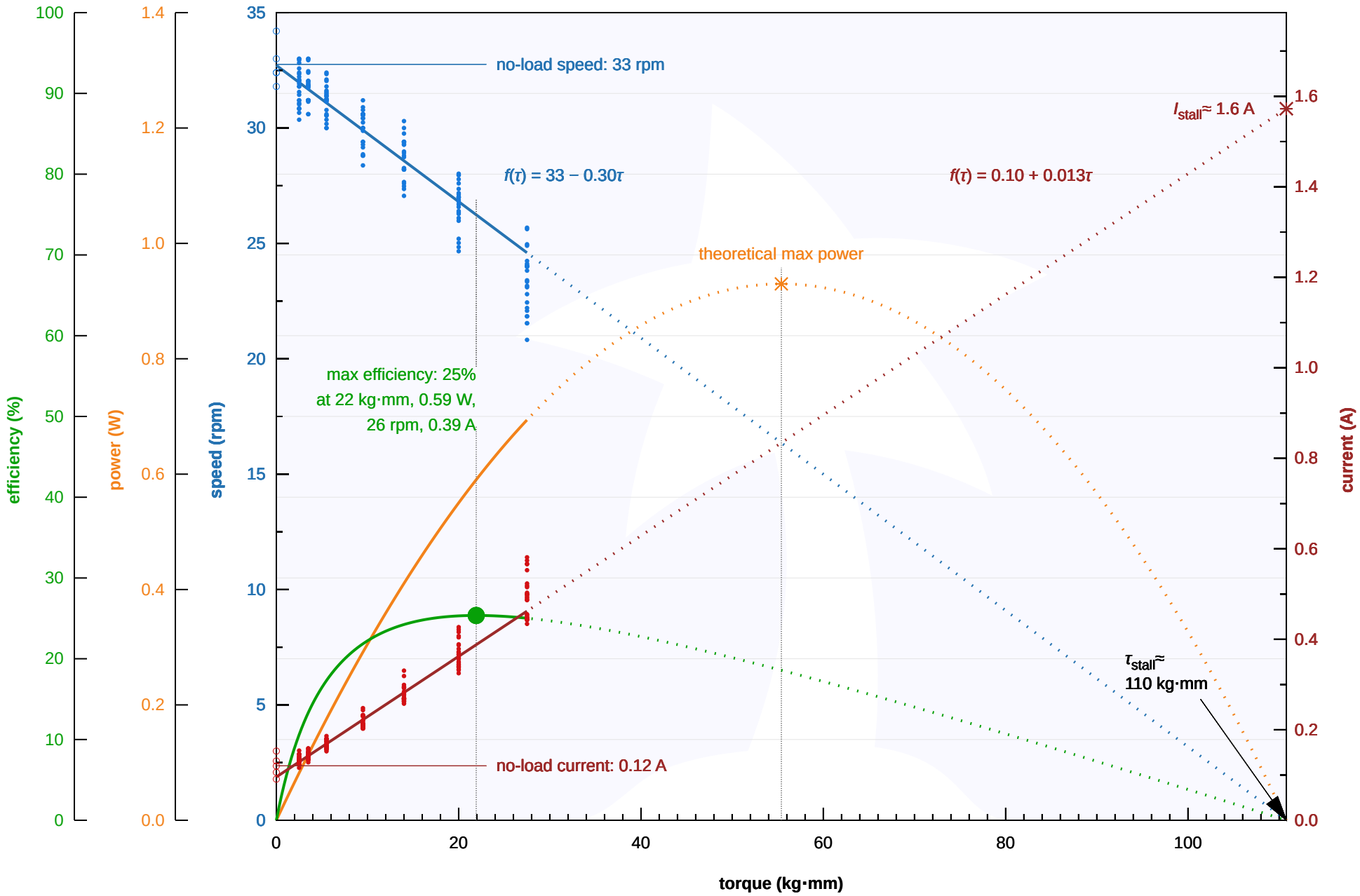
Pololu Items #3069, #3079, #5198, #5199 (298:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



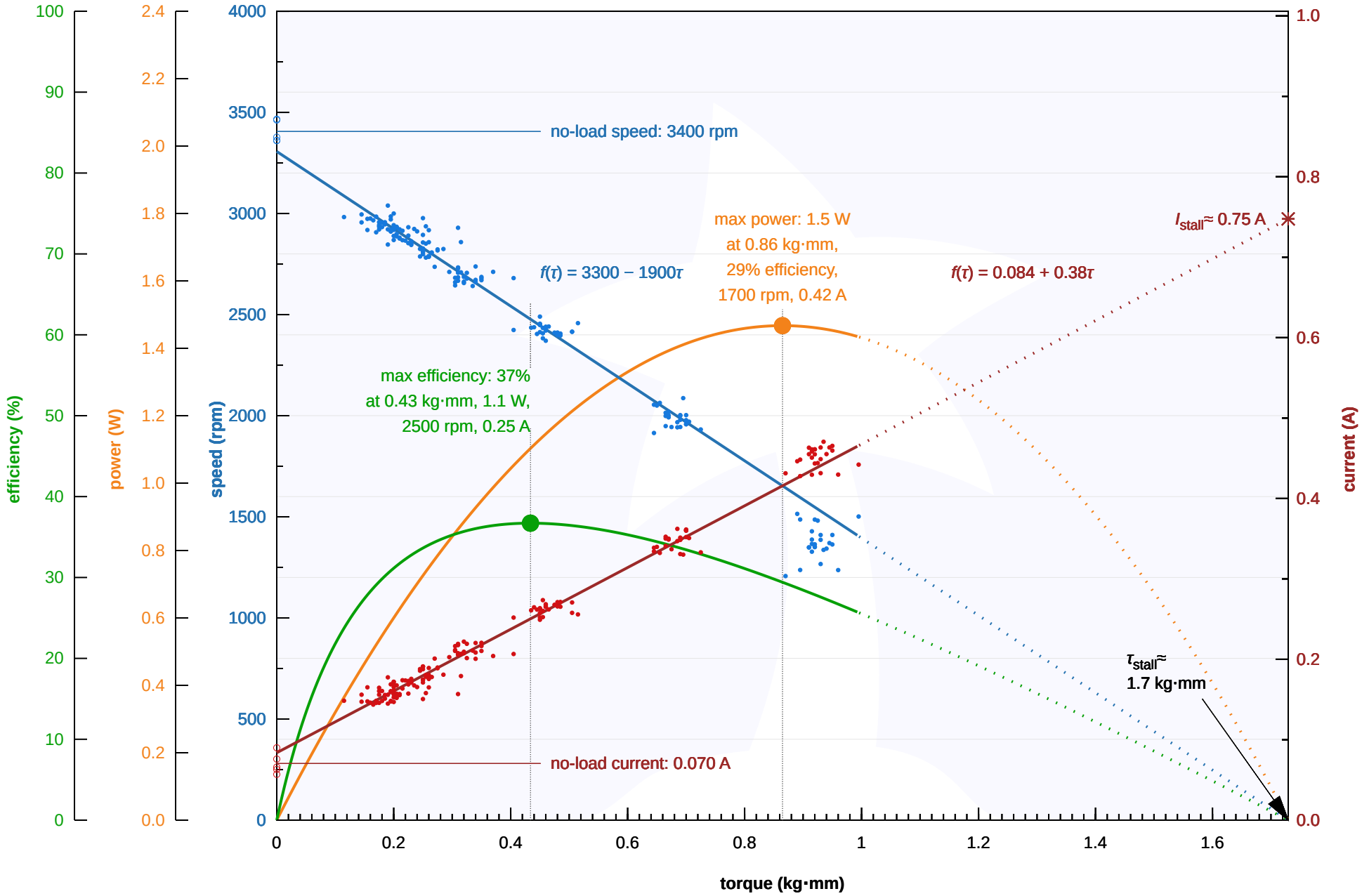
Pololu Items #4796, #4797, #5200, #5201 (380:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



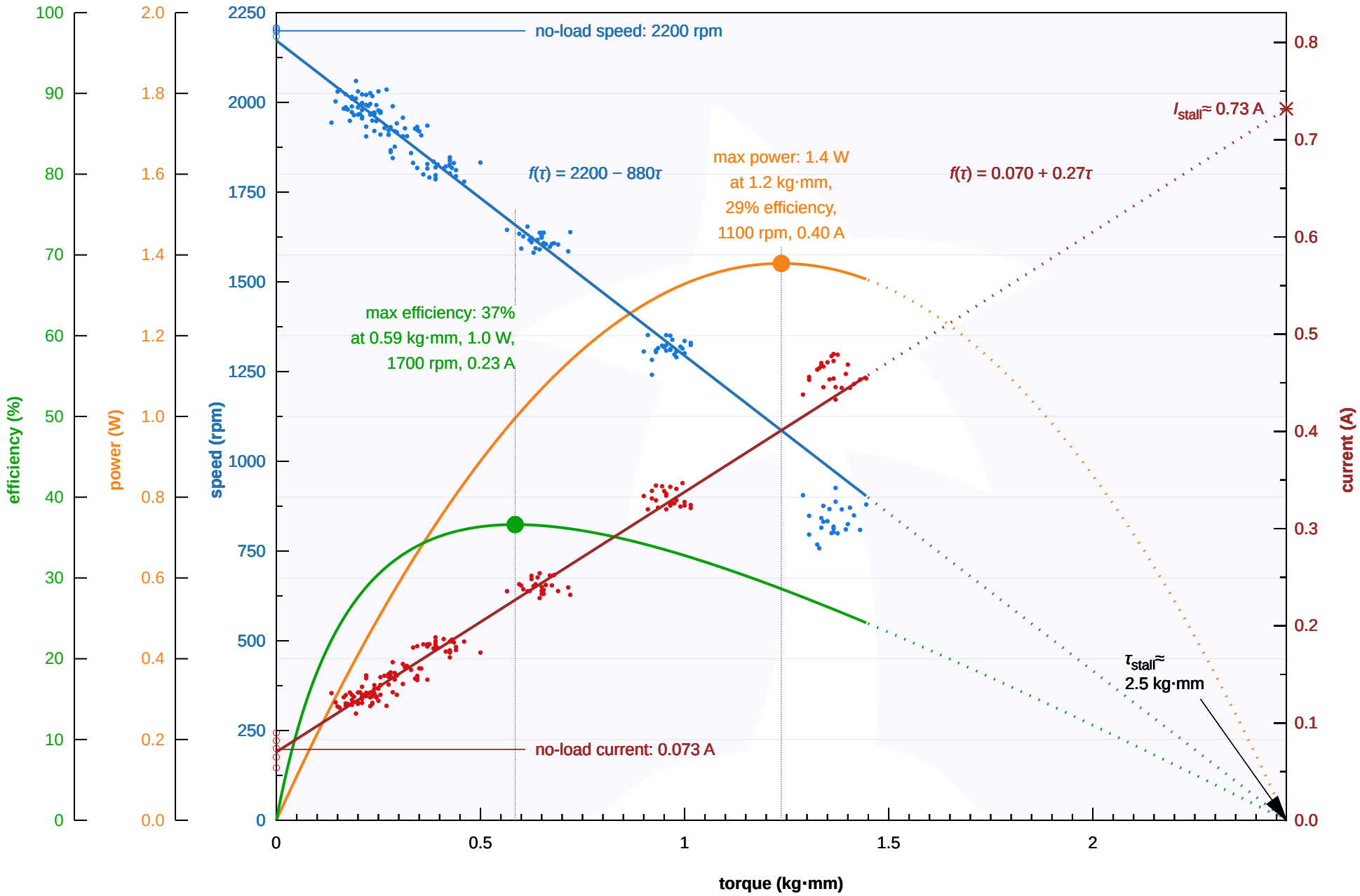
Pololu Items #3070, #3080, #5202, #5203 (1000:1 Micro Metal Gearmotor HPCB 6V) Performance at 6 V



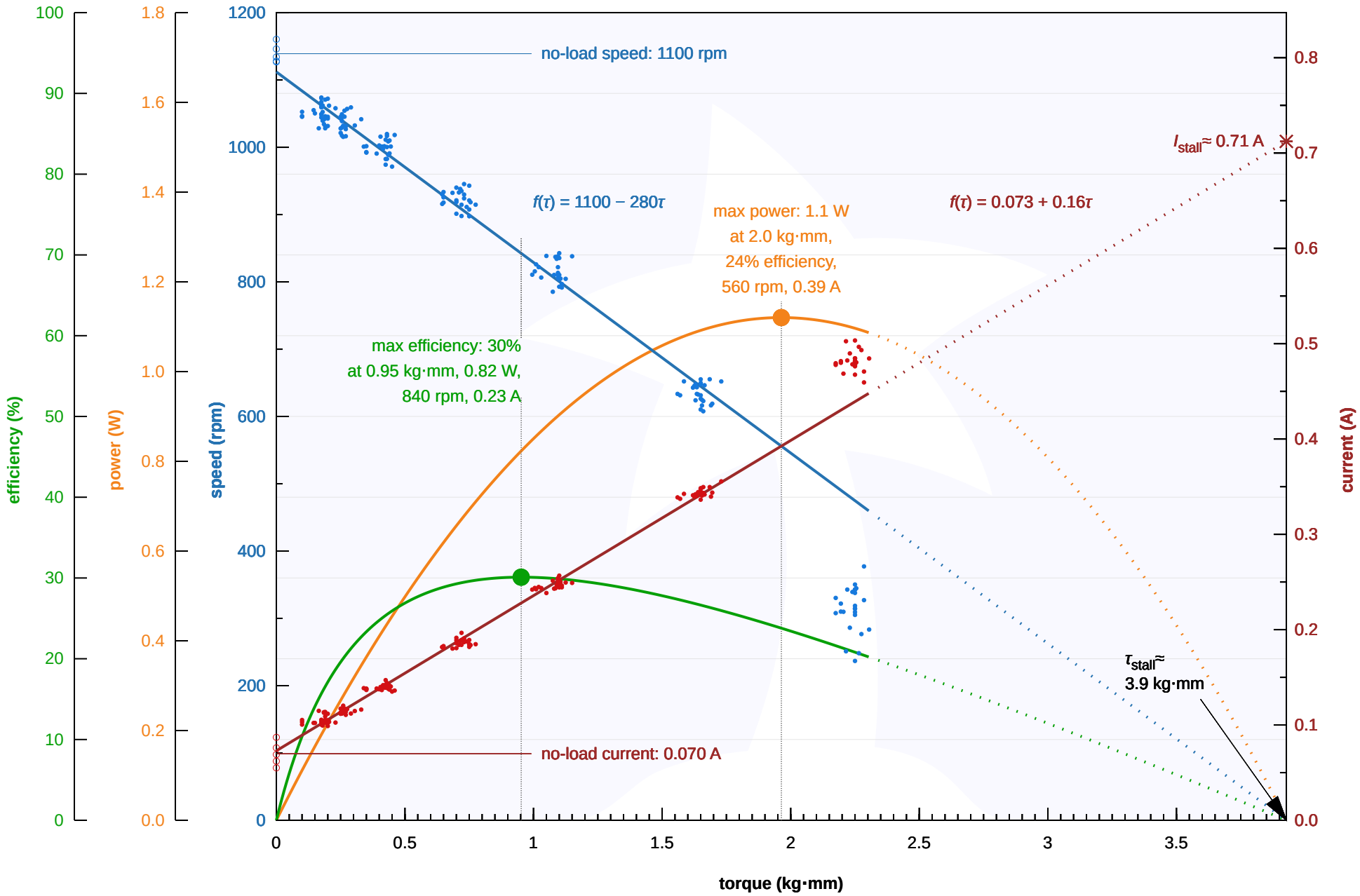
Pololu Items #3037, #3048, #5206, #5207 (10:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



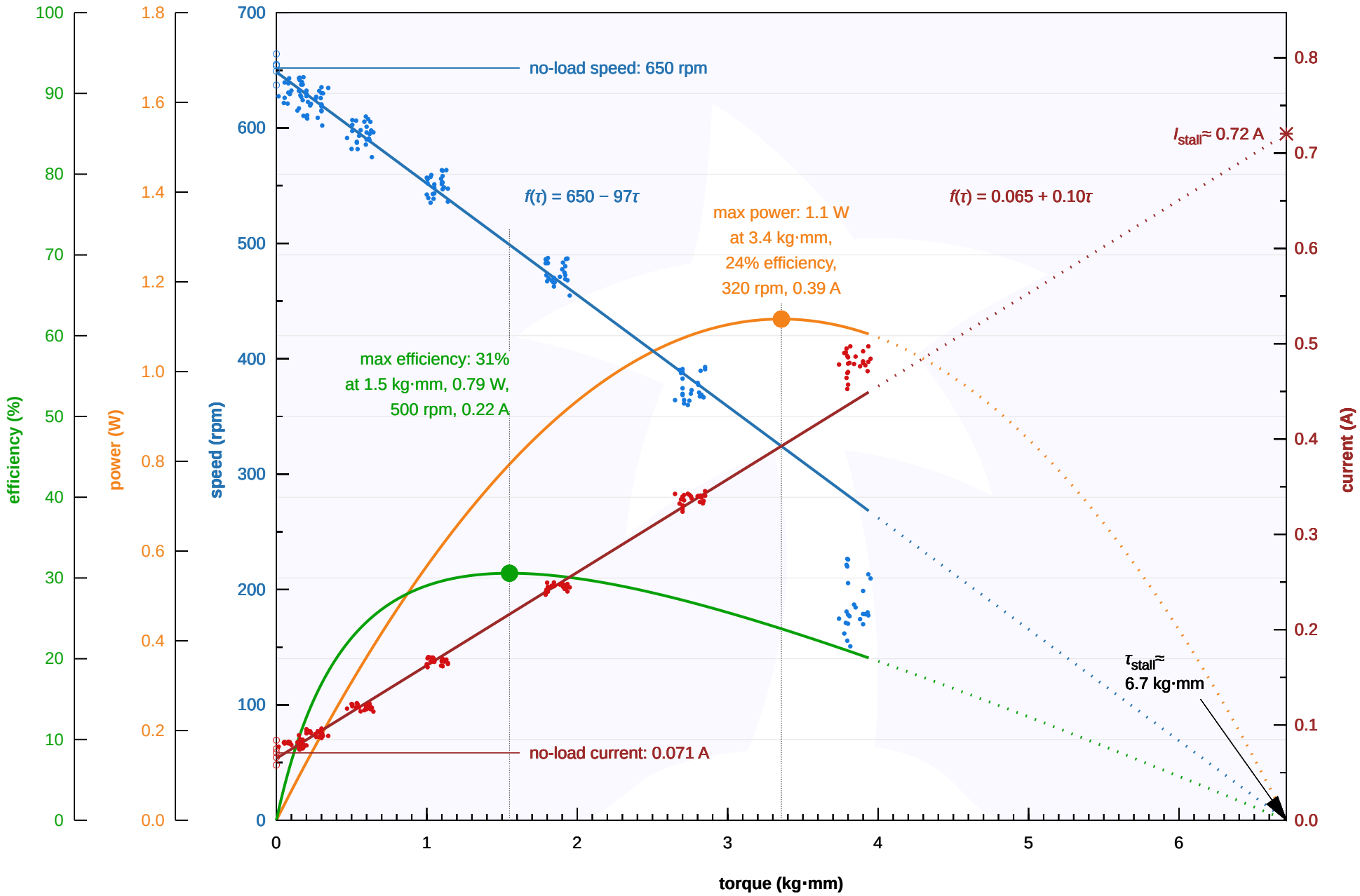
Pololu Items #4788, #4789, #5208, #5209 (15:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



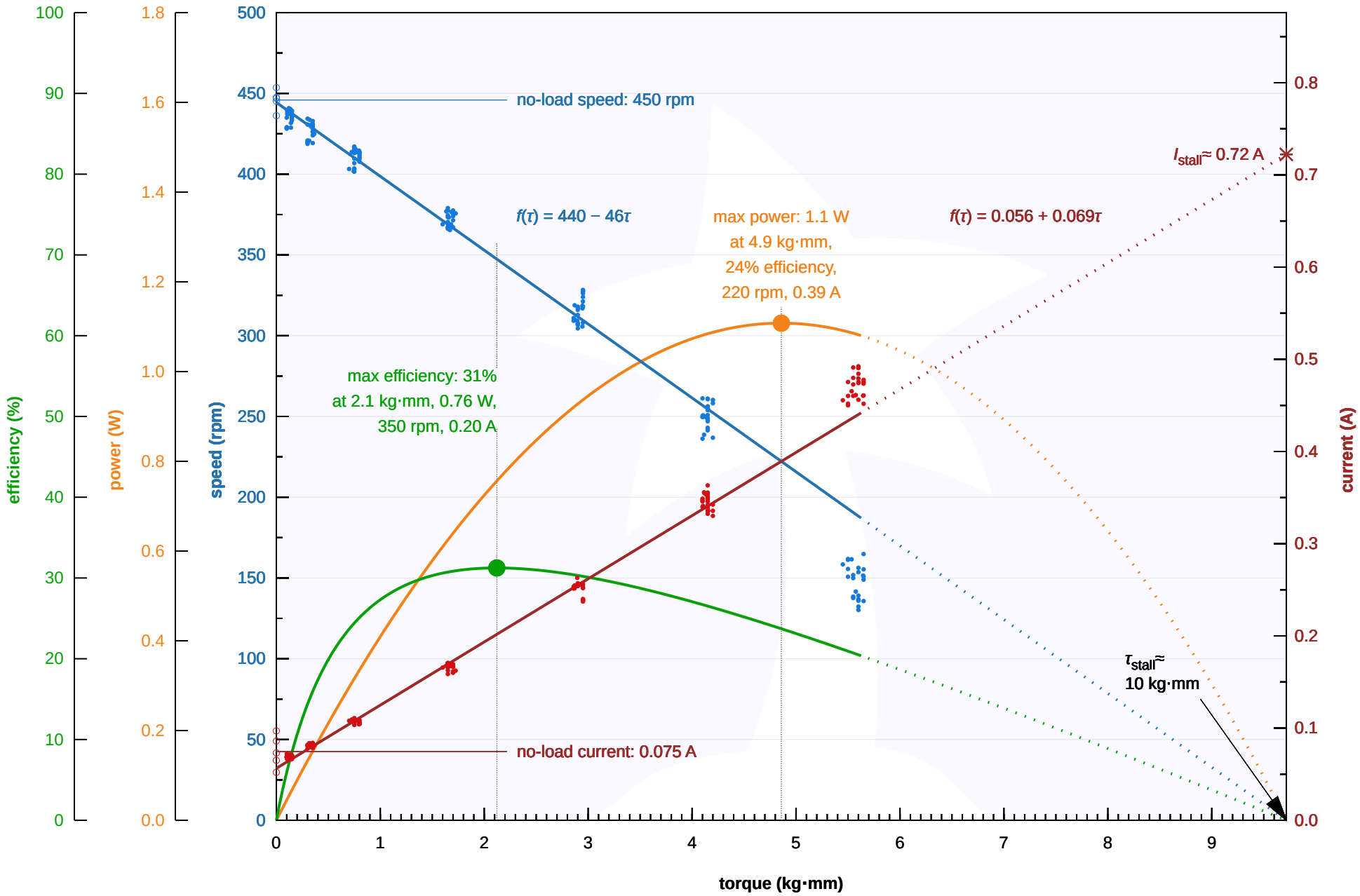
Pololu Items #3038, #3049, #5210, #5211 (30:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



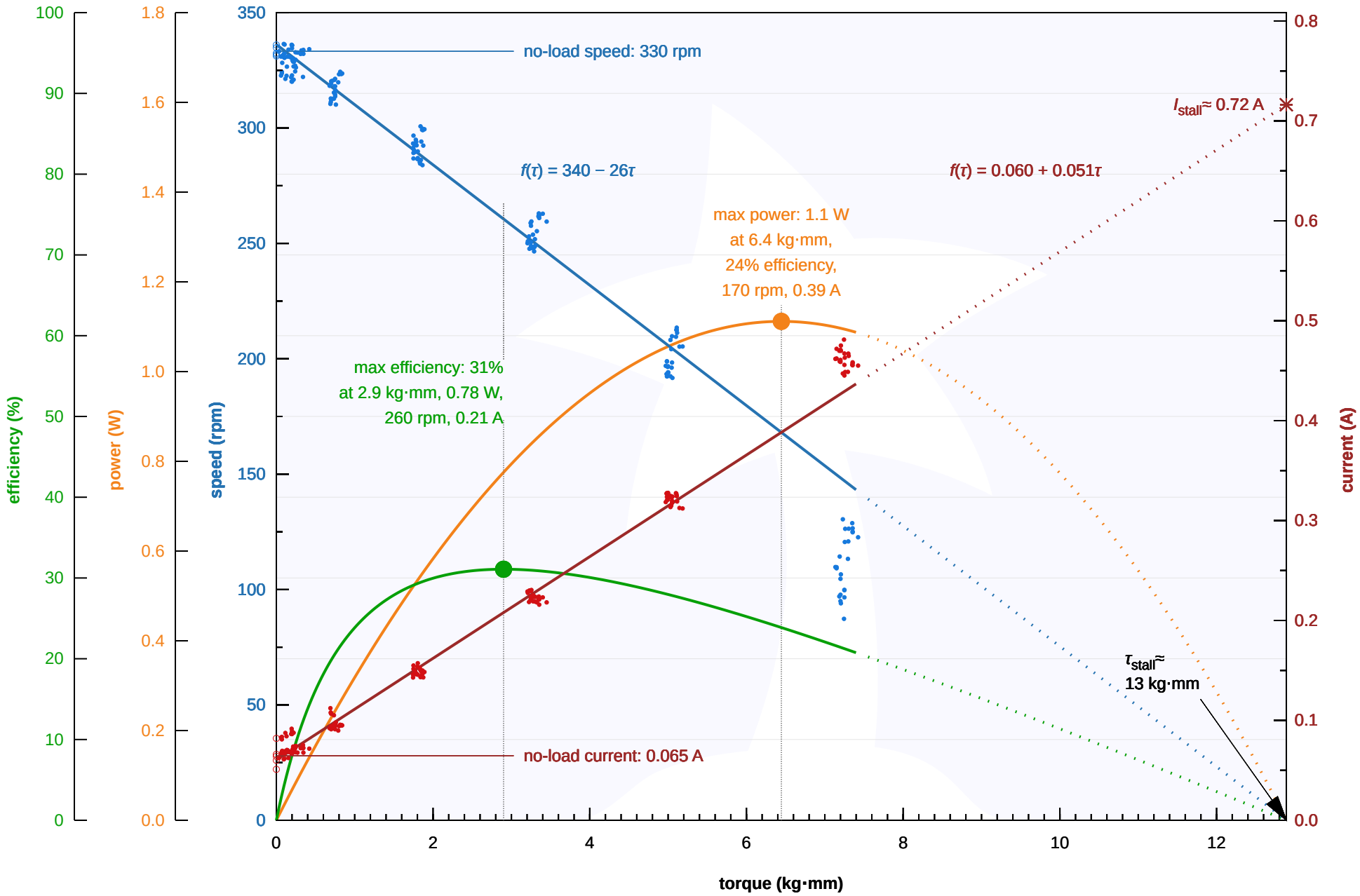
Pololu Items #3039, #3050, #5212, #5213 (50:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



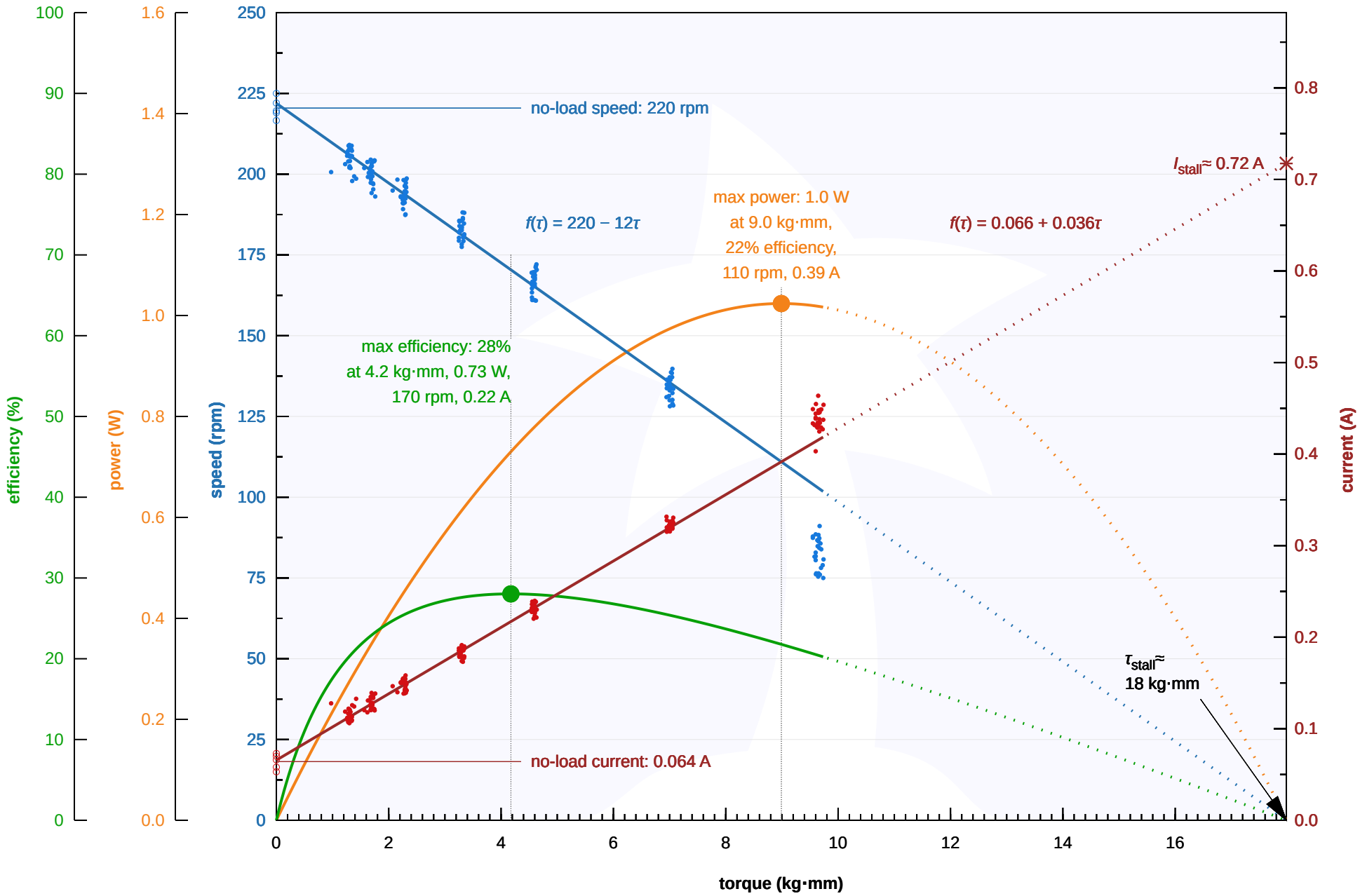
Pololu Items #3040, #3051, #5214, #5215 (75:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



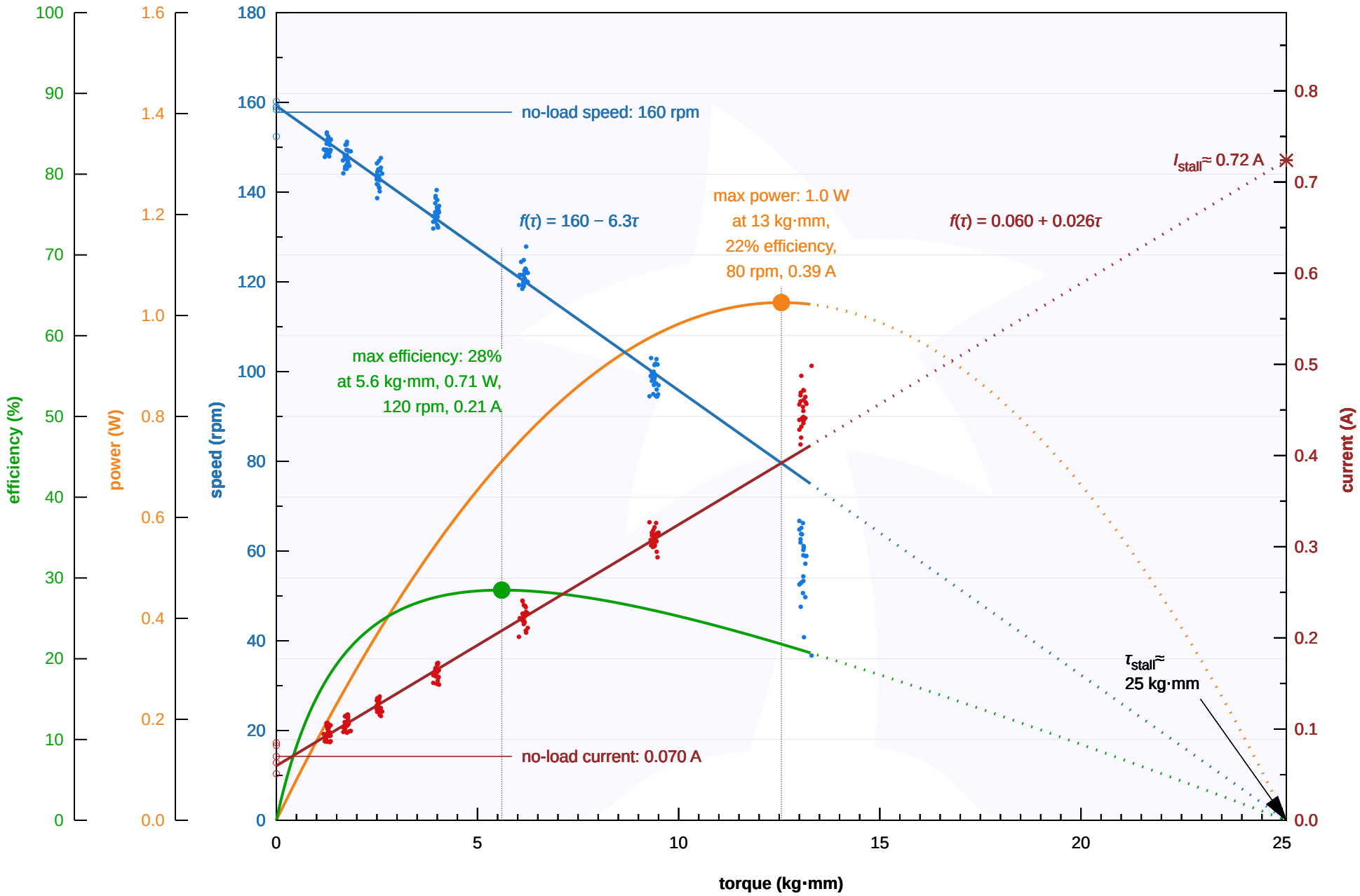
Pololu Items #3041, #3052, #5216, #5217 (100:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



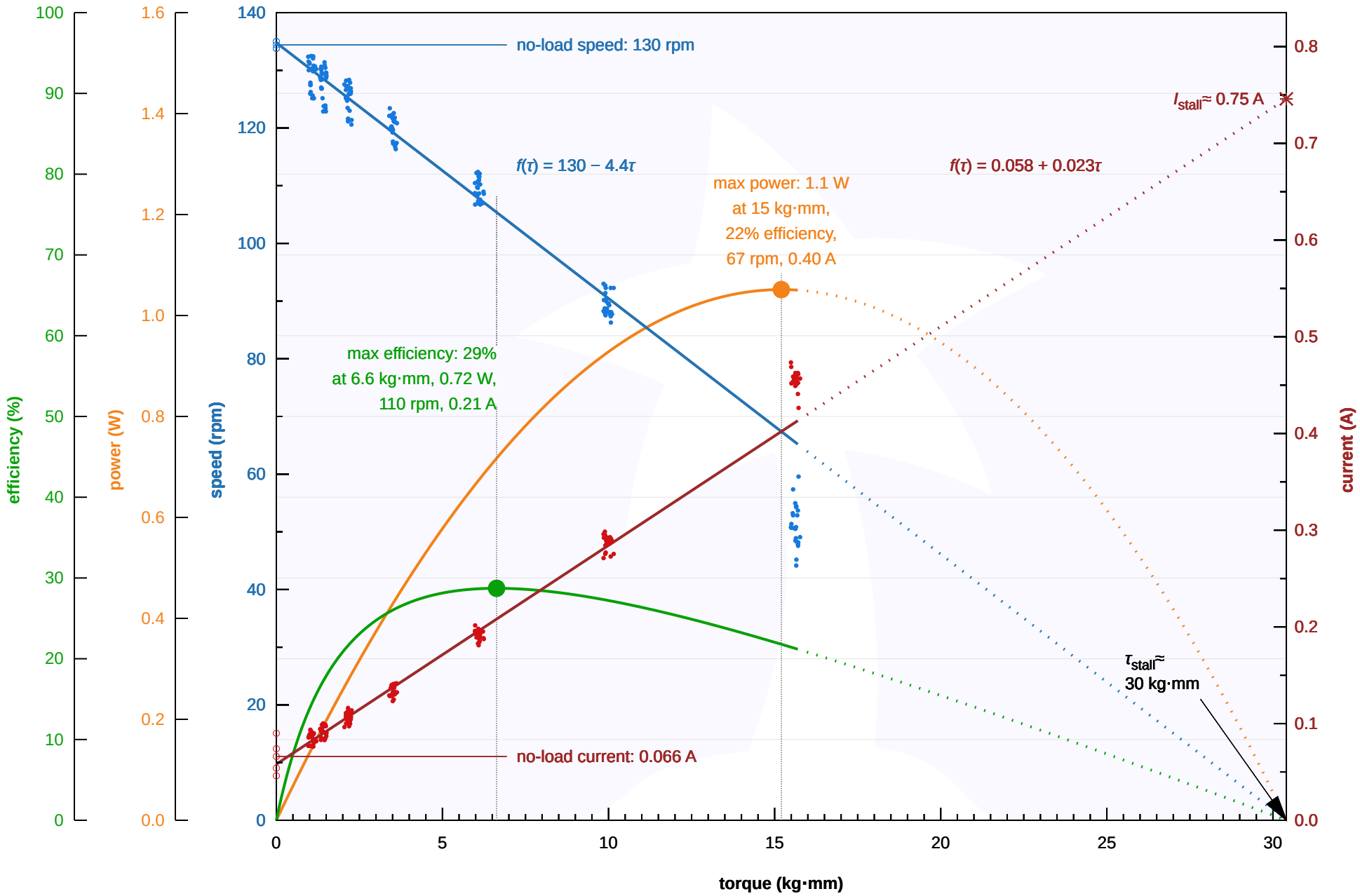
Pololu Items #3042, #3053, #5218, #5219 (150:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



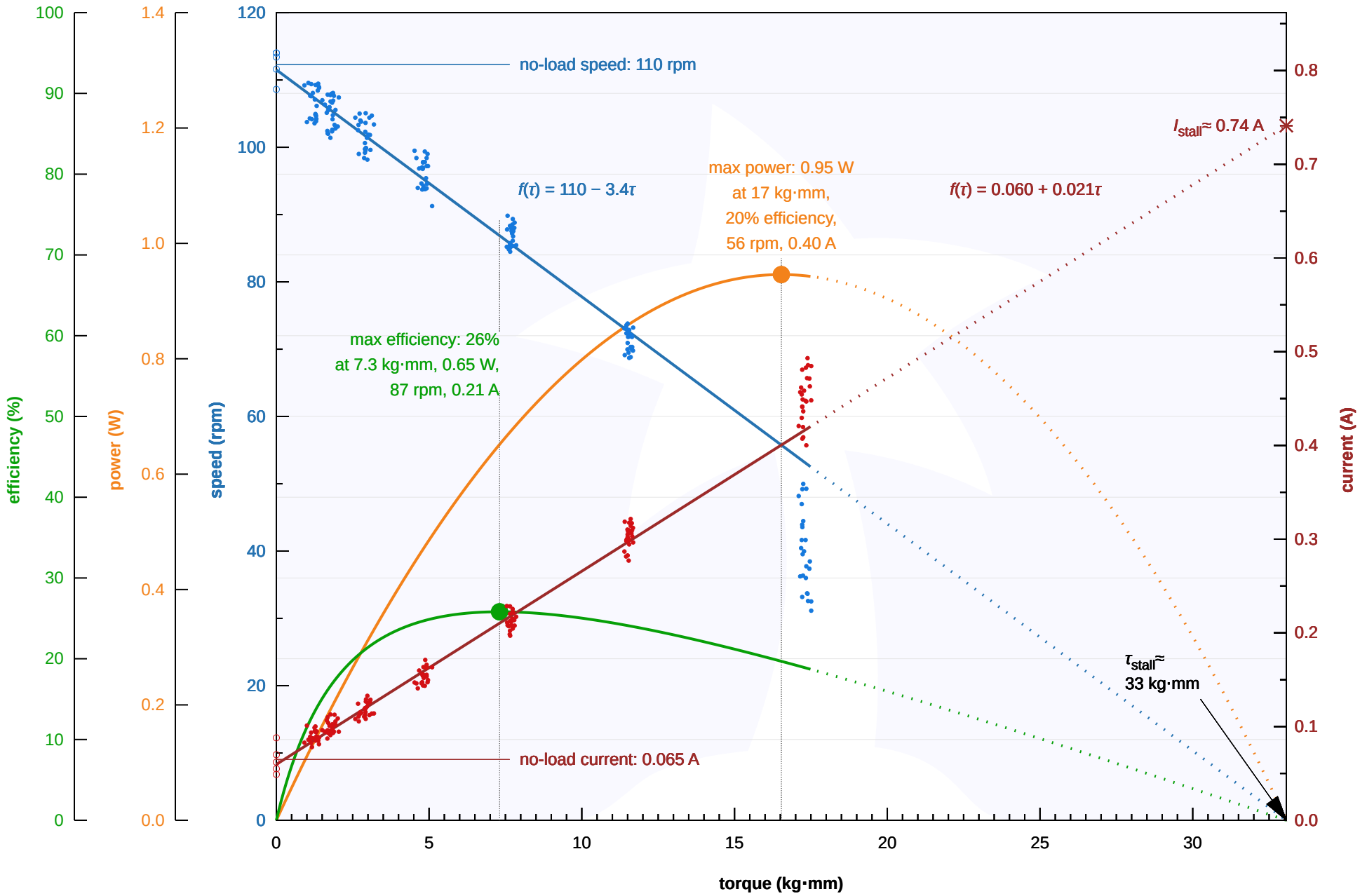
Pololu Items #3043, #3054, #5220, #5221 (210:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



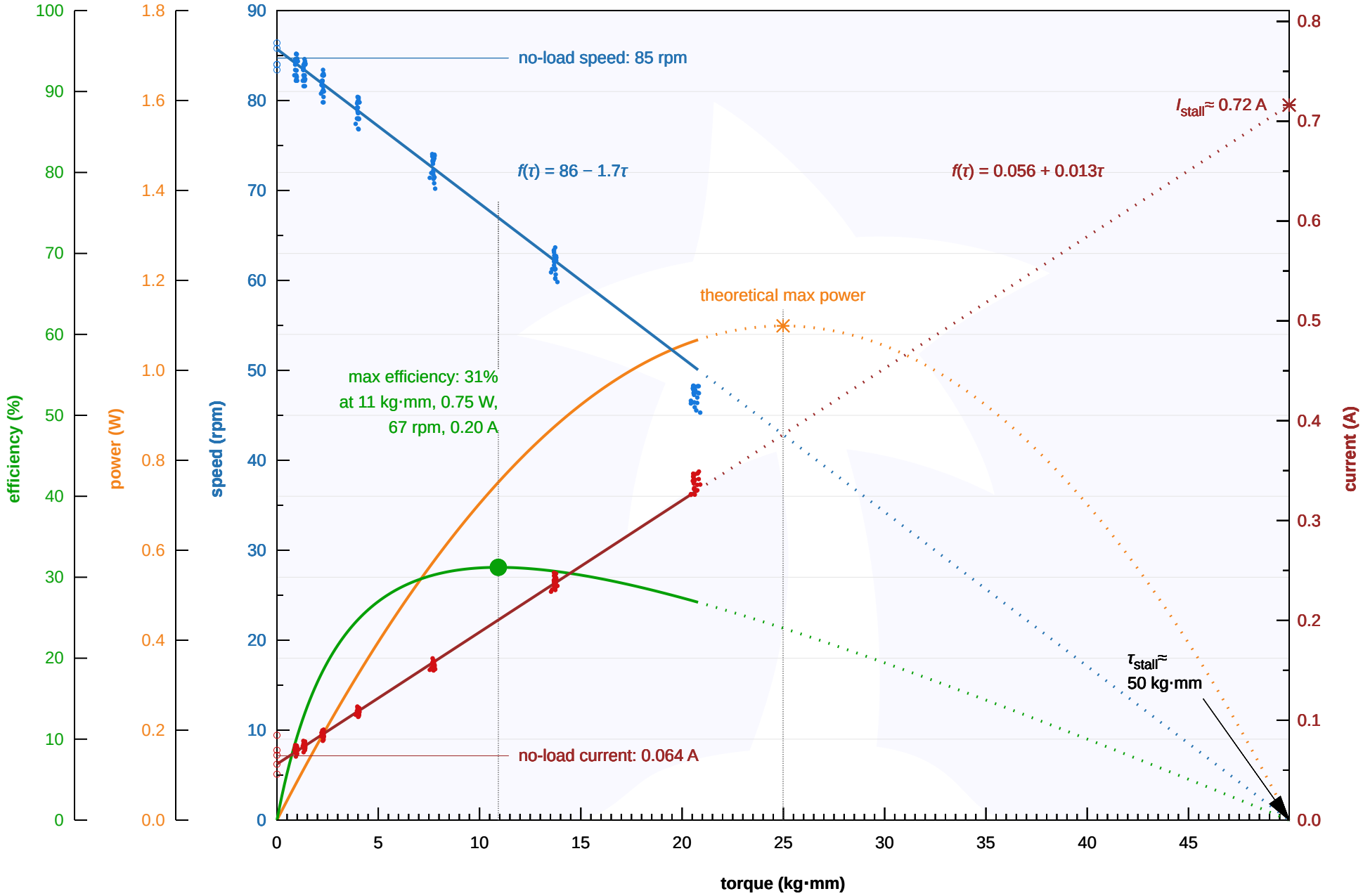
Pololu Items #3044, #3055, #5222, #5223 (250:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



Pololu Items #3045, #3056, #5224, #5225 (298:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



Pololu Items #4798, #4799, #5226, #5227 (380:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V



Pololu Items #3046, #3057, #5228, #5229 (1000:1 Micro Metal Gearmotor HPCB 12V) Performance at 12 V