

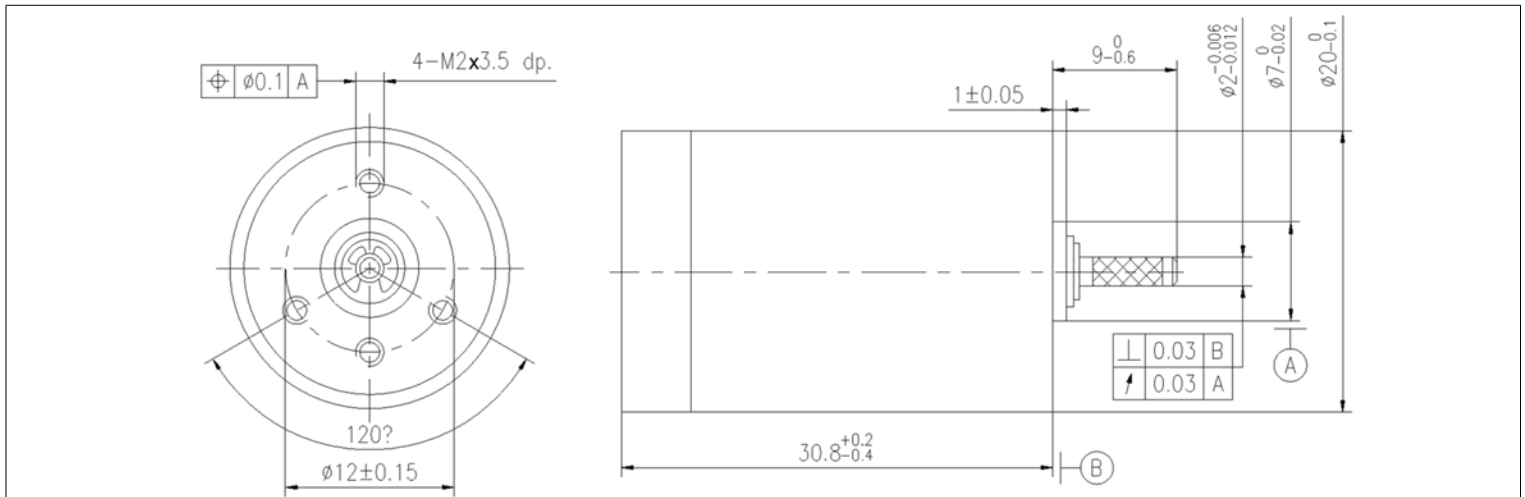
# Coreless DC Motor - 20 mm Ø



C20P03SD010

3.3 Watts Peak Power

Global Motion Products



Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	3.0 Volts	3.0 Volts	3.0 Volts
No-Load Speed	8,500 rpm	8,500 rpm	8,500 rpm
Stall Torque	15.1 mNm	154.1 gcm	2.1 oz-in
No-Load Current	0.060 Amps	0.060 Amps	0.060 Amps
Peak Output Power	3.3 Watts	3.3 Watts	3.3 Watts
Torque Constant	3.33 mNm/A	33.91 gcm/A	0.47 oz-in/A
Terminal Resistance	0.66 Ohms	0.66 Ohms	0.66 Ohms
Back-EMF Constant	0.35 V/krpm	0.35 V/krpm	0.35 V/krpm
Mechanical Time Constant	18.3 msec	18.3 msec	18.3 msec
Rotor Inertia	3.07 kgm <sup>2</sup> x10 <sup>-7</sup>	3.07 gm cm <sup>2</sup>	0.43 x10 <sup>-4</sup> oz-in-sec <sup>2</sup>
Mechanical Time Constant	18.3 msec	18.3 msec	18.3 msec
Slope of Speed/Torque Curve	562.3 rpm/mNm	55.1 rpm/gcm	3,970.6 rpm/oz-in
Speed Constant	2,871 rpm/Volt	78 %	78 %
Motor Constant	4.09 mNm/√Watt	41.74 gcm/√Watt	0.58 oz-in/√Watt
Commutation Type	Precious Metal	Precious Metal	Precious Metal
Rated Power @ 7,335 rpm	1.6 Watts	1.6 Watts	1.6 Watts
Rated Torque @ 7,335 rpm	2.1 mNm	21.3 gcm	0.3 oz-in
Rated Current @ 7,335 rpm	0.628 Amps	0.628 Amps	0.628 Amps

Part Number: How to Order C20P03SD010

Ratings are at 25°C Ambient Temperature.

Radial Load Rating	2.7 N	Radial Play	0.020 mm	Max Temperature	65 °C
Radial Load Distance	4 mm	Thrust Play	0.150 mm	Min Temperature	-20 °C
Axial Load	1.00 N	Magnet Type	NdFeB	Max Winding Temp	85 °C
Press Fit Force - Max	80.00 N	Bearing Type	Sleeve Bearings	Mass	39 grams
Gearbox Options	P22 Series Planetary Gearboxes				
Encoder Options	N/A				
Options - Other	Ball Bearings. Shaft length. Lubricants. Leads. Solder Tabs. Connectors.				

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Technical Support: (760) 451-2723

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Commutation Type:

Precious Metal

Manufactured under a  
Certified ISO 9001:2008  
Quality System

RoHS Compliant

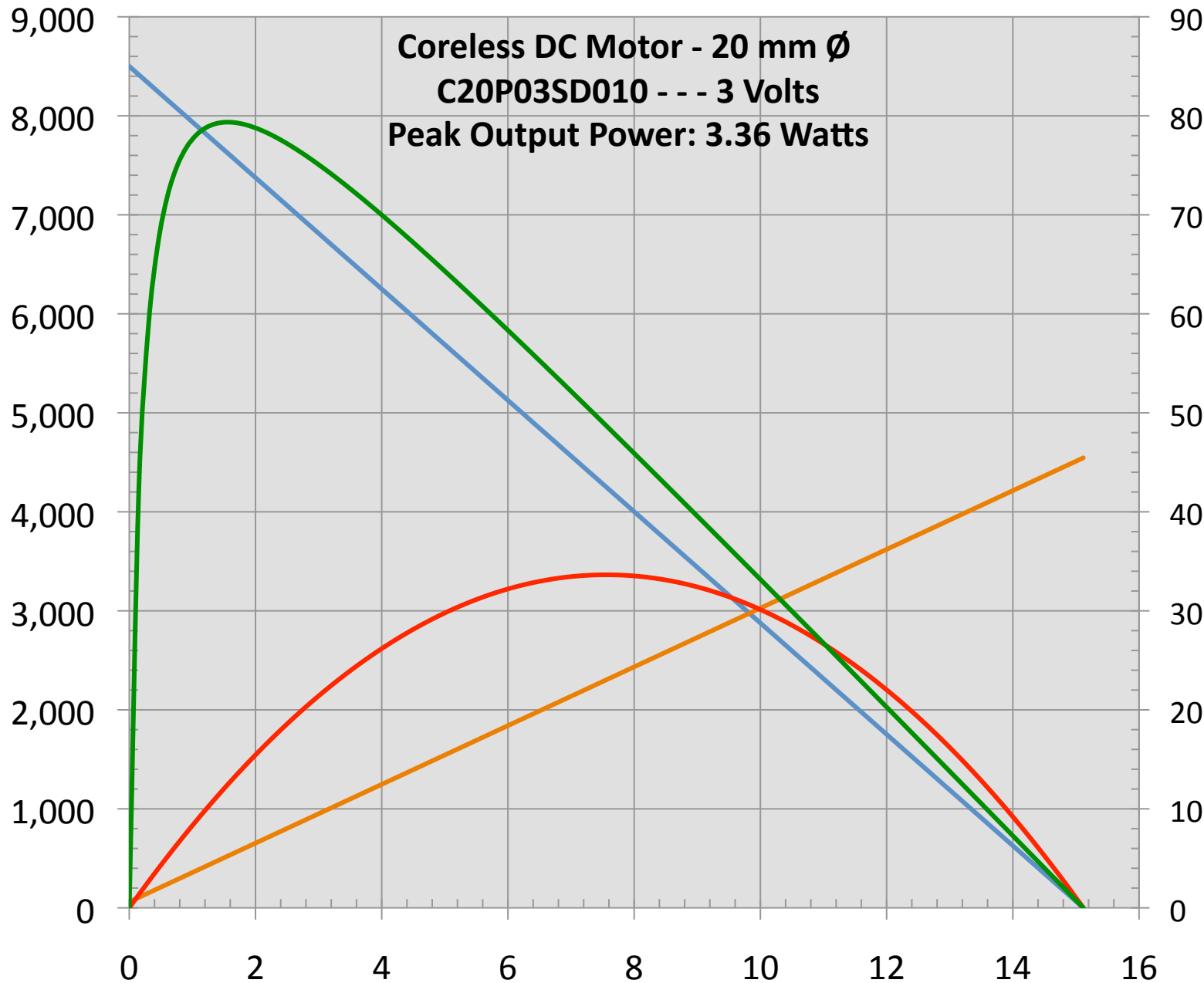
B - August 2011

Specifications Subject to change without notice

**Coreless DC Motor - 20 mm Ø**  
**C20P03SD010 - - - 3 Volts**  
**Peak Output Power: 3.36 Watts**

**C20P03SD010**  
**Voltage: 3 Volts**  
 No Load Speed: 8500 rpm  
 No Load Current: 0.0602 Amps  
 Terminal Resistance: 0.66 Ohms  
 Stall Torque: 15.12 mNm  
 Torque Constant: 3.33 mNm/A  
 Peak Output Power: 3.36 Watts  
 Peak Efficiency: 79.3%  
 Stall Current: 4.55 Amps

Speed - rpm



90  
80  
70  
60  
50  
40  
30  
20  
10  
0

A - Speed - rpm  
 A - Current - Amps / 10  
 A - Power Out - Watts / 10  
 A - Efficiency - %

Torque - mNm

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January 18, 2011

**CAUTION:** Peak Output Power is NOT a RATING. This is merely a calculated value and does not address Thermal Issues.

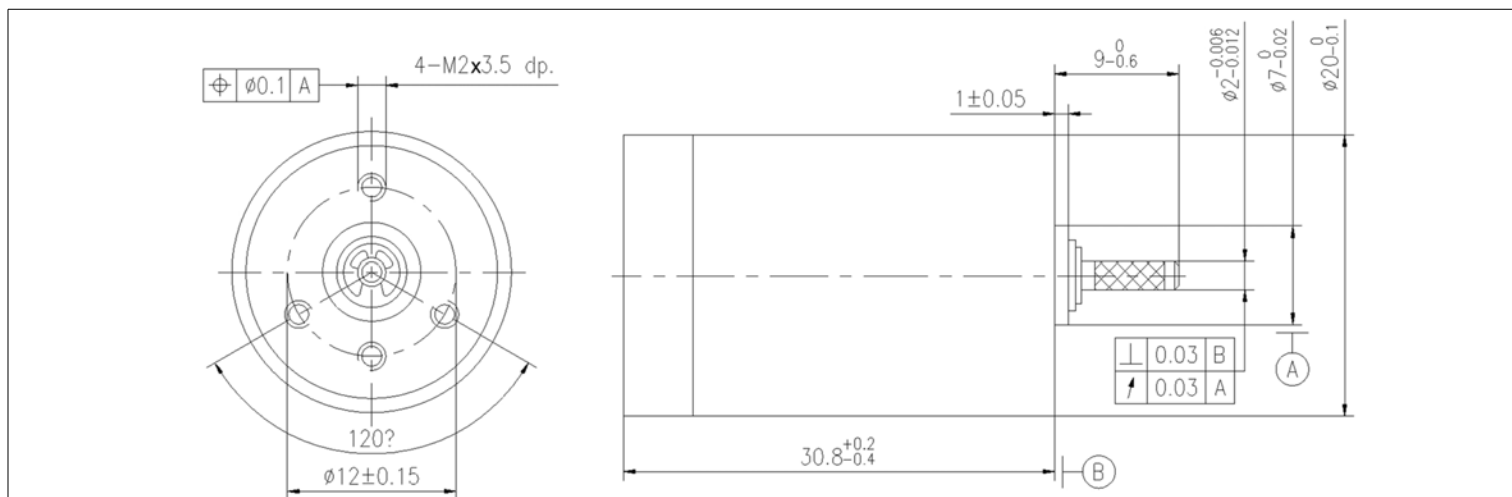
# Coreless DC Motor - 20 mm Ø

C20P06SD000

2.2 Watts Peak Power



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Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	6.0 Volts	6.0 Volts	6.0 Volts
No-Load Speed	8,200 rpm	8,200 rpm	8,200 rpm
Stall Torque	10.6 mNm	108.0 gcm	1.5 oz-in
No-Load Current	0.019 Amps	0.019 Amps	0.019 Amps
Peak Output Power	2.2 Watts	2.2 Watts	2.2 Watts
Torque Constant	6.90 mNm/A	70.37 gcm/A	0.98 oz-in/A
Terminal Resistance	3.91 Ohms	3.91 Ohms	3.91 Ohms
Back-EMF Constant	0.72 V/krpm	0.72 V/krpm	0.72 V/krpm
Mechanical Time Constant	25.6 msec	25.6 msec	25.6 msec
Rotor Inertia	3.12 kgm <sup>2</sup> x10 <sup>-7</sup>	3.12 gm cm <sup>2</sup>	0.44 x10 <sup>-4</sup> oz-in-sec <sup>2</sup>
Mechanical Time Constant	25.6 msec	25.6 msec	25.6 msec
Slope of Speed/Torque Curve	774.4 rpm/mNm	75.9 rpm/gcm	5,468.2 rpm/oz-in
Speed Constant	1,384 rpm/Volt	79 %	79 %
Motor Constant	3.49 mNm/√Watt	35.59 gcm/√Watt	0.49 oz-in/√Watt
Commutation Type	Precious Metal	Precious Metal	Precious Metal
Rated Power @ 6,319 rpm	1.6 Watts	1.6 Watts	1.6 Watts
Rated Torque @ 6,319 rpm	2.4 mNm	24.8 gcm	0.3 oz-in
Rated Current @ 6,319 rpm	0.352 Amps	0.352 Amps	0.352 Amps

Part Number: How to Order C20P06SD000

Ratings are at 25°C Ambient Temperature.

Radial Load Rating	2.7 N	Radial Play	0.020 mm	Max Temperature	65 °C
Radial Load Distance	4 mm	Thrust Play	0.150 mm	Min Temperature	-20 °C
Axial Load	1.00 N	Magnet Type	NdFeB	Max Winding Temp	85 °C
Press Fit Force - Max	80.00 N	Bearing Type	Sleeve Bearings	Mass	39 grams
Gearbox Options	P22 Series Planetary Gearboxes				
Encoder Options	N/A				
Options - Other	Ball Bearings. Shaft length. Lubricants. Leads. Solder Tabs. Connectors.				

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Commutation Type:

Precious Metal

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Certified ISO 9001:2008  
Quality System

RoHS Compliant

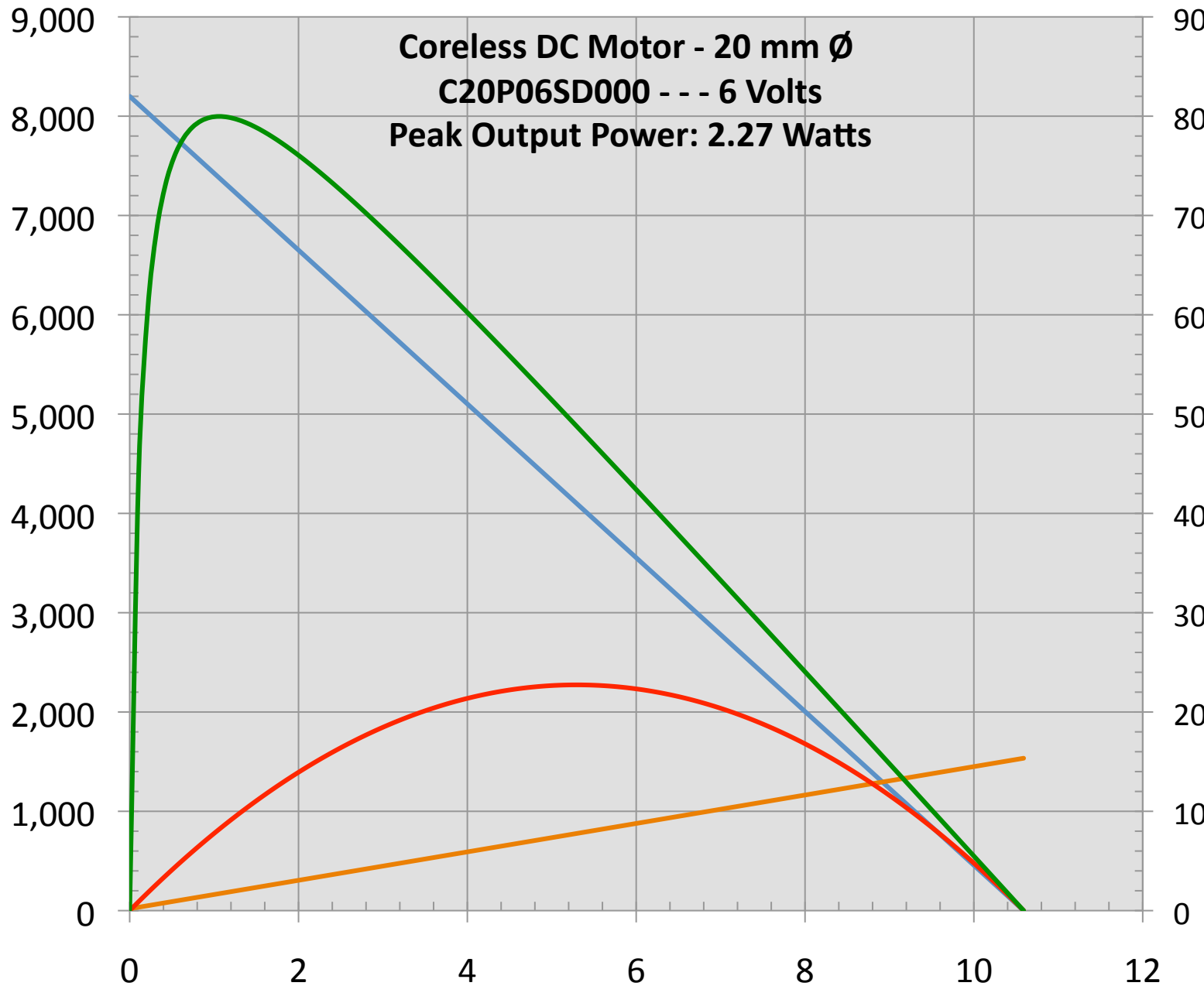
B - August 2011

Specifications Subject to change without notice

**Coreless DC Motor - 20 mm Ø**  
**C20P06SD000 - - - 6 Volts**  
**Peak Output Power: 2.27 Watts**

**C20P06SD000**  
**Voltage: 6 Volts**  
 No Load Speed: 8200 rpm  
 No Load Current: 0.019 Amps  
 Terminal Resistance: 3.91 Ohms  
 Stall Torque: 10.59 mNm  
 Torque Constant: 6.9 mNm/A  
 Peak Output Power: 2.27 Watts  
 Peak Efficiency: 80%  
 Stall Current: 1.53 Amps

Speed - rpm



90  
80  
70  
60  
50  
40  
30  
20  
10  
0

A - Speed - rpm  
 A - Current - Amps / 10  
 A - Power Out - Watts / 10  
 A - Efficiency - %

Torque - mNm

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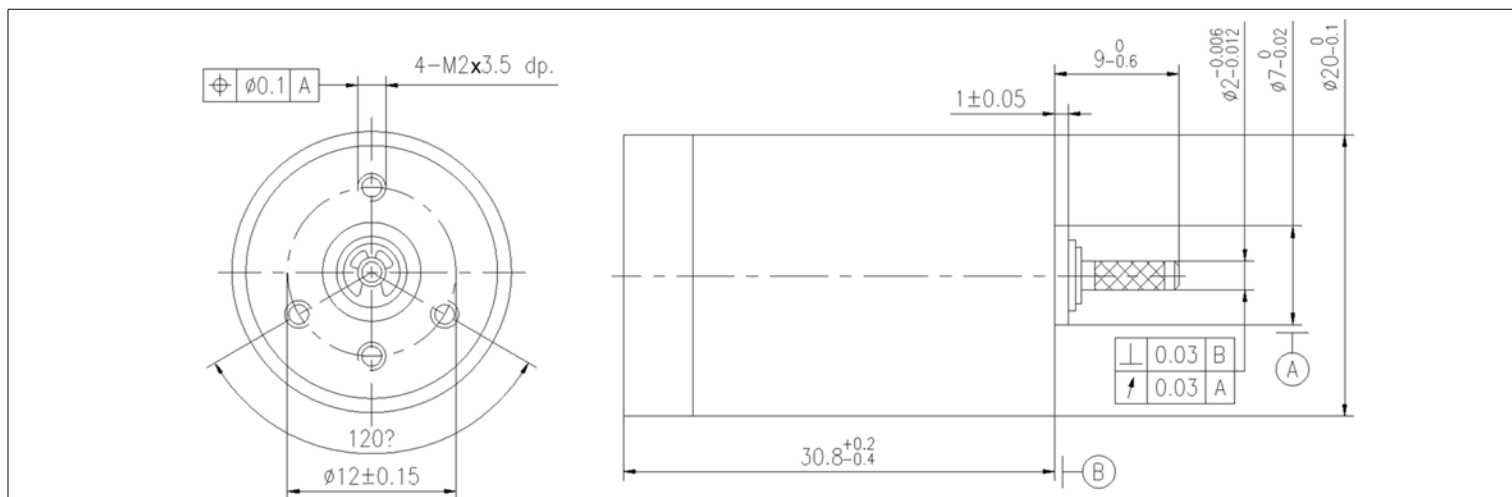
# Coreless DC Motor - 20 mm Ø

C20P15SD000

2.4 Watts Peak Power



Global Motion Products



Not to Scale - Dimensions in millimeters (mm)

Nominal Voltage	9.0 Volts	9.0 Volts	9.0 Volts
No-Load Speed	8,370 rpm	8,370 rpm	8,370 rpm
Stall Torque	11.2 mNm	114.4 gcm	1.6 oz-in
No-Load Current	0.019 Amps	0.019 Amps	0.019 Amps
Peak Output Power	2.4 Watts	2.4 Watts	2.4 Watts
Torque Constant	10.09 mNm/A	102.87 gcm/A	1.43 oz-in/A
Terminal Resistance	8.09 Ohms	8.09 Ohms	8.09 Ohms
Back-EMF Constant	1.06 V/krpm	1.06 V/krpm	1.06 V/krpm
Mechanical Time Constant	19.7 msec	19.7 msec	19.7 msec
Rotor Inertia	2.48 kgm <sup>2</sup> x10 <sup>-7</sup>	2.48 gm cm <sup>2</sup>	0.35 x10 <sup>-4</sup> oz-in-sec <sup>2</sup>
Mechanical Time Constant	19.7 msec	19.7 msec	19.7 msec
Slope of Speed/Torque Curve	745.8 rpm/mNm	73.1 rpm/gcm	5,266.5 rpm/oz-in
Speed Constant	947 rpm/Volt	75 %	75 %
Motor Constant	3.55 mNm/√Watt	36.17 gcm/√Watt	0.50 oz-in/√Watt
Commutation Type	Precious Metal	Precious Metal	Precious Metal
Rated Power @ 6,655 rpm	1.6 Watts	1.6 Watts	1.6 Watts
Rated Torque @ 6,655 rpm	2.3 mNm	23.5 gcm	0.3 oz-in
Rated Current @ 6,655 rpm	0.228 Amps	0.228 Amps	0.228 Amps

Part Number: How to Order C20P15SD000

Ratings are at 25°C Ambient Temperature.

Radial Load Rating	2.7 N	Radial Play	0.020 mm	Max Temperature	65 °C
Radial Load Distance	4 mm	Thrust Play	0.150 mm	Min Temperature	-20 °C
Axial Load	1.00 N	Magnet Type	NdFeB	Max Winding Temp	85 °C
Press Fit Force - Max	80.00 N	Bearing Type	Sleeve Bearings	Mass	39 grams
Gearbox Options	P22 Series Planetary Gearboxes				
Encoder Options	N/A				
Options - Other	Ball Bearings. Shaft length. Lubricants. Leads. Solder Tabs. Connectors.				

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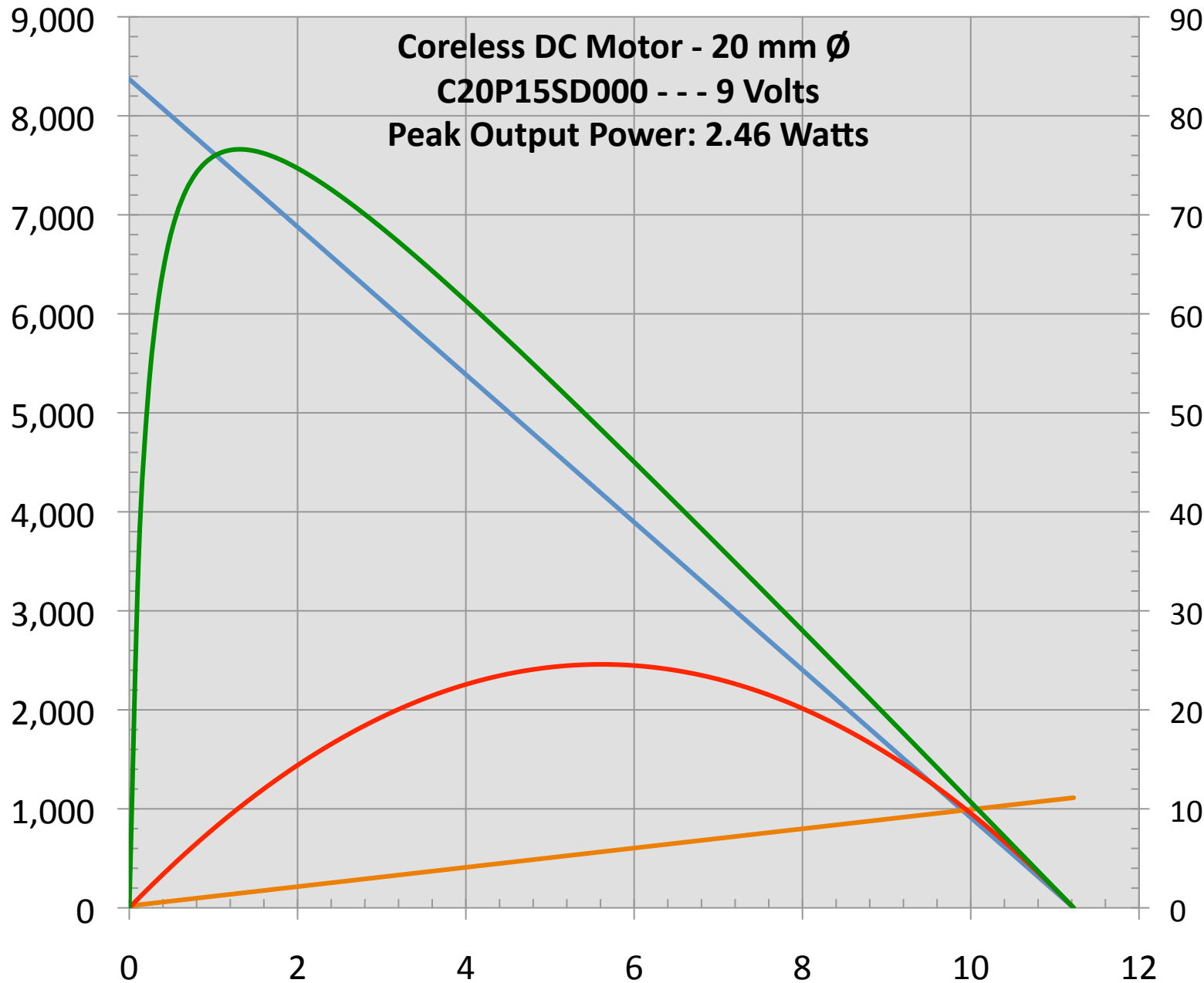
B - August 2011

Specifications Subject to change without notice

**Coreless DC Motor - 20 mm Ø**  
**C20P15SD000 - - - 9 Volts**  
**Peak Output Power: 2.46 Watts**

**C20P15SD000**  
**Voltage: 9 Volts**  
 No Load Speed: 8370 rpm  
 No Load Current: 0.0195 Amps  
 Terminal Resistance: 8.09 Ohms  
 Stall Torque: 11.22 mNm  
 Torque Constant: 10.09 mNm/A  
 Peak Output Power: 2.46 Watts  
 Peak Efficiency: 76.6%  
 Stall Current: 1.11 Amps

Speed - rpm



90  
80  
70  
60  
50  
40  
30  
20  
10  
0

— A - Speed - rpm  
 — A - Current - Amps / 10  
 — A - Power Out - Watts / 10  
 — A - Efficiency - %

Torque - mNm

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