

# DC-Micromotors

# Graphite Commutation

16 Watt

For combination with:

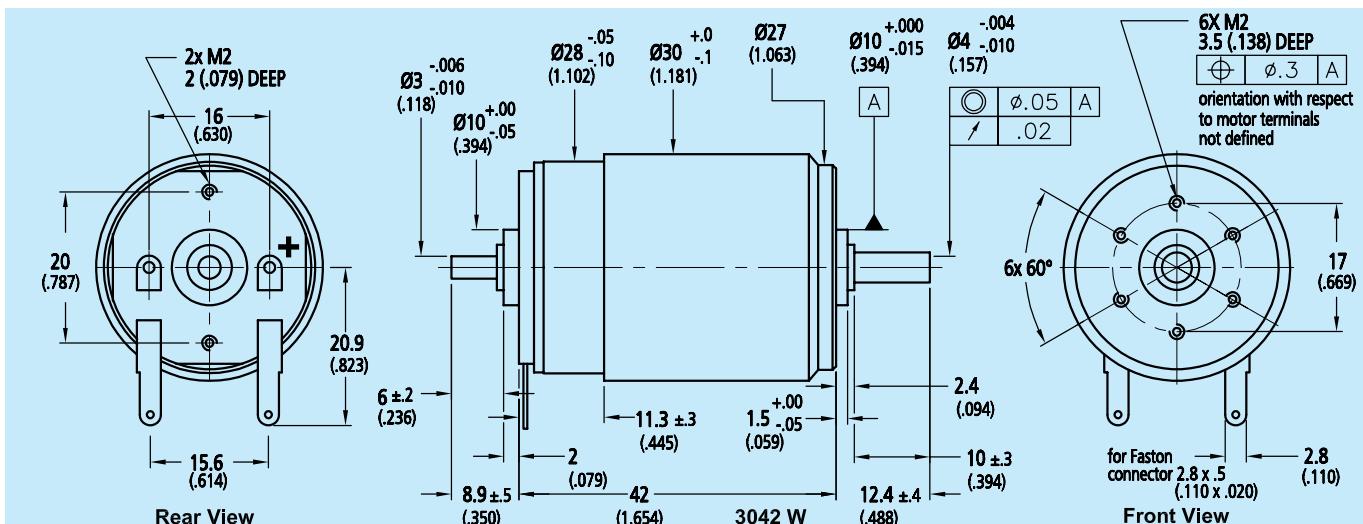
For combination with  
Gearheads: 30/1, 32PG, 38

Encoders: HE. 5500. 5540

## Series 3042 ... C

|  | 3042 W                                | 006 C                                 | 012 C                    | 018 C                    | 024 C                    | 036 C                    |  |
|--|---------------------------------------|---------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--|
| 1 Nominal voltage                            | U <sub>N</sub>                        | 6                                     | 12                       | 18                       | 24                       | 36                       | Volt                                     |
| 2 Terminal resistance                        | R                                     | ± 12%                                 | 0.6                      | 1.7                      | 3.8                      | 6.8                      | 14.0                                     |
| 3 Output power                               | P <sub>2</sub> max.                   |                                       | 14.5                     | 20.6                     | 20.7                     | 20.6                     | 22.5                                     |
| 4 Efficiency                                 | η <sub>1</sub> max.                   |                                       | 76                       | 80                       | 78                       | 79                       | %  |
| 5 No-load speed                              | n <sub>o</sub>                        | ± 12%                                 | 5,100                    | 5,400                    | 5,600                    | 5,700                    | 5,500                                    |
| 6 No-load current (with shaft ø 0.16 in)     | I <sub>o</sub>                        | ± 50%                                 | 0.180                    | 0.093                    | 0.070                    | 0.050                    | 0.035                                    |
| 7 Stall torque                               | M <sub>H</sub>                        |                                       | 15.29                    | 20.68                    | 19.97                    | 19.54                    | 22.09                                    |
| 8 Friction torque                            | M <sub>R</sub>                        |                                       | 0.283                    | 0.269                    | 0.297                    | 0.283                    | 0.312                                    |
| 9 Speed constant                             | k <sub>n</sub>                        |                                       | 866                      | 456                      | 316                      | 241                      | 155                                      |
| 10 Back-EMF constant                         | k <sub>E</sub>                        |                                       | 1.16                     | 2.19                     | 3.17                     | 4.15                     | 6.46                                     |
| 11 Torque constant                           | k <sub>M</sub>                        |                                       | 1.558                    | 2.960                    | 4.277                    | 5.608                    | 8.737                                    |
| 12 Current constant                          | k <sub>I</sub>                        |                                       | 0.642                    | 0.338                    | 0.234                    | 0.178                    | 0.114                                    |
| 13 Slope of n-M curve                        | Δn/ΔM                                 |                                       | 334                      | 261                      | 280                      | 292                      | 249                                      |
| 14 Rotor inductance                          | L                                     |                                       | 44                       | 165                      | 360                      | 620                      | 1,450                                    |
| 15 Mechanical time constant                  | τ <sub>m</sub>                        |                                       | 7                        | 7                        | 7                        | 7                        | 7  |
| 16 Rotor inertia                             | J                                     |                                       | 1.983 · 10 <sup>-4</sup> | 2.549 · 10 <sup>-4</sup> | 2.407 · 10 <sup>-4</sup> | 2.266 · 10 <sup>-4</sup> | 2.691 · 10 <sup>-4</sup>                 |
| 17 Angular acceleration                      | α <sub>max.</sub>                     |                                       | 76                       | 81                       | 84                       | 85                       | 82 · 10 <sup>-4</sup> rad/s <sup>2</sup> |
| 18 Thermal resistance                        | R <sub>th 1</sub> / R <sub>th 2</sub> | 3 / 14                                |                          |                          |                          |                          | °C/W                                     |
| 19 Thermal time constant                     | τ <sub>w1</sub> / τ <sub>w2</sub>     | 17.6 / 832                            |                          |                          |                          |                          | s  |
| 20 Operating temperature range:              |                                       |                                       |                          |                          |                          |                          |  |
| – motor                                      |                                       | – 30 to +125 (– 22 to +257)           |                          |                          |                          |                          | °C (°F)                                  |
| – rotor, max. permissible                    |                                       | +125 (+257)                           |                          |                          |                          |                          | °C (°F)                                  |
| 21 Shaft bearings                            |                                       | ball bearings, preloaded              |                          |                          |                          |                          |  |
| 22 Shaft load max.:                          |                                       |                                       |                          |                          |                          |                          |  |
| – with shaft diameter                        |                                       | 0.157                                 |                          |                          |                          |                          | in                                       |
| – radial at 3,000 rpm (0.12 in from bearing) |                                       | 72                                    |                          |                          |                          |                          | oz                                       |
| – axial at 3,000 rpm                         |                                       | 7.2                                   |                          |                          |                          |                          | oz                                       |
| – axial at standstill                        |                                       | 72                                    |                          |                          |                          |                          | oz                                       |
| 23 Shaft play:                               |                                       |                                       |                          |                          |                          |                          |  |
| – radial                                     | ≤                                     | 0.0006                                |                          |                          |                          |                          | in                                       |
| – axial                                      | =                                     | 0                                     |                          |                          |                          |                          | in                                       |
| 24 Housing material                          |                                       | steel, zinc galvanized and passivated |                          |                          |                          |                          |  |
| 25 Weight                                    |                                       | 5.51                                  |                          |                          |                          |                          | oz                                       |
| 26 Direction of rotation                     |                                       | clockwise, viewed from the front face |                          |                          |                          |                          |  |
| <b>Recommended values</b>                    |                                       |                                       |                          |                          |                          |                          |  |
| 27 Speed up to                               | n <sub>e</sub> max.                   |                                       | 5,000                    | 5,000                    | 5,000                    | 5,000                    | 5,000                                    |
| 28 Torque up to <sup>1)</sup>                | M <sub>e</sub> max.                   |                                       | 4.248                    | 4.248                    | 4.248                    | 4.248                    | 4.248                                    |
| 29 Current up to (thermal limits)            | I <sub>e</sub> max.                   |                                       | 2.650                    | 1.550                    | 1.050                    | 0.790                    | 0.550                                    |
|  |                                       |                                       |                          |                          |                          |                          | A  |

<sup>1)</sup> thermal resistance  $R_{th,2}$  by 40% reduced



For notes on technical data refer to "Technical Information". Specifications subject to change without notice. MM EO402