



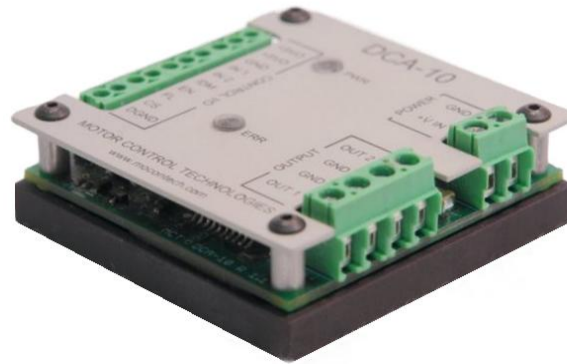
## **DCA-10**

### **DC Brushed Motor Drive**

Motor Control Technologies, LLC  
[www.mocontech.com](http://www.mocontech.com)

The DCA-10 is a four quadrant variable speed drive designed for DC brushed motors. The DCA-10 is capable of sourcing up to five amps continuous current at +24VDC. A simplified control scheme uses one PWM signal and one digital line to drive the speed and direction of a motor. The DCA-10 is fully compatible with +3.3V and +5V logic levels, making it easy to integrate with standard data acquisition hardware and microcontroller technologies.

Additional feedback and control options enhance the DCA-10 control capabilities. An analog voltage signal provides real-time load current monitoring. Other available features include short circuit detection, over temperature shutdown, +5V supply output, and drive enable/disable capabilities. The DCA-10 also has an expanded operating mode to control up to two inductive or resistive loads. This feature allows the user to control power to loads such as solenoids, small DC heaters, or individual phases on a stepper motor.



The DCA-10 is ready to use right out of the box. An anodized aluminum heat sink and enclosure may be used as a stand-alone base, or integrated into existing hardware. The DCA-10 also provides a convenient +5V regulated output to power encoders, limit switches, or other electronic components.

## DCA-10 Electrical Characteristics

Characteristic	Symbol	Min	Typ	Max	Unit
Supply Voltage	+V <sub>S</sub>	9	--	24	V
Motor Output Voltage	OUT <sub>n</sub>	--	+V <sub>S</sub> - 0.5	--	V
Continuous Output Current <sup>(1)</sup>	I <sub>OUT</sub>	0	--	5	A
Current Limiting Threshold	I <sub>LIM</sub>	5.0	6.5	7.8	A
Over temperature Shutdown <sup>(2)</sup>	T <sub>MAX</sub>	175	--	225	C
Peripheral Power (+5VO) <sup>(3)</sup> I <sub>out</sub> = 0 A I <sub>out</sub> = 50 mA I <sub>out</sub> = 100 mA	+5VO	-- -- --	5.0 4.6 4.3	5.2 5.1 5.0	V V V
Quiescent Current Drive Enabled (EN = 1) +V <sub>S</sub> = 9V +V <sub>S</sub> = 24V Drive Disabled (EN = 0) +V <sub>S</sub> = 9V +V <sub>S</sub> = 24V	I <sub>Q</sub>	-- -- -- --	15 17 7 8	-- -- -- --	mA mA mA mA
Control I/O input limits	V <sub>I</sub>	-7	--	7	V
Control I/O logic levels High level input voltage Low level input voltage	V <sub>IH</sub> V <sub>IL</sub>	2 --	-- --	-- 0.8	V V
PWM Frequency	f <sub>PWM</sub>	0	--	10	KHz
Bridge Resistance <sup>(4)</sup>	R <sub>BR</sub>	--	0.240	--	Ω
Recommended Winding Resistance <sup>(5)</sup> +V <sub>S</sub> = 24V +V <sub>S</sub> = 18V +V <sub>S</sub> = 12V +V <sub>S</sub> = 9V	R <sub>MOT</sub>	2.5 2.0 1.1 1.0	-- -- -- --	-- -- -- --	Ω
Bridge Current Feedback I <sub>BRIDGE</sub> = 0 A I <sub>BRIDGE</sub> = 0.5 A I <sub>BRIDGE</sub> = 1.5 A I <sub>BRIDGE</sub> = 3.0 A I <sub>BRIDGE</sub> = 6.0 A	V <sub>FB</sub>	-- 106 356 713 1.43	-- 133 400 800 1.60	61 170 467 933 1.87	mV mV mV mV V
Operating Temperature Range	T <sub>OP</sub>	-40	--	85	°C

**Notes:**

- 1) Inability to adequately dissipate heat from the drive unit will result in lower continuous current limit due to over temperature shutdown limits.
- 2) Power IC junction temperature.
- 3) Current sourcing above 100 mA from +5V0 will result in excessive voltage drop and heat generation within the unit. Thermal shutdown of +5V output can result.
- 4)  $R_{BR}$  value with the junction temperature at 25 C.
- 5) Motor winding resistances less than that noted for  $R_{MOT}$  can result in excessive bridge currents during breaking, and can cause serious damage to the DCA-10.
- 6) This is an abridged version of the DCA-10 specification sheet. A complete specification sheet is located in the product manual.