

When Every Movement Counts...

VIOLIN

Servo amplifier for DC motors



Elmo Motion Control
www.elmomc.com

General Description

The VIOLIN series of miniature servo amplifiers for DC brush motors incorporate custom mixed analog/digital ICs and a hybridized power stage. The basic configuration is a current mode amplifier targeting the OEM market. No trimmers are used in the basic version. The product meets UL508c and the relevant CE regulations. The power stage is implemented on a single ceramic substrate. This design enables very high thermal conductivity, high current carrying capacity, better EMC and good mechanical strength. The control section is implemented by dedicated custom ICs which contribute to higher reliability because fewer components are used and improved performance due to the high level of integration.

Standard Features

- Operation in current mode
- Internal DC to DC converter enables operation from one single supply
- One differential command reference input
- Zero deadband
- Excellent linearity
- External continuous and peak current limit adjustments
- Current feedback multiplier for low current motors
- Remote current gain control
- Enable input
- Motor current monitor
- Status indication by 4 open collector opto couplers
- Latch mode of the protective functions
- Ultra-compact size
- Interface via solder pins
- Package: Plated copper base plate, plastic housing, UL94V0 recognized

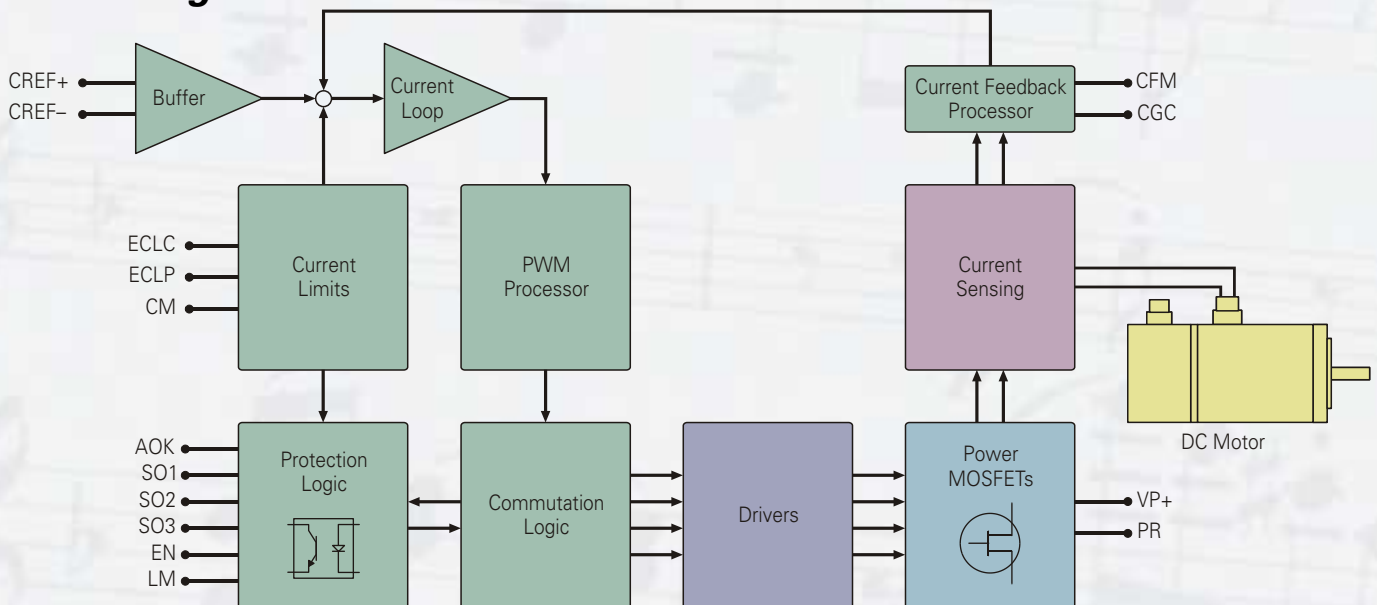
Optional Features

- High temperature range versions for military and avionics applications are available

Protective Features

- Short between the motor power outputs
- Short between each motor power output and the power input return
- Excess temperature
- Under/Over voltage
- Failure of the internal power supplies

Block Diagram





Control Connector J1

Current command input,
External continuous current limit,
External peak current limit,
Current monitor,
Current gain control for low inductance motors,
Current feedback multiplier for low current motors

Power Source

DC power input from a central isolated power supply or battery
See details on last page

Control Connector J2

Latch mode input,
Amplifier enable input,
Amplifier OK indication output; opto isolated,
3 bit status indication outputs; opto isolated

Motor Output

Motor power output phases,
Nominal output current up to 25A,
Peak output current up to 50A

Mounting

The unit should be mounted to an external heat sink for full output power ratings
Max. case temperature 87°C (188°F)

Accessories
VIO-STARTER

The VIO-STARTER is a special interface board designed to facilitate a fast startup and evaluation of the VIOLIN. This add on board includes screw type terminals for all connections, as well as four status LED's and sockets for current limiting and input scaling resistors. DIP switches are provided to enable the user to quickly select amplifier functions. The power pins must be soldered while the signal pins simply plug in. The starter board has the same footprint as the VIOLIN providing the convenience of DIP switches, yet still allowing the user to externally influence all the control functions.



VIO-VELOCITY

The VIO-VELOCITY extends the VIO line by adding a velocity loop daughter board. The VIO-VELOCITY permits operation in current or velocity mode. Velocity mode can utilize either armature feedback with IxR compensation or tachometer feedback. The VIO-VELOCITY incorporates forward and reverse limit switch inputs, a full array of diagnostic LED's and additional capacitance on the DC bus. DIP switches are provided for selecting functions such as CGC, CFM, Latch mode, directional limits and amplifier enable. It also includes socketed components for adjusting continuous and peak current limits, command scaling, tachometer scaling and velocity loop tuning. An



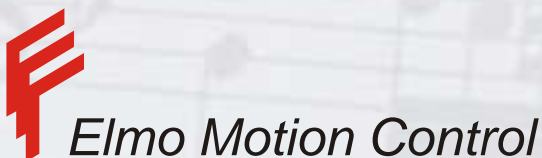
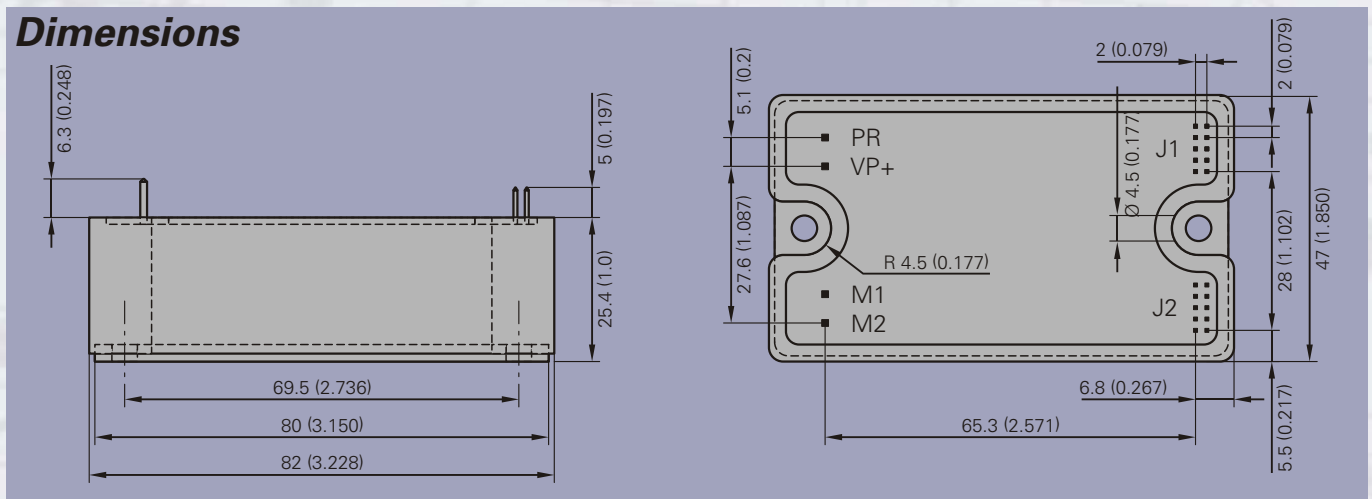
Technical Specifications

Power Ratings

Model		VIO 15/55	VIO 25/50	VIO 10/100	VIO 15/100	VIO 6/200	VIO 15/200
Supply voltage min.	[VDC]	10	10	20	20	40	40
Supply voltage max.	[VDC]	56	49	96	96	196	196
Continuous output current	[A]	15	25	10	15	6	15
Peak output current	[A]	30	50	20	30	12	30
PWM switching frequency	[kHz]	32 (on the motor)					
Switching method		Advanced unipolar PWM					
Current loop bandwidth	[kHz]	3					
Output voltage	[VDC]	$>93\%V_{IN}$					
Ambient temperature*	[°C] (°F)	0...60 (32...140)					
Max. case temperature	[°C] (°F)	87 (188)					
Storage temperature	[°C] (°F)	-40...100 (-40...212)					
Overall dimensions	[mm] (inch)	82 x 47 x 25.4 (3.23 x 1.85 x 1.00)					
Weight	[g] (oz)	180 (6.35)					

*Optional operating ambient temperature range: -45...85°C (-49...185°F). For ratings please consult the factory.

Dimensions



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