

EMI dV/dt Filter for Bipolar Stepper Motors

Reduce EMI and Electrical Overstress In Your Stepper Motor-Driven Equipment

Operation of a stepper motor causes a number of problems in equipment, including EMI pollution of and damage to the motor's bearings from leakage currents via electrical discharge machining (EDM), as well as resulting vibration. OnFILTER' patented dV/dt TF-series are complete filters incorporating common mode, differential mode, and ground filtering providing reduction of ground currents in a range of typically 50 to 100 times.

TF series motor filters are designed for incorporation into automated equipment containing bipolar stepper drives. Filters are small in size and are placed next to the drives to assure that the cables to the motors don't carry excessive EMI that pollutes the tool causing interference problems. Both panel mount and DIN rail mount options are available.



Applications

- Industrial robotics
- Automated tools
- Semiconductor fabrication
- Electronic assembly
- Reduction of EMI in equipment
- Reduction of vibration due to bearing damage
- Wherever EMI and EOS are a problem

Features

- Reduction of high-frequency currents
- Compliance with IEC61800-3
- Prevention of EDM (Electrical Discharge Machining)
- Reduction of overall EMI
- Easy plug-in installation
- No mechanical attachments
- Optimized for most PWM motors
- Effective management of rise and fall times of drive pulses

Reduced EMI in Equipment

TF series filters greatly reduce high-frequency noise on ground, as well as overall EMI in the tool, lowering risk of electrical overstress (EOS) and reducing errors in automated equipment and testers.

IEC61800-3 Compliance

dV/dt filters are required for stepper motors to reduce EMI and to extend life of motors. OnFILTER' TF-series patented filters reduce noise from PWM drive pulses beyond capabilities of common reactors, substantially reducing ground EMI leakage through the motor bearing

Reduction of EDM

High-frequency currents through bearings cause electrical discharge machining (EDM), literally eating into the bearings, irreversibly damaging them and causing vibrations. TF series filters prevent EDM damage by blocking these currents from reaching motors.

No Mechanical Attachments

SF series filters require no mechanical attachments to a motor and no maintenance. Filters' small size enables easy installation. Unlike mechanical approach, TF-series filters provide complete EMI reduction, addressing PWM noise problem at its core.

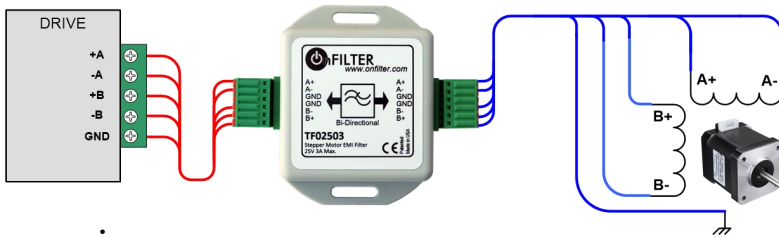
Stepper Motor
EMI Filter
TF02503 3A 25V

Specification

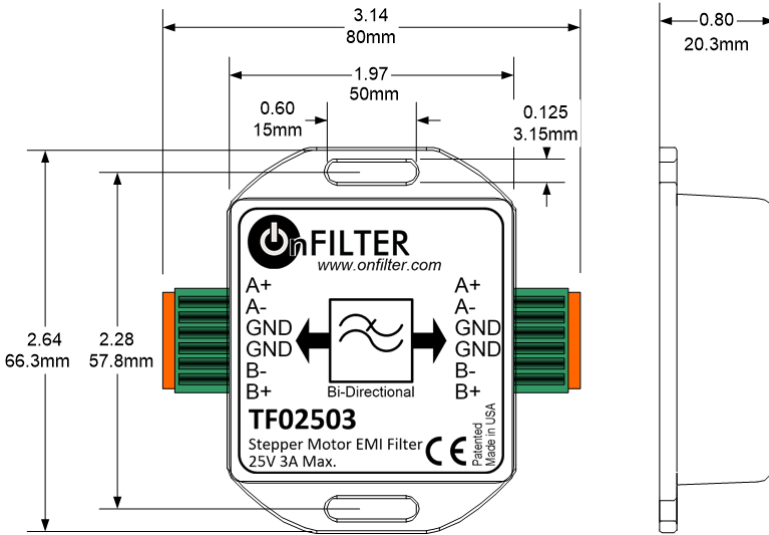
OnFILTER stepper motor filter utilizes patented and proprietary technology to provide maximum EMI suppression and to reduce high-frequency currents from PWM stepper motor operation.

| Parameter | TF02503 |
|---------------------------------|---------------|
| Drive Voltage, max. | 25V |
| Drive Current, max. | 3A |
| Rise/Fall Times Stretch, typ. | 20...30 times |
| Ground Current Reduction (typ.) | 30...80 times |
| Nominal DC Resistance | <0.3Ω |

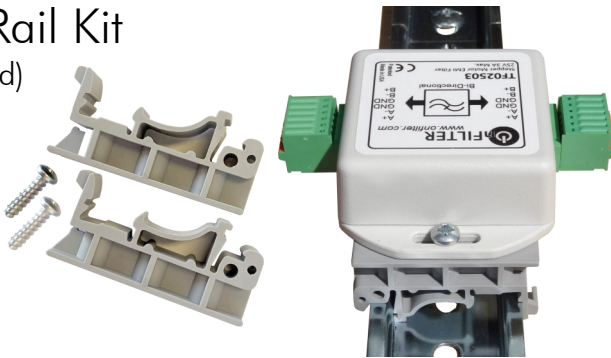
Typical Connection



Dimensions



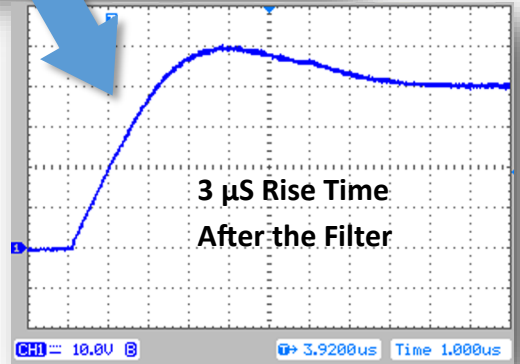
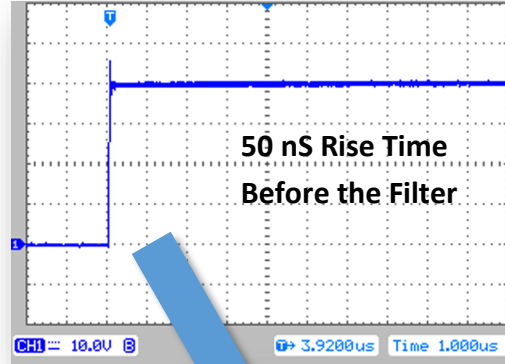
DIN Rail Kit (Supplied)



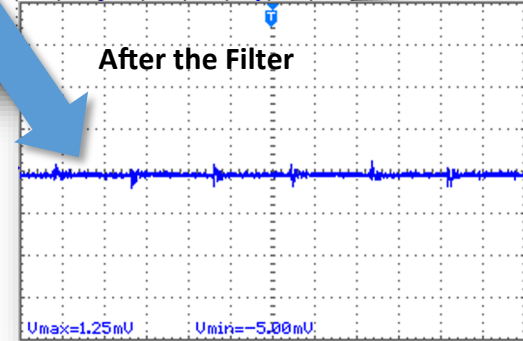
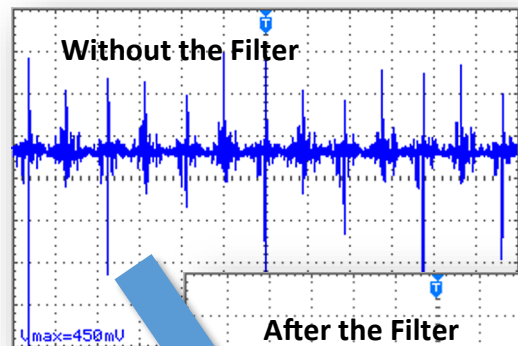
Ordering Information

| Model | Max. Rating |
|---------|-------------|
| TF02503 | 25V 3A |

Smooth Drive Pulse Edges



Reduction of Ground Current



See www.onfilter.com for other configurations of motor filters



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