

EMI dV/dt Filters 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 Filters

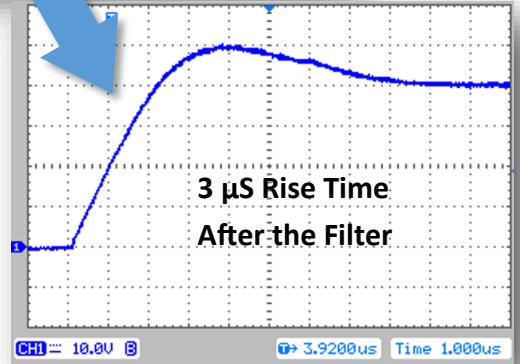
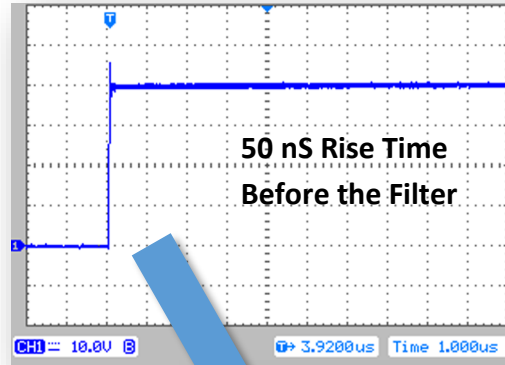
TF20101	10A 50V
TF02503	3A 25V

Specification

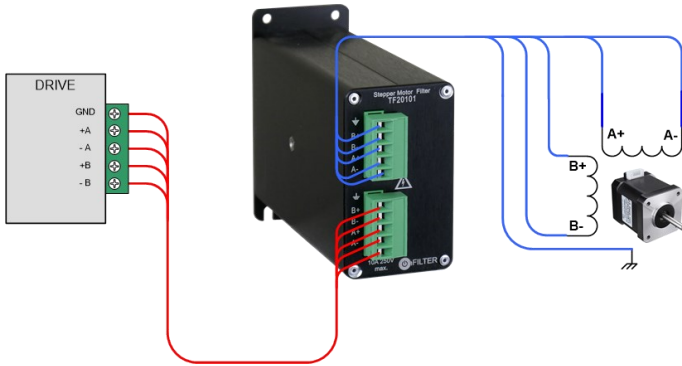
OnFILTER stepper motor filter utilizes patented and proprietary technology to provide maximum EMI suppression and to reduce high-frequency currents from PWM stepper motor operation.

Parameter	TF20101	TF02503
DRIVE FILTER		
Drive Voltage, max.	50V	25V
Drive Current, max.	10A	3A
Rise/Fall Times Stretch, typ.	20 ... 30 times	
Ground Current Reduction (typ.)	30...80 times	
Nominal DC Resistance	<0.2Ω	<0.3Ω
Dimensions w/plug-ins		
Width	1.85"	2.77"
Height	47mm	68mm
Depth	102mm	66.3mm
	5.87"	0.80"
	150mm	20.3mm

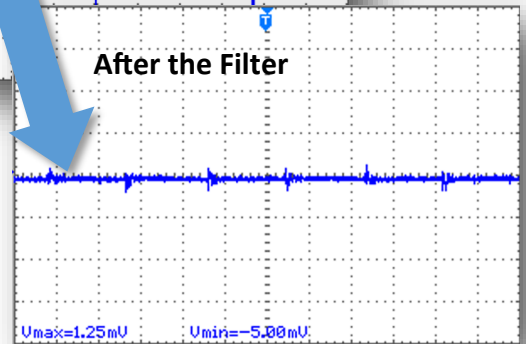
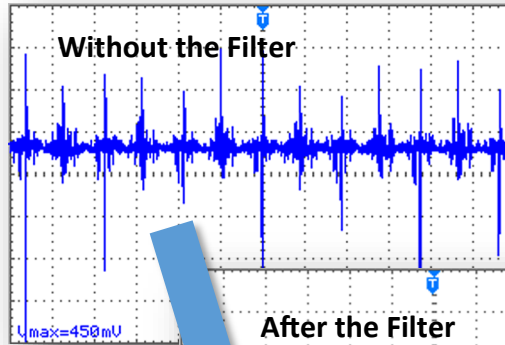
Smooth Drive Pulse Edges



Typical Connection



Reduction of Ground Current



Ordering Information

OnFILTER' stepper motor EMI filters work with the majority of stepper motors without any adjustments in software

You would need to know just two parameters: max. drive voltage and current - both are typically indicated on a label of the motor itself, or on the drive/controller. Do not exceed specified maximum rating of the filter as this may damage the filter itself, the motor, the motor controller and, possibly, your equipment.

Model	Motor	Mount
TF20101	50V 10A	Panel
TF02503	25V 3A	Panel

See other configurations of stepper motor filter



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