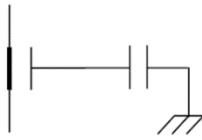


Failure Managed “Failsafe”, Ultra High Reliability, EMI Filter High Current DC Single Line Feedthrough Filter 55 Amp

The FSF series is designed to manage or prevent random failures while in operation. The internal design of this filter is abuse-tolerant and provides a level of failure-mode control and reliability over and above most feedthrough filter capacitor designs.

The FSF series design is based off NexTek’s widely popular, field-proven C.O.T.S. (Commercial-Off-The-Shelf) products. With the type of environments encountered by many applications in the military, automotive, aerospace, and medical industries systems must be highly robust and use the most reliable components available. Any solution must be able to cope with the given operating conditions, including shock + vibration and temperature range ratings.



Simplified Circuit

The redundancy feature incorporated within this design increases reliability (according to MTBF calculations) by 40X over standard single-stage capacitor filter products. As a result, these EMI filters can be safely and confidently used on automotive, aerospace, or other demanding platforms.

NexTek’s portfolio of Failsafe, Hi-Rel filters are specifically manufactured to withstand the electrical and mechanical stresses caused by factors such as vibration, extremes of temperature, and corrosion.



Key Features

- Managed Control of Failure
- Abuse Tolerant within Operational Cond.
- Excellent EMI Filtering in Compact Package
- High Shock and Vibration Applications
- Rugged and Lightweight Design
- DC to >1 GHz
- High Reliability (MTBF): 66M Hrs.
- Operating Temperature: -55°C to +125°C
- “C” Type Configuration Filter
- Voltage Ratings: up to 1000VDC
- Bolt-in Style
- RoHS Compliant

Applications

- Automotive
- Power Supplies
- Industrial Controls
- C.O.T.S. Military Applications
- Medical Equipment
- Telecommunications Infrastructure

Electrical Specifications

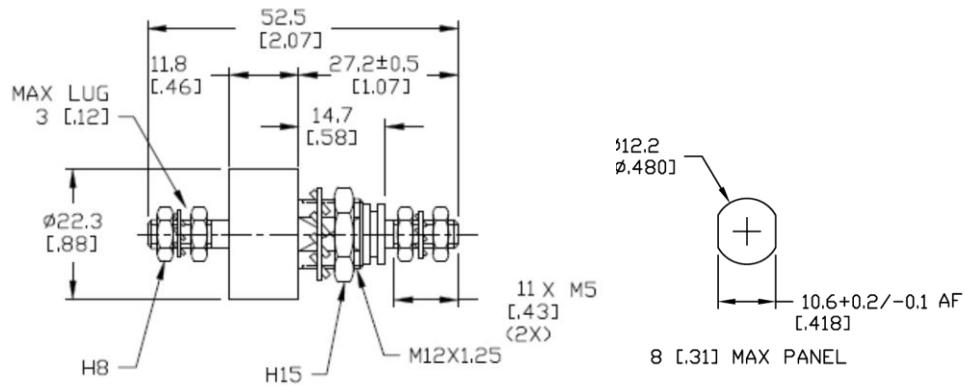
Parameter	Value	Description / Specification/ Method
Current	55 Amperes	
Insertion Loss	Reference Chart	Per Capacitor Value
RF Current	10A _{rms}	
Insulation Resistance	100ΩF (100MΩ Maximum) at 25°C	MIL-STD-202 Method 302
Dielectric Withstand Voltage	250% Rated Voltage (50mA 5s)	MIL-STD-202 Method 301
Dissipation Factor	3% Maximum	MIL-STD-202 Method 306
Voltage Drop	18mV	Wire to Wire
Operating Temp	-55°C to +125°C	5A@125°C to 55A@90°C
Temperature Rise	19.9°C Typical at 55A	
Heat Rise Constant	9.8 to 20	C ₁ in formula $\Delta T = C_1 \times W^{0.85}$
Storage Temperature	-55°C to +125°C	
Fungus	Non-Nutrient	MIL-HDBK-454A
Corrosion (metal finish)	5% NaCl / 35°C / 48 hrs.	MIL-STD-202 Method 101D / Cond B
Humidity	98%RH 25°C-65°C	MIL-STD-202 Method 106E
Shock	30g – 11ms	MIL-STD-202 Method 213B / Cond A
Terminal Strength	Torque: 14 in-lbs. (5.6N·m) Pull: 50lbs (23kg)	MIL-STD-202 Method 211A / Cond A & E
Reliability (MTBF)	66,000,000 hrs.	MIL-HDBK-217F Cond – GM, 30°, 50%V, M, CDR

Insertion Loss

Part Number	Rated Vdc	Min. Cap	Minimum Insertion Loss (dB)*					
			.01MHz	0.1MHz	1MHz	10MHz	100MHz	1000MHz
FSF0554705Z10	Up to 100	4.7uF	18	37	60+	60+	60+	60+
FSF0552205Z10	Up to 100	2.2uF	12	30	50	60+	60+	60+
FSF0551005Z20	Up to 200	1.0uF	6	24	44	60+	60+	60+
FSF0552204Z20	Up to 200	0.22uF	-	12	30	50	60+	60+
FSF0551004Z50	Up to 500	0.10uF	-	6	24	44	60+	60+
FSF0552203Z50	Up to 500	0.022uF	-	-	12	30	50	60+
FSF0551003Z1K	Up to 1000	0.010uF	-	-	6	24	44	60+

*Optimum performance when properly installed

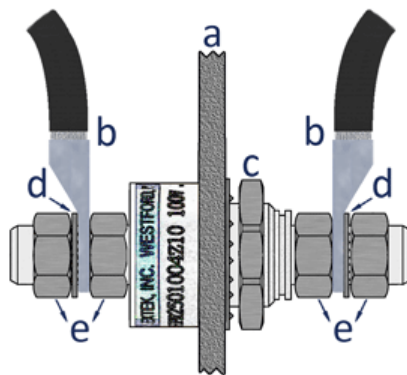
Mechanical Specifications



Component	Material	Finish
Housing	Aluminum	Clear Conversion
Insulator	FR4 or Nylon	-

Weight	lb.	kg
FSF055 Series	0.25	0.011

Mounting



- a. Mounting Panel
- b. Lug / Wire (not supplied)
- c. Mounting Nut
- d. Lock Washer
- e. Electrode Lug Nut

Installation Torque Recommendations

NOTE: Electrode Nuts (e) must be tightened using the Two-Wrench Method...Place an open-end wrench on the electrode nut closest to the mounting panel (a) and a calibrated torque wrench on the outer electrode nut on the same side...Tighten nuts against one another.

The “two wrench method” will prevent any torque from developing between the electrode and the HPR body.

Electrode Lug Nut (e) Torque: 14 in-lbs. (1.6 N·m)
 Mounting Panel Nut (c) Torque: 60 in-lbs. (6.7 N·m)

Part Number Configuration

Device	Current	Capacitance	Tolerance	Voltage
FSF	055	XXXX	Z	XX

- Device** FSF High Current Feedthrough Filter
- Current** Current rating in amperes
- Capacitance** in picofarads, first two digits are significant, last two digits are number of zeros e.g. 2203 = 22,000pF / 4704 = .47 μ F
- Tolerance** Capacitor Code: Z= +80%/-20% (Standard)
- Voltage** Rating Code: 10=100V, 20=200V, 50=500V, 1K = 1000V

Example: FSF0551004Z10 = Feedthrough Failsafe Filter / 55A / 0.10 μ F / +80%/-20% / 100Vdc

Safety Tips

- ✓ The filter should be mounted in a grounded shielding panel
- ✓ Tighten the electrode nuts to the torque specified with the two-wrench method
- ✓ Cover exposed electrode nuts
- ✓ Observe temperature, current, & voltage limits