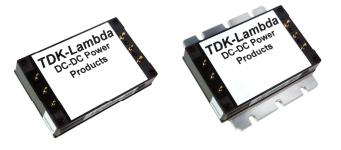
TDK·Lambda

FQA Series

MIL-COTS 20A, 40Vdc Passive EMC Filters





The FQA filter modules have been designed to reduce differential and common mode conducted emissions from dc-dc switching converters. The series takes advantage of TDK technologies to simplify system level compliance to MILSTD-461. The encapsulated rugged package design and a choice of baseplate options make the FQA modules suitable for use in a wide variety of harsh and demanding environments, including MIL-COTS.

| Features | Benefits |
|--|--|
| Filtering for Compliance to MIL-STD-461G | Simplifies the system EMC filter |
| Input Spike suppression per MIL-STD-1275D and RTCA/DO-160G | Suitable for vehicle and airborne use |
| High Differential and Common Mode Noise Attenuation | Reduces system EMI |
| -55 to 115°C Temperature Range (M-Grade) | For operation in harsh environments |
| Standard (S-Grade) or Enhanced Screening (M-Grade) Options | Reduces cost for COTS applications |
| Quarter Brick Size | Industry standard mounting and heatsinks |
| | |

Model Selector

| Model | Input Voltage (Vdc) | Maximum Current (A) | Flanged Baseplate | Non-Flanged Baseplate | Standard Screening (-S) | Enhanced Screening (-M) |
|-----------------|---------------------------|---------------------------|----------------------|--------------------------|-------------------------------|-------------------------------|
| FQA020ADC-007-S | -40 to +40 | 20 | Х | | Х | |
| FQA020ADC-N07-S | -40 to +40 | 20 | | Х | Х | |
| FQA020ADC-007-M | -40 to +40 | 20 | Х | | | Х |

| Screening Options | | |
|---------------------|------------------------------|------------------------------|
| Operation | S-Grade (Standard Screening) | M-Grade (Enhanced Screening) |
| Functional Test | Room and Hot Test | Cold, Room, and Hot Test |
| Burn in | Yes | Extended, 96 hour |
| Temperature Cycling | No | 10 Cycles |
| Hi-Pot | 2250VDC | 2250VDC |
| Visual Inspection | Yes | Yes |



Specifications

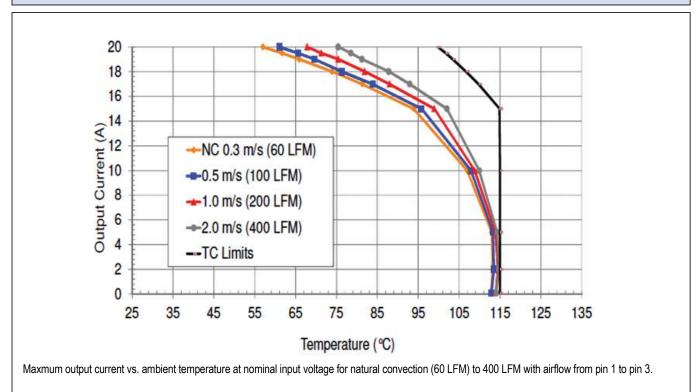
| Model | | | | FQA |
|--|--------|--|------------|---|
| Input/Output | | | | |
| Input Voltage range | Vdc | -40 to +40 | | |
| Input Current (maximum) | Α | 20A | | |
| DC Resistance (typical) | mΩ | Positive leg: 7.5m Ω , negative leg: 5m Ω | | |
| Power Loss | W | 5W at 20A | | |
| Differential Mode Attenuation at 300 kHz | dB | 50dB (typical with a 50 Ω source & load impedance | | |
| Common Mode Attenuation at 30 MHz | dB | 50dB (typical with a 50 Ω source & load impedance | | |
| Qualification Methods | - | Consistent with MIL-STD-883F and MIL-STD-202G | | |
| | | Radiated Emmisions | RE101 | Navy |
| | | Radiated Emmisions | RE102 | 10kHz to 18GHz Fixed Wing internal, >25m Nose to Tail |
| | | Conducted Emissions | CE101 | Surface ships and submarines |
| Compliance Matrix | | Conducted Emissions | CE102 | Basic Curve |
| (Tested to the most stringent listed) | | Conducted Susceptibility | CS101 | Curve 2, Imax=10A |
| | | Conducted Susceptibility | CS114 | Curve 5 |
| | | Conducted Susceptibility | CS115 | Basic Test Signal |
| | | Conducted Susceptibility | CS116 | 10kHz to 100MHz |
| Safety Agency Certifications | - | UL | /CSA/EN609 | 950-1, CE Mark (LVD and RoHS) |
| Environmental | | | | |
| Operating Baseplate Temperature (max) ⁽¹⁾ | °C | Standard screening (-S): -40°C to +115°C, Enhanced screening (-M): -55°C to +115°C | | |
| Storage Temperature | °C | -65 to 125°C | | |
| Operating Humidity (non condensing) | %RH | MIL-STD 883 Method 1004.7 | | |
| Cooling | - | Conduction, convection or forced air | | |
| Withstand Voltage (For 1 minute) | VAC | Terminals to Case: 2250Vdc | | |
| Vibration | - | MIL-STD-202G, Method 201A, Unpowered, sweep 1: 5 to 50 Hz at 0.5g, sweep 2: 50 to 500 Hz at 1.5g, three axis | | |
| Shock | - | MIL-STD-202G, Method 213B, Table 213-1, Test Condition I, Unpowered, 50G half sine 6ms, three axis | | |
| Other | | | | |
| Weight (Typ) | g | 100g (Flanged version) | | |
| Size (LxWxH) | mm | Flanged version: 60.6 x 55.9 x 12.7, Non-flanged version: 60.6 x 39 x 12.7 | | |
| Size (LxWxH) | Inches | Flanged version: 2.39 x 2.2 x 0.5, Non-flanged version: 2.39 x 1.54 x 0.5" | | |
| MTBF - Telcordia SR-332 issue 3 | Hours | 50°C ambient, full load: 15,000,000 hours | | |
| Warranty | Years | 3 | | |

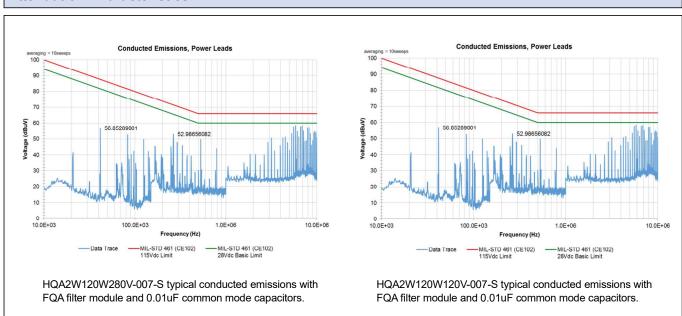
Notes

See website for detailed specifications, test methods and installation manual 1. See thermal performance section

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Thermal Performance

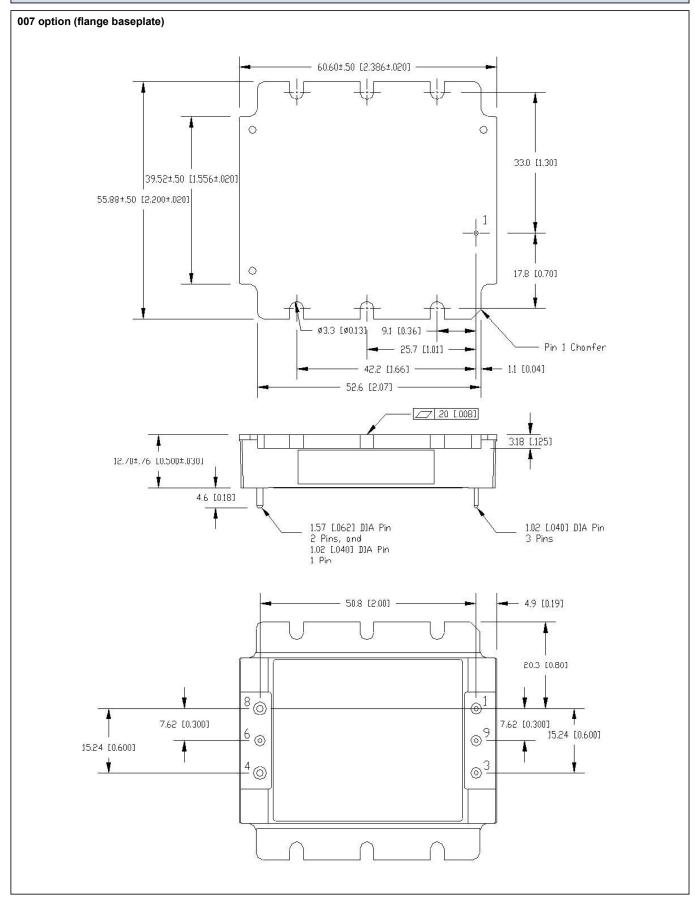




Attenuation Characteristics

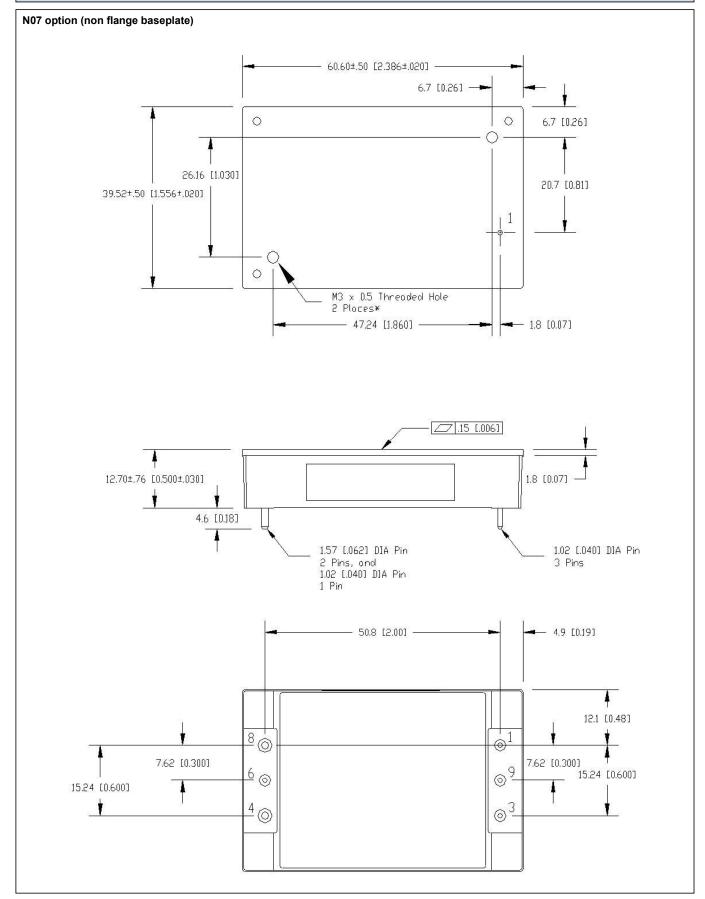


Outline Drawing





Outline Drawing



Trusted • Innovative • Reliable



| Pinout | |
|--------|------------------|
| PIN | Function |
| 1 | VIN (+) |
| 2 | Not populated |
| 3 | VIN (-) |
| 4 | VOUT (-) |
| 5 | Not populated |
| 6 | Common mode out* |
| 7 | Not populated |
| 8 | VOUT (+) |
| 9 | Common mode in* |

* In a typical application pin 6 would be connected to the Vout-/ground plane and pin 9 to chassis/ground for EMI measurement

Evaluation Board

| Evaluation Board Part # | Content |
|-------------------------|--|
| FQX-HQX-EVK-D0 | Evaluation PCB that can accommodate FQA or FQB filters plus two (2) HQA DC-DC Quarter Brick Modules. Filters and DC-DC bricks are not included. |

TDK·Lambda



TDK-Lambda France SAS

Tel: +33 1 60 12 71 65 france@fr.tdk-lambda.com www.emea.lambda.tdk.com/fr/

Italy Sales Office

Tel: +39 02 61 29 38 63 info.italia@it.tdk-lambda.com www.emea.lambda.tdk.com/it/

Netherlands

info@nl.tdk-lambda.com www.emea.lambda.tdk.com/nl/

TDK-Lambda Germany GmbH

Tel: +49 7841 666 0 info.germany@de.tdk-lambda.com www.emea.lambda.tdk.com/de/



Austria Sales Office

Tel: +43 2256 655 84 info@at.tdk-lambda.com www.emea.lambda.tdk.com/at/



Switzerland Sales Office

Tel: +41 44 850 53 53 info@ch.tdk-lambda.com www.emea.lambda.tdk.com/ch/

TDK-Lambda Nordic

Tel: +45 8853 8086 www.emea.lambda.tdk.com/dk/

TDK-Lambda UK Ltd.

TDK-Lambda Ltd.

Tel: +9 723 902 4333 info@tdk-lambda.co.il

Tel: +44 (0) 12 71 85 66 66 powersolutions@uk.tdk-lambda.com www.emea.lambda.tdk.com/uk/



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www.emea.lambda.tdk.com/il/

Commercial Support: Tel: +7 (495) 505 5674 Technical Support: Tel: +7 (812) 658 0463

info@tdk-lambda.ru www.emea.lambda.tdk.com/ru/



TDK-Lambda Americas

Tel: +1 800-LAMBDA-4 or 1-800-526-2324 powersolutions@us.tdk-lambda.com www.us.lambda.tdk.com



TDK Electronics do Brasil Ltda Tel: +55 11 3289-9599

sales.br@tdk-electronics.tdk.com www.tdk-electronics.tdk.com/en



TDK-Lambda Corporation Tel: +81-3-6778-1113 www.jp.lambda.tdk.com



Wuxi TDK-Lambda Electronics Co. Ltd.

Tel: +86 21 6485-0777 powersolutions@cn.tdk-lambda.com www.lambda.tdk.com.cn



TDK-Lambda Singapore Pte Ltd. Tel: +65 6251 7211 tls.mkt@sg.tdk-lambda.com www.sg.lambda.tdk.com



TDK India Private Limited, Power Supply Division

Tel: +91 80 4039-0660 mathew.philip@in.tdk-lambda.com www.sg.lambda.tdk.com



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