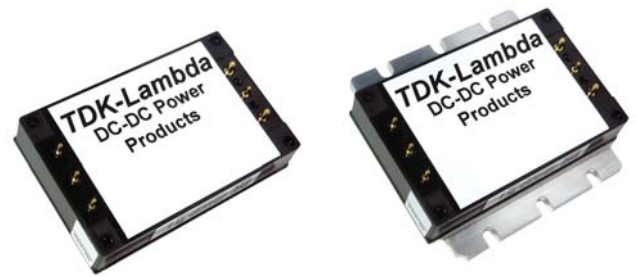


MIL-COTS 20A, 40Vdc Passive EMC Filters



COTS

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	X		X	
FQA020ADC-N07-S	-40 to +40	20		X	X	
FQA020ADC-007-M	-40 to +40	20	X			X

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

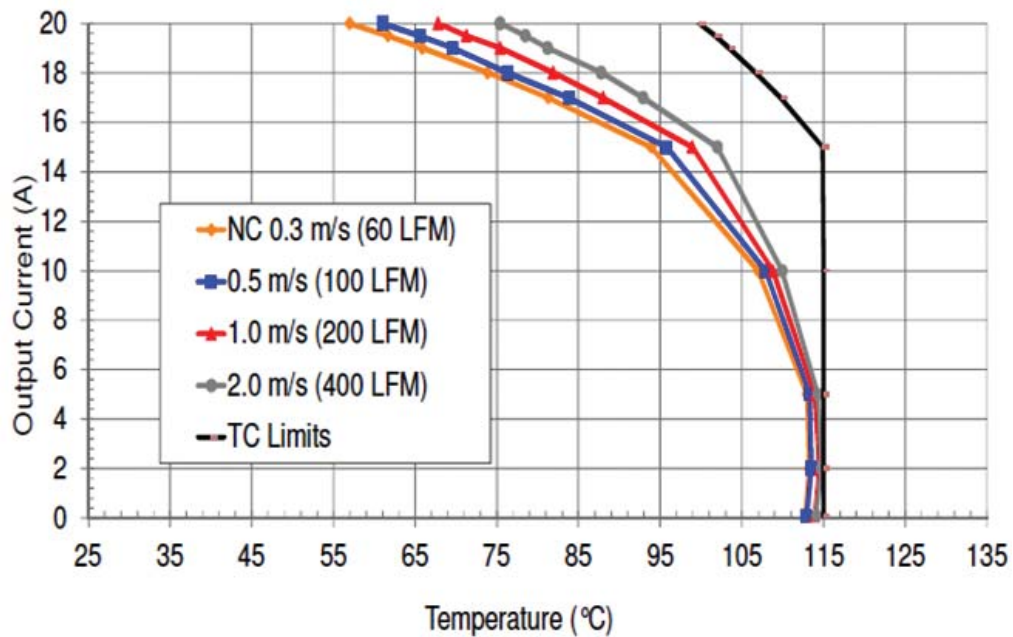
Specifications				
Model		FQA		
Input/Output				
Input Voltage range	Vdc	-40 to +40		
Input Current (maximum)	A	20A		
DC Resistance (typical)	mΩ	Positive leg: 7.5mΩ, negative leg: 5mΩ		
Power Loss	W	5W at 20A		
Differential Mode Attenuation at 300 kHz	dB	50dB (typical with a 50Ω source & load impedance)		
Common Mode Attenuation at 30 MHz	dB	50dB (typical with a 50Ω source & load impedance)		
Qualification Methods	-	Consistent with MIL-STD-883F and MIL-STD-202G		
Compliance Matrix (Tested to the most stringent listed)	Radiated Emmissions	RE101	Navy	
	Radiated Emmissions	RE102	10kHz to 18GHz Fixed Wing internal, >25m Nose to Tail	
	Conducted Emissions	CE101	Surface ships and submarines	
	Conducted Emissions	CE102	Basic Curve	
	Conducted Susceptibility	CS101	Curve 2, I _{max} =10A	
	Conducted Susceptibility	CS114	Curve 5	
	Conducted Susceptibility	CS115	Basic Test Signal	
	Conducted Susceptibility	CS116	10kHz to 100MHz	
Safety Agency Certifications	-	UL/CSA/EN60950-1, 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

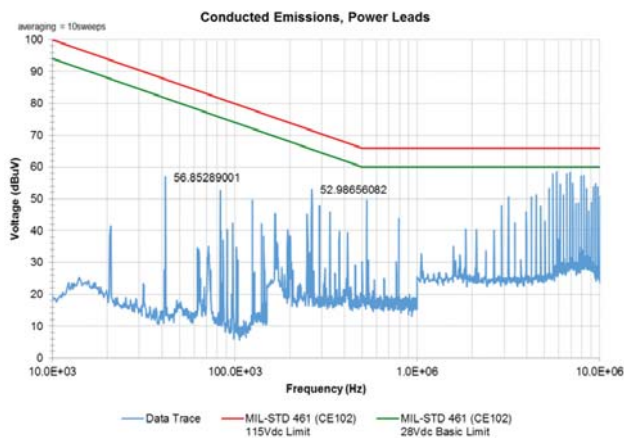
1. See thermal performance section

Thermal Performance

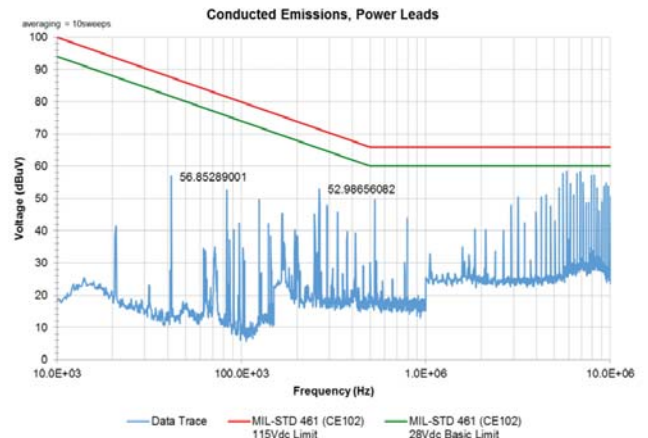


Maximum output current vs. ambient temperature at nominal input voltage for natural convection (60 LFM) to 400 LFM with airflow from pin 1 to pin 3.

Attenuation Characteristics



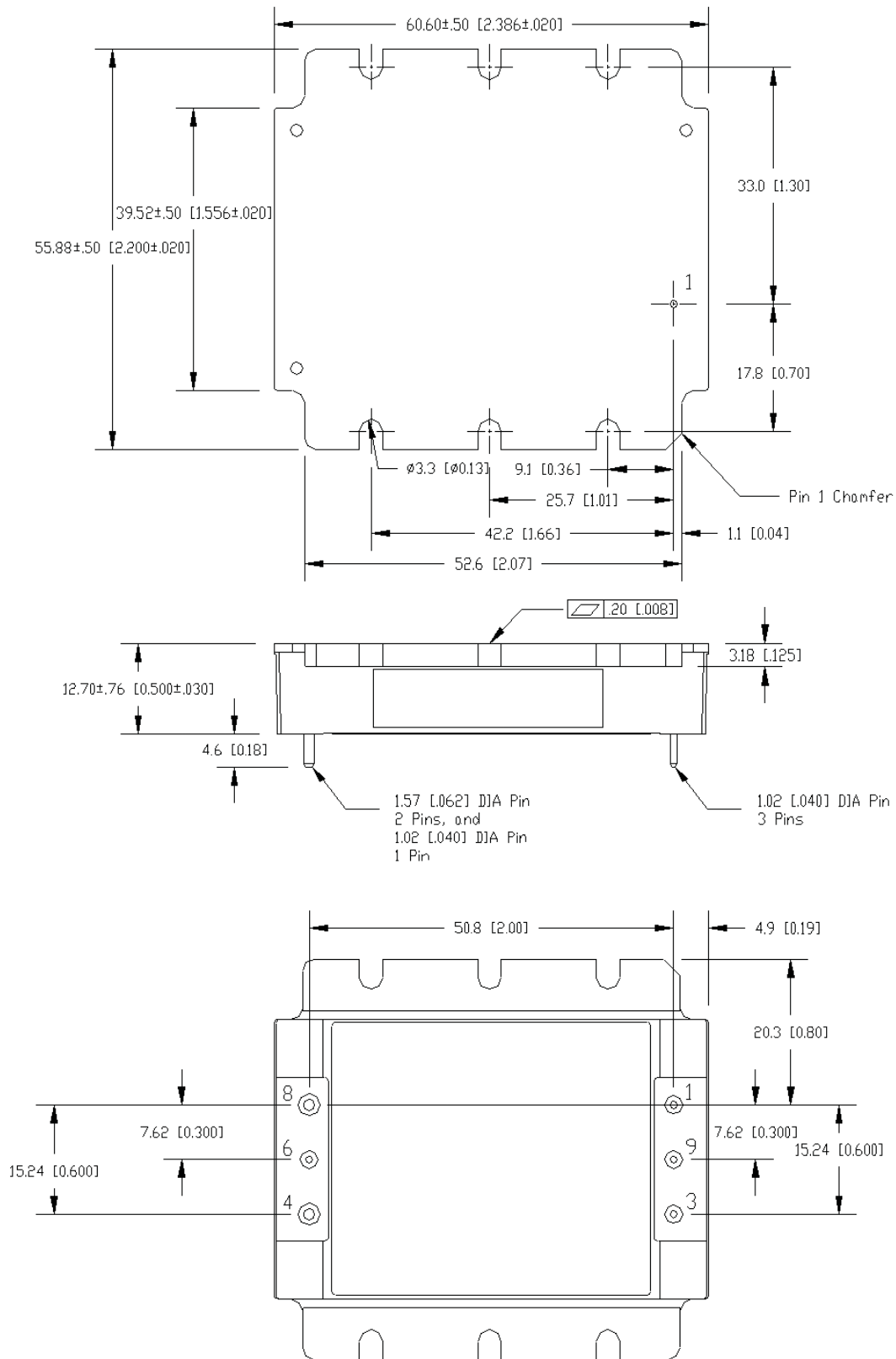
HQA2W120W280V-007-S typical conducted emissions with FQA filter module and 0.01uF common mode capacitors.



HQA2W120W120V-007-S typical conducted emissions with FQA filter module and 0.01uF common mode capacitors.

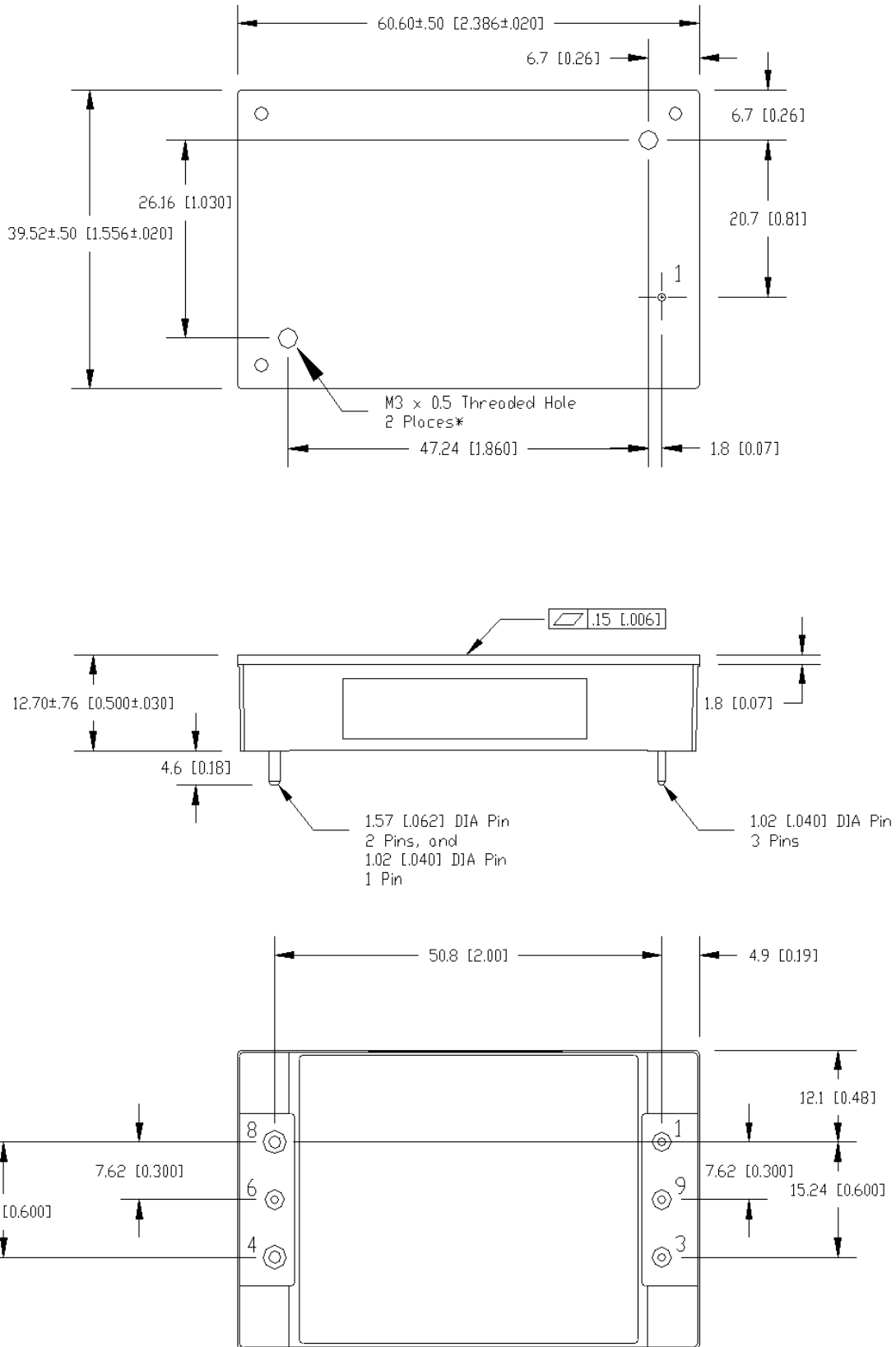
Outline Drawing

007 option (flange baseplate)



Outline Drawing

N07 option (non flange baseplate)



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*

Evaluation Board	
Evaluation Board Part #	Content
FQX-HQA-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.

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



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



Nordic Sales Office

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



TDK-Lambda UK Ltd.

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



TDK-Lambda Ltd.

Tel: +9 723 902 4333
info@tdk-lambda.co.il
www.emea.lambda.tdk.com/il



C.I.S.

Commercial Support:

Tel: +7 (495) 665 2627

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
tis.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

