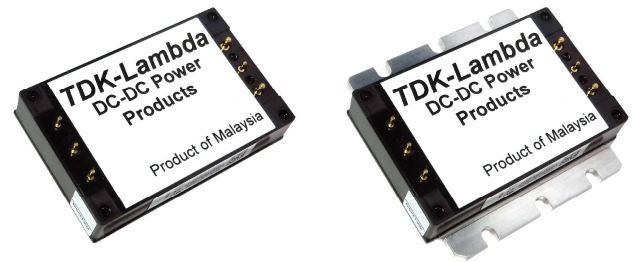


MIL-COTS 20A, 40Vdc Passive EMC Filters

www.us.tdk-lambda.com/lp/products/fqa-series
www.emea.tdk-lambda.com/fqa



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

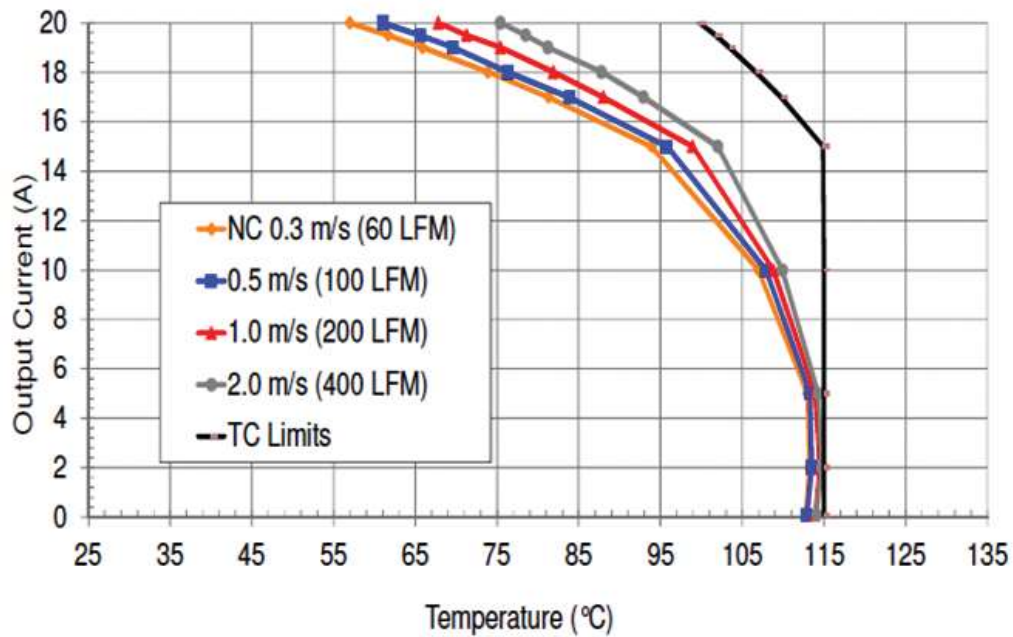
Model Selector						
Model	Input Voltage (Vdc)	Maximum Current (A)	Flanged Baseplate	Non-Flanged Baseplate	Standard Screening (-S)	Enhanced Screening (-M)
FQA020ADC-007-S	-40 to +40	20	X		X	
FQA020ADC-N07-S	-40 to +40	20		X	X	
FQA020ADC-007-M	-40 to +40	20	X			X

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	

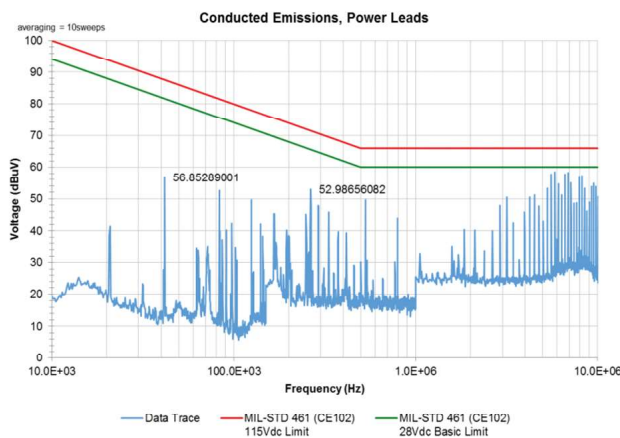
Notes
 See website for detailed specifications, test methods and installation manual
 1. See thermal performance section

Thermal Performance

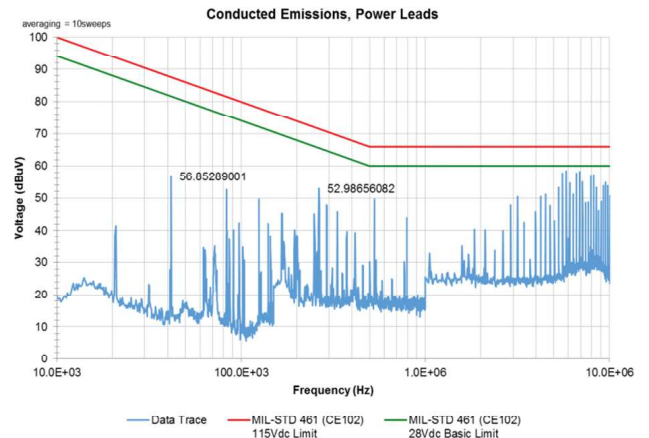


Maximum output current vs. ambient temperature at nominal input voltage for natural convection (60 LFM) to 400 LFM with airflow from pin 1 to pin 3.

Attenuation Characteristics



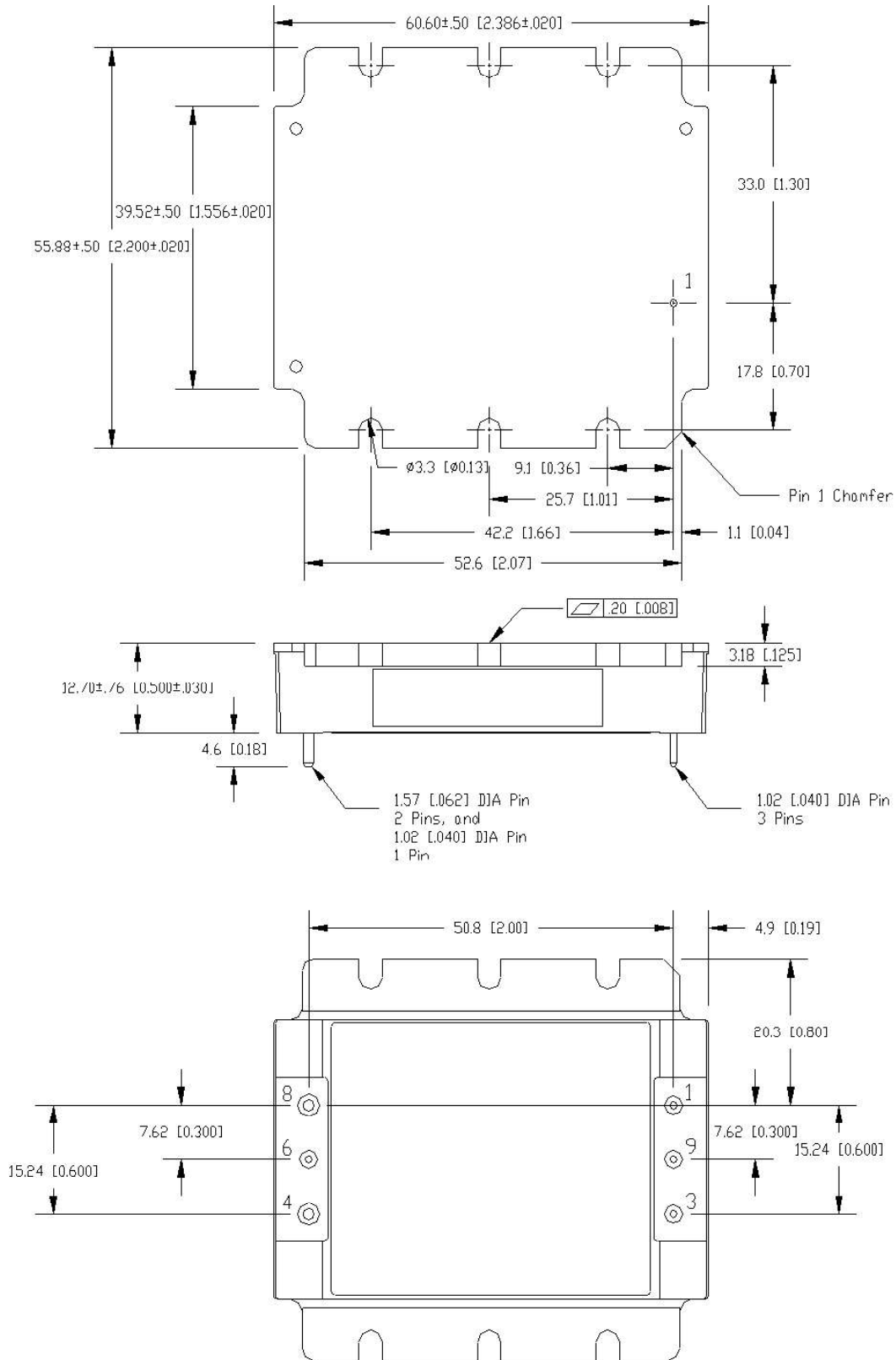
HQA2W120W280V-007-S typical conducted emissions with FQA filter module and 0.01uF common mode capacitors.



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

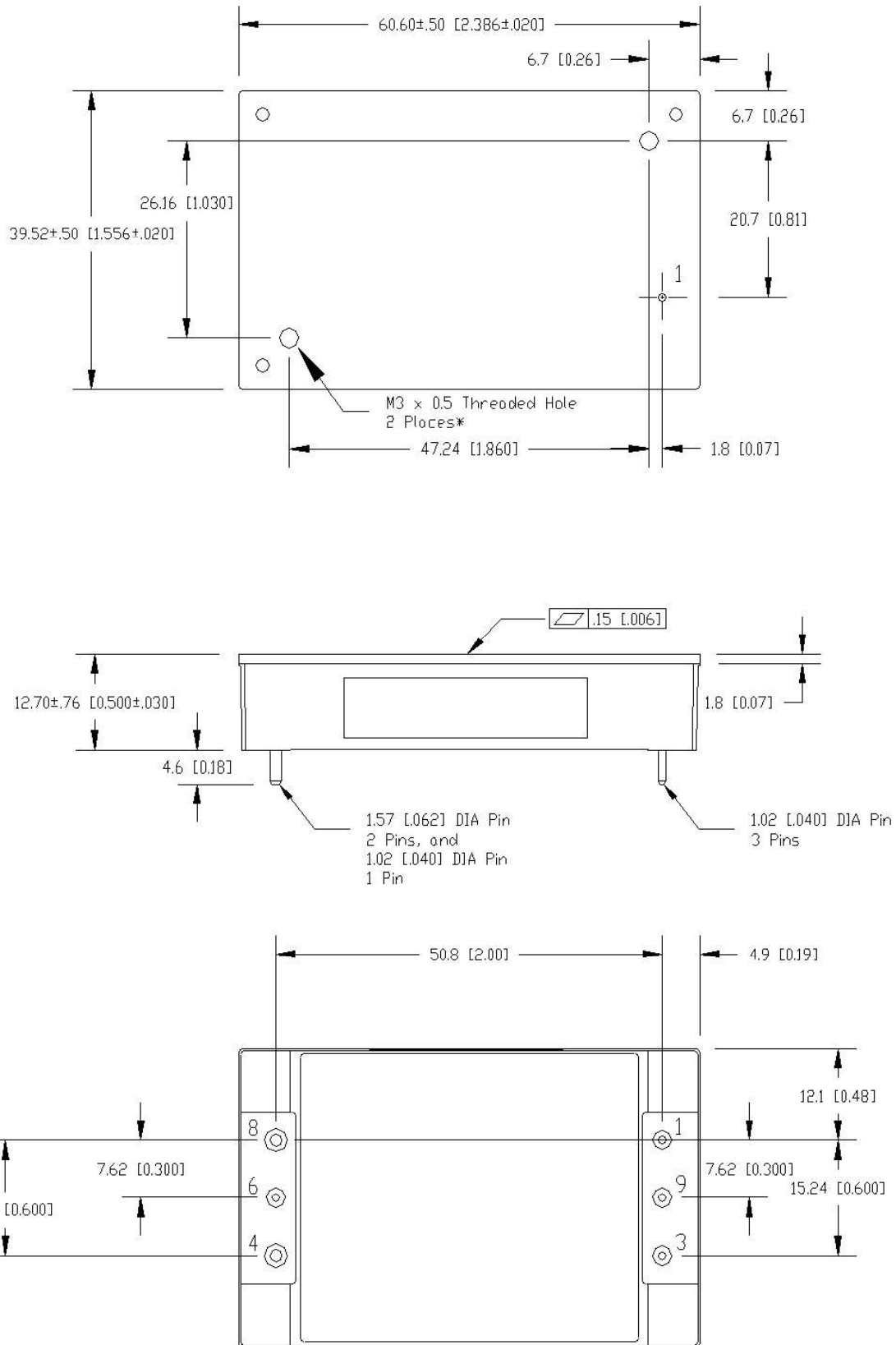
Outline Drawing

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-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.

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



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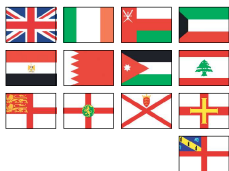
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