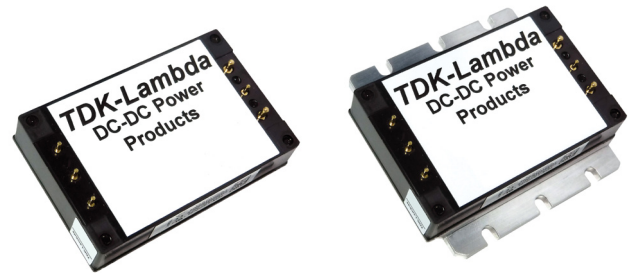


MIL-COTS 20A, 40Vdc Passive EMC Filters

<https://product.tdk.com/en/power/fqa>
www.emea.lambda.tdk.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

- Filtering for Compliance to MIL-STD-461G
- Input Spike suppression per MIL-STD-1275D and RTCA/DO-160G
- High Differential and Common Mode Noise Attenuation
- -55 to 115°C Temperature Range (M-Grade)
- Standard (S-Grade) or Enhanced Screening (M-Grade) Options
- Quarter Brick Size

Benefits

- Simplifies the system EMC filter
- Suitable for vehicle and airborne use
- Reduces system EMI
- For operation in harsh environments
- Reduces cost for COTS applications
- 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
FQA020ADC-N07-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

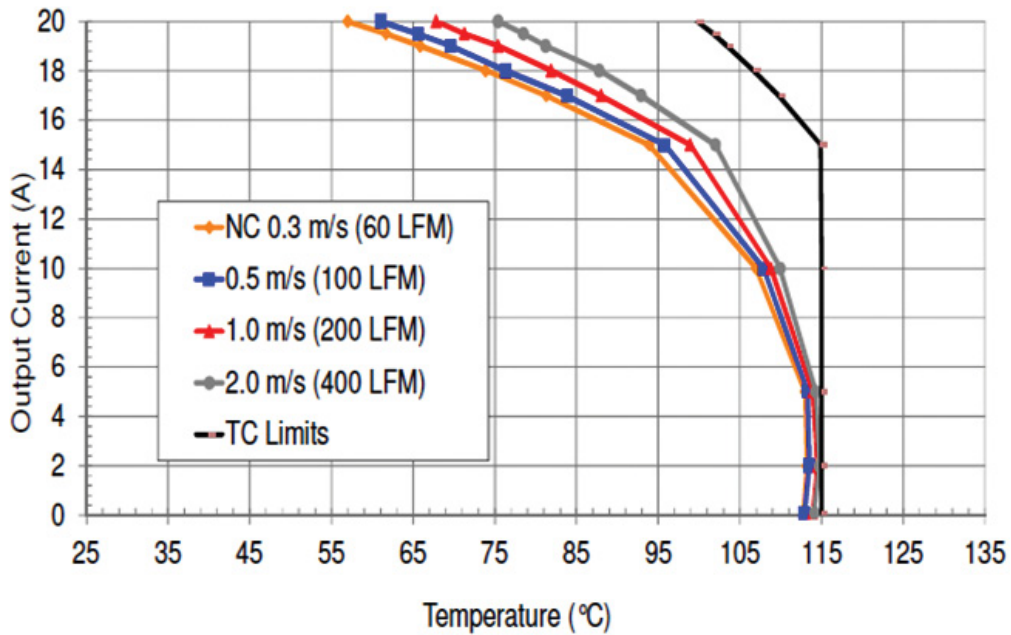
Evaluation Kit

Type	Part Number	Description
Evaluation Kit	FQX-HQA-EVK-D0	Evaluation board for FQA or FQB filter plus two (2) HQA DC-DC quarter brick modules. Filter and DC-DC modules are not included.

Specifications				
Model		FQA		
Input/Output				
Input Voltage Range	Vdc	-40 to +40		
Input Current (max)	A	20		
DC Resistance (typical)	mΩ	Positive Leg: 7.5, Negative Leg: 5		
Power Loss	W	5 @ 20 A		
Differential Mode Attenuation at 300 kHz	dB	50 (50 Ω source & load impedance)		
Common Mode Attenuation at 30 MHz	dB	50 (50 Ω source & load impedance)		
Qualification Methods	-	Consistent with MIL-STD-883F and MIL-STD-202G		
Compliance Matrix (Tested with FQX-HQA-EVK-D0 evaluation board: FQA filter + 2X HQA DC-DC Converter, 200W resistive load)	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	-	IEC/UL/CSA/EN62368-1, 60950-1, CE Mark		
Environmental				
Operating Baseplate Temperature	°C	Standard screening (-S): -40 to 115; Enhanced screening (-M): -55 to 115		
Storage Temperature	°C	-65 to 125		
Operating Humidity (non condensing)	%RH	MIL-STD-883 Method 1004.7		
Cooling	-	Conduction, convection or forced air		
Withstand Voltage (1 minute)	Vdc	2250 (Terminals to Case)		
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	100		
Size (LxWxH)	mm	Flanged version (-007-x): 60.6 x 55.9 x 12.7, Non-flanged version (-N07-x): 60.6 x 39.5 x 12.7		
Size (LxWxH)	Inches	Flanged version (-007-x): 2.39 x 2.20 x 0.50, Non-flanged version (-N07-x): 2.39 x 1.56 x 0.50		
MTBF - Telcordia SR-332	Hrs	15 M @ 50 °C ambient; full load		
Warranty	yrs	3		

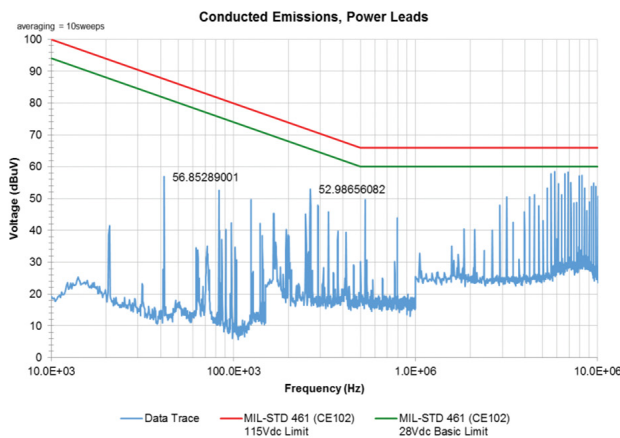
Notes
 See website for detailed [specifications](#)
 1. See thermal performance section

Thermal Performance

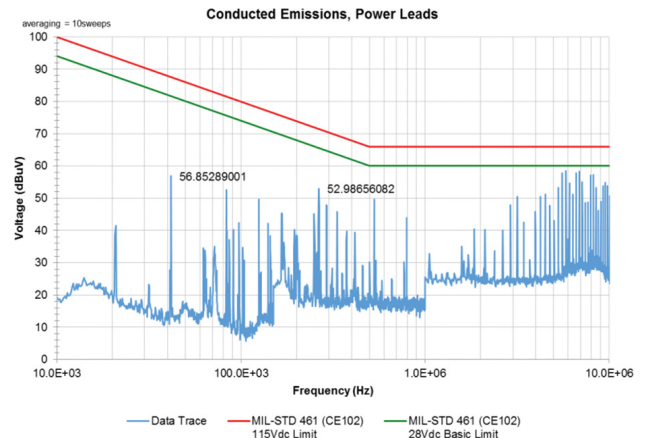


Maximum output current vs. ambient temperature at nominal input voltage for natural convection (60 LFM) to 400 LFM with airflow from pin 1 to pin 3.

Attenuation Characteristics



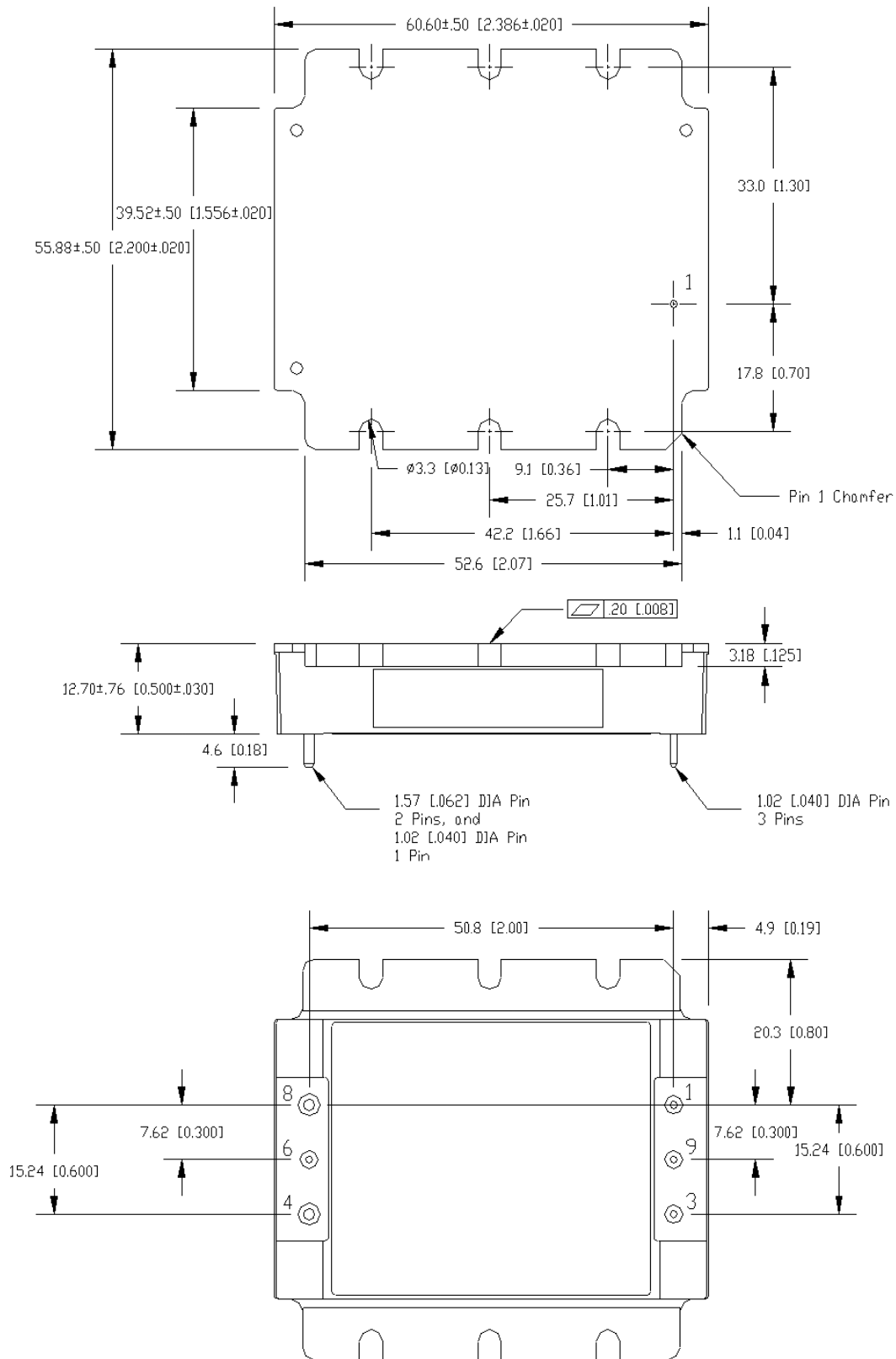
HQA2W120W280V-007-S typical conducted emissions with FQA filter module and 0.01uF common mode capacitors.



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

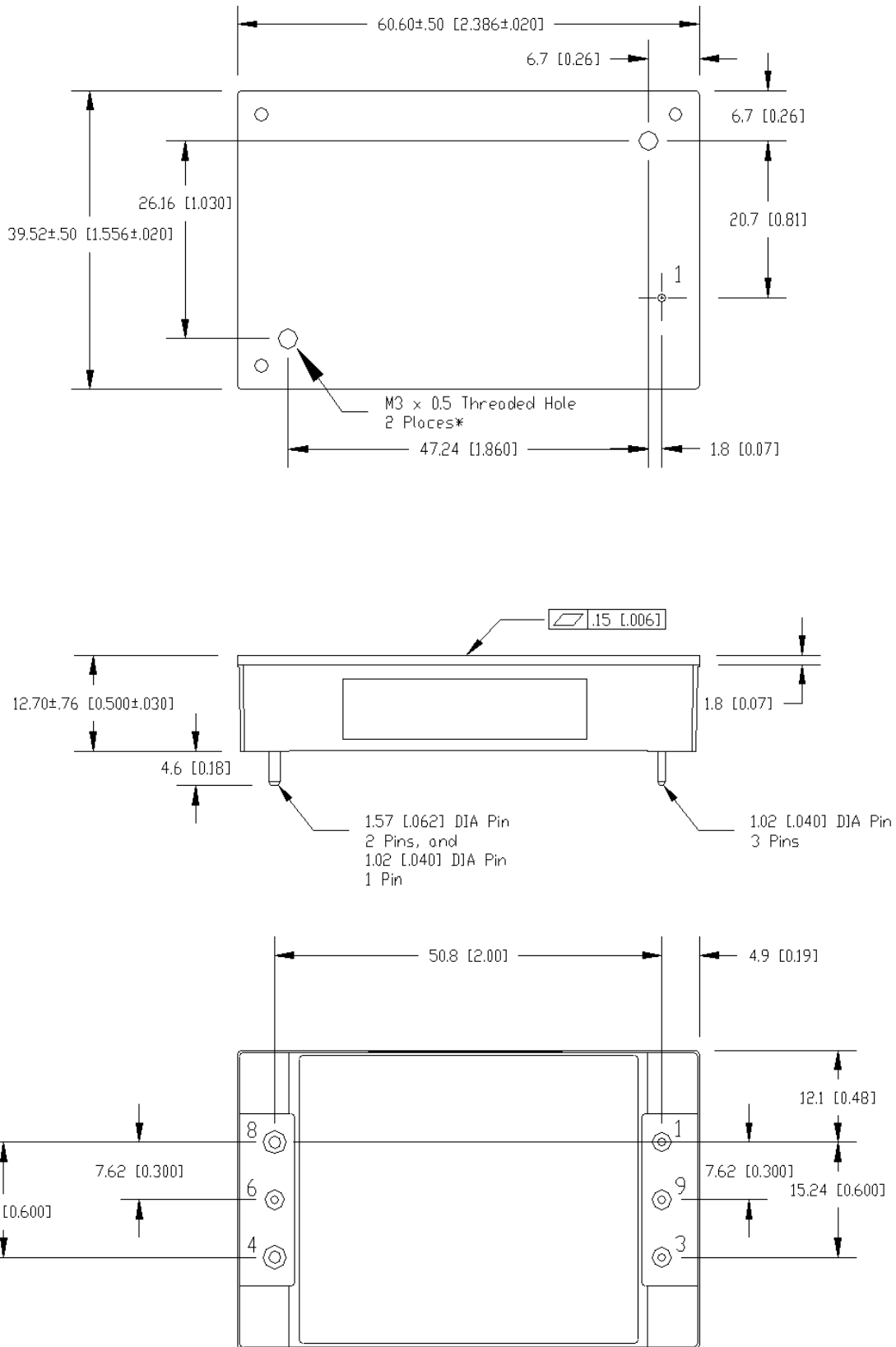
Outline Drawing

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*

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

Pin base material is Tellurium Copper with gold over nickel plating.



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