DVMH28 Series

HIGH RELIABILITY HYBRID EMI FILTERS

DESCRIPTION

The DVMH series of hybrid EMI filters is operable over the full military (-55 °C to +125 °C) temperature range with no power derating. The DVMH EMI filter is designed to filter conducted emissions of two DVHF or one DVTR series DC-DC converters.

These filters are designed and manufactured in a facility qualified to ISO9001 and certified to MIL-PRF-38534 and MIL-STD-883.

This product may incorporate one or more of the following U.S. patents:

5,784,266
5,790,389
5,963,438
5,999,433
6,005,780
6,084,792
6,118,673

FEATURES

- High Reliability
- Wide Input Voltage Range: 0 to 50 Volts per MIL-STD-704
- Up to 2.0 Amp Maximum Current
- 55 dB Minimum Attenuation at 500 kHz
- Industry Standard Pinout
- High Input Transient Voltage: 80 Volts for 1 sec per MIL-STD-704A
- Precision Projection Welded Hermetic Package
- Custom Versions Available
- Additional Environmental Screening Available
- Meets MIL-STD-461C and MIL-STD-461D EMC Requirements
- Protects Against Conducted Susceptibility Specified in MIL-STD-461C, CS01 and CS02
- Flanged and Non-flanged Versions Available
- MIL-PRF-38534 Element Evaluated Components

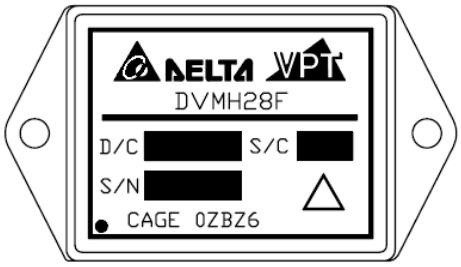


Figure 1 – DVMH28 / DVMH28F EMI Filter
(Exact marking may differ from that shown)

Sales Information:
Phone: (425) 353-3010
Fax: (425) 353-4030
E-mail: vptsales@vptpower.com

SPECIFICATIONS (T_{CASE} = -55°C to +125°C, V_{IN} = +28V ± 5%, Full Load, Unless Otherwise Specified)

ABSOLUTE MAXIMUM RATINGS			
Input Voltage (Continuous)	50 V_{DC}	Storage Temperature	-65°C to +150°C
Input Voltage (Transient, 1 second)	80 Volts	Lead Solder Temperature (10 seconds)	300°C
Output Current	2.0 Amps	Weight (Maximum) (Un-Flanged / Flanged)	(24 / 29) Grams
Power Dissipation (Full Load, T_{CASE} = +125°C)	1.0 Watt		

Parameter	Conditions	DVMH28			Units
		Min	Typ	Max	
STATIC					
INPUT Voltage[2]	Continuous	0	28	50	V
	Transient, 1 sec	-	-	80	V
Current[1,2,3]	Continuous	0	-	2.0	A
OUTPUT Voltage[2]	Continuous	$V_{OUT} = V_{IN} – (I_{IN} \times R_{DC})$			V
Current[2,3]	Continuous	0	-	2.0	A
DC RESISTANCE	Continuous	-	-	250	mΩ
POWER DISSIPATION[2]	Continuous	-	-	1.0	W
NOISE REJECTION	f = 500 kHz	55	-	-	dB
CAPACITANCE	Pin to Case	10	-	30	nF
ISOLATION	Any Pin to Case, 500 V_{DC}	100	-	-	MΩ
MTBF (MIL-HDBK-217F)	AIF @ T_C = 55°C	-	2.49	-	MHrs

Notes: 1. Derate linearly to 0 at 135°C.
2. Verified by initial electrical design verification. Post design verification, parameter shall be guaranteed to the limits specified.
3. Rated current applies at any voltage.

BLOCK DIAGRAM

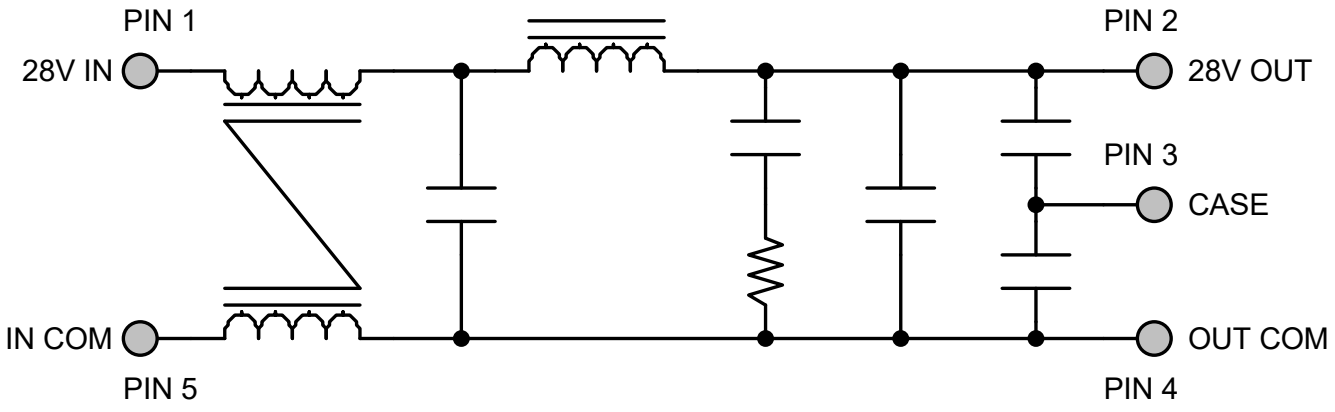


Figure 2

CONNECTION DIAGRAMS

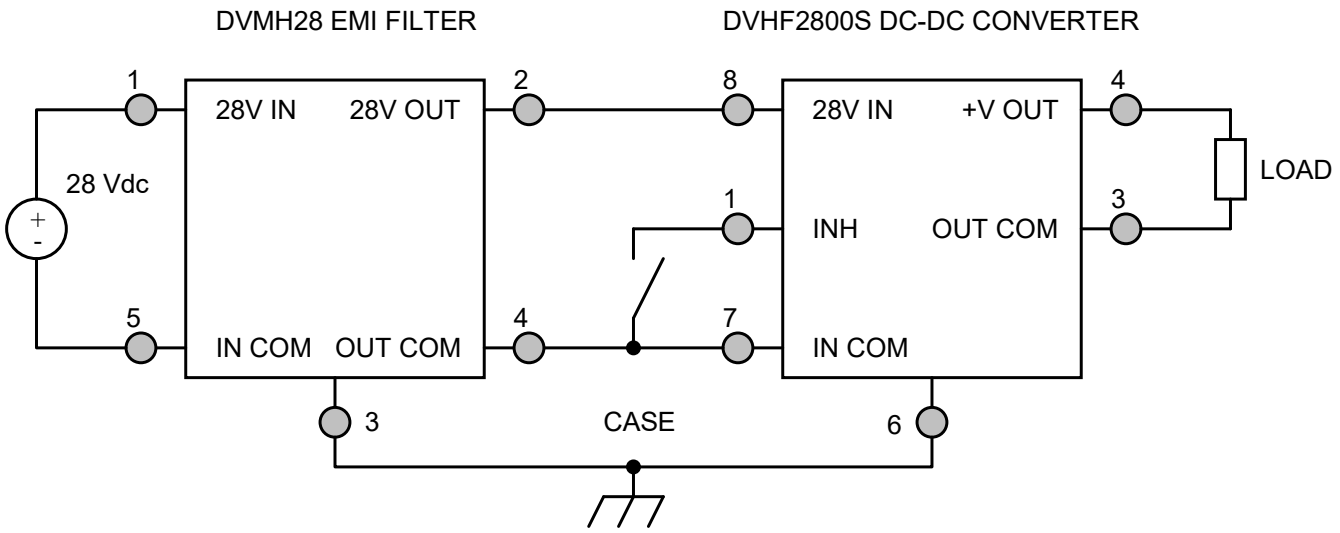


Figure 3 – DVMH28 EMI Filter Hookup with Single Converter

CONNECTION DIAGRAMS

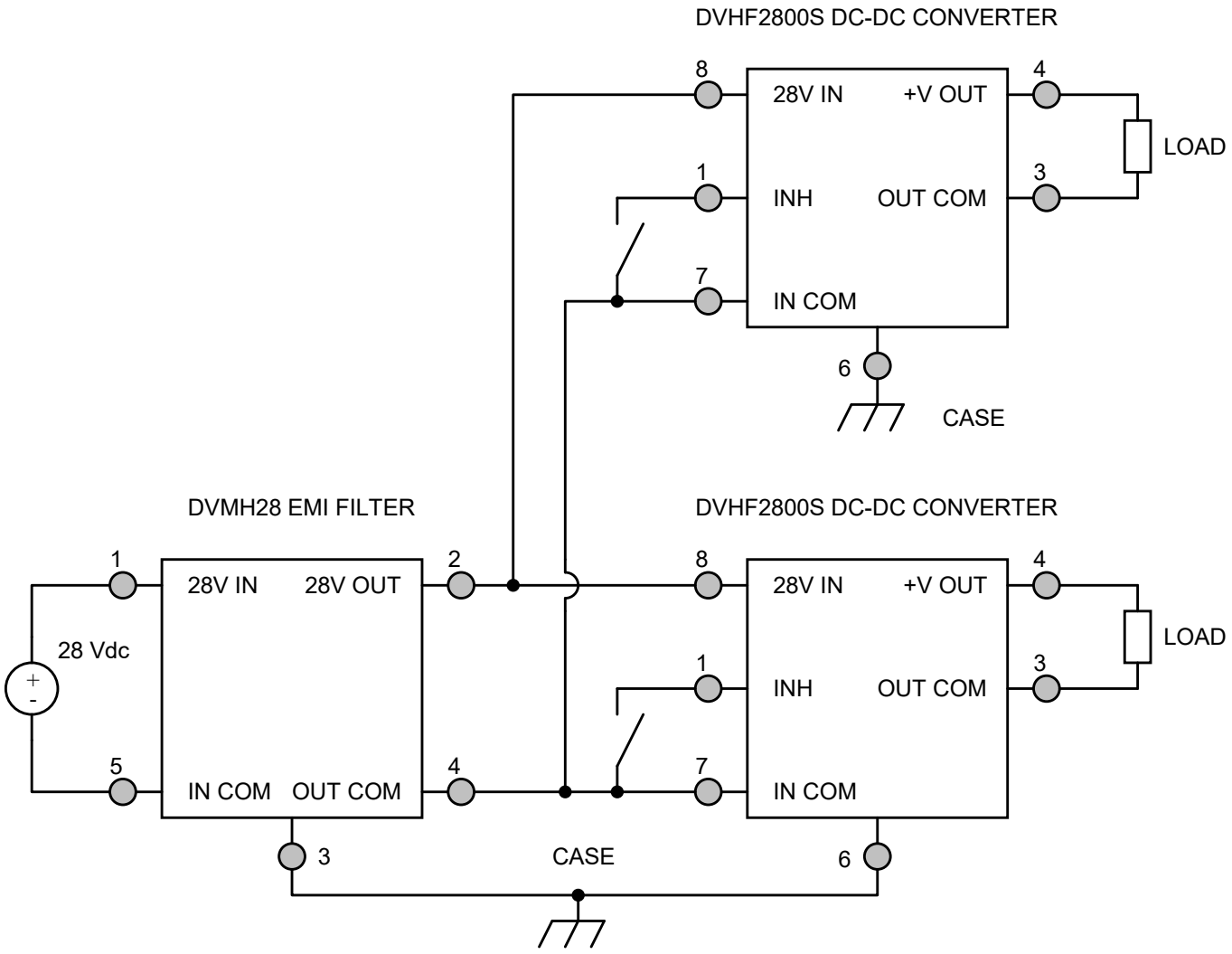


Figure 4 – DVMH28 EMI Filter Hookup with Two Converters

EMI MEASUREMENT METHODS CONNECTION DIAGRAMS

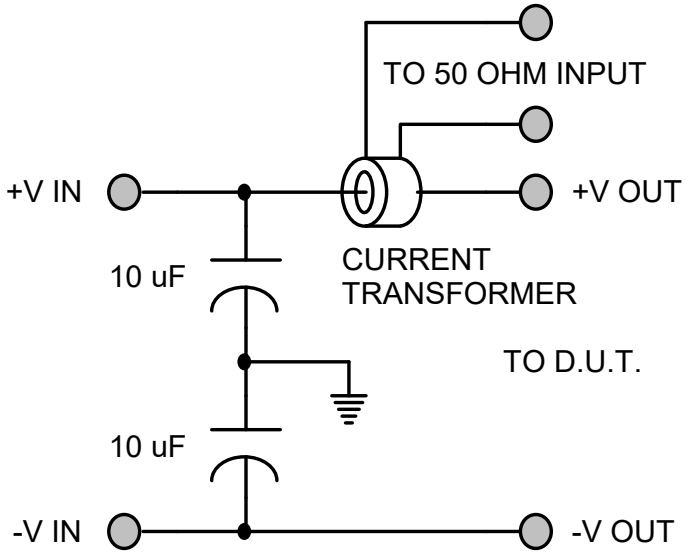


Figure 5 – MIL-STD-461C Measurement Method (Feedthrough Capacitor)

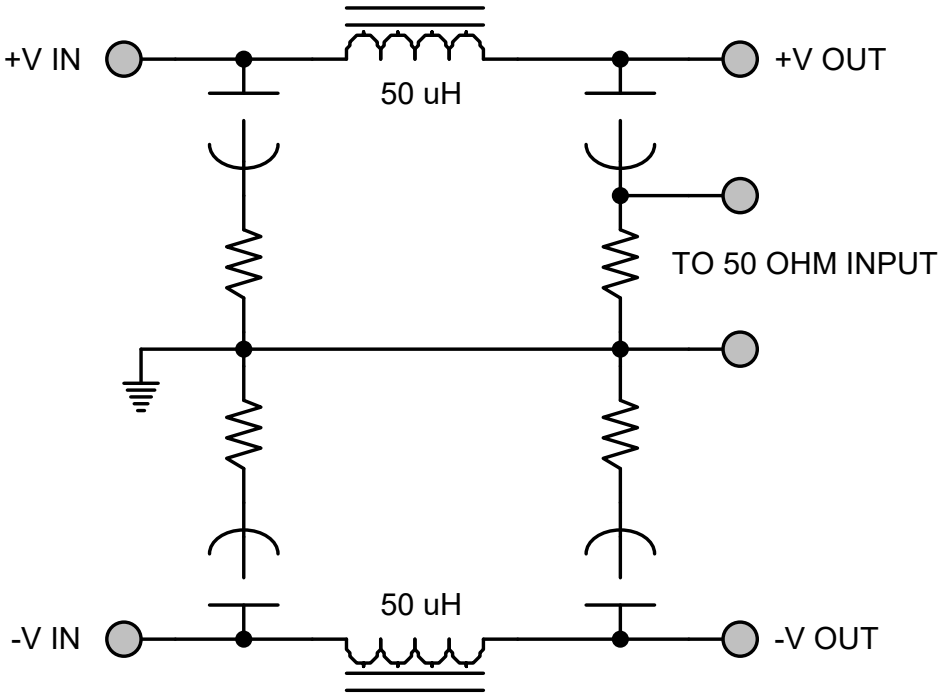


Figure 6 – MIL-STD-461D Measurement Method (LISN)

EMI PERFORMANCE CURVES

(T_{CASE} = 25°C, V_{IN} = +28V ± 5%, Full Load, Unless Otherwise Specified)

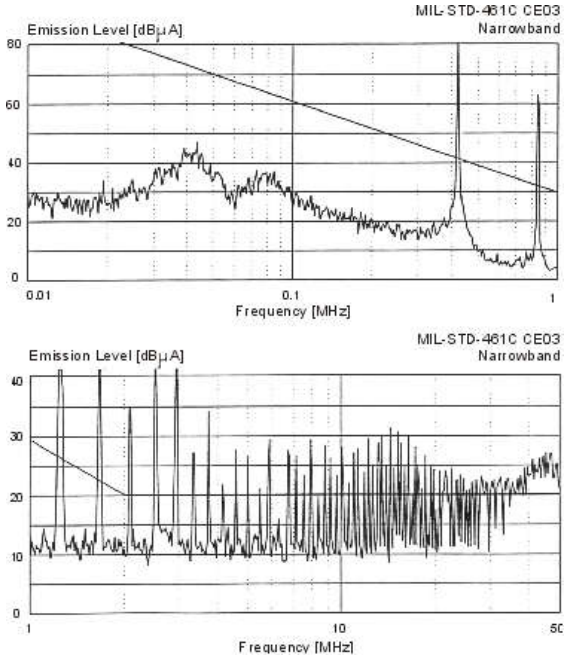


Figure 7 – MIL-STD-461C
DVHF2800D Without EMI Filter

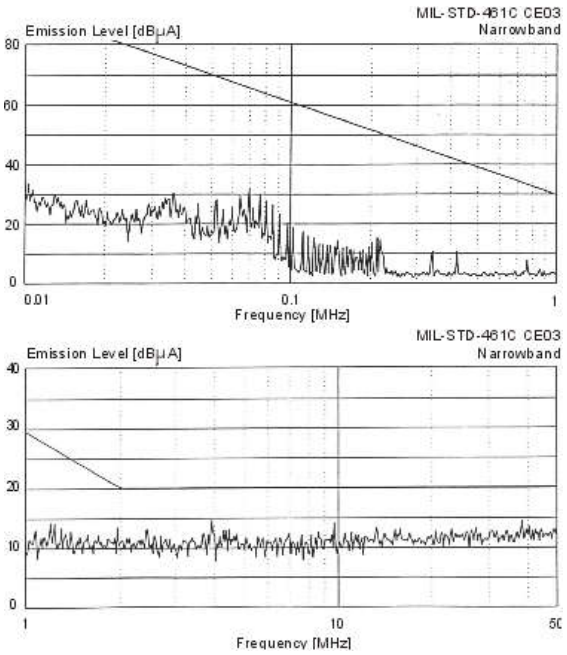


Figure 8 – MIL-STD-461C
DVHF2800D With DVMH28 EMI Filter

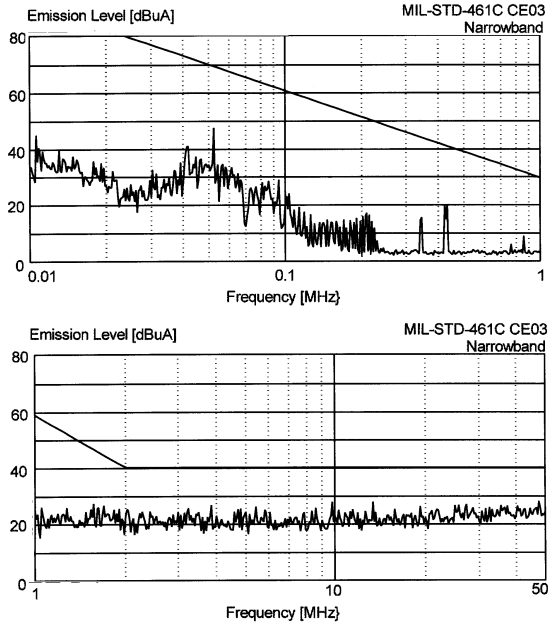


Figure 9 – MIL-STD-461C
Two DVHF2800S's With DVMH28 EMI Filter

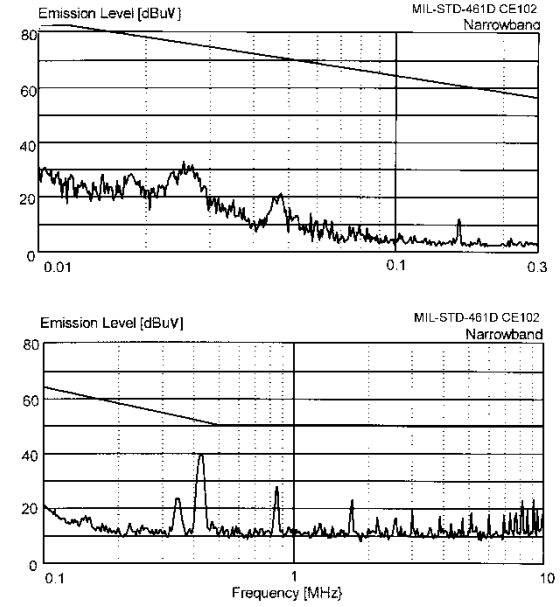
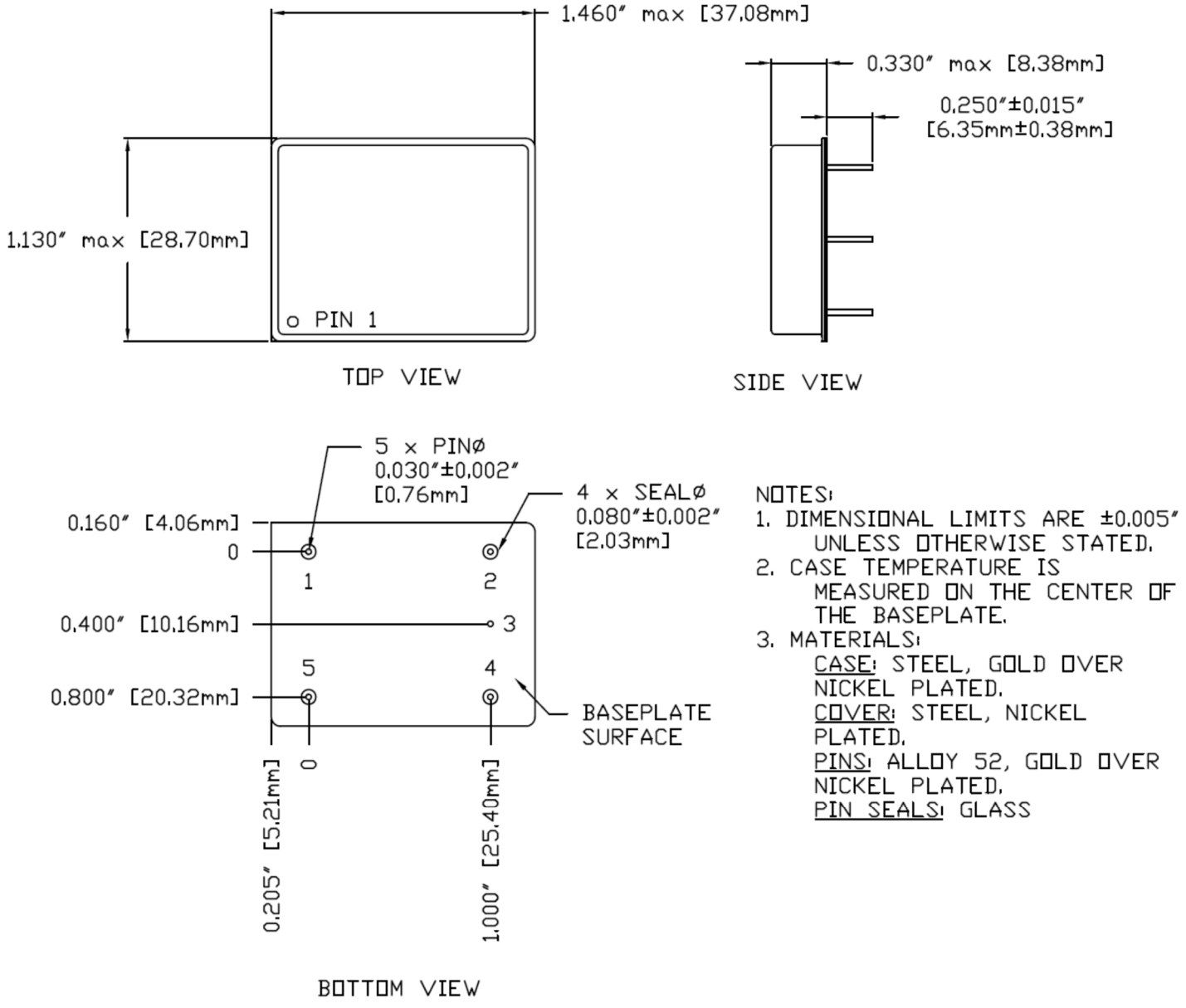


Figure 10 – MIL-STD-461D
DVHF2800S With DVMH28 EMI Filter

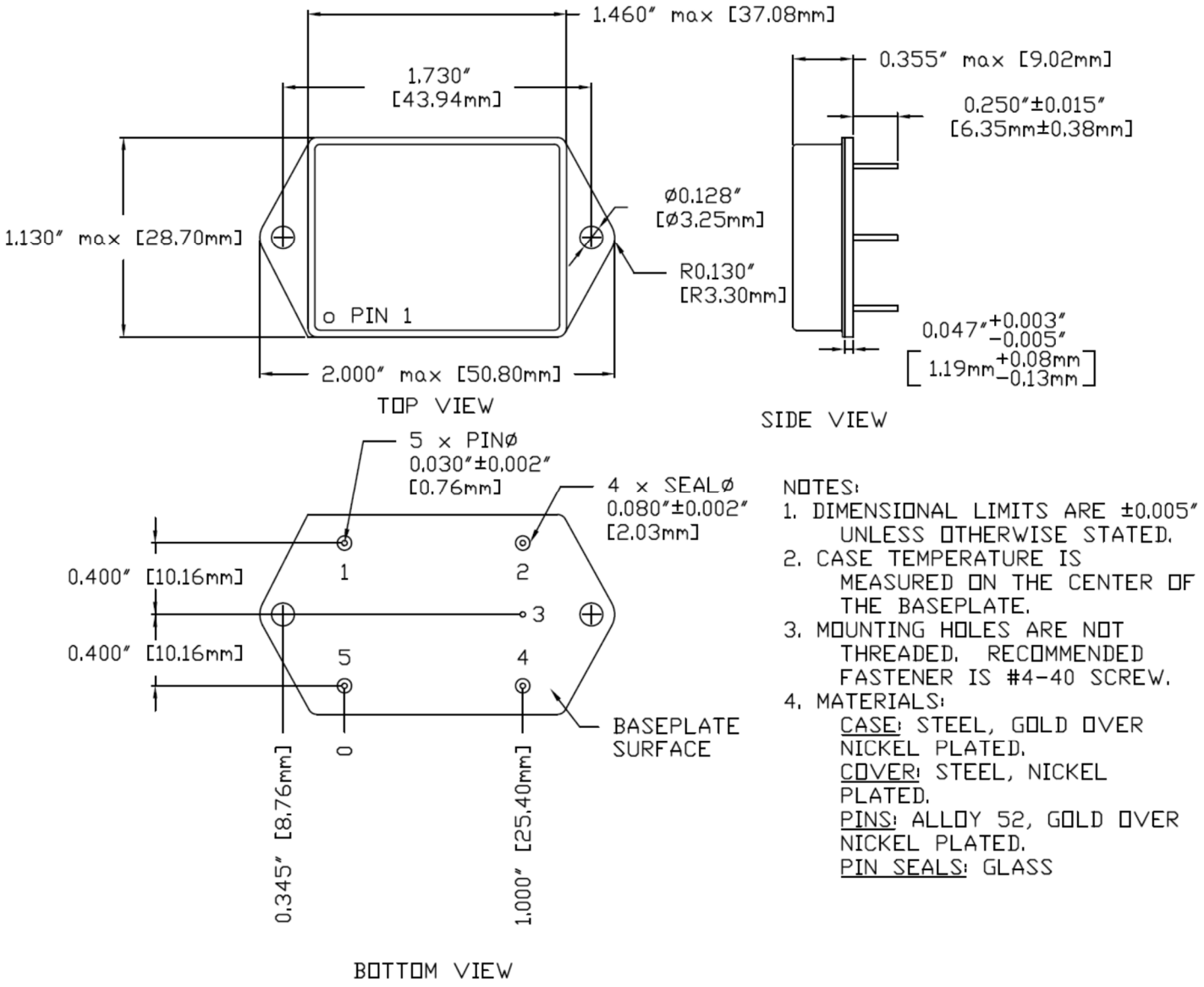
PACKAGE SPECIFICATIONS (NON-FLANGED)



Pin	Function	Pin	Function	Pin	Function
1	28V IN	3	CASE	5	IN COM
2	28V OUT	4	OUT COM		

Figure 11 – Non-Flanged Package and Pinout

PACKAGE SPECIFICATIONS (FLANGED)



Pin	Function	Pin	Function	Pin	Function
1	28V IN	3	CASE	5	IN COM
2	28V OUT	4	OUT COM		

Figure 12 – Flanged Package and Pinout

PACKAGE PIN DESCRIPTION

Pin	Function	Description
1	28V IN	Positive Input Voltage Connection
2	28V OUT	Positive Output Voltage Connection
3	CASE	Case Connection
4	OUT COM	Output Common Connection
5	IN COM	Input Common Connection

ENVIRONMENTAL SCREENING (100% Tested Per MIL-STD-883 as referenced to MIL-PRF-38534)

Test	MIL-STD-883 Test Method, Condition	No Suffix (Standard) Non-QML[4]	/ES (Extended) Non-QML[4]	/H (Class H)	/K and /KL1[4,7] (Class K)
Internal Visual	TM2010, TM2017, TM2032 (MIL-STD-750, TM2072, TM2073)	•	•	•	•
Temperature Cycling	TM1010, Condition C -65°C to 150°C, Ambient			•	•
	TM1010, Condition B -55°C to 125°C, Ambient		•		
Constant Acceleration	TM2001, 3000g, Y1 Direction			•	•
	TM2001, 500g, Y1 Direction		•		
PIND[5]	TM2020, Condition A				•
Pre Burn-In Electrical	25°C				•
Burn-In	TM1015, 320 hrs, 125°C, Case Typ				•
	TM1015, 160 hrs, 125°C, Case Typ			•	
	96 hrs, 125°C, Case Typ		•		
	24 hrs, 125°C, Case Typ	•			
Final Electrical	MIL-PRF-38534, Group A Subgroups 1-6 -55°C, 25°C, 125°C[3]			•	•
	MIL-PRF-38534, Group A Subgroups 1 and 4 25°C	•	•		
Hermeticity (Seal)	TM1014, Fine Leak, Condition A2 or B1		•	•	•
	TM1014, Gross Leak, Condition C or B2		•	•	•
	Gross Leak, Dip (1 x 10^{-3})	•			
Radiography[6]	TM2012				•
External Visual	TM2009	•	•	•	•

Notes:

1. Contact Sales for more information concerning additional environmental screening and testing options desired.
2. VPT Inc. reserves the right to ship higher screened or SMD products to meet lower screened orders at our sole discretion unless specifically forbidden by customer contract.
3. 100% R&R testing with all test data included in product shipment.
4. Non-QML products may not meet all requirements of MIL-PRF-38534.
5. PIND test Certificate of Compliance included in product shipment.
6. Radiographic test Certificate of Compliance and film(s) or data CD included in product shipment.
7. -KL1 products are identical in every way with Class K products in compliance with MIL-PRF-38534 revision L and later revisions except they contain elements evaluated to the requirements of MIL-PRF-38534 revision K and previous revisions. These devices are not marked with an SMD number or MIL-PRF-38534 certification mark and are marked with -KL1 screening code in place of -K.

ORDERING INFORMATION

DVMH	28	F	/H	-	XXX
1	2	3	4		5

(1)	(2)		(3)		(4)		(5)
Product Series	**Nominal Input Voltage**		**Package Option**		**Screening Code[1,2,3]**		**Additional Screening Code**
DVMH	**28**	28 Volts	**None** **F**	Non-Flanged Flanged	**None** **/ES** **/H** **/K** **/KL1**	Standard Extended Class H Class K Class K (KL1)	Contact Sales

Notes:

1. Contact the VPT Inc. Sales Department for availability of Class H (/H) or Class K (/K) qualified products.
2. VPT Inc. reserves the right to ship higher screened or DSCC Drawing products to meet lower screened orders at our sole discretion unless specifically forbidden by customer contract.
3. -KL1 products are identical in every way with Class K products in compliance with MIL-PRF-38534 revision L and later revisions except they contain elements evaluated to the requirements of MIL-PRF-38534 revision K and previous revisions. These devices are not marked with an SMD number or MIL-PRF-38534 certification mark and are marked with -KL1 screening code in place of -K.

Please contact your sales representative or the VPT Inc. Sales Department for more information concerning additional environmental screening and testing, different input voltage, output voltage, power requirement, source inspection, and/or special element evaluation for space or other higher quality applications.

DLA DRAWING NUMBERS

DLA Drawing	DVMH28 Series Similar Part Number
06005-01HXC 06005-01HXA 06005-01KXC 06005-01KXA	DVMH28/H DVMH28/H-E DVMH28/K DVMH28/K-E
06005-01HYC 06005-01HYA 06005-01KYC 06005-01KYA	DVMH28F/H DVMH28F/H-E DVMH28F/K DVMH28F/K-E

Do not use the DVMH28 Series similar part number for DLA Land and Maritime (Previously known as DSCC) Drawing product acquisition. It is listed for reference only. For exact specifications for the DLA Drawing product, refer to the DLA Drawing. DLA Drawings can be downloaded from the DLA website at https://landandmaritimeapps.dla.mil/programs/defaultapps.asp. The DLA Drawing number listed above represents the Federal Stock Class, Device Type, Device Class Designator, Case Outline, Lead Finish and RHA Designator (where applicable). Please reference the DLA Drawing for other screening levels, lead finishes, and radiation levels. All DLA Drawing products are marked with a “Q” on the cover as specified by the QML certification mark requirement of MIL-PRF-38534.

CONTACT INFORMATION

To request a quotation or place orders please contact your sales representative or the VPT Inc. Sales Department at:

Phone: (425) 353-3010
Fax: (425) 353-4030
E-mail: vptsales@vptpower.com