



SVHF2800S Series

HIGH RELIABILITY HYBRID RADIATION TOLERANT DC-DC CONVERTERS

DESCRIPTION

The SVHF series of high reliability DC-DC converters is operable over the full military temperature range (-55 °C to +125 °C) with no power derating. Paramount to the SVHF series is a magnetic feedback circuit that is radiation immune. Operating at a nominal fixed frequency of 450 kHz, these regulated, isolated units utilize well-controlled undervoltage lockout circuitry to eliminate slow start-up problems.

The SVHF series is specifically designed for the harsh radiation environment of space applications. Performance is guaranteed through the use of hardened semiconductor components, radiation lot acceptance testing (RLAT) of non-hardened components and analysis. The SVHF series has been characterized for Total Ionizing Dose (TID) performance including Enhanced Low Dose Rate Sensitivity (ELDRS) and for Single Event Effects (SEE) according to VPT's DLA approved Radiation Hardness Assurance (RHA) plan per MIL-PRF-38534, Appendix G. Characterization is performed at both the component level and at the SVHF series hybrid converter level.

These converters are designed and manufactured in a facility qualified to ISO9001 and certified to MIL-PRF-38534 Class H and Class K 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

- Guaranteed TID Performance to 30 krad(Si) including ELDRS, per VPT's RHA plan specified per MIL-PRF-38534, Appendix G, Level P with 2X margin.
- Characterized to 44 MeV-cm²/mg with minor transients only; no dropouts, shutdowns, latch up or burn out.
- High Reliability
- Very Low Output Noise
- Wide Input Voltage Range: 15 to 50 Volts per MIL-STD-704
- Up to 20 Watts Output Power
- Radiation Immune Magnetic Feedback Circuit
- NO Use of Optoisolators
- Undervoltage Lockout
- Current Limit and Short Circuit Protection
- High Input Transient Voltage: 80 Volts for 1 sec per MIL-STD-704A
- Precision Projection Welded Hermetic Package
- High Power Density: > 37 W/in³
- Custom Modified Versions May Be Available
- Additional Environmental Screening Available
- Meets MIL-STD-461 Revisions C, D, E and F EMC Requirements When Used With VPT's EMI Filters
- Flanged and Non-flanged Versions Available
- MIL-PRF-38534 Element Evaluated Components
- Worst Case analysis, Stress, Radiation, and Reliability reports available¹

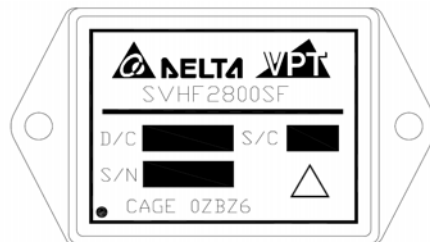


Figure 1 – SVHF2800S / SVHF2800SF DC-DC Converter (Exact marking may differ from that shown)

¹Subject to all export restrictions and export regulations including but not limited to the Export Administration and Foreign Assets Control Regulations. Further restrictions may apply contact VPT for details.

SPECIFICATIONS ($T_{CASE} = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, $V_{IN} = +28\text{V} \pm 5\%$, Full Load, Unless Otherwise Specified)

ABSOLUTE MAXIMUM RATINGS

Input Voltage (Continuous)	50 V_{DC}	Junction Temperature Rise to Case	+12°C
Input Voltage (Transient, 1 second)	80 Volts	Storage Temperature	-65°C to +150°C
Output Power ¹	20 Watts	Lead Solder Temperature (10 seconds)	270°C
Power Dissipation (Full Load, $T_{CASE} = +125^{\circ}\text{C}$)	6 Watts	Weight (Maximum) (Un-Flanged / Flanged)	(24 / 28) Grams

Parameter	Conditions ⁵	SVHF282R5S			SVHF283R3S			Units
		Min	Typ	Max	Min	Typ	Max	
STATIC								
INPUT Voltage ⁴	Continuous	15	28	50	15	28	50	V
	Transient, 1 sec	-	-	80	-	-	80	V
Current	Inhibited	-	4	6	-	4	6	mA
	No Load	-	45	65	-	45	65	mA
Ripple Current	Full Load, 20Hz to 10MHz	-	25	80	-	25	80	mA_{p-p}
	End-of-Life	-	-	110	-	-	110	mA_{p-p}
Inhibit Pin Input ⁴		0	-	1.5	0	-	1.5	V
Inhibit Pin Open Circuit Voltage ⁴		9	11	13	9	11	13	V
UVLO Turn On		12	-	14.8	12	-	14.8	V
UVLO Turn Off ⁴		11	-	14.5	11	-	14.5	V
OUTPUT Voltage	V_{OUT} $T_{CASE} = 25^{\circ}\text{C}$	2.475	2.50	2.525	3.267	3.30	3.333	V
	V_{OUT} $T_{CASE} = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$	2.463	2.50	2.538	3.25	3.30	3.35	V
	V_{OUT} End-of-Life	2.463	-	2.538	3.244	-	3.35	V
Power ³		0	-	8	0	-	10	W
Current ³	V_{OUT}	0	-	3.2	0	-	3	A
Ripple Voltage	V_{OUT} Full Load, 20Hz to 10MHz	-	10	40	-	10	40	mV_{p-p}
Line Regulation	V_{OUT} $V_{IN} = 15\text{V}$ to 50V	-	2	20	-	2	20	mV
Load Regulation	V_{OUT} No Load to Full Load	-	20	50	-	20	50	mV
EFFICIENCY		57	64	-	65	71	-	%
LOAD FAULT POWER DISSIPATION	Overload ⁴	-	-	8	-	-	8	W
	Short Circuit	-	-	8	-	-	8	W
CAPACITIVE LOAD ⁴		-	-	1000	-	-	1000	μF
SWITCHING FREQUENCY		350	450	500	350	450	500	kHz
ISOLATION	500 V_{DC}	100	-	-	100	-	-	$\text{M}\Omega$
MTBF (MIL-HDBK-217F)	SF @ $T_C = 55^{\circ}\text{C}$	-	776	-	-	776	-	kHrs
DYNAMIC								
Load Step Output Transient	V_{OUT} Half Load to Full Load	-	140	250	-	160	400	mV_{PK}
Load Step Recovery ²		-	400	600	-	350	500	μSec
Line Step Output Transient ⁴	V_{OUT} $V_{IN} = 16\text{V}$ to 40V	-	400	700	-	400	700	mV_{PK}
Line Step Recovery ^{2,4}		-	300	500	-	300	500	μSec
Turn On Delay	V_{OUT} $V_{IN} = 0\text{V}$ to 28V	-	10	20	-	10	20	mSec
Turn On Overshoot		-	0	15	-	0	15	mV_{PK}

Notes: 1. Dependant on output voltage. 2. Time for output voltage to settle within 1% of its nominal value.
 3. Derate linearly to 0 at 135°C. 4. Verified by qualification testing.
 5. End-of-Life performance includes aging and radiation degradation and is within standard limits except where noted.

SPECIFICATIONS ($T_{CASE} = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, $V_{IN} = +28\text{V} \pm 5\%$, Full Load, Unless Otherwise Specified)

ABSOLUTE MAXIMUM RATINGS

Input Voltage (Continuous)	50 V_{DC}	Junction Temperature Rise to Case	+12°C
Input Voltage (Transient, 1 second)	80 Volts	Storage Temperature	-65°C to +150°C
Output Power ¹	20 Watts	Lead Solder Temperature (10 seconds)	270°C
Power Dissipation (Full Load, $T_{CASE} = +125^{\circ}\text{C}$)	6 Watts	Weight (Maximum) (Un-Flanged / Flanged)	(24 / 28) Grams

Parameter	Conditions ⁵	SVHF2805S			SVHF2812S			Units	
		Min	Typ	Max	Min	Typ	Max		
STATIC									
INPUT Voltage ⁴	Continuous	15	28	50	15	28	50	V	
	Transient, 1 sec	-	-	80	-	-	80	V	
Current	Inhibited	-	4	6	-	4	6	mA	
	No Load	-	45	65	-	45	65	mA	
Ripple Current	Full Load, 20Hz to 10MHz	-	30	80	-	40	80	mA _{p-p}	
		End-of-Life	-	-	110	-	-	110	mA _{p-p}
Inhibit Pin Input ⁴		0	-	1.5	0	-	1.5	V	
Inhibit Pin Open Circuit Voltage ⁴		9	11	13	9	11	13	V	
UVLO Turn On		12	-	14.8	12	-	14.8	V	
UVLO Turn Off ⁴		11	-	14.5	11	-	14.5	V	
OUTPUT Voltage	V_{OUT}	$T_{CASE} = 25^{\circ}\text{C}$	4.95	5.00	5.05	11.88	12.00	12.12	V
	V_{OUT}	$T_{CASE} = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$	4.925	5.00	5.075	11.82	12.00	12.18	V
	V_{OUT}	End-of-Life	4.89	-	5.10	11.66	-	12.30	V
Power ³		0	-	15	0	-	20	W	
Current ³	V_{OUT}	0	-	3	0	-	1.67	A	
Ripple Voltage	V_{OUT}	Full Load, 20Hz to 10MHz	-	15	40	-	10	40	mV _{p-p}
Line Regulation	V_{OUT}	$V_{IN} = 15\text{V}$ to 50V	-	2	20	-	2	20	mV
Load Regulation	V_{OUT}	No Load to Full Load	-	25	50	-	10	50	mV
EFFICIENCY			72	77	-	77	84	-	%
LOAD FAULT POWER DISSIPATION	Overload ⁴	-	-	8	-	-	8	8	W
	Short Circuit	-	-	8	-	-	8	8	W
CAPACITIVE LOAD ⁴		-	-	1000	-	-	500	μF	
SWITCHING FREQUENCY		350	450	500	350	450	500	kHz	
ISOLATION	500 V_{DC}	100	-	-	100	-	-	-	MΩ
MTBF (MIL-HDBK-217F)	SF @ $T_C = 55^{\circ}\text{C}$	-	776	-	-	776	-	-	kHrs
DYNAMIC									
Load Step Output Transient	V_{OUT}	Half Load to Full Load	-	250	600	-	350	500	mV _{PK}
Load Step Recovery ²			-	450	600	-	250	500	μSec
Line Step Output Transient ⁴	V_{OUT}	$V_{IN} = 16\text{V}$ to 40V	-	400	800	-	500	900	mV _{PK}
Line Step Recovery ^{2,4}			-	300	700	-	300	500	μSec
Turn On Delay	V_{OUT}	$V_{IN} = 0\text{V}$ to 28V	-	10	20	-	10	20	mSec
Turn On Overshoot			-	0	25	-	0	50	mV _{PK}

Notes: 1. Dependant on output voltage. 2. Time for output voltage to settle within 1% of its nominal value.
 3. Derate linearly to 0 at 135°C. 4. Verified by qualification testing.
 5. End-of-Life performance includes aging and radiation degradation and is within standard limits except where noted.

SPECIFICATIONS ($T_{CASE} = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$, $V_{IN} = +28\text{V} \pm 5\%$, Full Load, Unless Otherwise Specified)

ABSOLUTE MAXIMUM RATINGS

Input Voltage (Continuous)	50 V _{DC}	Junction Temperature Rise to Case	+12°C
Input Voltage (Transient, 1 second)	80 Volts	Storage Temperature	-65°C to +150°C
Output Power ¹	20 Watts	Lead Solder Temperature (10 seconds)	270°C
Power Dissipation (Full Load, $T_{CASE} = +125^{\circ}\text{C}$)	6 Watts	Weight (Maximum) (Un-Flanged / Flanged)	(24 / 28) Grams

Parameter	Conditions ⁵	SVHF2815S			Units
		Min	Typ	Max	
STATIC					
INPUT Voltage ⁴	Continuous	15	28	50	V
	Transient, 1 sec	-	-	80	V
Current	Inhibited	-	4	6	mA
	No Load	-	45	65	mA
Ripple Current	Full Load, 20Hz to 10MHz	-	40	80	mA _{p-p}
		End-of-Life	-	-	110
Inhibit Pin Input ⁴		0	-	1.5	V
Inhibit Pin Open Circuit Voltage ⁴		9	11	13	V
UVLO Turn On		12	-	14.8	V
UVLO Turn Off ⁴		11	-	14.5	V
OUTPUT Voltage	V _{OUT} $T_{CASE} = 25^{\circ}\text{C}$	14.85	15.00	15.15	V
	V _{OUT} $T_{CASE} = -55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$	14.775	15.00	15.225	V
	V _{OUT} End-of-Life	14.565	-	15.4	V
Power ³		0	-	20	W
Current ³	V _{OUT}	0	-	1.34	A
Ripple Voltage	V _{OUT} Full Load, 20Hz to 10MHz	-	10	40	mV _{p-p}
Line Regulation	V _{OUT} $V_{IN} = 15\text{V}$ to 50V	-	2	20	mV
Load Regulation	V _{OUT} No Load to Full Load	-	10	50	mV
EFFICIENCY		78	85	-	%
LOAD FAULT POWER DISSIPATION	Overload ⁴	-	-	8	W
	Short Circuit	-	-	8	W
CAPACITIVE LOAD ⁴		-	-	500	μF
SWITCHING FREQUENCY		350	450	500	kHz
ISOLATION	500 V _{DC}	100	-	-	MΩ
MTBF (MIL-HDBK-217F)	SF @ $T_C = 55^{\circ}\text{C}$	-	776	-	kHrs
DYNAMIC					
Load Step Output Transient	V _{OUT} Half Load to Full Load	-	350	500	mV _{PK}
Load Step Recovery ²		-	250	500	μSec
Line Step Output Transient ⁴	V _{OUT} $V_{IN} = 16\text{V}$ to 40V	-	500	900	mV _{PK}
Line Step Recovery ^{2,4}		-	300	500	μSec
Turn On Delay	V _{OUT} $V_{IN} = 0\text{V}$ to 28V	-	10	20	mSec
Turn On Overshoot		-	0	50	mV _{PK}

- Notes: 1. Dependant on output voltage. 2. Time for output voltage to settle within 1% of its nominal value.
 3. Derate linearly to 0 at 135°C. 4. Verified by qualification testing.
 5. End-of-Life performance includes aging and radiation degradation and is within standard limits except where noted.

BLOCK DIAGRAM

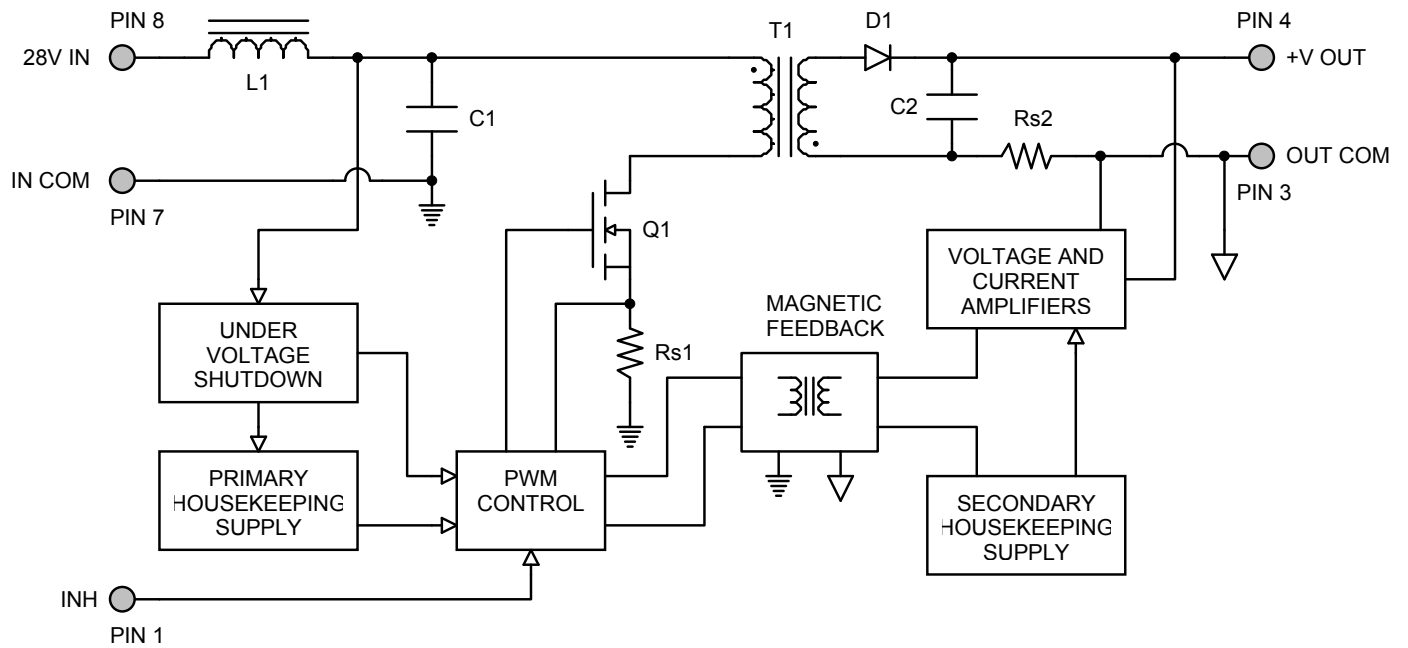


Figure 2

CONNECTION DIAGRAM

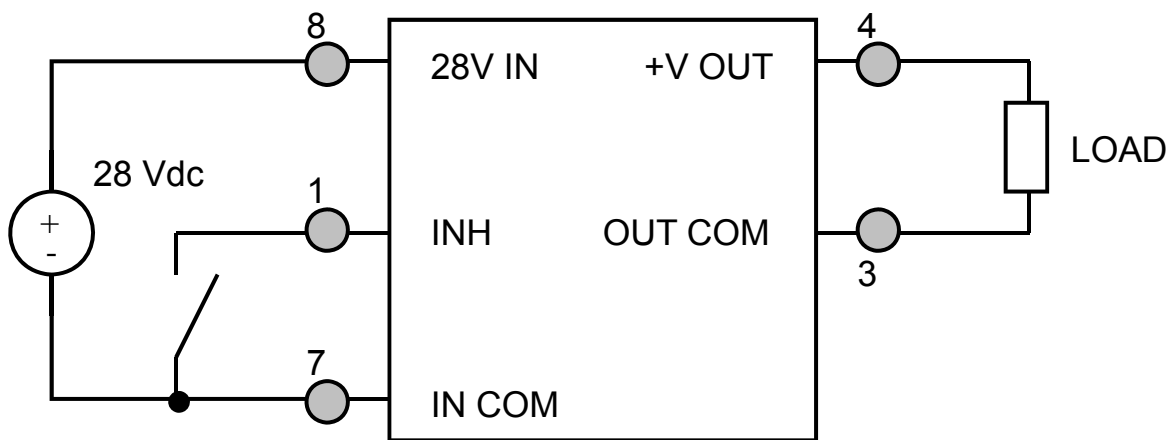


Figure 3

INHIBIT DRIVE CONNECTION DIAGRAMS

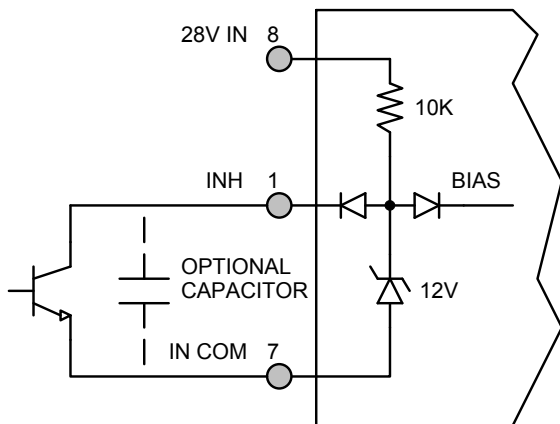


Figure 4 – Internal Inhibit Circuit and Recommended Drive
(Shown with optional capacitor for turn-on delay)

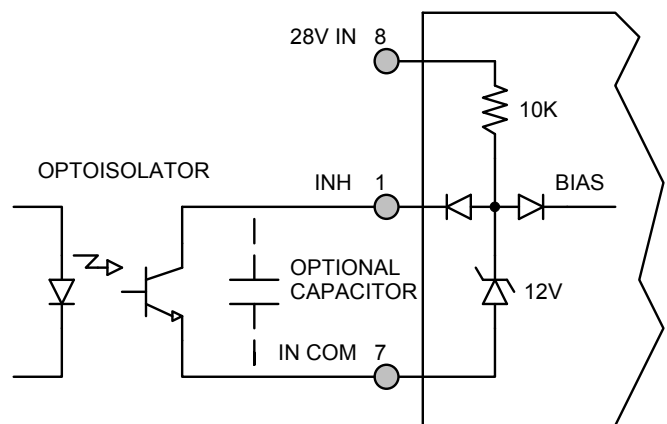


Figure 5 – Isolated Inhibit Drive
(Shown with optional capacitor for turn-on delay)

EMI FILTER HOOKUP DIAGRAM

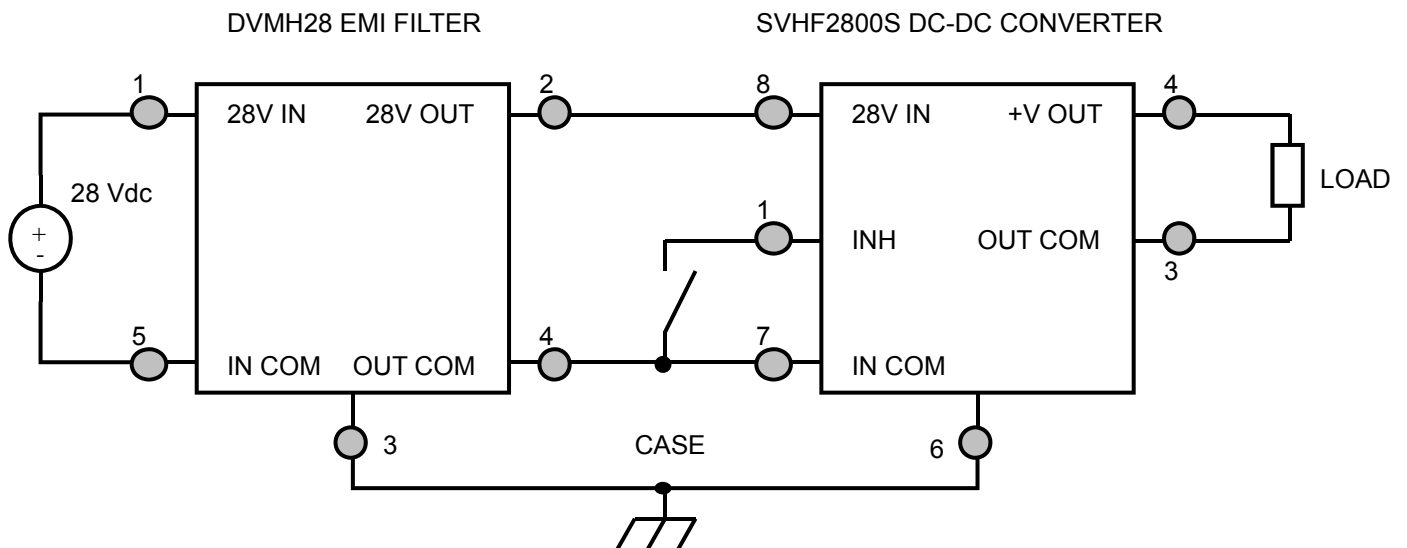


Figure 6 – Converter with EMI Filter

EFFICIENCY PERFORMANCE CURVES ($T_{CASE} = 25^{\circ}C$, Full Load, Unless Otherwise Specified)

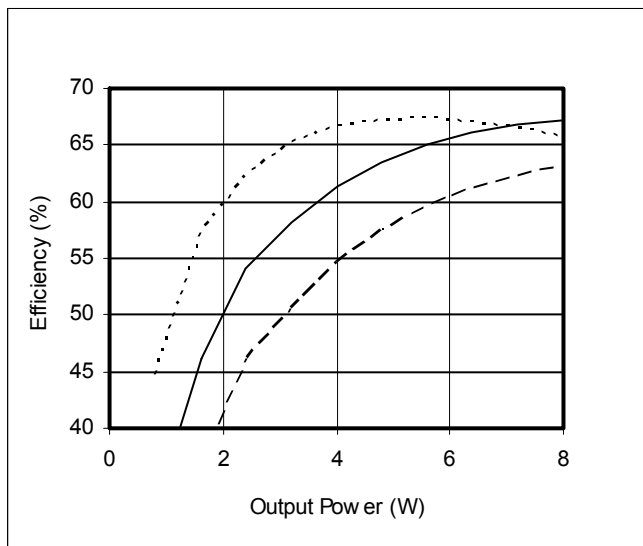
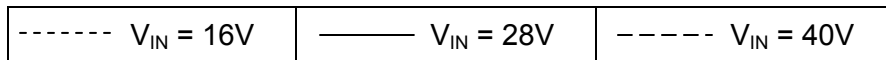


Figure 7 – SVHF282R5S
Efficiency (%) vs. Output Power (W)

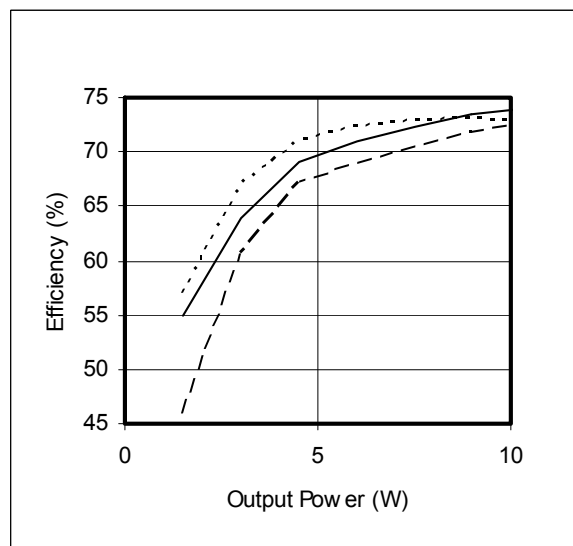


Figure 8 – SVHF283R3S
Efficiency (%) vs. Output Power (W)

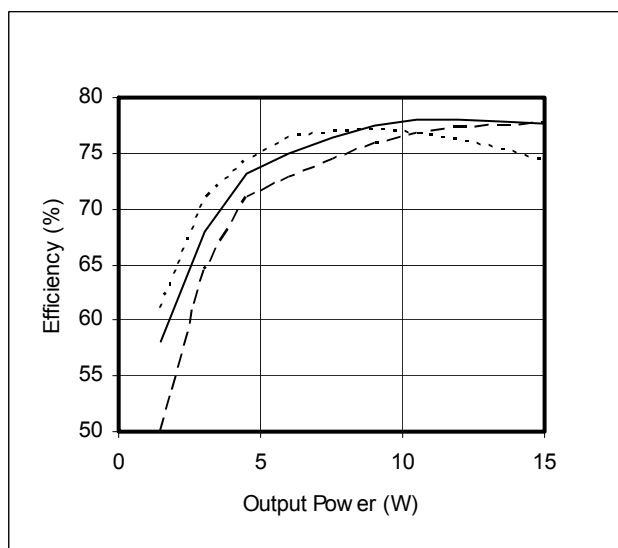


Figure 9 – SVHF2805S
Efficiency (%) vs. Output Power (W)

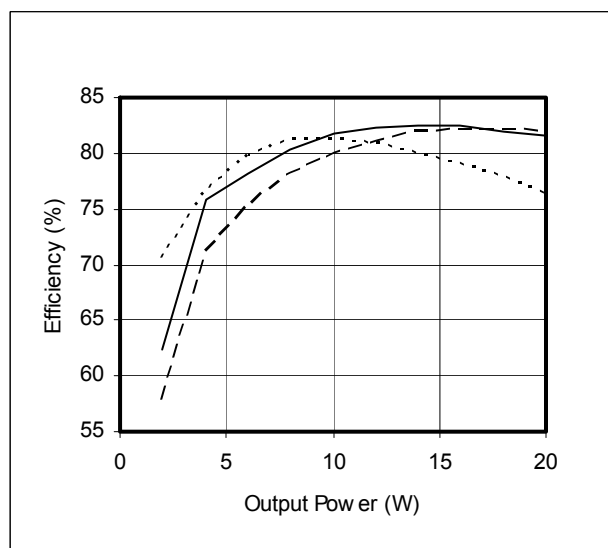


Figure 10 – SVHF2812S
Efficiency (%) vs. Output Power (W)

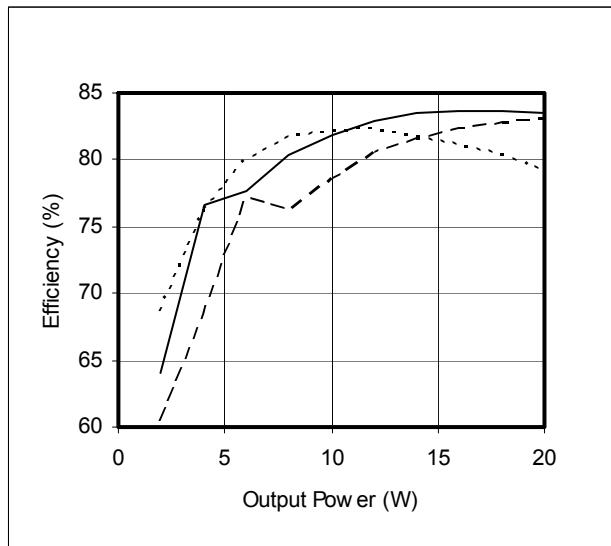


Figure 11 – SVHF2815S
Efficiency (%) vs. Output Power (W)

EMI PERFORMANCE CURVES ($T_{CASE} = 25^{\circ}C$, $V_{IN} = +28V \pm 5\%$, Full Load, Unless Otherwise Specified)

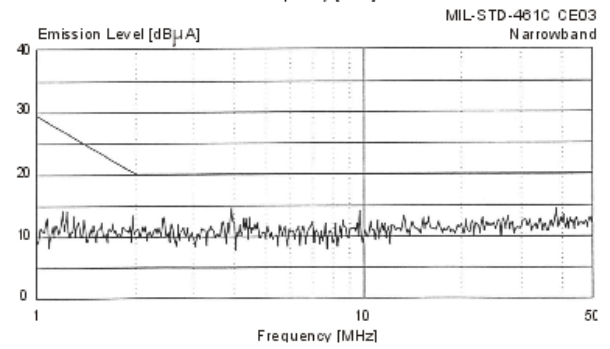
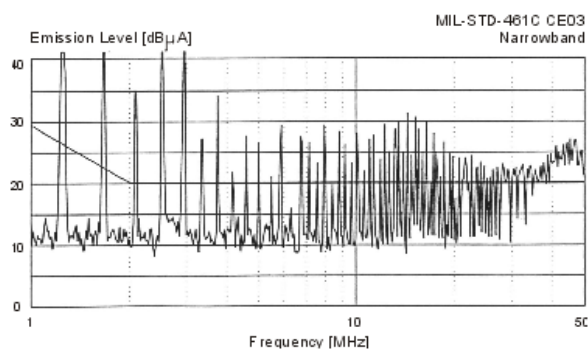
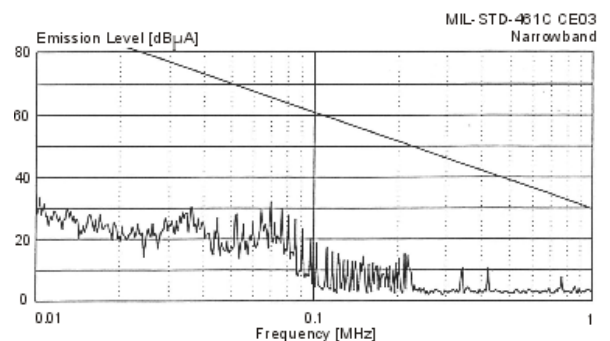
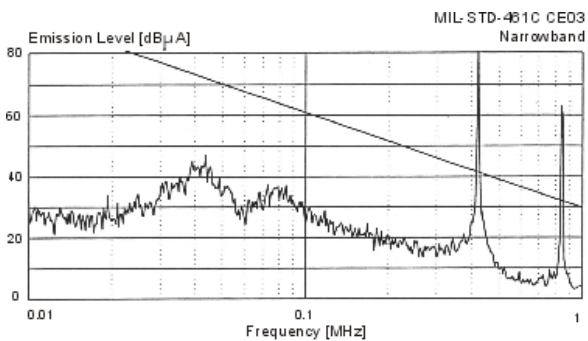


Figure 12 – SVHF2800S without EMI Filter

Figure 13 – SVHF2800S with EMI Filter

RADIATION HARDNESS ASSURANCE (RHA)

The SVHF series radiation performance is guaranteed through the use of hardened semiconductor components, radiation lot acceptance testing (RLAT) of non-hardened components, and characterization of the completed hybrid according to VPT's Radiation Hardness Assurance (RHA) plan per MIL-PRF-38534, Appendix G. Post radiation end of life performance limits are determined by worst case analysis.

As part of qualification, one representative model of the hybrid converter family is characterized for total ionizing dose (TID). TID is tested to 60 krad(Si). Subsequent performance is guaranteed to 30 krad(Si) by 2 times margin. Characterization is performed at high dose rate (HDR) in accordance with condition C (minimum dose rate of 30 rad(Si)/s) of method 1019 of MIL-STD-883, and at low dose rate (LDR) in accordance with condition D of method 1019 of MIL-STD-883. A minimum of 1 biased sample and 1 unbiased sample is tested. After radiation exposure, converter testing is performed at 25 °C per standard datasheet limits. The radiation exposure test circuit is given in Figure 14.

Also as part of qualification, one representative model of the hybrid converter family is characterized for Single Event Effects (SEE). The specific test LET is specified on the first page of the datasheet and is tested to a minimum fluence of 1×10^6 particles/cm². The characterization is performed at nominal input voltage at 25 °C in air. The radiation exposure test circuit is specified in Figure 15.

Continued compliance is guaranteed by component testing and analysis. Critical semiconductor components, unless procured with manufacturer radiation guarantees, are subjected to RLAT at HDR in accordance with condition C of method 1019 of MIL-STD-883. Semiconductors which have been shown to exhibit ELDRS are subject to RLAT at LDR in accordance with condition D of method 1019 of MIL-STD-883. RLAT is not performed on inherently radiation hard semiconductor component technologies including zeners, diodes, and small signal BJTs.

RHA TEST CIRCUIT DIAGRAMS

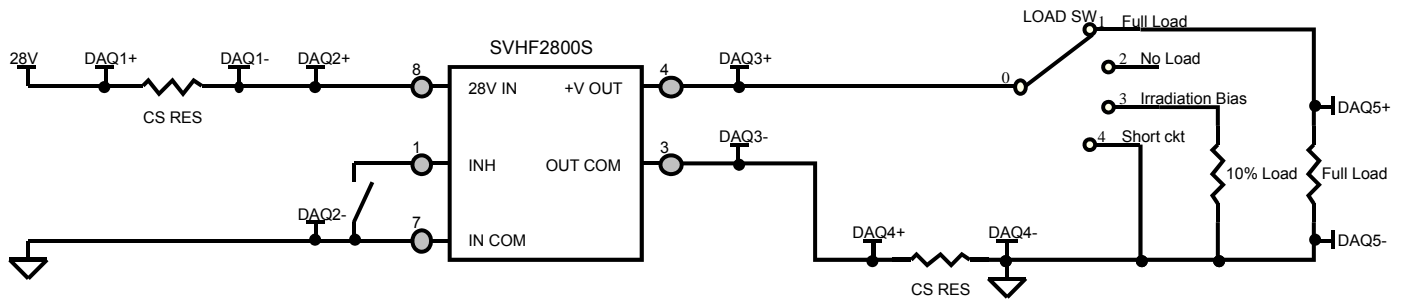


Figure 14 – Radiation exposure circuit (TID)

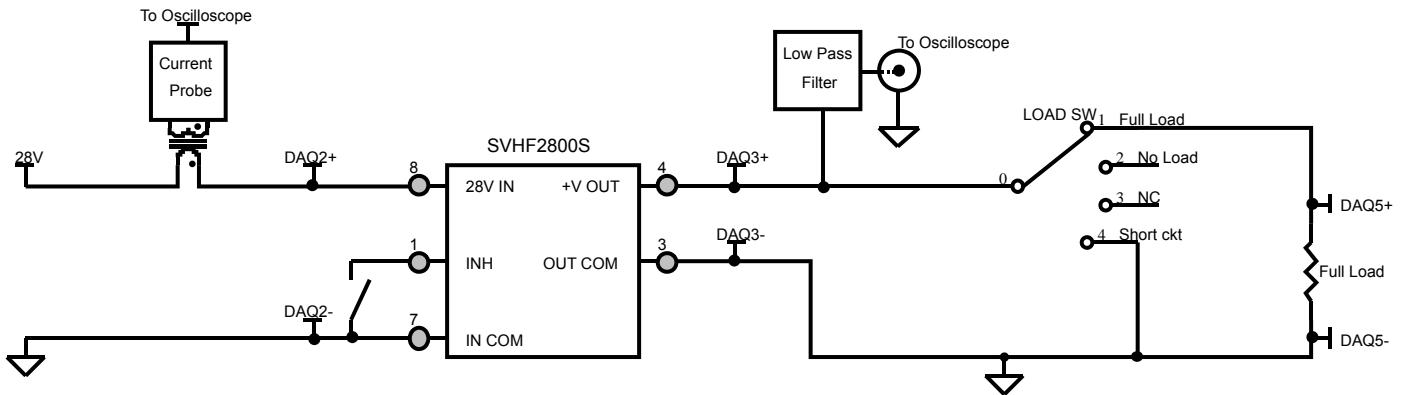
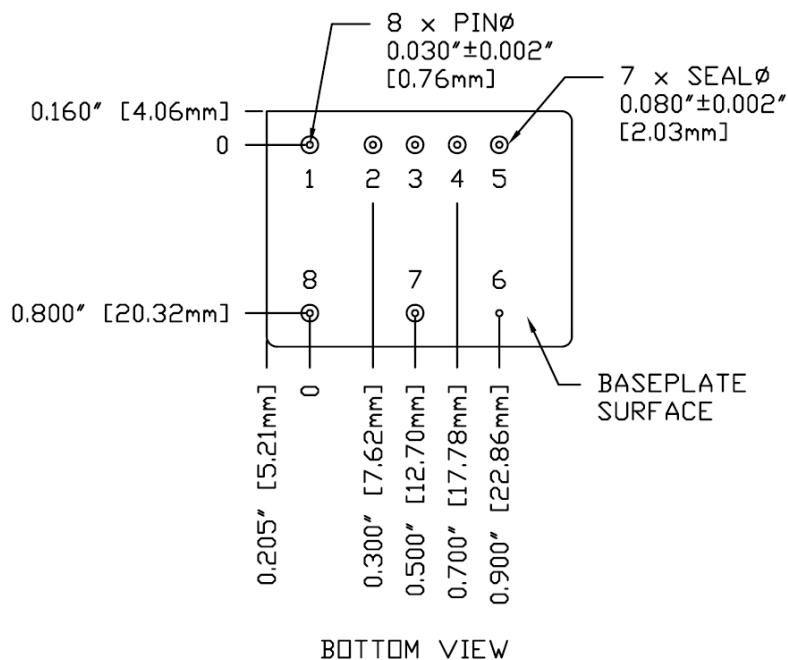
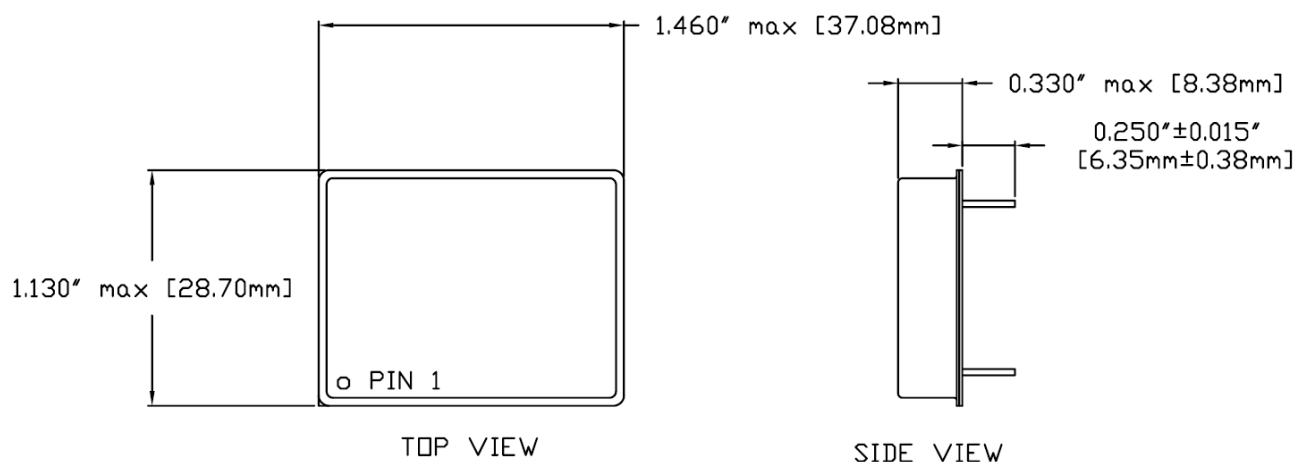


Figure 15 – Radiation exposure circuit (SEE)

PACKAGE SPECIFICATIONS (NON-FLANGED)

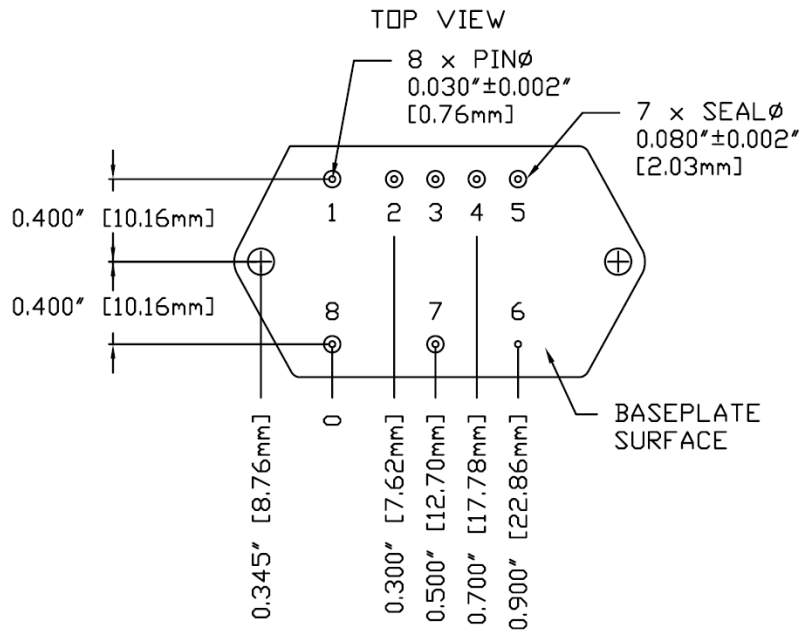
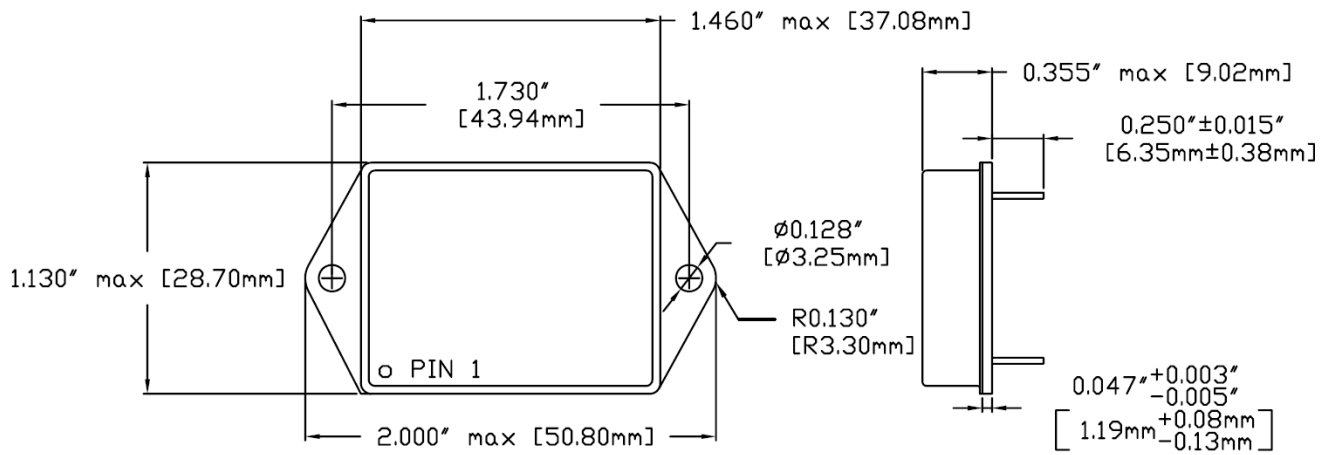


- NOTES:
1. DIMENSIONAL LIMITS ARE $\pm 0.005"$ UNLESS OTHERWISE STATED.
 2. CASE TEMPERATURE IS MEASURED ON THE CENTER OF THE BASEPLATE.
 3. MATERIALS:
CASE: STEEL, GOLD OVER NICKEL PLATED.
COVER: STEEL, NICKEL PLATED.
PINS: ALLOY 52, GOLD OVER NICKEL PLATED.
PIN SEALS: GLASS

PIN	FUNCTION	PIN	FUNCTION
1	INHIBIT	5	N/C
2	N/C	6	CASE
3	OUT COM	7	IN COM
4	+V OUT	8	28V IN

Figure 16 – Non-Flanged Package and Pinout

PACKAGE SPECIFICATIONS (FLANGED)



- NOTES:
1. DIMENSIONAL LIMITS ARE $\pm 0.005"$ UNLESS OTHERWISE STATED.
 2. CASE TEMPERATURE IS MEASURED ON THE CENTER OF THE BASEPLATE.
 3. MOUNTING HOLES ARE NOT THREADED. RECOMMENDED FASTENER IS #4-40 SCREW.
 4. MATERIALS:
CASE: STEEL, GOLD OVER NICKEL PLATED.
COVER: STEEL, NICKEL PLATED.
PINS: ALLOY 52, GOLD OVER NICKEL PLATED.
PIN SEALS: GLASS

BOTTOM VIEW

PIN	FUNCTION	PIN	FUNCTION
1	INHIBIT	5	N/C
2	N/C	6	CASE
3	OUT COM	7	IN COM
4	+V OUT	8	28V IN

Figure 17 – Flanged Package and Pinout

PACKAGE PIN DESCRIPTION

Pin	Function	Description
1	INHIBIT	Logic Low = Disabled Output. Connecting the inhibit pin to input common causes converter shutdown. Logic High = Enabled Output. Unconnected or open collector TTL.
2	N/C	No Connection
3	OUT COM	Output Common Connection
4	+V OUT	Positive Output Voltage Connection
5	N/C	No Connection
6	CASE	Case Connection
7	IN COM	Input Common Connection
8	28V IN	Positive Input Voltage Connection

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

Screening	MIL-STD-883	Class H+ /H+	Class K /K	Engineering Model ⁵ /EM
Non-Destructive Bond Pull	Method 2023 ³	•	•	•
Internal Visual	Method 2017, 2032 Internal Procedure	•	•	•
Temperature Cycling	Method 1010, Condition C	•	•	
Constant Acceleration	Method 2001, 3000g, Y1 Direction	•	•	
PIND	Method 2020, Condition A ²	•	•	
Pre Burn-In Electrical	100% at 25°C		•	
Burn-In	Method 1015, 320 hours at +125°C Method 1015, 160 hours at +125°C 24 Hours at +125°C	•	•	•
Final Electrical	MIL-PRF-38534, Group A ¹ 100% at 25°C	•	•	•
Hermeticity	Method 1014, Fine Leak, Condition A Method 1014, Gross Leak, Condition C Dip (1×10^{-3})	• •	• •	•
Radiography	Method 2012 ⁶		•	
External Visual	Method 2009	•	•	•

- Notes:
- 100% R&R testing at -55°C, +25°C, and +125°C with all test data included in product shipment.
 - PIND test Certificate of Compliance included in product shipment. This is an additional screening test not required per MIL-PRF-38534, Class H.
 - Non-Destructive bond pull per Method 2023 performed. This is an additional screening test not required per MIL-PRF-38534, Class H.
 - Please contact your sales representative or the VPT Inc. Sales Department for more information concerning additional environmental screening and testing options desired.
 - Engineering models utilize only the standard screening specified and are not considered compliant for flight use.
 - Radiographic test Certificate of Compliance and film(s) included in product shipment.

ORDERING INFORMATION

SVHF	28	05	S	F	/H+	-	XXX
1	2	3	4	5	6		7

(1) Product Series	(2) Nominal Input Voltage		(3) Output Voltage		(4) Number of Outputs	
SVHF	28	28 Volts	2R5 3R3 05 12 15	2.5 Volts 3.3 Volts 5 Volts 12 Volts 15 Volts	S	Single

(5) Package Option		(6) Screening Code		(7) Additional Screening Code
None F	Non-Flanged Flanged	/EM /H+ /K	Engineering Model Class H+ Class K	Contact Sales

Note: Engineering models utilize only the standard screening specified and are not considered compliant for flight use. These models are intended for low volume engineering characterization. The customer must place the following statement on each line item of their purchase order(s) for /EM units when ordering engineering models:

“(Customer Name) acknowledges that the /EM unit listed in this line item is not permitted for flight use and will be used for Engineering characterization only.”

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.

SMD (STANDARD MICROCIRCUIT DRAWING) NUMBERS

Standard Microcircuit Drawing (SMD)	SVHF2800S Series Similar Part Number
5962P1121805HXC 5962P1121805HYC 5962P1121805KXC 5962P1121805KYC	SVHF282R5S/H+ SVHF282R5SF/H+ SVHF282R5S/K SVHF282R5SF/K
5962P1121801HXC 5962P1121801HYC 5962P1121801KXC 5962P1121801KYC	SVHF283R3S/H+ SVHF283R3SF/H+ SVHF283R3S/K SVHF283R3SF/K
5962P1121802HXC 5962P1121802HYC 5962P1121802KXC 5962P1121802KYC	SVHF2805S/H+ SVHF2805SF/H+ SVHF2805S/K SVHF2805SF/K
5962P1121803HXC 5962P1121803HYC 5962P1121803KXC 5962P1121803KYC	SVHF2812S/H+ SVHF2812SF/H+ SVHF2812S/K SVHF2812SF/K
5962P1121804HXC 5962P1121804HYC 5962P1121804KXC 5962P1121804KYC	SVHF2815S/H+ SVHF2815SF/H+ SVHF2815S/K SVHF2815SF/K

Do not use the SVHF2800S Series similar part number for SMD product acquisition. It is listed for reference only. For exact specifications for the SMD product, refer to the SMD drawing. SMDs can be downloaded from the DLA Land and Maritime (Previously known as DSCC) website at <http://www.dsccl.dla.mil/programs/smcr/>. The SMD number listed above is for standard gold-plated lead finish and "P" RHA (Radiation Hardness Assurance) level. Please reference the SMD for other screening levels, lead finishes, and radiation levels. All SMD 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@vpt-inc.com

All information contained in this datasheet is believed to be accurate, however, no responsibility is assumed for possible errors or omissions. The products or specifications contained herein are subject to change without notice.