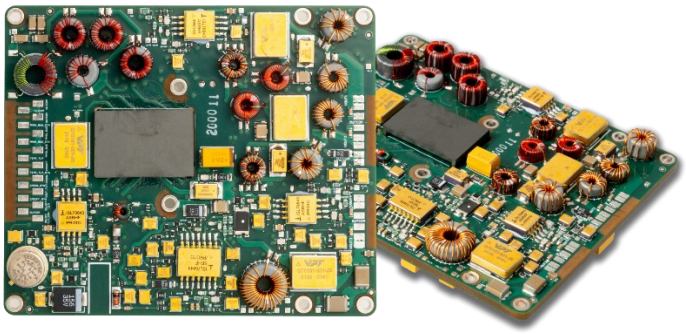
DATASHEET

SLNP17-100CQ

SPACE QUALIFIED DC-DC CONVERTERS



Product Overview
Input: 96 V to 103 V continuous, 120 V transient
Quad Output: Factory Configurable
Very low output noise / ripple
Very high noise rejection for both CE and CS
17W total output power

1.0 DESCRIPTION

The SLNP17-100CQ is an extremely low noise, quad output 17 W DC-DC power supply designed for RF space applications. It was built to withstand the harsh radiation environments needed for the most demanding commercial, scientific and military space applications. Performance is guaranteed through the use of radiation lot acceptance tested (RLAT) components.

Thanks to our multi-stage approach, the SLNP achieves an exceptional rejection of noise for both conducted emissions and conducted susceptibility. With eleven configurable options, the SLNP is the DC-DC converter for all low-noise applications. VPT's history of proven space flight heritage ensures long term performance reliability.

1.1 FEATURES

- Very low output voltage ripple: < 250 µVrms (frequency domain)
- Designed for high CS rejection: 90dB+ rejection
- Highly configurable with four outputs: +5 V to +8 V, +5 V to +8 V, +12 V, and -6 V to -5 V
- Command On/Off with configuration options
- Command telemetry with configuration options
- Temperature telemetry with configuration options
- Single output voltage telemetry
- Undervoltage lockout
- Integrated EMI filter
- Typical Efficiency of 72% (full load)
- 120 V - 10 msec transient ,110 V - 100 msec transient
- Current limit protection / Short Circuit protection
- Output Sequencing with negative output (Vout 4)
- Reverse polarity protection on input

1.2 SPACE LEVEL CHARACTERIZATIONS

- Guaranteed TID performance to 100 krad(Si) and 2.2 x 10^{11} n/cm^2
- SEE performance to 85 MeV/mg/cm^2. Transients are fully analyzed for cross-section and magnitude
- Worst-case analysis & thermal analysis available
- Radiation, MBTF reliability, FMECA reports, and mechanical model available

1.3 MANUFACTURING AND COMPLIANCE

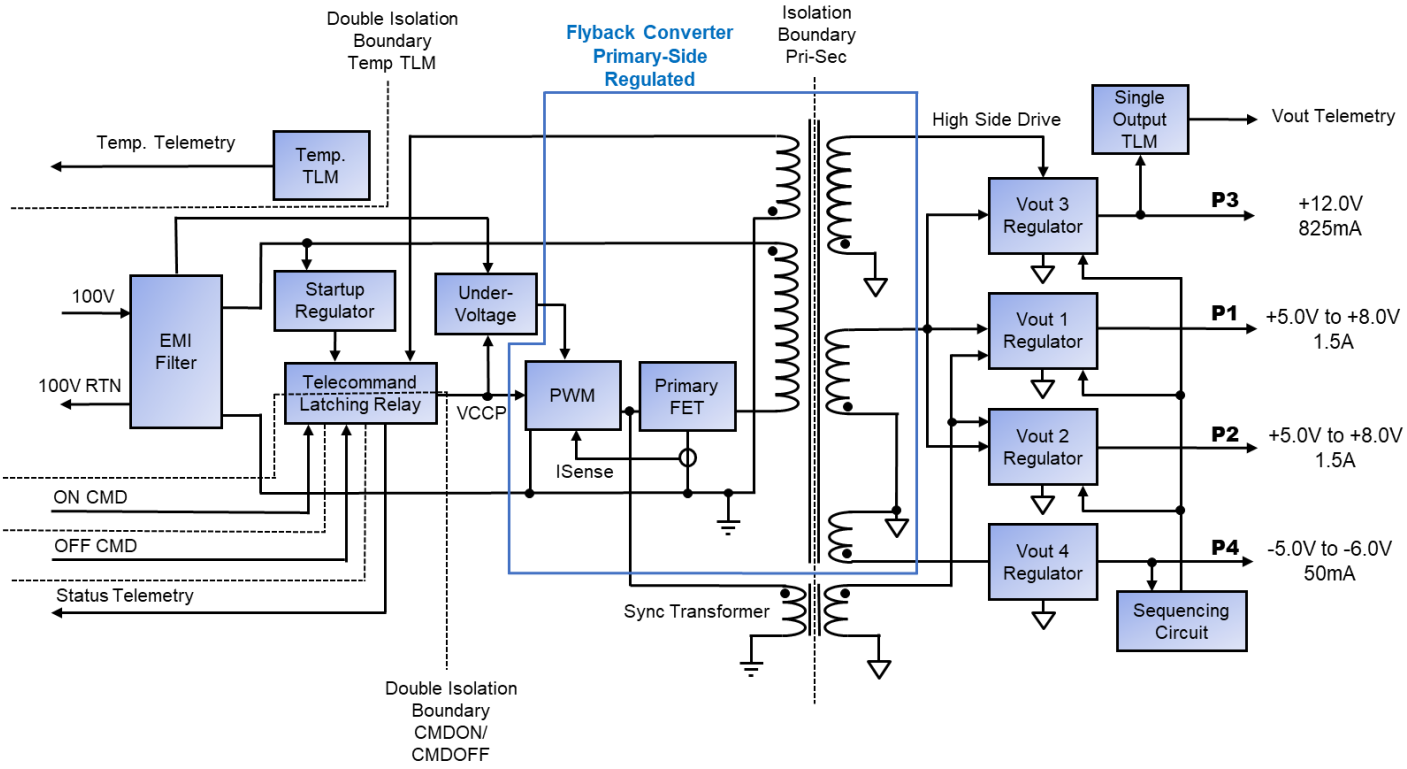
- Manufactured in a facility certified to AS9100, J-STD-001 (Space Addendum), and IPC-A-610
- Designed in line with NASA EEE-INST-002 and ECSS-Q-ST-30-11C derating

1.4 PACKAGING

- Low-profile: 3.346" x 2.795" x 0.633"
- Max Weight: 109 g

2.0 DIAGRAMS

2.1 BLOCK DIAGRAM



3.0 SPECIFICATIONS

3.1 ABSOLUTE MAXIMUM RATINGS

Absolute Maximum Ratings[1]			
Input Voltage (Continuous)	-0.5 V to 103 V	Operating Temperature (Full Load)[2,3]	-20 °C to +75 °C
Input Voltage (Transient, 10 msec)	-0.5 V to 120 V	Storage Temperature	-40 °C to +100 °C
Output Power (total of all outputs)[3]	17.0 W		

1. Assemblies are ESD sensitive and must be handled with proper precautions.
2. Mounting hole temperature
3. Reference note 1 (page 5) for output current deratings for mounting temperatures above +75°C.

3.2 PERFORMANCE SPECIFICATIONS

Tmount = -20 °C to +75 °C, Vin = +100 V, Full Load, Unless Otherwise Specified

SLNP17-100CQ (general)					
Parameter	**Conditions**	**Min**	**Typ**	**Max**	**Units**
INPUT					
Voltage	Continuous	96	100	103	V
	Transient, 100 msec	-	-	110	V
	Transient, 10 msec	-	-	120	V
Current	Off state	-	0.9	1	mA
Undervoltage Lockout	Beginning-of-Life Turn-Off	88.9	90	92.0	V
	End-of-Life Turn-Off	87.2	-	92.0	V
	Hysteresis[1]	1.0	-	-	V
GENERAL					
Efficiency at Max Load (17W)[2]	Beginning-of-Life	70.0	71.6	-	%
	End-of-Life	69.0	-	-	%
Capacitive Load[1]	Vout 1	0	-	150	µF
	Vout 2	0	-	150	µF
	Vout 3	0	-	100	µF
	Vout 4	0	-	150	µF
Switching Frequency	Beginning-of-Life	300.3	315	329.9	kHz
	End-of-Life	296.6		333.0	kHz
Isolation	100 V DC, Tcase = 25 °C	10	-	-	MΩ
Weight[3]	No shields	-	94	99	g
	Bottom-side shields only	-	97	102	g
	Top-side shields only	-	101	106	g
	Top and bottom side shields	-	104	109	g
MTBF (MIL-HDBK-217F)	Tmount = 55 °C	-	6.265	-	MHr

1. Verified by initial electrical design. Post design verification, parameter shall be guaranteed to the limits specified.
2. Efficiency load condition: Vout 1 (8V) = 425 mA, Vout 2 (8V) = 425 mA, Vout 3 (12V) = 825mA, Vout 4 (-6V) = 50 mA. This is the loading configuration that provides the lowest overall efficiency at max load (17W) for the stated output voltages. Since each output regulator has unique efficiency, overall assembly efficiency is loading dependant. Reference the “Performance Curves” section for typical efficiency curves over temperature and load.
3. Reference section 6.3 for a summary of radiation shield configuration options.

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3.2 PERFORMANCE SPECIFICATIONS (CONTINUED)

Tmount = -20 °C to +75 °C, Vin = +100 V, Full Load, Unless Otherwise Specified

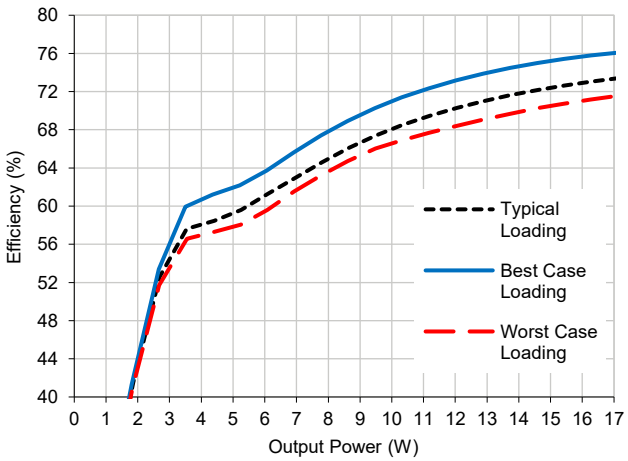
SLNP17-100CQ (outputs)

Parameter	Conditions	Min	Typ	Max	Units
VOUT 1 AND VOUT 2 (CONFIGURABLE)					
Voltage	Beginning-of-Life Regulation	-1%	-	+1%	V
(Configurable from 5.0 V to 8.0 V)	End-of-Life Regulation	-2%	-	+2%	V
Current[1,2]		0.1	-	1.5	A
Ripple Voltage (time domain)	10 MHz bandwidth limit	-	-	15	mVpp
Ripple Voltage (frequency domain)[3]	100 Hz to 50 MHz	-	-	250	µVrms
Conducted Susceptibility (line rejection)[3]	100 Hz to 50 MHz, Tcase = 25 °C	90	-	-	dB
Line Regulation	Vin = 96 V to 103 V	-	1	5	mV
Load Regulation	No Load to Full Load	-	1	5	mV
Load Fault Power Dissipation	Overload	-	6.4	10	W
	Short Circuit	-	8.5	10	W
Load Step, Half to Full Load	Output Transient	-	150	300	mVpk
	Recovery[4]	-	130	500	µs
Line Step, Vin = 100 V to 120 V	Output Transient[3]	-	-	1%	Vpk
	Recovery[3,4]	-	-	0	µs
Turn On, Commanded On at 100 Vin	Delay	-	45	75	ms
	Overshoot	-	1	25	mVpk
VOUT 3					
Voltage	Beginning-of-Life Regulation	-1%	-	+1%	V
(Fixed at 12.0V)	End-of-Life Regulation	-2%	-	+2%	V
Current[1]		0	-	0.825	A
Ripple Voltage (time domain)	10 MHz bandwidth limit	-	-	15	mVpp
Ripple Voltage (frequency domain)[3]	100 Hz to 50 MHz	-	-	250	µVrms
Conducted Susceptibility (line rejection)[3]	100 Hz to 50 MHz, Tcase = 25 °C	90	-	-	dB
Line Regulation	Vin = 96 V to 103 V	-	1	5	mV
Load Regulation	No Load to Full Load	-	1	2	mV
Load Fault Power Dissipation	Overload[3]	-	8.5	13.0	W
	Short Circuit	-	2.3	5.0	W
Load Step, Half to Full Load	Output Transient	-	25	75	mVpk
	Recovery[4]	-	-	0	µs
Line Step, Vin = 100 V to 120 V	Output Transient[3]	-	-	1%	Vpk
	Recovery[3,4]	-	-	0	µs
Turn On, Commanded On at 100 Vin	Delay	-	45	75	ms
	Overshoot	-	5	50	mVpk
VOUT 4 (CONFIGURABLE)					
Voltage	Beginning-of-Life Regulation	-1%	-	+1%	V
(Configurable from -5.0 V to -6.0 V)	End-of-Life Regulation	-2%	-	+2%	V
Current[1]		0	-	50	mA
Ripple Voltage (time domain)	10 MHz bandwidth limit	-	-	15	mVpp
Ripple Voltage (frequency domain)[3]	100 Hz to 50 MHz	-	-	250	µVrms
Conducted Susceptibility (line rejection)[3]	100 Hz to 50 MHz, Tcase = 25 °C	90	-	-	dB
Line Regulation	Vin = 96 V to 103 V	-	1	5	mV
Load Regulation	No Load to Full Load	-	1	2	mV
Load Fault Power Dissipation	Overload	-	7.5	12	W
	Short Circuit	-	4	6	W
Load Step, Half to Full Load	Output Transient	-	10	30	mVpk
	Recovery[4]	-	-	0	µs
Line Step, Vin = 100 V to 120 V	Output Transient[3]	-	-	1%	Vpk
	Recovery[3,4]	-	-	0	µs
Turn On, Commanded On at 100 Vin	Delay	-	9	15	ms
	Overshoot	-	1	25	mVpk

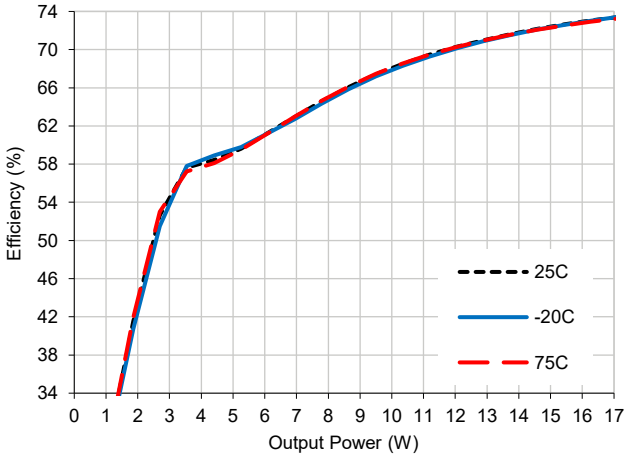
1. Not to exceed 17.0W for all outputs combined. Derate output current linearly to the defined minimums between +75°C and +85°C.
2. The minimum output load currents for Vout 1 and Vout 2 are specified low enough to be practical for most applications and are intended to prevent no load operations. The secondary regulators are functionally capable of operating below the specified minimum output currents; however, this condition would result in increased output voltage ripple that can be observed on all four outputs. For this reason, it is recommended that VPT disable the secondary regulator that doesn't meet the minimum load or is not intended to be used in the application. Disabling the regulator output is an available option on the configuration form for this model.
3. Verified by initial electrical design. Post design verification, parameter shall be guaranteed to the limits specified.
4. Time for output voltage to settle within 1% of steady-state value

4.0 PERFORMANCE CURVES

4.1.1 Efficiency Typical, Standard Configuration (Vout 1 = 8V, Vout 2 = 8V, Vout 3 = 12V, Vout 4 = -6V)

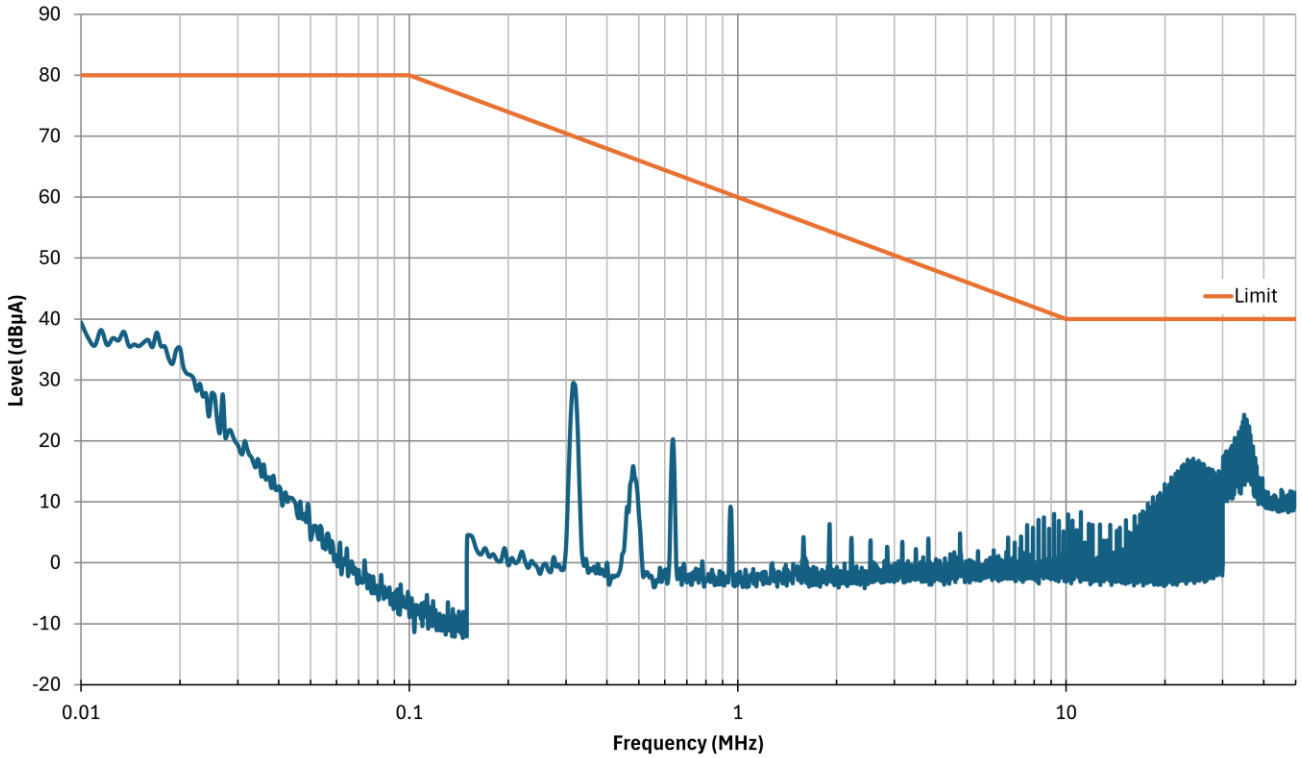


4.1.2 Efficiency across Temperature, Standard Configuration (Vout 1 = 8V, Vout 2 = 8V, Vout 3 = 12V, Vout 4 = -6V)

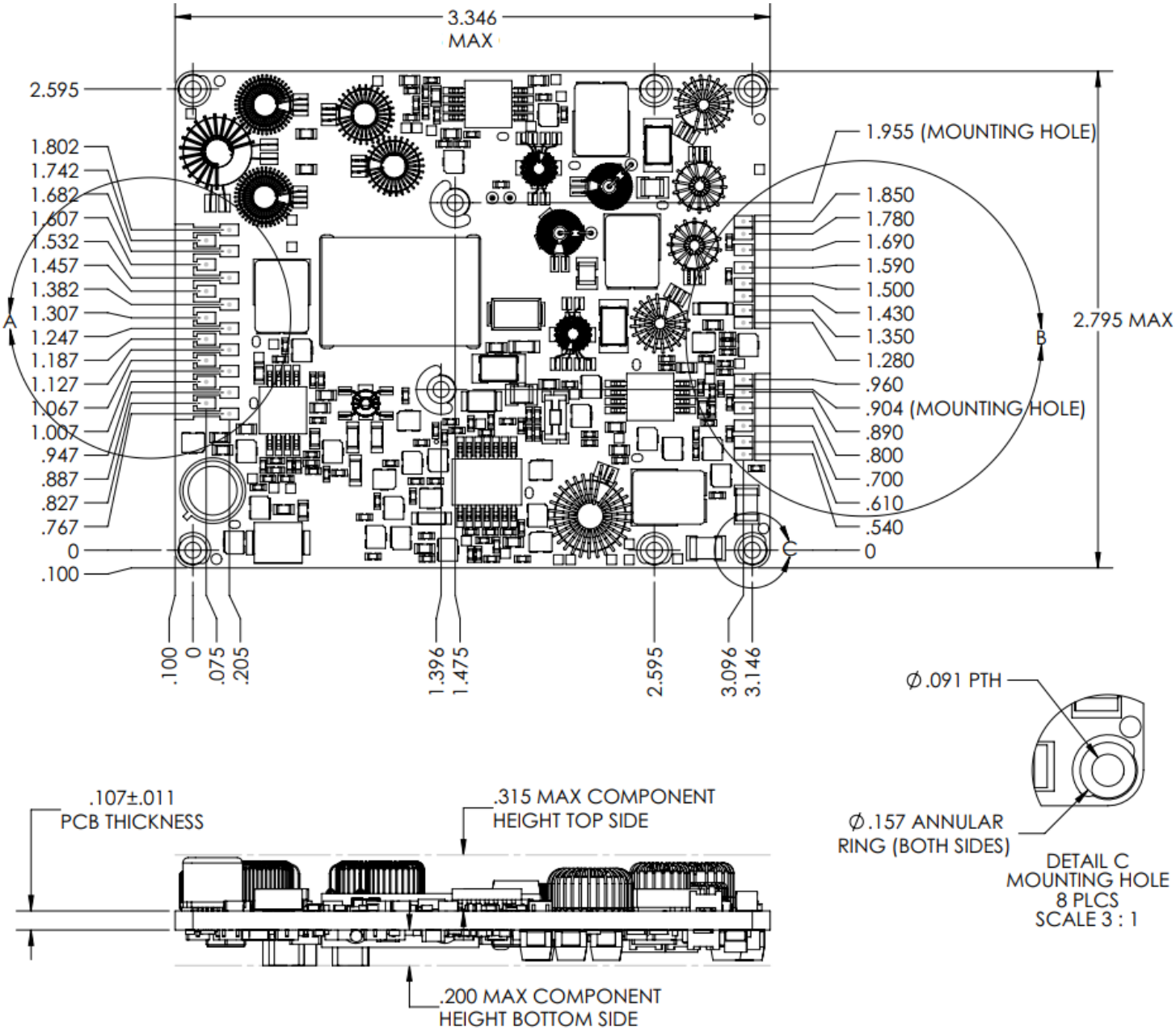


4.0 PERFORMANCE CURVES (CONTINUED)

4.1.3 Conducted Emissions, MIL-STD-462 setup

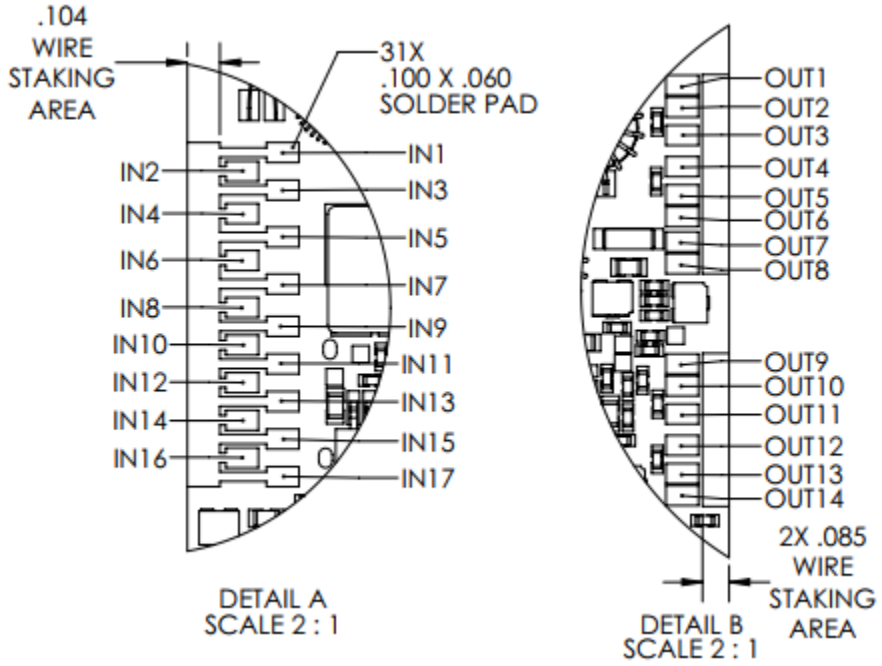


5.0 MECHANICAL OUTLINES AND PINOUT



1. Tolerances are ±0.005" unless otherwise stated

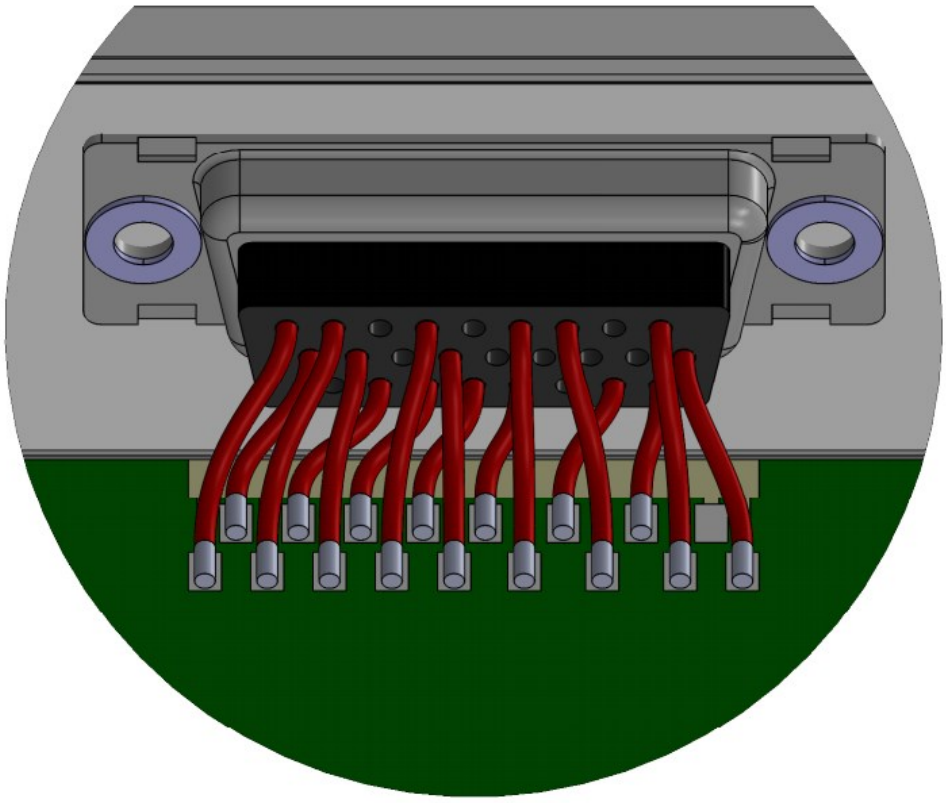
5.0 MECHANICAL OUTLINES AND PINOUT (CONTINUED)



Input Pads (Detail A)		Output Pads (Detail B)	
Pin	**Function**	**Pin**	**Function**
1	OUTCOM (CHASSIS)	1	V OUT 1
2	OUTCOM (CHASSIS)	2	V OUT 1
3	OUTCOM (CHASSIS)	3	OUTCOM (CHASSIS)
4	100 V RETURN	4	OUTCOM (CHASSIS)
5	100 V IN	5	V OUT 2
6	100 V RETURN	6	V OUT 2
7	100 V IN	7	OUTCOM (CHASSIS)
8	TEMPERATURE TELEMETRY	8	OUTCOM (CHASSIS)
9	COMMAND OFF	9	V OUT 4
10	TEMPERATURE TELEMTRY RETURN	10	V OUT 4
11	COMMAND ON	11	OUTCOM (CHASSIS)
12	COMMAND ON RETURN	12	OUTCOM (CHASSIS)
13	VOUT TELEMETRY	13	V OUT 3
14	COMMAND OFF RETURN	14	V OUT 3
15	ON/OFF TELEMETRY		
16	OUTCOM (CHASSIS)		
17	ON/OFF TELEMTRY RETURN		

5.0 MECHANICAL OUTLINES AND PINOUT (CONTINUED)

SLNP17-100CQ to 26 pin D-Sub connector wiring example



RECOMMENDED WIRING TO EXTERNAL 3-ROW 26-PIN D-SUB CONNECTOR		
PAD ON PCB	**26-PIN D-SUB CONNECTOR PIN**	**FUNCTION**
IN1	10	OUTCOM (CHASSIS)
IN2	N/C	OUTCOM (CHASSIS)
IN3	1	OUTCOM (CHASSIS)
IN4	19	100 V RETURN
IN5	3	100 V IN
IN6	20	100 V RETURN
IN7	4	100 V IN
IN8	22	TEMPERATURE TELEMETRY
IN9	15	COMMAND OFF
IN10	23	TEMPERATURE TELEMTRY RETURN
IN11	6	COMMAND ON
IN12	24	COMMAND ON RETURN
IN13	17	VOUT TELEMETRY
IN14	25	COMMAND OFF RETURN
IN15	8	ON/OFF TELEMETRY
IN16	18	OUTCOM (CHASSIS)
IN17	9	ON/OFF TELEMTRY RETURN

6.0 TECHNICAL NOTES

Please note that many of these functions are also demonstrated in detail on the VPT website in the form of technical video labs.

6.1 GENERAL INFORMATION

6.1.1 Topology Description

The SLNP17-100CQ uses a two-stage topology consisting of an isolated flyback converter with four non-isolated post-regulators in addition to having both input and output EMI filtering. The two-stage topology with integrated EMI filters reduces EMI noise from the power supply as well as greatly attenuating any noise being conducted by the bus through the converter. Vout 1 and Vout 2 offer rejection to conducted bus noise on the input up to 110dB and a guaranteed rejection of 90dB. Vout 3 and Vout 4 offer a nominal rejection of 110dB or better of conducted bus noise from the input.

6.1.2 External Components

The SLNP17-100CQ is designed to operate nominally without output capacitance. Operation with maximum capacitance is listed in section 3.2.

6.2 FUNCTION DESCRIPTIONS

6.2.1 Integrated EMI Filter

The SLNP17-100CQ contains an integrated input filter and an integrated output filter for each output. These filters provide rejection starting from frequencies approximately 10 kHz all the way to 50 MHz or higher.

6.2.2 Output sequencing

An output sequencing circuit is implemented to ensure that the negative output Vout 4 is approaching regulation prior to the positive outputs starting up. When Vout 4 is detected to fall out of regulation (e.g. overload condition), the other three outputs are disabled and power transfer is stopped to those outputs.

6.3 CONFIGURATION DESCRIPTIONS

6.3.1 Configuration Options

The SLNP17-100CQ was designed to offer many configuration features to accommodate many user applications. These options include two adjustable positive outputs, an adjustable negative output, command circuit series diodes, command circuit coil reset diodes, command circuit isolated returns, command telemetry circuit series diodes, command telemetry circuit logic polarity, command telemetry circuit series resistance, temperature telemetry linearization, and component shielding options. Each of these options will have further details in the following sections.

6.3.2 Adjustable Output Voltages

Vout 1, Vout 2, and Vout 4 are adjustable outputs that can be set during the final assembly step. Vout 1 and Vout 2 can be set in the range of +5.0 V to +8.0 V and are limited only by standard resistor values. Vout 4 can be set in the range of -5.0 V to -6.0 V and is limited only by standard resistor values.

6.3.3 Command On/Off Control

The Command On and Command Off lines can be used to enable or disable the SLNP17-100CQ power supply with a square pulse of 21.5 V to 34.0 V in magnitude and a nominal duration of 25 msec to 50 msec. After receiving a Command Off pulse, power conversion will stop in the flyback stage, and the unit will start to shut down until all energy is removed from the converter and stay in the off state. After receiving a Command On pulse, the control circuitry of the flyback will be enabled and all outputs will soft start. If the unit experiences an input under-voltage event, the outputs will become disabled, and a power cycle (sending a Command Off signal, followed by a Command On signal) will restore nominal operation.

The Command circuitry has multiple design configurations: optional series diodes, optional coil suppression diodes, and an option to tie together the Command ON and OFF returns to a common return.

6.3.4 Command On/Off Telemetry

An on/off telemetry status is provided through an available contact on the command relay and is a configurable option. There are options for series protection diodes, user-selectable series resistance, and telemetry polarity options. The two polarity options include whether the signal is in a “closed” or “open” state when the last known Command signal was “ON”.

6.3.5 Temperature Telemetry Linearization

The temperature telemetry circuit has the option to be linearized with a 10kΩ resistor. If this option is chosen, the 10kΩ resistor would be installed in parallel with the thermistor on the assembly prior to delivery.

6.3.6 Radiation Shielding

The SLNP17 is designed to be radiation hardened to 100 krad(Si), but has the option to include 60 mil Kovar shields on all sensitive semiconductor components for applications that see levels above this. These shields can be configured to be on one or both sides of the board, or not included. A mechanical model is available for radiation analysis by the customer to determine if additional shielding is required to meet an application above 100 krad(Si).

6.4 PROTECTION FEATURES

6.4.1 Input Undervoltage Lockout

The SLNP17-100CQ provides input undervoltage lockout protection. For input voltages below the turn-on voltage, the converter will remain off, drawing minimal current from the source. When the input voltage exceeds the turn-on voltage, the converter will start if issued a Command On pulse. The undervoltage lockout will immediately turn off the output voltage when Vin is below 90 V. When Vin is below 96 V and above 90 V the unit will operate but may not meet performance detailed in the electrical performance table in Section 3.2.

6.4.2 Output Soft Start

The SLNP17-100CQ utilizes an output soft-start function to ramp the outputs in a controlled manner, minimizing output voltage overshoot and inrush current at turn on. A voltage-mode soft-start ensures the output waveform remains consistent regardless of changes in the load current. Vout 4 has a rise time of about 9 ms, and the remaining three output rise times are approximately 45 ms. This time will vary with additional capacitive load. Under normal conditions, current drawn from the source during turn-on will not exceed the full-load input current. The turn-on delay time is specified from the application of the Command ON pulse until the output reaches 90% of its final value.

6.4.3 Output Overcurrent Protection

The SLNP17-100CQ provides output overcurrent and output short circuit protection on each output. Vout 1 and Vout 2 are protected by a single-cycle constant current limit circuit, Vout 3 is protected by a hiccup mode current limiting circuit, and Vout 4 is protected by a constant current limit circuit. Recovery is automatic and immediate upon removal of the fault condition. Sustained short circuit or overload operation can cause excessive power dissipation. Care should be taken to control the operating temperature of the converter in this condition.

The flyback converter also has a single-cycle current limit circuit. Under certain fault conditions where the SLNP17-100CQ sees more than 17W of total power, the current limit circuit of the flyback may disable all converter outputs. In this case, after removing the load fault, the converter can be command power cycled and outputs will be restored.

6.4.4 Reverse Polarity Protection on Input

The SLNP17-100CQ contains an anti-parallel diode to protect against being installed with a reverse polarity on the input. This diode has been properly sized for most fused applications.

6.4.5 Double Insulation

The SLNP17-100CQ meets the double insulation requirements of ECSS-Q-ST-70-12C for the Command ON/OFF, Command ON/OFF Telemetry and Temperature telemetry circuitry. This requirement was met by careful PCB layout where circuits are appropriately grouped together, and the double-insulation rules for the PCB were met in the X, Y, and Z directions.

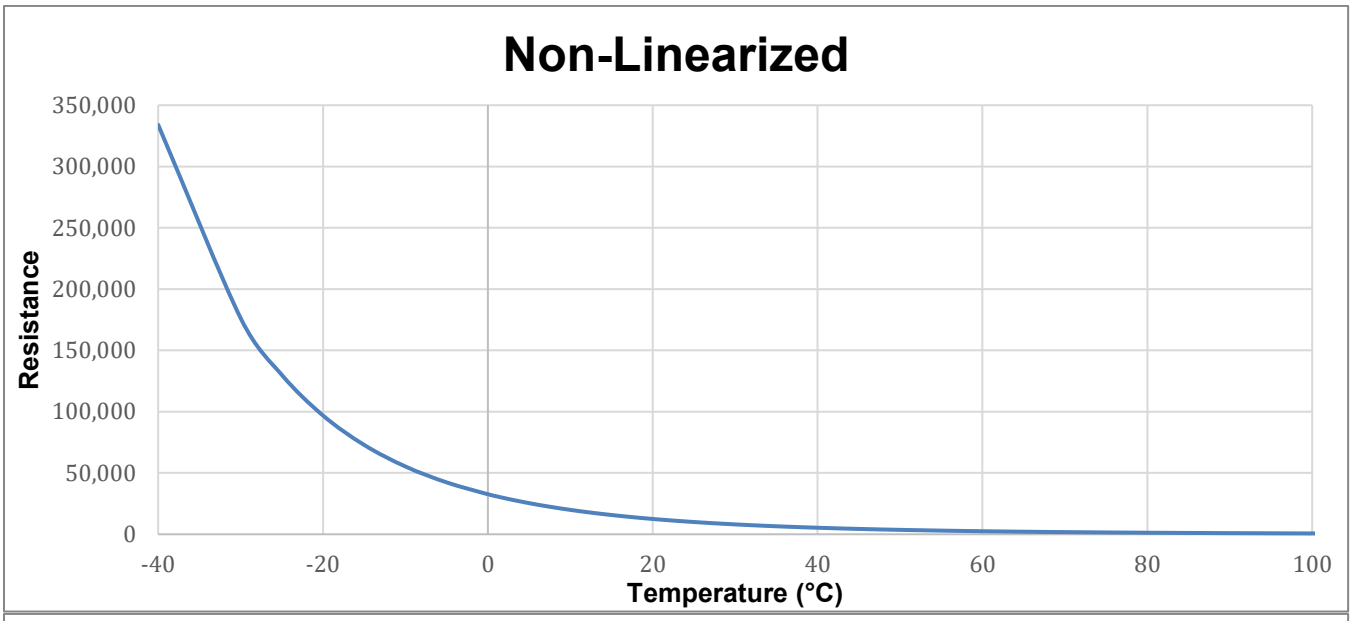
6.5 TELEMETRY FEATURES

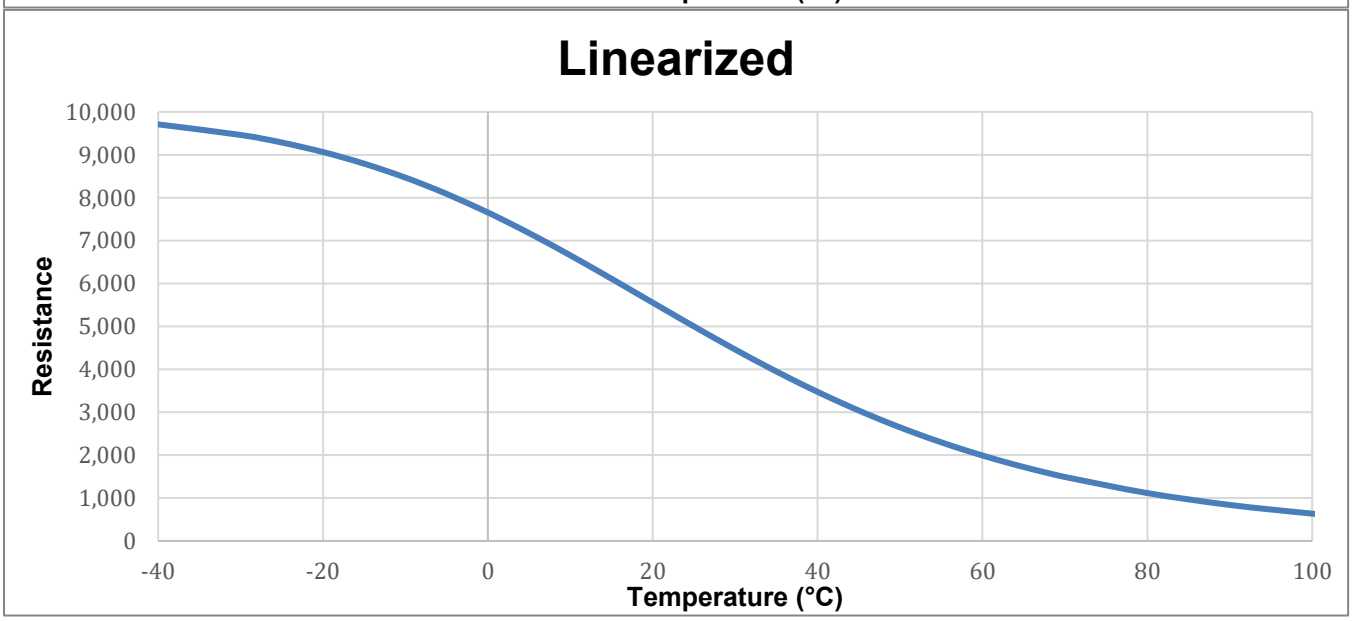
6.5.1 Command Telemetry

The On/Off Telemetry provides a telemetry signal dependent on configuration. A Commanded On state can be represented with either an open or short between On/Off Telemetry and On/Off Telemetry return. This telemetry is in reference to its own isolated return.

6.5.2 Temperature Telemetry

The temperature telemetry uses a 10k thermistor (ESA PN: 400601306) that has the properties below that can optionally be linearized with a 10kΩ resistor. A current source will need to be applied, and a voltage read to determine the temperature of the circuit board. To prevent self-heating affecting the thermistor measurement, VPT recommends using a low duty cycle, pulsed 1mA (or less) external current source. Temperature telemetry is referenced to its own isolated return.





6.5.3 Output Voltage Telemetry

The output voltage telemetry signal is based on Vout 3 and is a 0-5V analog signal that is a representation of the output voltage. The signal will work with analog or bi-level systems and is nominally 4.26 V and is under 10kΩ in node impedance. Output voltage telemetry is referenced to OUTCOM.

6.6 THERMAL CONSIDERATIONS

The SLNP17-100CQ is rated for full power operation at 75 °C maximum mounting hole temperature. Operation above 75 °C is allowed at reduced power. Contact VPT Engineering for reduced power options above 75 °C. The converter is designed to be conduction-cooled through the mounting point hole locations. The assembly should be mounted to short mechanical bosses that can maintain a max mounting point temperature of 75 °C for any single mounting boss.

The DC-DC converter contains many semiconductor components. The maximum temperature rise from junction to mounting hole is 29 °C at full load.

6.7 RADIATION HARDNESS ASSURANCE

VPT takes a conservative approach to radiation testing to ensure product performance in a space environment. VPT's Radiation Hardness Assurance (RHA) plan documents VPT's processes and procedures for guaranteeing the performance of VPT products under various environmental conditions in space, including Total Ionizing Dose (TID) and Single-Event Effects (SEE). Additionally, Enhanced Low Dose-Rate Sensitivity (ELDRS) effects are considered for all bipolar devices used in the SLNP. Hardness is guaranteed by a combination of both converter-level analysis and Radiation Lot Acceptance Testing (RLAT) of all sensitive semiconductor piece-parts used within the converter.

6.7.1 Radiation Test and Performance Levels

Radiation Environment		Piece Part RLAT	Converter-Level Analysis
Total Ionizing Dose (TID)	High Dose Rate (HDR)	120 krad(Si)[1]	120 krad(Si)
	Low Dose Rate (LDR)	200 krad(Si)[2]	200 krad(Si)
Single-Event Effects (SEE)	Destructive (SEB, SEGR, SEL)	Not applicable	≥ 85 MeV/mg/cm[3]
	Non-Destructive (SET, SEU, SEFI)[2]	Not applicable	≥ 85 MeV/mg/cm[3]
Displacement Damage (DD)		2.2×10^{11} n/cm^2	Not applicable

1. RLAT for ICs and MOSFETs is 100 krad (Si), High Dose Rate.
2. Piece-part LDR screening performed on potentially ELDRs sensitive components (bipolar transistors).
3. The PWM IC used in this part is susceptible to a non-destructive SEFI/SEL event with threshold LET ≥ 42 MeV/mg/cm^2. The SEFI manifests as a shutdown for up to 1 second, followed by a controlled soft-start of the affected sub-converter. The non-destructive SEL manifests itself as a shutdown requiring user intervention to recover by cycling command off and then command on. At the worst-case maximum mounting temperature and 85 MeV/mg/cm^2, the cross-section of these events for the entire assembly is 9.54×10^{-6} cm^2. Full details available in the Radiation Test Report.

6.7.2 RHA Plan Summary

Test	RHA Plan for SLNP Series Isolated DC-DC Converters
Total Ionizing Dose (TID):	Sensitive semiconductor components undergo RLAT to radiation limits per MIL-STD-883 Method 1019. Converters are analyzed to radiation limit plus design margin
Enhanced Low Dose Rate Sensitivity (ELDRS):	All bipolar linear ICs and all discrete bipolars are characterized for ELDRS and tested in accordance with MIL-STD-883 test method 1019 section 3.13
Single Event Effects (SEE):	Converters are analyzed to LET ≥ 85 MeV/mg/cm^2 for both catastrophic events (SEL, SEB, SEGR) and functional interrupts (SEFI) under heavy ion exposure. Converters are also analyzed for cross-section and magnitude of output transients (SET) for at least worst-case LET level.
Radiation Lot Acceptance Testing (RLAT):	All production lots of sensitive semiconductor components undergo RLAT for TID at HDR and LDR as appropriate per part type.
Displacement Damage (DD):	Potentially sensitive microcircuit devices are characterized to the radiation limit per MIL-STD-883 Method 1017.

6.7.3 Supporting Documentation Available (Contact Sales)

Report	Description
Radiation Hardness Assurance Plan:	RHA plan covering TID, SEE, and ELDRS
Worst-Case Analysis Report:	Detailed worst-case analysis including electrical stress/derating limits and guaranteed circuit performance post-radiation and end of life
Radiation Test Summary Report:	Overview of piece-part RLAT and hybrid characterization for all guaranteed environments. Also includes SEE discussion.
Reliability Report:	MTBF report based on MIL-HDBK-217F reliability calculations.
Thermal Analysis Report:	Component temperature rise analysis and measurement results.
Failure Modes, Effects, and Criticality Analysis (FMECA) Report:	Functional report of failure modes of the SLNP17, how to recognize the failures, and solutions to failure modes.
Radiation Mechanical Model:	Mechanical model of SLNP17 used for radiation analysis to determine product shielding

7.0 ENVIRONMENTAL SCREENING

Test	Test Method and/or Condition	Flight	/EM (Engineering Model)[2]
Visual Inspection	IPC-A-610, Class 3 J-STD-001 (Space Addendum)	•	•
Random Vibration	**Freq (Hz)** / **PSD (g^2/Hz)** 20 / 0.09 1000 / 0.09 2000 / 0.02 **Grms** / **11.4** XYZ Axis Duration: 60 seconds	•	
Temperature Cycling	Temp: -20 °C to 80 °C Cycles: 10 Dwell: 15 minutes Max Ramp: 5 °C/min.	•	
Final Electrical[1]	100% at -20 °C, 25 °C, and 75 °C	•	
	100% at 25 ºC		•
Final Visual	Internal Procedure	•	•

1. 100% R&R testing with all test data included in product shipment.
2. Engineering models utilize only the screening specified and are not considered compliant for flight use.

8.0 ORDERING INFORMATION

SLNP	17	-	100	C	Q	-	0XX	/EM
1	2		3	4	5		6	7

(1) Product Series	(2) Power Level	(3) Input Voltage	(4) Output Voltage	(5) Number of Outputs	(6) Configuration Code[1]	(7) Screening Code[2]
SLNP	**17** 17 Watts	**100** 100 Volts	**C** Configurable	**Q** Quad Output	Contact Sales	**None** Flight **/EM** Engineering Model

1. The SLNP17-100CQ-0xx is custom-configured to customer's individual application. Contact the VPT Sales team to obtain a configuration form that details all options that are listed as configurable in this datasheet. Each custom configuration will receive its own dash number for identification purposes.

2. 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 only and have no guarantee regarding operation in a radiation environment. 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(s) 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 VPT Inc. Sales Department for more information concerning additional environmental screening and testing, different input voltage, output voltage, power requirements, source inspection, and/or special element evaluation for space or other higher-quality applications.

9.0 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

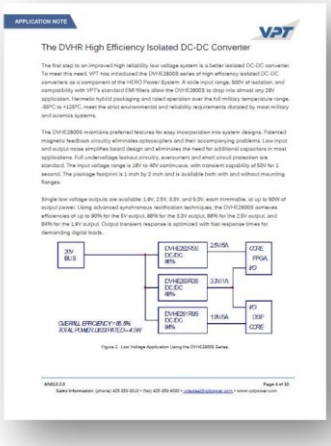
All information contained in this technical preview is believed to be accurate; however, no responsibility is assumed for possible errors or omissions. The products or specifications contained herein are subject to change without notice.

10.0 ADDITIONAL INFORMATION

Visit the VPT website for additional technical resources, including:

Product Catalogs

Application Notes and White Papers



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