DC-DC CONVERTERS

And Accessories for Military, Avionics and Space Applications

FLIGHT AND RELIABILITY
CRITICAL MODULES

Power Your Critical Mission Today.

POWER YOUR CRITICAL MISSION TODAY

LEADING POWER PRODUCTS FOR WHEN THE MISSION IS CRITICAL

VPT Inc. is a global leader in providing high reliability DC-DC converters, EMI filters, and accessory products for use in military, avionics, and space applications.

Working in partnership with Delta Electronics, the world's largest commercial power supply manufacturer, VPT delivers its patented power solutions in a fast timeframe, at the highest certified quality, and at a comfortable cost.

VPT's products are designed for the challenge of demanding environments whether on the ground, in the air, or beyond. VPT carries MIL-PRF-38534 Class H, MIL-PRF-38534 Class K, and ISO 9001 quality certifications.

VPT products are sold around the globe through sales partners in more than 25 countries. Every day, leading organizations including NASA, Lockheed Martin, Boeing, the U.S. Air Force, and many more depend on VPT's quality solutions to power critical systems.

PARTIAL LIST OF PROGRAMS POWERED BY VPT

AIRCRAFT - A-1 • Airbus A380 • ALR-56 • Apache Helicopter • Blackhawk • Boeing 737 • Boeing 757 • Boeing 777 • Boeing 787 • Canadair • C-17 • CH-53 CL289 DRONE • Commanche • D0428 • F-15 • F-16 • F-18 • Falcon 900 • Fokker • Gulfstream • Harrier • Hercules C-130 • Jaas-39 Grippen • JSF • Lynx Mini-Armor • NH-90 • Predator • SAR • Tomahawk • Tornado • WAH-64 HUMS

SPACE - AISAT • FY Series Meteorological SATS • FAISAT • GPS IIF • GPS IIR-M • INSAT • Mercury Messenger • Pluto New Horizons • SCISAT • SDO Space Shuttle Experiments • Space Station • Tacsat 2 • Venus Express Satellite • WFCA • X-33 • X-37

TERRESTRIAL VEHICLES - Abrhams Tank • Crusader • Lance • Leopard • Raven II • SeaLaunch • Trojan • US Army LAV • Virginia Class Submarine • Warrior

WEAPONS - ACES • Advanced Targeting Pod • AMRAAM • ATACMS 2000 • ATGM (Anti Tank Guided Missile) • BMD (Ballistic Missile Defense System) • IRIS T Meteor-W • PAC-3 • Stinger Missile • Tactical Tomahawk • THAAD • Tomahawk • Tracer

DC-DC CONVERTERS

Max. Output Power (W)	Model Series	Input DC Voltage (V)	Output Voltage (V)	EMI Filter	Available Qualified to DSCC QML	Page #
Military & Avionics DC-DC Converters - Thick-film hybrid converters for flight critical applications with extreme temperature requirements.						
1.5	DVCH2800S/D	12-50	Single 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMSA28		5
6	DVSA2800S/D	15-50	Single 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMA28	Yes	6
12.5	DVSB2800D	15-50	Dual ±3.3, ±5	DVMH28	Yes	7
12.5	DVGF+2800T	15-50	Triple 3.3/±12, 3.3/±15	DVMH28	Yes	8
15	DVHV2800S/D	15-50	Single 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMC28		9
15	DVHF+2800T	15-50	Triple 5/±12, 5/±15	DVMH28	Yes	10
20	DVHF2800S/D	15-50	Single 1.9, 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMH28	Yes	11
25	DVWR2800T	15-50	Triple 3.3/±12V, 3.3/±15V	DVMC28		12
30	DVTR2800T	15-50	Triple 5/±12, 5/±15	DVMC28		13
40	DVTR2800S/D	15-50	Single 2.5, 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMC28		14
120	DVFL2800S/D	16-40	Single 3.3, 5, 12, 15 Dual ±5, ±12, ±15	DVME28	Yes	15
Military & Avionics DC-DC Converters with Integral EMI Filter - Thick-film hybrid converters include EMI filtering plus power conversion in one small, light weight, cost-effective package.						
10	DVEHF2800T	15-50	Triple 5/±12, 5/±15	Included		16
40	DVETR2800S/D	15-50	Single 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	Included		17
Hero Low Voltage Power System - A solution that combines an isolated, high power DC-DC converter with a set of small-size point-of-load DC-DC converters in a complete system for powering low voltage devices.						
50	DVHE2800S	16-40	Single 1.9, 2.5, 3.3, 5V	DVMC28		18
16W	DVPL0505S	3.3-5.5	-2.5 to +2.5V			19
33W	DVPL0510S	4.5 - 5.5	-2.5 to +2.5V			19
DC-DC Converters for Space - Guaranteed to 30krads (Si) for the most critical of flight missions. Ultimate reliability DC-DC converters save time, board weight, and the expense and risk of developing customized solutions.						
6	SVSA2800S/D	15-50	Single 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMA28		21
20	SVHF2800S/D	15-50	Single 1.9, 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMH28		22
40	SVTR2800S/D	15-50	Single 2.5, 3.3, 5, 5.2, 12, 15 Dual ±5, ±12, ±15	DVMC28		23
120	SVFL2800S/D	16-40	Single 3.3, 5, 12, 15 Dual ±5, ±12, ±15	DVME28		24

EMI FILTERS AND TRANSIENT SUPPRESSION

Max Output Current (A)	Model Series	Input DC Voltage (V)	Available Qualified to DSCC QML	Page #
Reduce noise even further with VPT's companion EMI filters.				
0.8A	DVMSA	0 - 50		25
1A	DVMA28	0 - 50	Yes	25
2A	DVMH28	0 - 50	Yes	26
2A	DV704A	0 - 50		26
4A	DVMC28	0 - 50	Yes	26
7A	DVMD28	0 - 50	Yes	27
15A	DVME28	0 - 50	Yes	27

THERMAL PADS

Model	For Use With
VPT's accessory thermal pads ensure low thermal resistance, fill in air gaps, and provide excellent thermal performance and electrical isolations.	
TP-001	DVFL and DVME
TP-002	DVHF*, DVHF+ Triple, DVEHF Triple, DVSB, DVGF+
TP-003	DVTR*, DVHV*, DVEHF* single/dual output
TP-004	DVTR* Tiple, DVETR*, DVWR
TP-005	DVSA

MILITARY & AVIONICS DC-DC CONVERTERS

CRITICAL RELIABILITY SOLUTIONS FOR YOUR POWER SYSTEMS

Choose VPT's military and avionics line of DC-DC converters to deliver full performance in extreme environments where reliability is critical. This product line is ideal for aircraft, weapons systems, ground vehicles or other applications with stringent reliabilty requirements and failure is not an option.

HIGH POWER DENSITY FOR EFFICIENT, COST-EFFECTIVE SYSTEMS. VPT advances in thick-film chip and wire techniques deliver the highest power densities possible in the lightest hermetic package available. The small size and light weight of these modules save you board space, system weight and cost while creating an efficient distributed power system.

RUGGED CONSTRUCTIONS FOR EXTREME ENVIRONMENTS. VPT products undergo rigid qualification procedures to ensure optimal performance through shock, vibration, and temperature cycling environments. VPT also offers additional environmental screening for reliability assurance including Class H (military) and Class K (space) standards.

WIDE VARIETY OF MODULES AVAILABLE OFF-THE-SHELF. More than 400 standard modules in power levels from 1.5 to 120 watts are available typically from stock to get your power system off the ground today.

FEATURES THAT OPTIMIZE RELIABILITY. VPT's military and avionics DC—DC converters feature:

- Single, dual and triple output configurations
- 28V nominal inputs
- Hermetic Cases with various mounting options
- Wide case temperature operation of -55°C to +125°C with full performance over temperature range
- Fault tolerant design with radiation immune magnetic isolation technology—no optoisolators
- Protection features such as well controlled undervoltage lockout, inhibit, current limiting, and indefinite short circuit protection
- Very low input/output noise
- Extra-wide input voltage ranges per MIL-STD-704A
- Available with compliance to MIL-PRF-38534 Class H & K
- EMI filter modules to meet MIL-STD-461 C/D/E are also available

MODULES ON DSCC SMDS

VPT offers several products on the Defense Supply Center Columbus (DSCC) Qualified Manufacturers List (MIL-PRF-38534, Hybrid Microcircuits, FSC 5962) to Standard Microcircuit and DSCC Drawings. Current products families offered with this qualification include:

- DVSA Converter, 6W
- DVSB Converter, 12.5W
- DVGF+ Converter, 12.5W
- DVHF Converter, 20W
- DVHF+ Converter, 15W
- DVFL Converter, 120W
- DVMA EMI filter, 1A
- DVMH EMI filter, 2A
- DVMC EMI filter, 4A
- DVMD EMI Filter, 7A
- DVME EMI filter, 15A

Advantages include:

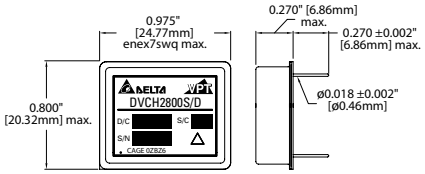
- No need to generate special drawings
- QML-38534 provides ease of product selection
- Preferred parts, less parts control issues for the end user
- Element evaluated components
- 100% testing

This list is continually expanding. Please visit the Web site www.vpt-inc.com for complete module specifications and SMD numbers.

DVCH SERIES

[SINGLE OR DUAL OUTPUT]

VPT's new DVCH Series delivers extremely efficient low power from a tiny package size. The extra-wide input voltage range and inherent radiation immunity ensures the DVCH is the perfect low power choice for your next military or avionics project.



- Single outputs of 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V and ±15V
- Very low output noise
- Wide input voltage range: 12–50 Volts per MIL-STD-704
- Radiation immune magnetic feedback circuit
- Extreme reliability – no use of optoisolators
- Indefinite short circuit protection
- Undervoltage lockout resulting in minimal overshoot on startup
- Extremely low profile (.270") and light weight (11g) fully hermetic packaging
- High input voltage: 80 Volts for 1 sec per MIL-STD-704A
- Meets MIL-STD-461 C/D conducted emissions requirements when used with VPT's DVMSA28 EMI filter
- Additional environmental screening available

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVCH283R3S			DVCH2805S			DVCH285R2S			DVCH2812S			DVCH2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	12	28	50 80	15	12	50 80	12	28	50 80	12	28	50 80	12	28	50 80	Vdc
Output Voltage	Full Load	3.17	3.3	3.43	4.95	5.00	5.20	5.00	5.2	5.40	11.52	12	12.48	14.4	15	15.60	Vdc
Output Power	Vin: 12–50V	0		1	0		1.5	0		1.5	0		1.5	0		1.5	W
Efficiency	Vin: 28V, Full Load	69	75		72	79		72	79		76	81		77	81		%
Input Ripple	Full Load, 20Hz–10MHz			30			30			30			30			30	mApp
Output Ripple	Full Load, 20Hz–10MHz			50			50			50			50			50	mVpp
Load Regulation	10% Load to Full Load 50% Load to Full Load			400 250			400 250			400 250			700 250			700 250	mV
Line Regulation	Vin: 12–50V			150			150			150			60			60	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVCH2805D			DVCH2812D			DVCH2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		12	28	50 80	12	28	50 80	12	28	50 80	Vdc
Output Voltage	Full Load		4.8	5	5.20	11.52	12	12.48	14.40	15	15.60	Vdc
Output Power	Vin: 12–50V	Total Either Output	0 0		1.5 1.2	0 0		1.5 1.2	0 0		1.5 1.2	W
Efficiency	Vin: 28V, Full Load		72	79		74	79		74	79		%
Input Ripple	Full Load, 20Hz–10MHz				30			30			30	mApp
Output Ripple	Full Load, 20Hz–10MHz				50			100			100	mVpp
Load Regulation	10% Load to Full Load 50% Load to Full Load				400 250			700 250			700 250	mV

1) Transient time up to 1 second.

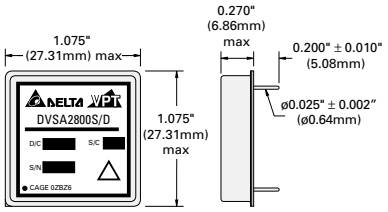
For complete data, see data sheet at www.vpt-inc.com

DVSA SERIES

- Single outputs of 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V and ±15V
- Extra-wide 15V to 50V input range with 80V transient
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Indefinite short circuit protection
- Radiation immune magnetic feedback circuit
- Extremely low profile (.270") and light weight (15g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500Vdc input/output isolation
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMA28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-005

[SINGLE OR DUAL OUTPUT]

With the lowest output ripple of converters in this size and power class plus 20% more power delivered in a standard package, the DVSA Series is a smart choice for any demanding application.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVSA283R3S			DVSA2805S			DVSA285R2S			DVSA2812S			DVSA2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	3.25	3.30	3.35	4.925	5.00	5.075	5.122	5.20	5.278	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 15–50V	0		4	0		5	0		5.2	0		6	0		6	W
Efficiency	Vin: 28V, Full Load	62	66		65	70		65	70		71	75		72	76		%
Input Ripple	Full Load, 20Hz–10MHz			50			50			50			50			50	mApp
Output Ripple	Full Load, 20Hz–10MHz			30			30			30			30			30	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50	mV
Line Regulation	Vin: 15–50V			15			15			15			15			15	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVSA2805D			DVSA2812D			DVSA2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.75	5.00 5.00	5.075 5.25	11.82 11.52	12.00 12.00	12.18 12.48	14.775 14.40	15.00 15.00	15.225 15.60	Vdc
Output Power	Vin: 15–50V Total Either Output		0 0		5 3.5	0 0		6 4.2	0 0		6 4.2	W
Efficiency	Vin: 28V, Full Load		66	72		72	77		73	79		%
Input Ripple	Full Load, 20Hz–10MHz			30	50		30	50		30	50	mApp
Output Ripple	Full Load, 20Hz–10MHz				50			50			50	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo		10 50	50 200		10 50	50 200		10 50	50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo		10 50	20 200		10 50	20 200		10 50	20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				450			450			450	mV

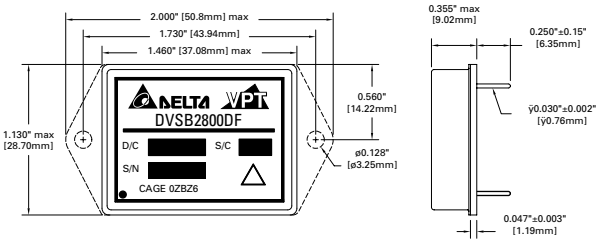
1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

DVSB SERIES

[DUAL OUTPUT]

The DVSB Series eliminates the need for custom converters or multiple converters to satisfy multiple output voltage needs in a power system. With outputs of 3.3V and 5V, the DVSB Series can power systems from a single module, saving board space, weight, and development cost, while enhancing the system reliability.



- Dual outputs of ±3.3V and ±5V
- Very low output noise: 40mV typical
- Wide input voltage range: 15 to 50 Volts per MIL-STD-704
- Minimal cross regulation due to VPT's dual control loop design topology
- Fault tolerant magnetic feedback circuit
- Extreme reliability – no use of optoisolators
- Indefinite short circuit protection
- Undervoltage lockout resulting in minimal overshoot on start up
- Extremely low profile (.355") and light weight (24/28g) fully hermetic package
- High input transient voltage: 80 Volts for 1 sec per MIL-STD-704A
- Flanged and non-flanged versions available
- Meets MIL-STD-461C/D conducted emissions requirements when used with VPT's DVMH28 EMI filter
- Additional enviromental screening available
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-002

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

DUAL OUTPUT VERSION

Parameter	Conditions		DVSB2853R3D Min	DVSB2853R3D Typ	DVSB2853R3D Max	Units
Input Voltage	Continuous Transient[1]		15	28	50 80	Vdc
Output Voltage	Full Load	Vout1 Vout2	4.925 3.25	5.0 3.3	5.075 3.35	Vdc
Output Power	Vin: 15–50V	Total Vout1 Vout2	0 0 0		12.5 7.5 5	W
Efficiency	Vin: 28V, Full Load		69	74		%
Input Ripple	Full Load, 20Hz to 10MHz			40	60	mApp
Output Ripple	Full Load, 20Hz to 10MHz			40	60	mVpp
Load Regulation	No Load to Full Load			10	50	mV
Line Regulation	Vin: 15–50V			0	25	mV
Cross Regulation	Vout1= 0%,Vout2=100% Vout1= 100%, Vout2=0%			10	50	mV

1) Transient time up to 1 second.

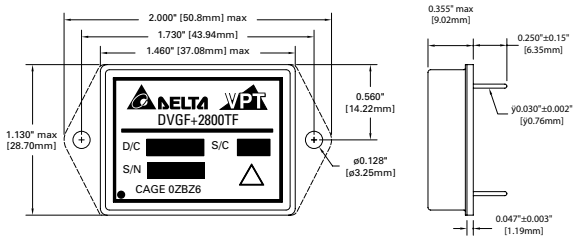
For complete data, see data sheet at www.vpt-inc.com

DVGF+ SERIES

- Triple outputs of 3.3V/±12V and 3.3V/±15V
- Very low output noise
- 15 to 50 volts per MIL-STD-704, an essential input range for military applications
- Fault tolerant magnetic feedback circuit
- No optoisolators, greatly enhancing reliability
- Undervoltage lockout circuitry, which eliminates slow startup problems
- Flanged and non-flanged versions available
- Low profile of .355" and light weight (26/29g) fully hermetic package
- High input transient voltage tolerance: 80 Volts for 1 sec per MIL-STD-704A
- High power density: > 23 W/in^3
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMH28 EMI filter
- Wide case temperature operation of -55°C to +125°C with no power derating
- Additional enviromental screening available
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-002

[TRIPLE OUTPUT]

The DVGF+ Series triple output DC-DC converter is the first converter in its class to provide a 3.3V main output to satisfy low voltage requirements on newer aircraft, weapon, and other military and avionics system platforms.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%,full load, unless otherwise specified.

TRIPLE OUTPUT VERSION

Parameter	Conditions		DVGF+283R312T			DVGF+283R315T			Units
			Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	Vdc
Output Voltage		Vmain +Vaux -Vaux	3.25 11.64 -12.48	3.3 12.0 -12.0	3.35 12.36 -11.52	3.25 14.55 -15.6	3.3 15.0 -15.0	3.35 15.45 -14.4	Vdc
Output Power[2]		Total Vmain ±Vaux	0 0 0		12.5 5 7.5	0 0 0		12.5 5 7.5	W
Efficiency	Full Load[3]		73	75		73	75		%
Input Ripple	Full Load[3], 20Hz to 10MHz				50			50	mApp
Output Ripple	Full Load[3], 20Hz to 10MHz	Vmain ±Vaux		40 60	50 80		40 60	50 80	mVpp
Load Regulation	No Load to Full Load[3, 4]	Vmain +Vaux -Vaux		5 10 20	50 50 200		5 10 20	50 50 200	mV
Line Regulation	Vin: 15–50V	Vmain ±Vaux		10 15	20 50		10 15	20 50	mV
Cross Regulation	+Vout 70%, -Vout 30% +Vout 30%, -Vout 70%				450			450	mV

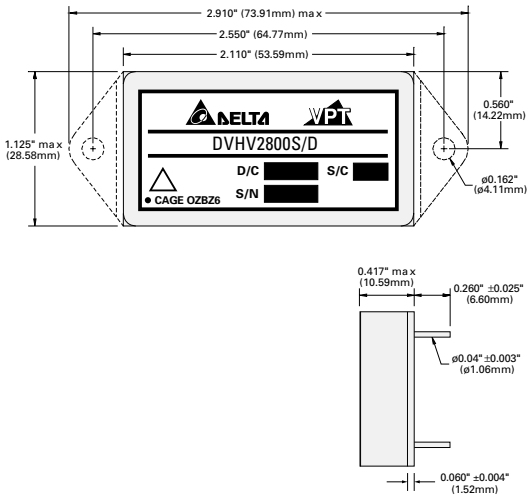
1) Transient time up to 1 second.
2) Up to 70% of the total auxiliary power or current can be drawn from either of the auxiliary outputs.
3) 5W on Vmain and 7.5W on ±Vaux.
4) -Vaux is 5% load to full load at -55°C.

For complete data, see data sheet at www.vpt-inc.com

DVHV SERIES

[SINGLE OR DUAL OUTPUT]

Free of optoisolator components, the DVHV Series of converters provides rugged, reliable operation through transients according to MIL-STD-704A requirements.



- Single outputs of 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V and ±15V
- Extra-wide 15V to 50V input range with 80V transient
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Indefinite short circuit protection
- Undervoltage lockout to eliminate slow startup problems
- Radiation immune magnetic feedback circuit
- Flanged and non-flanged versions available
- Extremely low profile (.417") and light weight (49/52g max) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMC28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-003

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVHV283R3S			DVHV2805S			DVHV285R2S			DVHV2812S			DVHV2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	3.25	3.30	3.35	4.925	5.00	5.075	5.122	5.20	5.278	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 15–50V	0		10	0		15	0		15	0		15	0		15	W
Efficiency	Vin: 28V, Full Load	68			73			73			77			77			%
Input Ripple	Full Load, 20Hz–10MHz			50			50			50			50			50	mApp
Output Ripple	Full Load, 20Hz–10MHz			30			30			30			40			40	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50	mV
Line Regulation	Vin: 15–50V			20			20			20			20			20	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVHV2805D			DVHV2812D			DVHV2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	+Vo -Vo	4.925 4.900	5.00 5.00	5.075 5.100	11.82 11.76	12.00 12.00	12.18 12.24	14.775 14.700	15.00 15.00	15.225 15.300	Vdc
Output Power	Vin: 15–50V	Total Either Output	0 0		15 10.5	0 0		15 10.5	0 0		15 10.5	W
Efficiency	Vin: 28V, Full Load		74			76			77			%
Input Ripple	Full Load, 20Hz–10MHz				50			50			50	mApp
Output Ripple	Full Load, 20Hz–10MHz				30			40			40	mVpp
Load Regulation	5% Load to Full Load	+Vo -Vo			50 200			50 200			50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				500			500			500	mV

1) Transient time up to 1 second.
2) Each output can supply up to 70% of power.

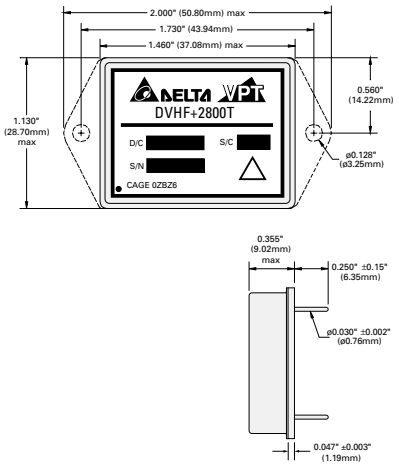
For complete data, see data sheet at www.vpt-inc.com

DVHF+ SERIES

- Triple outputs of 5V/±12V and 5V/±15V
- Extra-wide 15V to 50V input range with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Flanged and non-flanged versions available
- Extremely low profile (.355" max) and light weight (26/29g max) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- Undervoltage lockout
- Short circuit protection
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMH28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-002

[TRIPLE OUTPUT]

In addition to the same features as the single and dual version, the DVHF+ triple output module uses two independent control loops to avoid minimum loading on the main output and features outstanding regulation.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

TRIPLE OUTPUT VERSION

Parameter	Conditions		DVHF+28512T			DVHF+28515T			Units
			Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	Vmain +Vaux -Vaux	4.85 11.64 -12.48	5.00 12.00 -12.00	5.15 12.36 -11.52	4.85 14.55 -15.60	5.00 15.00 -15.00	5.15 15.45 -14.40	Vdc
Output Power[2]	Vin: 15–50V	Total Vmain +Vaux	0 0 0		15 7.5 7.5	0 0 0		15 7.5 7.5	W
Efficiency	Vin: 28V, Full Load		74	77		74	77		%
Input Ripple	Full Load, 20Hz to 10MHz			40	50		40	50	mApp
Output Ripple	Full Load, 20Hz to 10MHz	Vmain ±Vaux		40 60	50 80		40 60	50 80	mVpp
Load Regulation[3]	No Load to Full Load	Vmain +Vaux -Vaux		5 10 20	50 50 200		5 10 20	50 50 200	mV
Line Regulation	Vin: 15–50V	Vmain ±Vaux		10 15	20 50		10 15	20 50	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				450			450	%

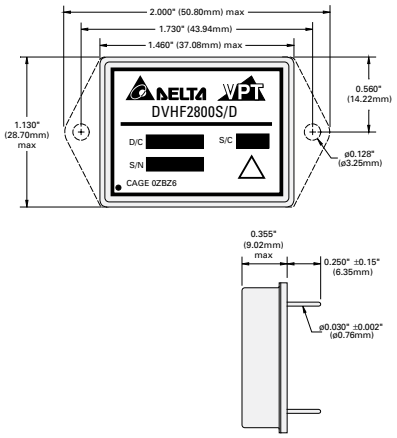
1) Transient time up to 1 second.
2) Up to 70% of the total auxiliary power or current can be drawn from either of the auxiliary outputs.
3) 7.5W Vmain and 7.5W ±Vaux.

For complete data, see data sheet at www.vpt-inc.com

DVHF SERIES

[SINGLE OR DUAL OUTPUT]

The DVHF Series is ideal for high reliability applications with a radiation immune feedback circuit, lack of startup overshoots, and up to 30% more power in a standard package.



- Single outputs of 1.9V, 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V and ±15V
- Extra-wide 15V to 50V input range with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Radiation immune magnetic feedback circuit
- Extremely low profile (.355" max) and light weight (24/28g max) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- Undervoltage lockout
- Indefinite short circuit protection
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMH28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-002

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVHF281R9S			DVHF283R3S			DVHF2805S			DVHF285R2S			DVHF2812S			DVHF2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	1.86	1.90	1.94	3.25	3.30	3.35	4.925	5.00	5.075	5.122	5.20	5.278	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 15–50V	0		8	0		10	0		15	0		15	0		20	0		20	W
Efficiency	Vin: 28V, Full Load	60			65			72			72			77			78			%
Input Ripple	Full Load, 20Hz to 10MHz			80			80			80			80			80			80	mApp
Output Ripple	Full Load, 20Hz to 10MHz			40			40			40			40			40			40	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50			50	mV
Line Regulation	Vin: 15–50V			20			20			20			20			20			20	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVHF2805D			DVHF2812D			DVHF2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.75	5.00 5.00	5.075 5.25	11.82 11.52	12.00 12.00	12.18 12.48	14.775 14.40	15.00 15.00	15.225 15.60	Vdc
Output Power[3]	Vin: 15–50V Either Output	Total Either Output	0 0		15 10.5	0 0		15 14	0 0		20 14	W
Efficiency	Vin: 28V, Full Load		73			78			79			%
Input Ripple	Full Load, 20Hz to 10MHz				60			90			90	mApp
Output Ripple	Full Load, 20Hz to 10MHz				60			50			60	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			50 200			50 200			50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				500			500			500	mV

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

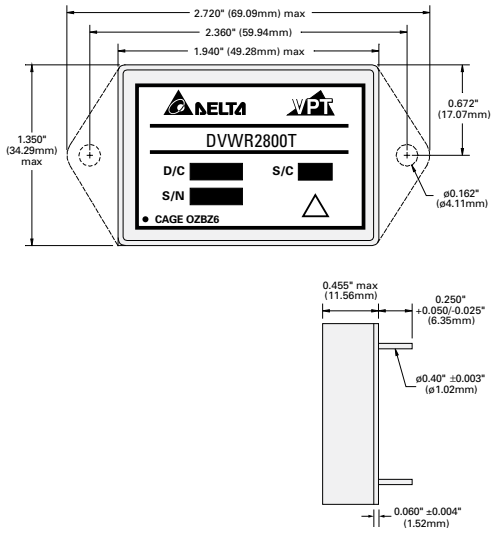
For complete data, see data sheet at www.vpt-inc.com

DVWR SERIES

- Triple outputs of 3.3V/ ±12V and 3.3V/ ±15V
- Wide input voltage range: 15–50V with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Indefinite short circuit protection
- Flanged and non-flanged versions available
- Extremely low profile (.455") and light weight (50/56g) fully hermetic package
- Wide case temperature operation of -55°C to +125°C with no power derating
- 500 Vdc input/output
- Additional enviromental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMC28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-004

[TRIPLE OUTPUT]

VPT's new DVWR Series incorporates a dual topology with independent control loops to ensure excellent regulation—especially for a low voltage output.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

TRIPLE OUTPUT VERSION

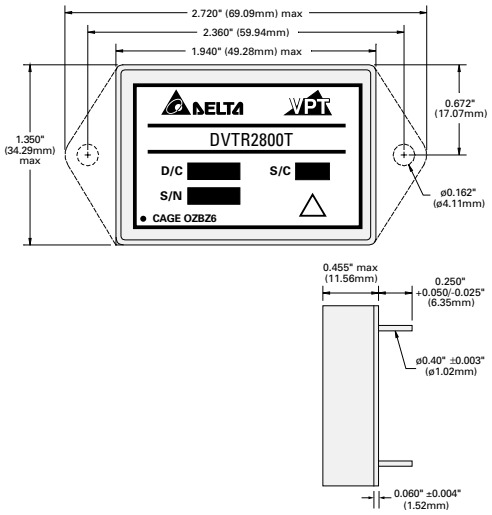
Parameter	Conditions		DVWR283R312T			DVWR283R315T			Units
			Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	Vmain +Vo -Vo	3.20 11.64 -12.48	3.30 12.00 -12.00	3.40 12.36 -11.52	3.20 14.55 -15.60	3.30 15.00 -15.00	3.40 15.45 -14.40	Vdc
Output Power[2]	Vin: 15–50W	Total Vmain ±Vaux	0 0 0		25 10 15	0 0 0		25 10 15	W
Efficiency	Vin: 28V, Full Load		74	79		75	80		%
Input Ripple	Vin: 28, Full Load, 20Hz to 10MHz			20	50		20	50	mApp
Output Ripple	Full Load, 20Hz to 10MHz	Vmain ±Vaux		20 40	60 100		20 40	60 100	mVpp
Load Regulation[3]	No Load to Full Load	Vmain +Vaux -Vaux		10 10 50	25 50 250		10 10 50	25 50 250	mV
Line Regulation	Vin: 15–50V	Vmain ±Vaux -Vaux		10 15 20	25 50 100		10 15 20	25 50 100	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				550			550	mV

1) Transient time up to 1 second.
2) Total power of +Vaux and -Vaux is 15W but either output can draw up to 10.5W maximum
3) 10W on Vmain and 15W on ±Vaux

For complete data, see data sheet at www.vpt-inc.com

[TRIPLE OUTPUT]

Packed with the same features as the single and dual versions, the DVTR triple output device also uses two independent control loops to avoid minimum loading on the main output.



- Triple outputs of 5V/±12V and 5V/±15V
- Extra-wide 15V to 50V input range with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Indefinite short circuit protection
- Undervoltage lockout
- Extremely low profile (.455") and light weight (54/56g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500 Vdc input/output isolation
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMC28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-004

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

TRIPLE OUTPUT VERSION

Parameter	Conditions		DVTR28512T			DVTR28515T			Units
			Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	Vmain +Vaux -Vaux	4.85 11.64 11.52	5.00 12.00 12.00	5.15 12.36 12.48	4.85 14.55 14.40	5.00 15.00 15.00	5.15 15.45 15.60	Vdc
Output Power[2]	Vin: 15–50V	Total Vmain ±Vaux	0 0 0		30 15 15	0 0 0		30 15 15	W
Efficiency	Vin: 28V, Full Load		74	79		75	80		%
Input Ripple	Full Load, 20Hz to 10MHz			20	50		20	50	mApp
Output Ripple	Full Load, 20Hz to 10MHz	Vmain ±Vaux		20 40	60 100		20 40	60 100	mVpp
Load Regulation[3]	No Load to Full Load	Vmain +Vaux -Vaux		10 10 50	25 50 250		10 10 50	25 50 250	mV
Line Regulation	Vin: 15–50V	Vmain +Vaux -Vaux		10 15 20	25 50 100		10 15 20	25 50 100	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				550			550	%

1) Transient time up to 1 second.
2) Total power of +Vaux and -Vaux is 15W but each output can draw up to 10.5W maximum.
3) 15W Vmain and 15W ±Vaux.

For complete data, see data sheet at www.vpt-inc.com

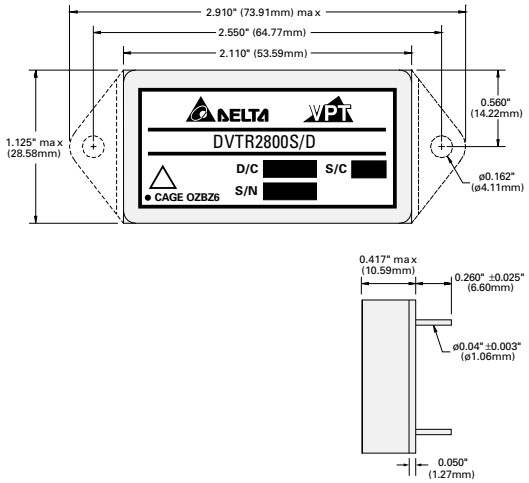
DVTR SERIES

MILITARY AND AVIONICS
DC-DC CONVERTERS

- Single outputs of 2.5V, 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V and ±15V
- Extra-wide 15V to 50V input range with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Indefinite short circuit protection
- Undervoltage lockout to eliminate slow startup problems
- Flanged and non-flanged versions available
- Extremely low profile (.417") and light weight (49/52g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500 Vdc input/output isolation
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMC28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-003

[SINGLE OR DUAL OUTPUT]

Get up to 30% more power with the DVTR Series. This series also provides uninterrupted operation through MIL-STD-704A transient spikes, eliminating the space and cost of an additional filter.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVTR282R5S			DVTR283R3S			DVTR2805RS			DVTR285R2S			DVTR2812S			DVTR2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	2.46	2.50	2.54	3.20	3.30	3.40	4.875	5.00	5.125	5.07	5.20	5.33	11.70	12.00	12.30	14.625	15.00	15.375	Vdc
Output Power	Vin: 15–50V	0		15	0		20	0		30	0		30	0		40	0		40	W
Efficiency	Vin: 28V, Full Load	63			65			72			72			76			77			%
Input Ripple	Full Load, 20Hz to 10MHz			50			50			50			50			50			50	mApp
Output Ripple	Full Load, 20Hz to 10MHz			50			50			50			50			50			50	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50			50	mV
Line Regulation	Vin: 15–50V			20			20			20			20			20			20	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVTR2805D			DVTR2812D			DVTR2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.70	5.00 5.00	5.075 5.30	11.82 11.64	12.00 12.00	12.18 12.36	14.70 14.55	15.00 15.00	15.30 15.45	Vdc
Output Power[3]	Vin: 15–50V	Total Either Output	0 0		30 21	0 0		40 28	0 0		40 28	W
Efficiency	Vin: 28V, Full Load		73			78			79			%
Input Ripple	Full Load, 20Hz to 10MHz				50			50			50	mApp
Output Ripple	Full Load, 20Hz to 10MHz				60			50			50	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			50 200			50 200			50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				650			650			650	mV

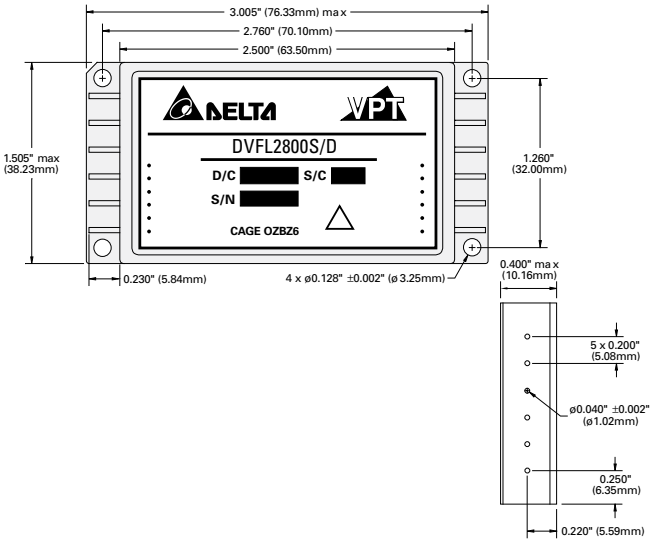
1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

DVFL SERIES

[SINGLE OR DUAL OUTPUT]

With no stacked capacitors, this converter is ready for rugged assignments. The DVFL Series offers a significant price advantage over similar competitive products.



- Single outputs of 3.3V, 5V, 12V and 15V
- Dual outputs of ±5V, ±12V and ±15V
- Extra-wide 16V to 40V input range with 50V transient
- Parallel operation with current sharing up to five units
- Fault tolerant design with patented technology – no optoisolators
- Undervoltage lockout to eliminate slow startup problems
- Radiation immune feedback circuit
- Extremely low profile (.400") and light weight (86g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500 Vdc input/output isolation
- Additional environmental screening available
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVME28 EMI filter
- Ensure excellent thermal performance and unit isolation by using with the thermal pad TP-001

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVFL283R3S			DVFL2805S			DVFL2812S			DVFL2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	16	28	40 50	16	28	40 50	16	28	40 50	16	28	40 50	Vdc
Output Voltage	Full Load	3.25	3.30	3.35	4.925	5.00	5.075	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 16–40V	0		66	0		100	0		110	0		120	W
Efficiency	Vin: 28V, Full Load	68	72		72	77		79	85		80	85		%
Input Ripple	Full Load, 20Hz–10MHz			80			80			80			80	mApp
Output Ripple	Full Load, 20Hz–10MHz			80			80			80			80	mVpp
Load Regulation	No Load to Full Load			80			100			120			120	mV
Line Regulation	Vin: 16–40V			20			20			20			20	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVFL2805D			DVFL2812D			DVFL2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		16	28	40 50	16	28	40 50	16	28	40 50	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.75	5.00 5.00	5.075 5.25	11.82 11.52	12.00 12.00	12.18 12.48	14.775 14.40	15.00 15.00	15.225 15.60	Vdc
Output Power[3]	Vin: 16–40V	Total Either Output	0 0		100 70	0 0		110 77	0 0		120 84	W
Efficiency	Vin: 28V, Full Load		73	79		80	85		81	85		%
Input Ripple	Full Load, 20Hz–10MHz				80			80			80	mApp
Output Ripple	Full Load, 20Hz–10MHz				80			80			80	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			100 200			120 200			120 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				450			450			450	mV

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

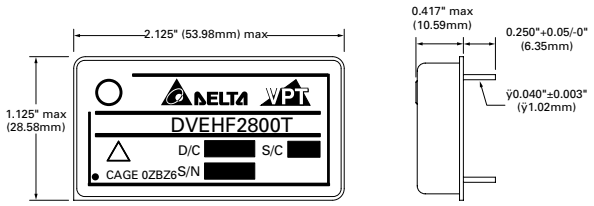
For complete data, see data sheet at www.vpt-inc.com

DVEHF SERIES

- Triple outputs of 5V/±12V and 5V/±15V
- Extra-wide 15V to 50V input range with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Indefinite short circuit protection
- Internal EMI filter meets MIL-STD-461 C/D conducted emissions requirements
- Extremely low profile (.417") and light weight (50g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500 Vdc input/output isolation
- Additional environmental screening available

[TRIPLE OUTPUT]

A 3-in-1 device, the DVEHF combines a converter, an EMI filter, and a transient voltage spike suppressor in a single space-saving package.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

TRIPLE OUTPUT VERSION

Parameter	Conditions		DVEHF28512T			DVEHF28515T			Units
			Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	Vmain ±Vaux	4.925 11.4	5.00 12.00	5.05 12.66	4.925 14.25	5.00 15.00	5.075 15.75	Vdc
Output Power	Vin: 15–50V	Total Vmain ±Vaux	0 0.15 0		10 5 3.5	0 0.15 0		10 5.0 3.5	W
Efficiency	Vin: 28V, Full Load		67	72		67	72		%
Output Ripple	Full Load, 20Hz to 10MHz	Vmain ±Vaux		15 15	50 50		15 15	50 50	mVpp
Load Regulation[2]	No Load to Full Load	Vmain ±Vaux		5 10	20 50		5 10	20 50	mV
Line Regulation	Vin: 16–40V	Vmain ±Vaux		10 15	20 50		10 15	20 50	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				50			50	

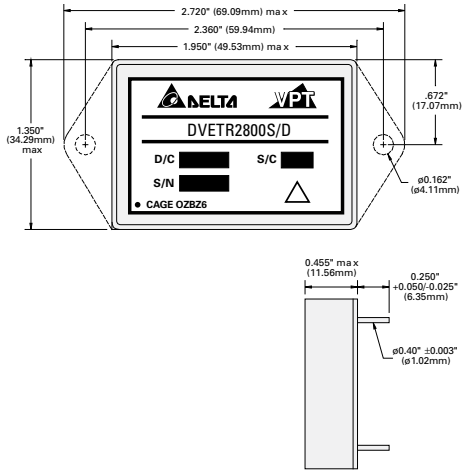
1) Transient time up to 1 second.
2) 5.0W on Vmain and 2.5W on +/- Vaux.

For complete data, see data sheet at www.vpt-inc.com

DVETR SERIES

[SINGLE OR DUAL OUTPUT]

Maximum functionality in a minimal, board space-saving size. The DVETR offers both EMI reduction and transient voltage spike suppression in the smallest package available.



- Single outputs of 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V, and ±15V
- Extra-wide 15V to 50V input range with 80V transient per MIL-STD-704A
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Undervoltage lockout
- Indefinite short circuit protection
- Internal EMI filter meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.455") and light weight (51/55g) fully hermetic packaging
- Flanged and non-flanged versions available
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500 Vdc input/output isolation
- Additional environmental screening available
- Ensure excellent thermal performance and unit isolation by using with thermal pad TP-004

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVETR283R3S			DVETR2805S			DVETR285R2S			DVETR2812S			DVETR2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	3.25	3.30	3.35	4.98	5.00	5.10	5.09	5.20	5.31	11.72	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 15–50V	0		20	0		30	0		30	0		40	0		40	W
Efficiency	Vin: 28V, Full Load	65			70			70			74			75			%
Output Ripple	Full Load, 20Hz–10MHz			50			50			50			50			50	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50	mV
Line Regulation	Vin: 15–50V			20			20			20			20			20	mV

DUAL OUTPUT VERSION

Parameter	Conditions		DVETR2805D			DVETR2812D			DVETR2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.700	5.00 5.00	5.075 5.30	11.82 11.64	12.00 12.00	12.18 12.36	14.70 14.55	15.00 15.00	15.30 15.45	Vdc
Output Power[3]	Vin: 15–50V	Total Either Output	0 0		30 21	0 0		40 28	0 0		40 28	W
Efficiency	Vin: 28V, Full Load		70			74			75			%
Output Ripple	Full Load, 20Hz–10MHz				60			50			50	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			50 200			50 200			50 200	mV
Line Regulation	Vin: 10–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				650			650			650	mV

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

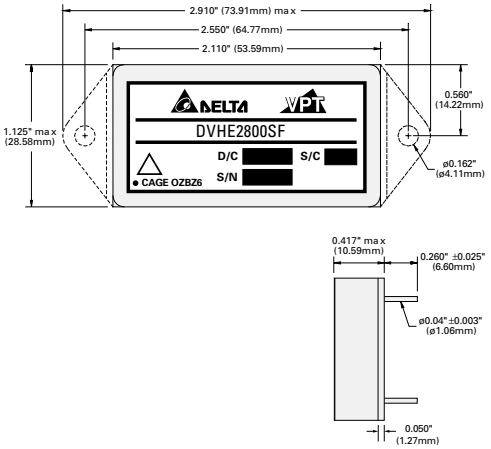
DVHE SERIES

- Single outputs of 1.9V, 2.5V, 3.3V, 5V
- Extra-wide 16V to 40V input range with 50V transient
- Up to 50W output power
- Fault tolerant design with patented technology - no optoisolators
- Very low output noise
- Up to 90% efficiency
- Flanged and non-flanged versions available
- Very low input noise
- Tiny size - 2.110" x 1.125" x .417" and light weight (52/55g max)
- Short circuit/current limit protection
- Undervoltage lockout resulting in minimal overshoot on startup
- Wide case temperature operating range of -55 °C to +125 °C with no power derating
- 500Vdc input/output isolation
- Additional environmental screening available
- Meets MIL-STD-461C/D/E conducted emissions requirements when used with DVMC28 EMI filter

[SINGLE OUTPUT]

The DVHE Series of DC-DC converters can be used alone or in conjunction with the DVPL point-of-load converter as part of the High Efficiency, Reliability Optimized (HERO) Power System. The DVHE packs 50W in a standard hermetic case at more than 90% efficiency.

Save board space and cost by using a single DVHE to power multiple low voltage devices instead of deploying multiple DC-DC converters.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	DVHE281R9S			DVHE282R5S			DVHE283R3S			DVHE2805S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	16	28	40 50	16	28	40 50	16	28	40 50	16	28	40 50	Vdc
Output Voltage	Full Load	1.84	1.9	1.96	2.44	2.5	2.53	3.22	3.30	3.38	4.87	5.00	5.13	Vdc
Output Power	Vin: 16–40V	0		19	0		25	0		33	0		50	W
Efficiency	Vin: 28V, Full Load	80	84		83	87		85	88		86	90		%
Input Ripple	Full Load, 20Hz to 10MHz			100			150			150			150	mApp
Output Ripple	Full Load, 20Hz to 10MHz			150			150		75	150		100	200	mVpp
Load Regulation	No Load to Full Load		15	30		15	30		15	30		15	30	mV
Line Regulation	Vin: 16–40V		1	10		1	10		1	10		1	10	mV

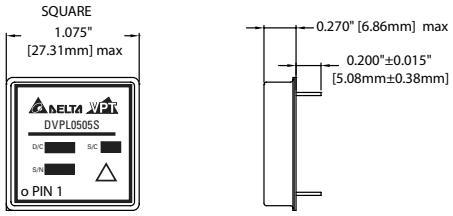
1) Transient time up to 1 second.

For complete data, see data sheet at www.vpt-inc.com

DVPL SERIES

[SINGLE OUTPUT]

The new DVPL Series of DC-DC point-of-load converters can be used alone or in conjunction with the DVHE DC-DC converter as part of the High Efficiency, Reliability Optimized (HERO) Power System. This is a non-isolated, synchronous, buck regulated converter that steps down the voltage at the point of end use. The DVPL is the world's first point-of-load converter that is designed and built to military-grade reliability as defined in MIL-PRF-38534. Power multiple DVPLs at your points of load from a single DVHE Series DC-DC converter.



- Single outputs of 3.3V, 5V, 5.2V, 12V and 15V
- Dual outputs of ±5V, ±12V, and ±15V
- Extra-wide 15V to 50V input range with 80V transient
- Fault tolerant design with patented technology – no optoisolators
- Very low output noise
- Internal EMI filter meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.455") and light weight (55g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C with no power derating
- 500 Vdc input/output isolation
- Additional environmental screening available
- Ensure excellent thermal performance and unit isolation by using with thermal pad TP-004

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

DVPL 5A MODULE

Parameter	Conditions	DVPL0505S			Units
		Min	Typ	Max	
Input Voltage	Vout = 0.8V to 2.5V Vout = 2.6V to 3.3V	3.0 4.0		5.5 5.5	Vdc
Output Voltage	Full Load	-2.5	Vout	2.5	%Vout
Output Power	Vout = 3.3V	0		16.5	W
Efficiency	Vout = 3.3V	93	96		%
Output Ripple	Full Load, 20Hz to 10Hz		35	90	mVpp

DVPL 10A MODULE

Parameter	Conditions	DVPL0510S			Units
		Min	Typ	Max	
Input Voltage	Continuous	4.5		5.5	Vdc
Output Voltage	Full Load	-2.5	Vout	+2.5	%Vout
Output Power	Vout = 3.3V	0		33	W
Efficiency	Vout = 3.3V Vin: 28V, Full Load	91	95		%
Output Ripple	Full Load, 20Hz to 10Hz		40	80	mVpp

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

DC-DC CONVERTERS FOR THE UNIQUE CHALLENGES OF SPACE

Save time, board weight, and the expense of custom solutions with VPT's ultimate reliability standard DC-DC converters for space applications.

These new space DC-DC converters deliver up to 120 watts of output power, operate reliably through harsh radiation environments, and are available for fast delivery at reasonable cost.

With more than 50 modules grouped in four product families, VPT satisfies today's stringent space requirements by offering the power, configurations, and radiation tolerances you need for your next space system.

Finally - space level converters that are ready to fly when you are. Launch your critical mission today with VPT.

DESIGNED FOR THE RIGORS OF SPACE TRAVEL

All space products feature these specific performance characterizations for your space mission:

- Characterized and guaranteed to 30krads (Si) radiation tolerance per VPT's RHA plan specified per MIL-PRF-38534, Appendix G, Level P with 2x margin*
- Characterized and tested for TID (total ionizing dose) at HDR (high dose rate) and LDR (low dose rate -- ELDRS) per VPT's RHA plan *
- Designed and manufactured in a facility certified to MIL-STD-883 and MIL-PRF-38534 Class H (military) and K (space) and qualified to ISO 9001
- Characterization and testing performed at the critical semiconductor component piece-part level (RLAT) from traceable semiconductor lots
- Characterization and testing also performed on the hybrid converters produced from the same traceable semiconductor lots evaluated during RLAT.
- MIL-PRF-38534 Class H element evaluated components standard
- Components selected from NASA database of recommended RH devices
- Wide case temperature operation of -55°C to +125°C with full performance over temperature range
- Fault tolerant design with radiation immune magnetic isolation technology—no optoisolators
- Extra-wide input voltage ranges per MIL-STD-704
- EMI filter modules to meet MIL-STD-461 C/D/E are also available

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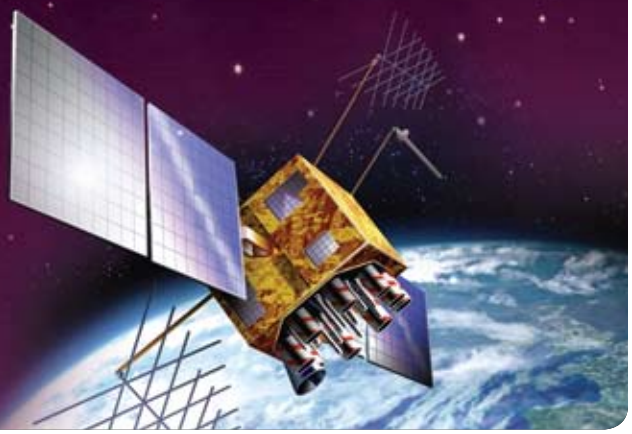
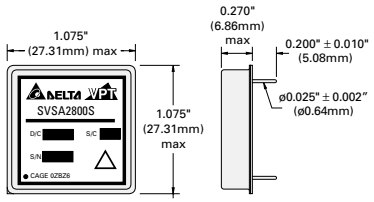
VPT's certified radiation program per MIL-PRF-38534, appendix G, is currently under review by DSCC. Contact DSCC at (614) 692-0585 directly for the most up to date information.



[SINGLE OR DUAL OUTPUT]

In a miniature, lightweight case, the SVSA DC-DC converter is packaged to power your critical mission system in space.



- Single outputs of 3.3V, 5V, 5.2V, 12V, and 15V
- Dual outputs of ±5V, ±12V, and ±15V
- Guaranteed radiation tolerance to 30krads (Si) plus all other space performance characterizations detailed on p. 20
- Fault tolerant design with radiation immune magnetic isolation technology - no optoisolators
- Extra-wide 15V to 50V input range per MIL-STD-704, high input transient to 80V for 1 sec
- Extremely low profile (.270 inches) and light weight (15g) fully hermetic packaging
- Very low output noise
- Undervoltage lockout, indefinite short circuit protection, current limit protection
- Wide case temperature operation of -55°C to +125°C with full performance over temperature range
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMA28 EMI filter

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	SVSA283R3			SVSA2805S			SVSA285R2S			SVSA2812S			SVSA2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	3.25	3.30	3.35	4.925	5.00	5.075	5.122	5.2	5.278	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 15–50V	0		4	0		5	0		5.2	0		6	0		6	W
Efficiency	Vin: 28V, Full Load	62	66		65	70		65	70		71	75		72	76		%
Output Ripple	Full Load, 20Hz–10MHz			50			50			50			50			50	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50	mV
Line Regulation	Vin: 15–50V			15			15			15			15			15	mV

DUAL OUTPUT VERSION

Parameter	Conditions		SVSA2805D			SVSA2812D			SVSA2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.75	5.00 5.00	5.075 5.25	11.82 11.52	12.00 12.00	12.18 12.48	14.775 14.40	15.00 15.00	15.225 15.60	Vdc
Output Power[3]	Vin: 15-50V		0		5	0		6	0		6	W
Efficiency	Vin: 28V, Full Load		66	72		72	77		73	79		%
Input Ripple	Full Load, 20Hz–10MHz			30	50		30	50		30	50	mApp
Output Ripple	Full Load, 20Hz–10MHz				50			50			50	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo		10 50	50 200		10 50	50 200		10 50	50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo		10 50	50 200		10 50	50 200		10 50	50 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				450			450			450	mV

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

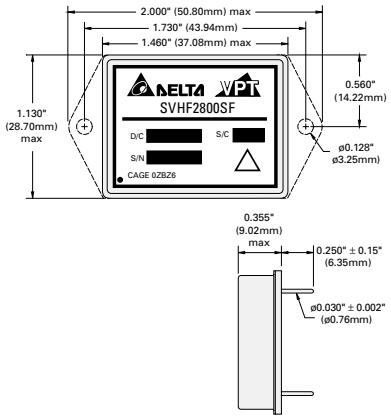
SVHF SERIES

DC-DC CONVERTERS FOR SPACE

- Single outputs of 1.9V, 3.3V, 5V, 5.2V, 12V, and 15V
- Dual outputs of ±5V, ±12V, and ±15V
- Guaranteed radiation tolerance to 30krads (Si) plus all other space performance characterizations detailed on p. 20
- Fault tolerant design with radiation immune magnetic isolation technology - no optoisolators
- Extra-wide 15V to 50V input range per MIL-STD-704, high input transient to 80V for 1 sec
- Very low output noise
- Undervoltage lockout, indefinite short circuit protection, current limit protection
- Extremely low profile (.330 inches) and light weight (24/27g) fully hermetic packaging
- Wide case temperature operation of -55°C to +125°C with full performance over temperature range
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMH28 EMI filter
- Flanged and non-flanged case styles available

[SINGLE OR DUAL OUTPUT]

Packing 20W in a miniature, lightweight case, the SVHF DC-DC converter is guaranteed radiation tolerant to 30Krad (Si) including ELDRS for the longevity of your space mission.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	SVHF281R9S			SVHF283R3S			SVHF2805S			SVHF285R2S			SVHF2812S			SVHF2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	1.86	1.9	1.94	3.25	3.30	3.35	4.925	5.00	5.075	5.122	5.20	5.278	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 15–50V	0		8	0		10	0		15	0		15	0		20	0		20	W
Efficiency	Vin: 28V, Full Load	59			65			72			72			77			78			%
Input Ripple	Full Load, 20Hz to 10MHz			80			80			80			80			80			80	mApp
Output Ripple	Full Load, 20Hz to 10MHz			40			40			40			40			40			40	mVpp
Load Regulation	No Load to Full Load			65			50			50			50			50			50	mV
Line Regulation	Vin: 16–40V			20			20			20			20			20			20	mV

DUAL OUTPUT VERSION

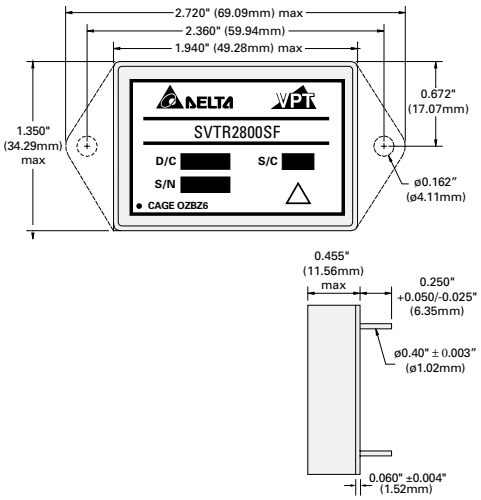
Parameter	Conditions		SVHF2805D			SVHF2812D			SVHF2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.700	5.00 5.00	5.075 5.25	11.82 11.52	12.00 12.00	12.18 12.48	14.775 14.40	15.00 15.00	15.225 15.60	Vdc
Output Power[3]	Vin: 15–50V		0		15	0		20	0		20	W
Efficiency	Vin: 28V, Full Load		73			78			79			%
Input Ripple	Full Load, 20Hz–10MHz				60			90			90	mVpp
Output Ripple	Full Load, 20Hz–10MHz				60			50			60	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			50 200			50 200			50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				500			500			500	mV

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

[SINGLE OR DUAL OUTPUT]

The SVTR DC-DC converter delivers 40W in a small size, light weight package and operates at full power throughout the extreme temperature range of -55°C to +125°C.



- Single outputs of 2.5V, 3.3V, 5V, 5.2V, 12V, and 15V
- Dual outputs of ±5V, ±12V, and ±15V
- Guaranteed radiation tolerance to 30krads (Si) plus all other space performance characterizations detailed on p. 20
- Fault tolerant design with radiation immune magnetic isolation technology - no optoisolators
- Extra-wide 15V to 50V input range per MIL-STD-704, high input transient to 80V for 1 sec
- Very low output noise
- Undervoltage lockout, indefinite short circuit protection, current limit protection
- Extremely low profile (.405 inches) and light weight (49/52g) fully hermetic packaging
- Wide case temperature operation of -55°C to +125°C with full performance over temperature range
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVMC28 EMI filter
- Flanged and non-flanged case styles available

Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	SVTR282R5S			SVTR283R3S			SVTR2805S			SVTR285R2S			SVTR2812S			SVTR2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage	Full Load	2.46	2.50	2.54	3.20	3.30	3.40	4.875	5.00	5.125	5.07	5.20	5.33	11.70	12.00	12.30	14.625	15.00	15.375	Vdc
Output Power	Vin: 15–50V	0		15	0		20	0		30	0		30	0		40	0		40	W
Efficiency	Vin: 28V, Full Load	63			65			72			72			76			77			%
Input Ripple	Full Load, 20Hz to 10MHz			50			50			50			50			50			50	mApp
Output Ripple	Full Load, 20Hz to 10MHz			50			50			50			50			50			50	mVpp
Load Regulation	No Load to Full Load			50			50			50			50			50			50	mV
Line Regulation	Vin: 16–40V			20			20			20			20			20			20	mV

DUAL OUTPUT VERSION

Parameter	Conditions		SVTR2805D			SVTR2812D			SVTR2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		15	28	50 80	15	28	50 80	15	28	50 80	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.700	5.00 5.00	5.075 5.300	11.82 11.64	12.00 12.00	12.18 12.36	14.70 14.55	15.00 15.00	15.30 15.45	Vdc
Output Power[3]	Vin: 15–50V		0		30	0		40	0		40	W
Efficiency	Vin: 28V, Full Load		73			78			79			%
Input Ripple	Full Load, 20Hz–10MHz				50			50			50	mVpp
Output Ripple	Full Load, 20Hz–10MHz				60			50			50	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			50 200			50 200			50 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				650			650			650	mV

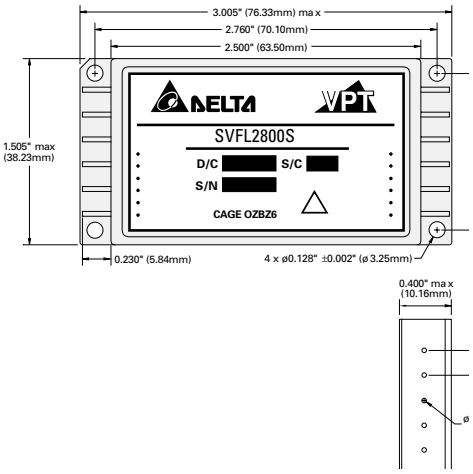
1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

- Single outputs of 3.3V, 5V, 12V, and 15V
- Dual outputs of ±5V, ±12V, and ±15V
- Guaranteed radiation tolerance to 30krads (Si) plus all other space performance characterizations detailed on p. 20
- Fault tolerant design with radiation immune magnetic isolation technology - no optoisolators
- Extra-wide 16V to 40V input range per MIL-STD-704, input transient to 50V for 1 sec
- Very low output noise
- Undervoltage lockout, indefinite short circuit protection, current limit protection
- Extremely low profile (.400 inches) and light weight (86g) fully hermetic packaging
- Wide case temperature operation of -55°C to +125°C with full performance over temperature range
- Meets MIL-STD-461 C/D conducted emissions requirements when used with a DVME28 EMI filter

[SINGLE OR DUAL OUTPUT]

With no stacked capacitors, these regulated, isolated units utilize well controlled undervoltage lockout circuitry to eliminate slow startup problems. Current sharing enables parallel operation of up to five units for 5x power output.



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

SINGLE OUTPUT VERSION

Parameter	Conditions	SVFL283R3S			SVFL2805S			SVFL2812S			SVFL2815S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]	16	28	40 50	16	28	40 50	16	28	40 50	16	28	40 50	Vdc
Output Voltage	Full Load	3.25	3.30	3.35	4.925	5.20	5.075	11.82	12.00	12.18	14.775	15.00	15.225	Vdc
Output Power	Vin: 16–40V	0		66	0		100	0		110	0		120	W
Efficiency	Vin: 28V, Full Load	68	72		72	77		79	85		80	85		%
Input Ripple	Full Load, 20Hz to 10MHz			80			80			80			80	mApp
Output Ripple	Full Load, 20Hz to 10MHz			80			80			80			80	mVpp
Load Regulation	No Load to Full Load			80			100			120			120	mV
Line Regulation	Vin: 16–40V			20			20			20			20	mV

DUAL OUTPUT VERSION

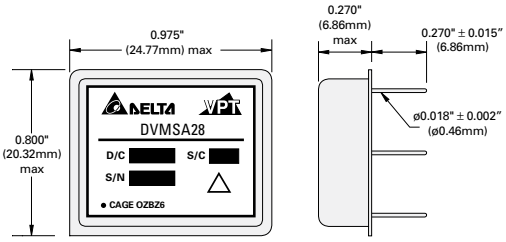
Parameter	Conditions		SVFL2805D			SVFL2812D			SVFL2815D			Units
			Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient[1]		16	28	40 50	16	28	40 50	16	28	40 50	Vdc
Output Voltage[2]	Full Load	+Vo -Vo	4.925 4.75	5.00 5.00	5.075 5.25	11.82 11.52	12.00 12.00	12.18 12.48	14.775 14.40	15.00 15.00	15.225 15.60	Vdc
Output Power[3]	Vin: 16–40V		0		100	0		110	0		120	W
Efficiency	Vin: 28V, Full Load		73	79		80	85		81	85		%
Input Ripple	Full Load, 20Hz–10MHz				80			80			80	mVpp
Output Ripple	Full Load, 20Hz–10MHz				80			80			80	mVpp
Load Regulation[2]	No Load to Full Load	+Vo -Vo			100 200			120 200			120 200	mV
Line Regulation	Vin: 16–40V	+Vo -Vo			20 200			20 200			20 200	mV
Cross Regulation	+Load 70%, -Load 30% +Load 30%, -Load 70%				450			450			450	mV

1) Transient time up to 1 second.
2) Equal load at each output.
3) Each output can supply up to 70% of power.

For complete data, see data sheet at www.vpt-inc.com

DVMSA SERIES EMI FILTER

- For use with the DVSA Series DC-DC converters
- 0V to 50V input range with 80V transient per MIL-STD-704A
- 0.8A max output current
- 40dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.270") and light weight (11g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

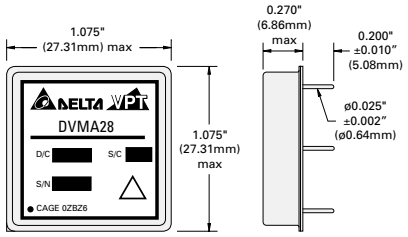
Parameter	Conditions	DVMSA			Units
		Min	Typ	Max	
Input Voltage	Continuous Transient[1]	0	28	50 80	Vdc
Output Current[2]	Continuous	0		0.8	A
Noise Rejection	f = 500kHz	40			dB

1) Transient time up to 1 second.
2) The maximum output current is linearly derated to zero at +135°C.

For complete data, see data sheet at www.vpt-inc.com

DVMA SERIES EMI FILTER

- For use with the DVSA and DVHF Series DC-DC converters
- 0V to 50V input range with 80V transient per MIL-STD-704A
- 1.0A max output current
- 40dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.270") and light weight (15g) fully hermetic packaging
- Wide case temperature operation range of -55° C to +125° C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

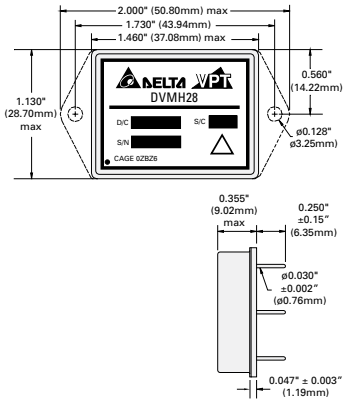
Parameter	Conditions	DVMA28			Units
		Min	Typ	Max	
Input Voltage	Continuous Transient[1]	0	28	50 80	Vdc
Output Current[2]	Continuous	0		1.0	A
Noise Rejection	f = 500kHz	40			dB

1) Transient time up to 1 second.
2) The maximum output current is linearly derated to zero at +135°C.

For complete data, see data sheet at www.vpt-inc.com

DVMH SERIES EMI FILTER

- For use with DVHF and DVTR Series DC-DC converters
- 0V to 50V input range with 80V transient per MIL-STD-704A
- 2A max output current
- 55dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Radiation resistant
- Extremely low profile (.355" max) and light weight (24/29g max) fully hermetic packaging
- Flanged and non-flanged versions available
- Wide case temperature operation range of -55° C to +125° C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

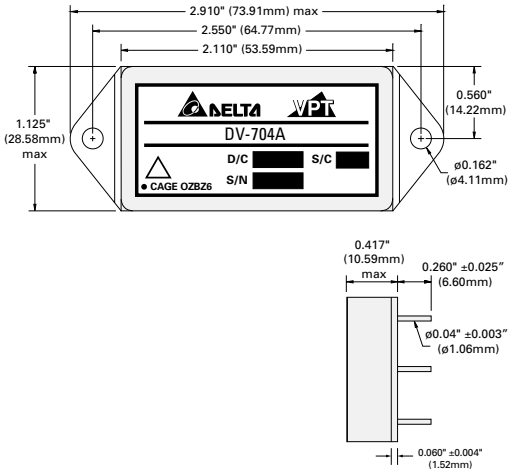
Parameter	Conditions	DVMH28			Units
		Min	Typ	Max	
Input Voltage	Continuous Transient[1]	0	28	50 80	Vdc
Output Current[2]	Continuous	0		2.0	A
Noise Rejection	f = 500kHz	55			dB

1) Transient time up to 1 second.
2) The maximum output current is linearly derated to zero at +135°C.

For complete data, see data sheet at www.vpt-inc.com

DV-704A SERIES EMI FILTER

- For use with DVTR, DVHF, DVSA, DVFL Series DC-DC converters
- 0V to 40V input range with 600V transient
- Inrush current limit and soft start
- 2.0A max output current
- 45dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.417" max) and light weight (47g) fully hermetic packaging
- Wide case temperature operation range of -55°C to +125°C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

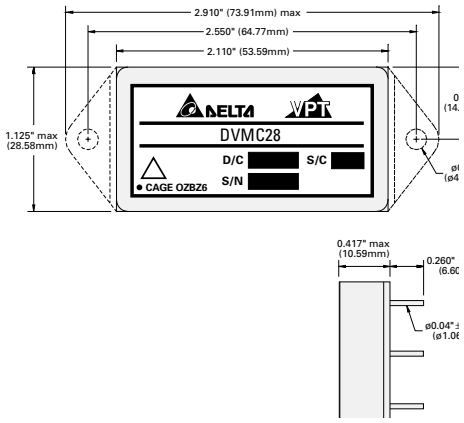
Parameter	Conditions	DV-704A			Units
		Min	Typ	Max	
Input Voltage	Continuous 2.0A load Transient[1], 100ms, Rs=0.0Ω Transient[1], 60ms, Rs=0.5Ω Transient[1], 20µs, Rs=50Ω	15	28	40 80 100 600	Vdc
Output Current[2]	Continuous	0		2.0	A
Noise Rejection	f = 500kHz	45			dB
Output Clamp Voltage		43		47	V

1) Transient time up to 1 second.
2) The maximum output current is linearly derated to 0A from +125°C to +135°C.

For complete data, see data sheet at www.vpt-inc.com

DVMC SERIES EMI FILTER

- For use with DVTR and DVFL Series DC-DC converters
- Wide 0V to 50V input range with 80V transient per MIL-STD-704A
- 4.0A max output current
- 40dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.417") and light weight (47/51g max) fully hermetic packaging
- Flanged and non-flanged versions available
- Wide case temperature operation range of -55° C to +125° C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

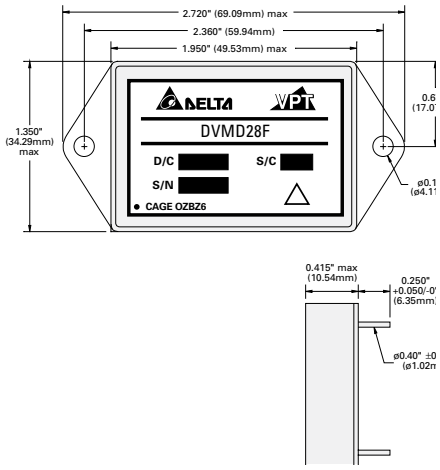
Parameter	Conditions	DVMC28			Units
		Min	Typ	Max	
Input Voltage	Continuous Transient[1]	0	28	50 80	Vdc
Output Current	Continuous	0		4.0	A
Noise Rejection	f = 500kHz	40			dB

1) Transient time up to 1 second.

For complete data, see data sheet at www.vpt-inc.com

DVMD SERIES EMI FILTER

- For use with DVTR and DVFL Series DC-DC converters
- 0V to 50V input range with 80V transient per MIL-STD-704A
- 7.0A max output current
- 40dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.415" max) and light weight (63g) fully hermetic packaging
- Wide case temperature operation range of -55°C to +125°C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

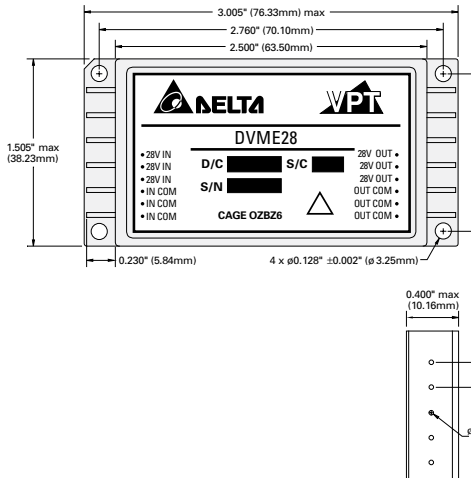
Parameter	Conditions	DVMD28			Units
		Min	Typ	Max	
Input Voltage	Continuous Transient[1]	0	28	50 80	Vdc
Output Current[2]	Continuous	0		7.0	A
Noise Rejection	f = 500kHz	40			dB

1) Transient time up to 1 second.
2) The maximum output current is linearly derated to zero at +135°C.

For complete data, see data sheet at www.vpt-inc.com

DVME SERIES EMI FILTER

- For use with DVFL Series DC-DC converter
- 0V to 50V input range with 80V transient per MIL-STD-704A
- 15.0A max output current
- 40dB noise rejection
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements
- Extremely low profile (.400") and light weight (77g) fully hermetic packaging
- Wide case temperature operation range of -55°C to +125°C
- Additional environmental screening available



Electrical performance at T_{case} = -55° C to +125° C, V_{in} = +28V ±5%, full load, unless otherwise specified.

Parameter	Conditions	DVME28			Units
		Min	Typ	Max	
Input Voltage	Continuous Transient[1]	0	28	50 80	Vdc
Output Current	Continuous	0		15.0	A
Noise Rejection	f = 500kHz	40			dB

1) Transient time up to 1 second.
2) The maximum output current is linearly derated to zero at +135°C.

For complete data, see data sheet at www.vpt-inc.com

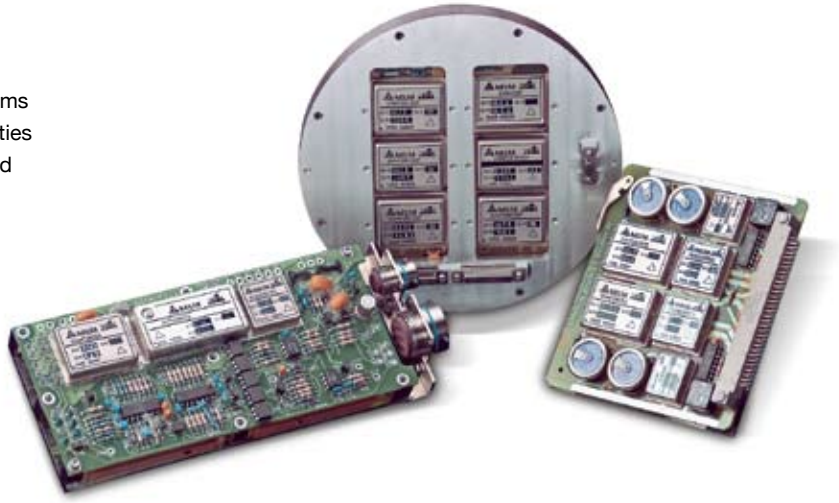
POWER SYSTEM DESIGN & ASSEMBLY

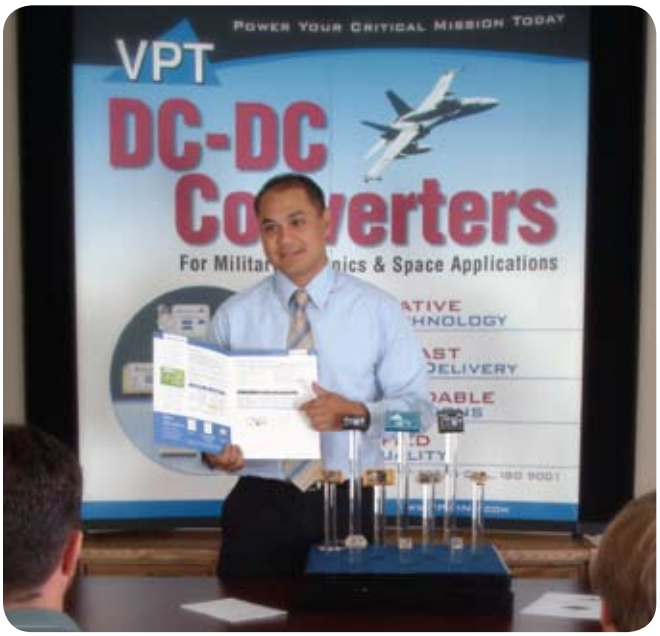
VPT is your partner for fast, affordable design and assembly of your avionics, military, and space power systems. As a global leader in high reliability DC-DC power conversion, we combine experienced power system design with military quality standards to deliver your system quickly, expertly, and cost-effectively.

For your project, VPT offers:

- Expert, experienced designers
- An extensive portfolio of technical capabilities
- Exclusive experience in avionics, military, and space systems
- A proven, documented design process in class 100K facilities
- A top-flight quality system adhering to standards controlled by MIL-PRF-38534 and ISO 9001

If you're short on time, resources, or internal expertise for your power system project, we invite you to consider VPT. We'll work with you to design and deliver your custom power system on time, within budget, and to your exact specifications.





TECHNICAL DESIGN ASSISTANCE

Designing a new power system? Looking to maximize efficiency and cost? Then rely on VPT's engineers and our new Technical Design Assistance service.

Some of the issues we can help with include:

- Implementing a power conversion design to maximize power and cost efficiencies
- Understanding power converter topologies and performance characteristics so you can decide which products work best for your design
- Understanding reliability metrics, power derating, environmental stress screening, thermal management, and EMI performance

Hosted at the location of your choice, design assistance sessions are tailored to your specific project and typically last about an hour.

FOR FURTHER INFORMATION ON THESE PRODUCTS AND SERVICES, PLEASE CONTACT US.

Web www.vpt-inc.com
Phone 425.353.3010
Email vptsales@vpt-inc.com

SCREENING AND DEFINITIONS

VPT's converters and EMI filters are available with targeted screening grades to satisfy a wide range of requirements. Additional custom environmental screening may be performed to meet individual customer needs. Please contact a sales representative concerning different environmental screenings.

Environmental Screening Options for Military, Avionics, and Space DC-DC Modules

Screening	MIL-STD-883	Standard (No Suffix)	Extended /ES	HB /HB	ClassH /H	ClassK** /K
Non-Destructive Bond Pull	Method 2023	■	■	■	■	■
Internal Visual	Method 2017, 2032 Internal Procedure	■	■	■	■	■
Temperature Cycling	Method 1010, Condition C Method 1010, -55°C to 125°C	■				
Constant Acceleration	Method 2001, 3000g, Y1 Direction Method 2001, 500g, Y1 Direction		■	■	■	■
PIND	Method 2020, Condition A*		■	■	■	■
Pre Burn-In Electrical	100% at 25°C					■
Burn-In	Method 1015, 320 hours at +125°C Method 1015, 160 hours at +125°C 96 hours at +125°C 24 hours at +125°C	■	■	■	■	■
Final Electrical	MIL-PRF-38534, Group A† 100% at 25°C	■	■	■	■	■
Hermeticity	Method 1014, Fine Leak, Condition A Method 1014, Gross Leak, Condition C Dip (1x10-3)	■	■ ■	■ ■	■ ■	■ ■
Radiography	Method 2012 ††					■
External Visual	Method 2009		■	■	■	■

* 100% R&R testing at -55°C, +25°C with all test data included in product shipment.
† PIND test Certificate of Compliance included with product shipment.
†† Radiographic test certificate of Compliance and film(s) included with product shipment.
** VPT's radiation plan is filed and currently pending with DSCC. Contact DSCC at (614)692-0585 directly for the most up to date information.

For complete data, see data sheet at www.vpt-inc.com

DEFINITION OF PARTS NUMBERS

DC-DC Converters

DVTR	28	05	S	F	R	/H

Product Series	Nominal Input Voltage		Output Voltage		No. of Outputs		Package Options		Rad Hard Option		Screening Code	
	28	28 Volts	1R5 1R9 2R5 3R3 05 5R2 12 15 512 515	1.5 Volts 1.9 Volts 2.5 Volts 3.3 Volts 5 Volts 5.2 Volts 12 Volts 15 Volts 5 & ±12 V 5 & ±15 V	S D T	Single Dual Triple	None F	Without flange With flange	None R	Standard 100k Rad	None /ES /H /HB /K	Standard Extended Class H HB Class K

EMI Filters

DVMC	28	F	/ES

Product Series	Nominal Input Voltage		Package Options		Screening Code1	
	28	28 Volts	None F	Without flange Flange	None /ES /H /HB /K	Standard Extended Class H HB Class K

HIGH RELIABILITY COMMERCIAL OFF THE SHELF (COTS) MODULES

Designed for when you need high reliability performance that is not flight critical, consider VPT's affordable COTS DC-DC converters. They deliver the reliability you need at a cost within your program's budget, and usually ship to you immediately from stock. Unlike other COTS converters, VPT's products are designed from the start for the unique requirements of military and avionics applications.

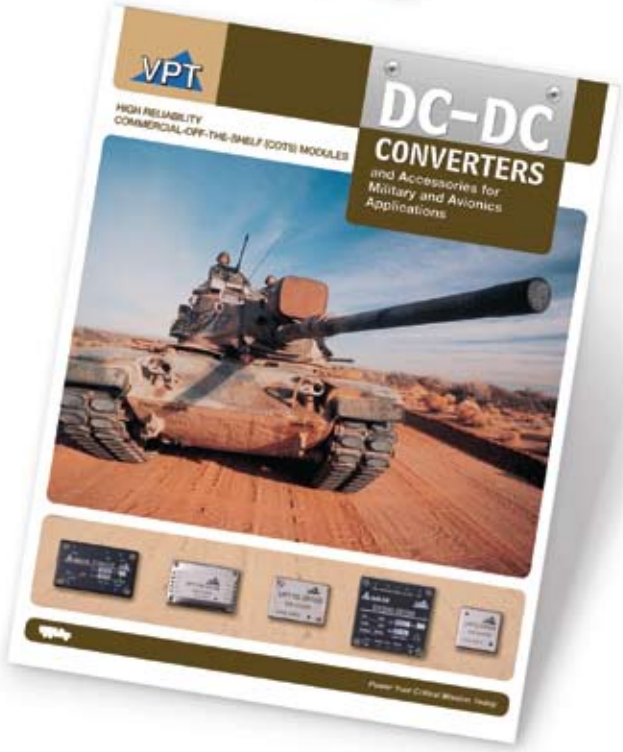
Two COTS Series are available for your application:

VPT SERIES

- Full product line of DC-DC converters and EMI filters
- Ultra high reliability performance, magnetic feedback
- Manufactured in the USA to J-STD-001
- Operation over a wide -55°C to +100°C temperature STANDARD
- 6 sided metal cases for improved EMI performance and mechanical/environmental performance
- High power density
- Proven topologies and designs
- Environmental screening, including a 96 hour burn-in, 100% electrical testing, and temperature cycling testing STANDARD
- Fast delivery

COTS POTTED MODULES

- Optimization for the standard military 28V bus. No adaptation from other buses, such as the 48V telecommunications standard.
- Patented magnetic feedback technology that eliminates the use of optocouplers, ensuring reliable performance
- Undervoltage lockout circuitry for safe operation
- Full potting
- Cold temperature ratings to -55°C
- Full military standard input voltage range
- Performance guarantee for harsh environmental conditions including extreme temperature cycling, vibration, shock, salt atmosphere, barometric conditions, and moisture and solvent resistance



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New Products
Full Product Datasheets
Application Notes
SMD Cross Reference

POWER YOUR CRITICAL MISSION TODAY

CONTACT YOUR LOCAL SALES REPRESENTATIVE

To learn more about how VPT DC-DC converters, EMI filters, and accessories can power your mission today, visit the VPT Web site at www.vpt-inc.com.

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