



# HERO Distributed Power System

Point of Load DC-DC Power Conversion

For Avionics and Military Applications

Power Your Critical Mission Today

[www.vpt-inc.com](http://www.vpt-inc.com)

# The Hero Distributed Power System

## For Avionics and Military Applications

Improve Efficiency While Reducing Your Power System's Size, Weight, Thermals and Cost

Avionics and military applications today demand the highest reliability power solutions, with the smallest footprint, at an affordable cost.

You can satisfy these demands with a smarter, more efficient power design using VPT's High Efficiency, Reliability Optimized (HERO) distributed power system.



## Available From Stock

With the fastest delivery time in the industry, get started building your system right now, today\*.

\*VPT's goal is to provide many products directly from stock. Typical lead times of finished goods can be directly from stock in most cases.

\*\*See data sheets of individual products for details.

## As Easy as 1-2-3

Our power modules are truly military qualified and available off-the-shelf. To put your system together, simply:

- 1 **Take one high efficiency isolated VPT DC-DC converter**, such as VPT's 50W DVHE Series.
- 2 **Add multiple smaller, extremely efficient VPT point of load DC-DC converters**. Pick from a complete set of DVPL 3A, 5A, 10A, and 20A modules.
- 3 **Deploy a distributed power system that is ultra efficient, ultra flexible, and ultra reliable** for your avionics or military program.

## One Powerful Solution

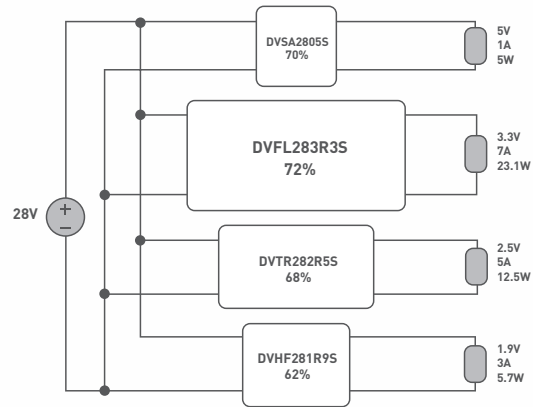
Using this method, you'll realize:

- **Less space, weight, heat and cost.**  
Smaller, lighter modules demand less board real estate.
- **High efficiency.**  
All modules are over 90% efficient.\*\*
- **More reliability.**  
These hermetic products are designed specifically for hi-rel military and avionics applications. Guaranteed full performance from -55° C to +125° C.

## Traditional Approach

Using multiple isolated DC-DC power converters:

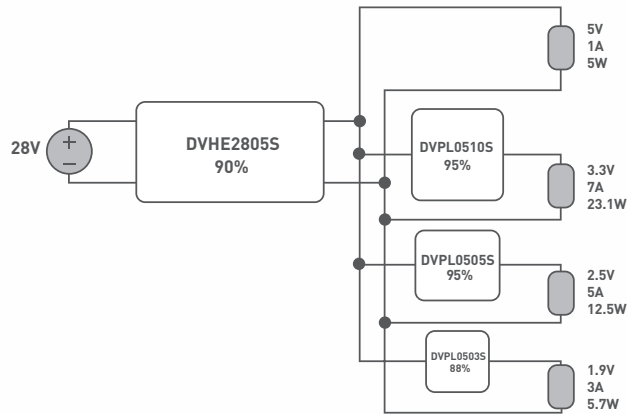
- Power Out = 46.3W
- Power In = 66.8W
- Efficiency = 69.3%
- Board Area = 9.718 in<sup>2</sup>
- Weight = 177G



## With VPT's HERO Approach

Using a single isolated DC-DC power converter and multiple POL converters:

- Power Out = 46.3W
- Power In = 54.4W
- Efficiency = 85.1%  
(>15% improvement)
- Board Area = 4.81 in<sup>2</sup>  
(≈50% reduction)
- Weight = 90G  
(≈50% lighter)



(enlarged to show detail)

### [ HERO POWER SYSTEM SPECIFICATIONS ]

Max. Output Power	Model Series	Input DC Voltage (V)	Output Voltage (V)	Efficiency
50W	DVHE2800S	16–40	Single 1.9, 2.5, 3.3, 5V	90%
<b>NEW</b> 3A	DVPL0503S	4.0–5.5	0.8V to 3.4V	92%
5A	DVPL0505S	3.0–5.5	0.8V to 3.4V	96%
10A	DVPL0510S	4.5–5.5	0.8V to 3.4V	95%
<b>NEW</b> 20A	DVPL0520S	4.5–5.5	0.8V to 3.4V	90%

**Note:** VPT's DVHE 50W isolated DC-DC converter is shown here in this system, however you can use any VPT isolated DC-DC converter as part of the HERO distributed power system.

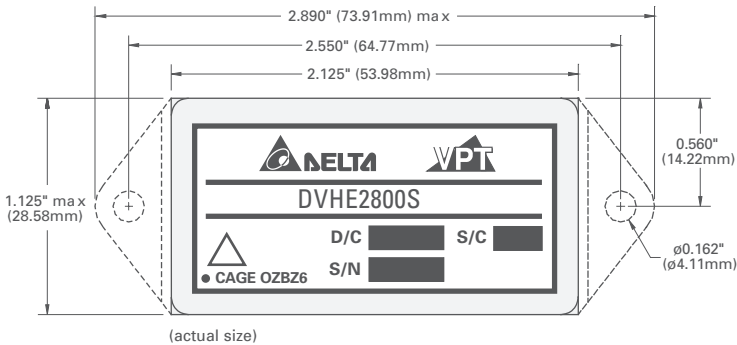
### Isolated DC-DC Converters

[ SINGLE OUTPUT ]

The DVHE packs 50W in a standard hermetic case at up to 90% efficiency.

The DVHE 2800 Series of DC-DC converters can be used alone or in conjunction with the DVPL point of load converters as part of the High Efficiency, Reliability Optimized (HERO) Power System.

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



- Single outputs of 1.9V, 2.5V, 3.3V, 5V
- Up to 90% efficiency
- Extra-wide 16V to 40V input range with 50V transient
- Up to 50W output power
- Fault tolerant design with magnetic feedback — no optoisolators
- Very low output noise
- Flanged and non-flanged versions available
- Very low input noise
- Tiny size - 2.125" x 1.125" x .417" and light weight (54/56g max)
- True hermetic packaging
- 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 full performance
- 500Vdc input/output isolation
- Environmental screening available
- Meets MIL-STD-461C/D conducted emissions requirements when used with DVMC28 EMI filter
- MIL-PRF-38534 element evaluated components used in all products

[ SINGLE OUTPUT ]

Electrical performance at Tcase = -55° C to +125° C, Vin = +28V ±5%, full load, unless otherwise specified.

Parameter	Conditions	DVHE281R9S			DVHE282R5S			DVHE283R3S			DVHE2805S			Units
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
Input Voltage	Continuous Transient <sup>1</sup>	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	2.56	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](http://www.vpt-inc.com)

### Point of Load DC-DC Converters

[ SINGLE OUTPUT ]

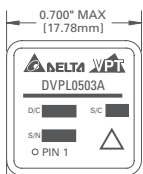
The DVPL is the world's first point of load converter that is designed and built to military-grade reliability as defined in MIL-PRF-38534.

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.

Power multiple DVPLs at your points of load from a single DVHE Series DC-DC converter.

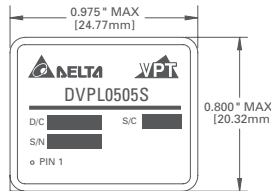
- Complete line of 3A (10W), 5A (16W), 10A (33W), and 20A (66W) Point of Load Modules
- SMD Number: 5962-0924101HXC
- Up to 96% efficiency
- Hermetically sealed packaging
- User adjustable output voltage from 0.8V to 3.4V
- Output inhibit control, over current and short circuit protection
- Very low output noise
- Tiny size and light weight
- Full military temperature operating range of -55° C to +125° C with full performance
- Environmental screenings available, including MIL-PRF-38534
- Meets MIL-STD-461C and MIL-STD-461D EMC requirements when used with VPT DC-DC converters and EMI filters
- Manufactured in a facility qualified to ISO-9001 and certified to MIL-PRF-38534 and MIL-STD-883

#### DVPL3A Module



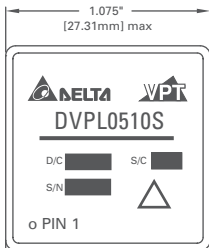
SQUARE (actual size)

#### DVPL5A Module



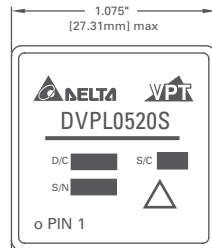
(actual size)

#### DVPL10A Module



SQUARE (actual size)

#### DVPL20A Module



SQUARE (actual size)

[ SINGLE OUTPUT ]

Electrical performance at Tcase = -55° C to +125° C, Vin = 5V ±5%, full load, unless otherwise specified.

Parameter	DVPL0503S				DVPL0505S				DVPL0510S				DVPL0520S				Units
	Conditions	Min	Typ	Max	Conditions	Min	Typ	Max	Conditions	Min	Typ	Max	Conditions	Min	Typ	Max	
Input Voltage	Vout = 0.8V to 3.4V	4.0		5.5	Vout = 0.8V to 2.5V Vout = 2.6V to 3.3V	3.0		5.5	Continuous	4.5		5.5	Continuous	4.5		5.5	Vdc
Output Voltage	Full Load, Adjustable	0.8		3.4	Full Load	0.8	Vout	3.4	Full Load	0.8	Vout	3.4	Full Load	0.8	Vout	3.4	Vdc
Output Power	Vout = 3.3V	0		10	Vout = 3.3V	0		16.5	Vout = 3.3V	0		33	Vout = 3.3V			66	W
Efficiency	Vin = 5V, Vout 3.3 V Full Load	86	92		Vout = 3.3V	93	96		Vout = 3.3V	91	95		Vout = 3.3V		90		%
Output Ripple	Full Load, 20Hz to 10MHz		35	90	Full Load, 20Hz to 10Hz		35	90	Full Load, 20Hz to 10Hz		40	80	Full Load, 20Hz to 10Hz	100			mVpp



For complete data visit:

[www.vpt-inc.com](http://www.vpt-inc.com)

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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](http://www.vpt-inc.com).

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