1. Description

EHDH 500 series is a new generation of high end DC-DC power module featured with high reliability, high efficiency, high power density and low ripple noise etc. It has industry standard half brick package and applied advanced potting technology. Offers input voltage 24 -300Vdc,output voltage from 5-48V, with max power 500W. It is widely used in high end applications with high reliability requirements such as radar, electronic warfare, industrial control, railway , defense and other similar applications.

- 300-510W isolated output
- Input voltage range：18-36Vdc and 200-400Vdc
- Line regulation：±0.2%
- Load regulation：±0.5%
- Output trimming：±10%
- Output over current protection
- Output short circuit protection
- Input under voltage protections
- Output overvoltage protection
- Over temperature protection
- I/O dielectric strength：1500Vdc and 4250Vdc

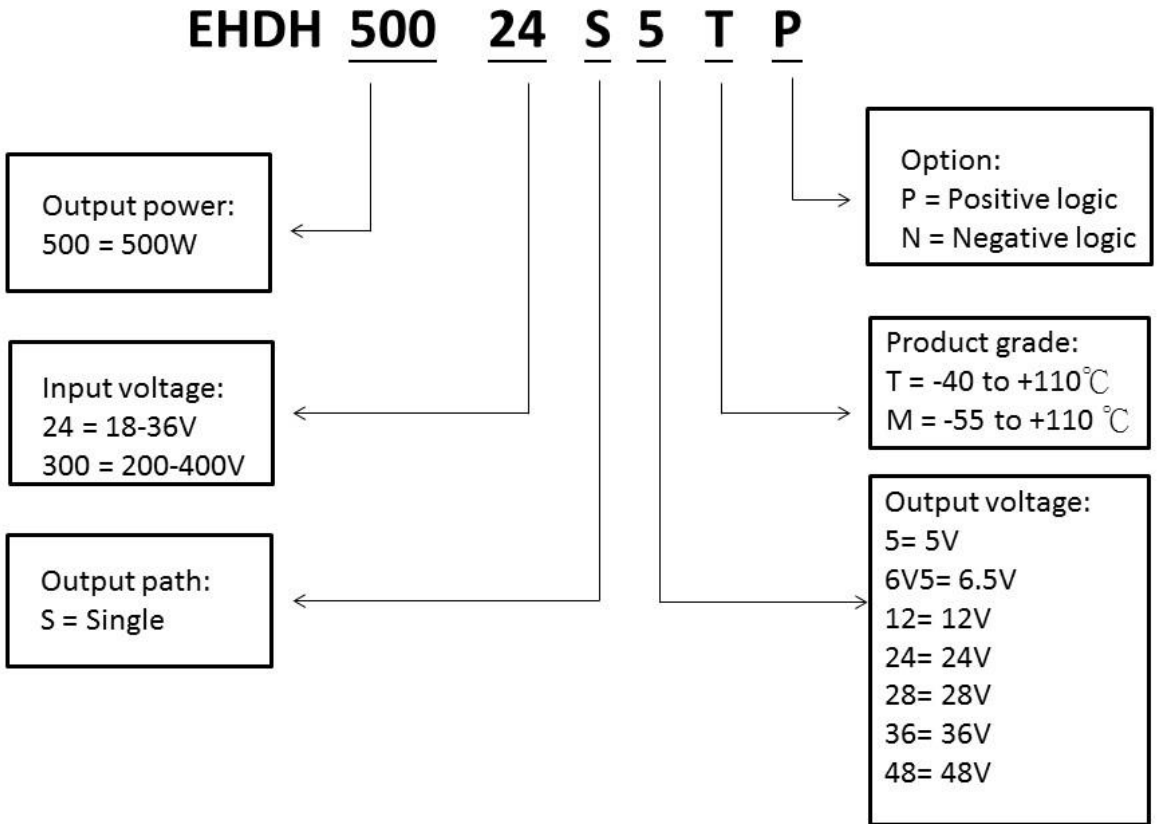
2. Part Number（Figure 1）

Model	Input voltage range	Output voltage	Output current	Efficiency	Typical ripple noise
EHDH50024S5TP	18-36Vdc	5Vdc	60A	93%	50mV
EHDH50024S6V5TP	18-36Vdc	6.5Vdc	50A	94%	50mV
EHDH50024S12TP	18-36Vdc	12Vdc	42A	94%	50mV
EHDH50024S24TP	18-36Vdc	24Vdc	21A	93%	100mV
EHDH50024S28TP	18-36Vdc	28Vdc	18A	92.8%	100mV
EHDH50024S36TP	18-36Vdc	36Vdc	14A	91%	150mV
EHDH50024S48TP	18-36Vdc	48Vdc	10.5A	91%	200mV
EHDH500300S5TP	200-400Vdc	5Vdc	60A	89.5%	75mV
EHDH500300S12TP	200-400Vdc	12Vdc	30A	92.5%	180mV
EHDH500300S15TP	200-400Vdc	15Vdc	24A	92.5%	200mV
EHDH500300S24TP	200-400Vdc	24Vdc	21A	92.5%	400mV
EHDH500300S28TP	200-400Vdc	28Vdc	18A	93.5%	400mV
EHDH500300S36TP	200-400Vdc	36Vdc	10.5A	92%	500mV
EHDH500300S48TP	200-400Vdc	48Vdc	10.5A	92%	500mV

Remarks：1, Unless otherwise noted, all specifications are tested under 25℃ baseplate temperature, rated input voltage and rated output.

2, M grade and other output voltages are available, please consult manufacturer.

Model number configuration



3. General Specifications

3.1 Input characteristics

Parameter		Min	Typical	Max	Unit	Remarks/Conditions
Input voltage range		18	24	36	Vdc	
Input under-voltage Lockout	Turn On	15.0	15.5	16.0	Vdc	50% load
	Turn Off	16.5	17.0	17.5	Vdc	50% load
	Hysteresis Voltage		1.5		Vdc	50% load
ON/OFF Remote control(Positive logic)		3.5		25.0	Vdc	NC or logic high, normal output
		-0.3		1.2	Vdc	Logic low, control current ≤ 1mA, no output
No load input current				600	mA	Typical input, output no load, Tc=25℃

Parameter		Min	Typical	Max	Unit	Remarks/Conditions
Input voltage range		200	280	400	Vdc	
Input under-voltage Lockout	Turn On	175	185	195	Vdc	50% load
	Turn Off	180	190	200	Vdc	50% load
	Hysteresis Voltage		5		Vdc	50% load

Input under-voltage Lockout	Turn On	415	425	435	Vdc	50% load
	Turn Off	402	410	418	Vdc	50% load
	Hysteresis Voltage		15		Vdc	50% load
ON/OFF Remote control(Positive logic)		3.5		10	Vdc	NC or logic high, normal output
		-0.3		1.2	Vdc	Logic low, control current ≤ 1mA, no output
No load input current				100	mA	Typical input, output no load, Tc=25℃

3.2 Output characteristics

Parameter		Min	Typical	Max	Unit	Remarks/Conditions
Output voltage set point				±1	%Vdc	Typical input, 50% load
Line regulation				±0.2	%	Full range, 100% load
Load regulation				±0.5	%	Typical input, 0-100% load
Output voltage trim range		-10		+10	%	Output power ≤ Max output power, Output current ≤ Max output current
Output current limit		110		150	%Iomax	Typical input, constant-current hiccup mode protection, self-recovery
Output over voltage protection		115		140	%Vout	Typical input, 50% load output, constant-current hiccup mode protection, self-recovery
Ripple + noise（p-p）		Refer figure 1				Typical input, typical output, BW=20 MHz，Output parallel a 0.1μF ceramic cap and 10μF tantalum cap
Transient response	Overshoot amplitude			±5	%Vout	25%-50%-25%，50%-75%-50% load step change，di/dt= 2.5A/μs，Output add min capacitance load
	Recovery time			500	μs	
Parameter		**Min**	**Typical**	**Max**	**Unit**	**Remarks/Conditions**
Output voltage set point				±1	%Vdc	Typical input, 50% load
Line regulation				±0.2	%	Full range, 100% load
Load regulation				±0.5	%	Typical input, 0-100% load
Output voltage trim range		-10		+10	%	Output power ≤ Max output power, Output current ≤ Max output current
Output current limit		110		155	%Iomax	Typical input, constant-current hiccup mode protection, self-recovery
Output over voltage protection		114		135	%Vout	Typical input, 50% load output, constant-current hiccup mode protection, self-recovery
Ripple + noise（p-p）		Refer figure 1				Typical input, typical output,

						BW=20 MHz，Output parallel a 0.1μF ceramic cap and 10μF tantalum cap
Transient response	Overshoot amplitude			±5	%Vout	25%-50%-25%，50%-75%-50% load step change，di/dt= 2.5A/μs，Output add min capacitance load
	Recovery time			1000	μs	

3.3 Feature characteristics

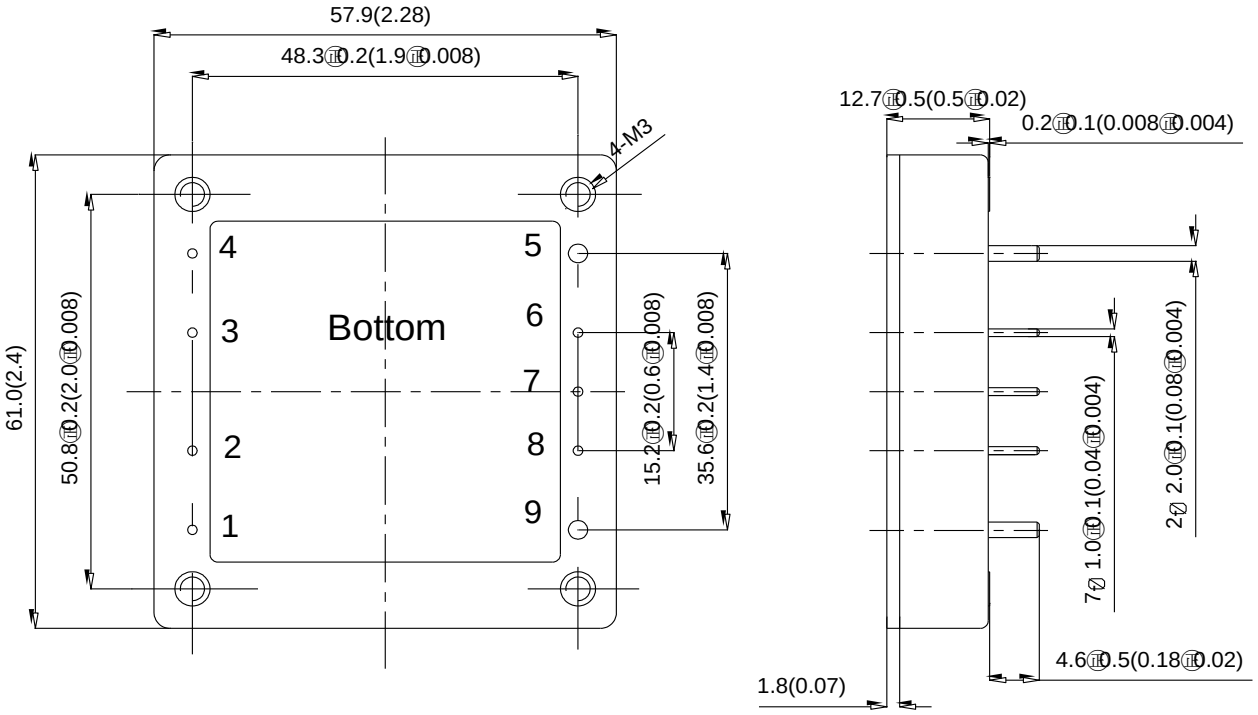
Parameter	Min	Typical	Max	Unit	Remarks/Conditions
Switching frequency		300		KHz	Full range
Efficiency	Refer figure 1				Typical input, typical output, Tc=25℃
Over temperature protection	110	120	130	℃	Shutdown，Thermistor PCB nearby temp
Over temperature recover	100	110	120	℃	Recover turn on, thermistor PCB nearby temp
Output short circuit protection	Can be a long short circuit, auto recovery				
Parameter	**Min**	**Typical**	**Max**	**Unit**	**Remarks/Conditions**
Switching frequency		300		KHz	Full range
Efficiency	Refer figure 1				Typical input, typical output, Tc=25℃
Over temperature protection	100	110	120	℃	Shutdown，Thermistor PCB nearby temp
Over temperature recover	90	100	110	℃	Recover turn on, thermistor PCB nearby temp
Output short circuit protection	Can be a long short circuit, auto recovery				

3.4 General characteristics

Parameter		Min	Typical	Max	Unit	Remarks/Conditions
Isolation voltage	Input to output	1500			Vdc	Test condition：1mA/60s，rate of rise 500Vdc/s；No breakdown, no arc
	Input to case	1500			Vdc	
	Output to	500			Vdc	

	case					
Isolation resistance		100			MΩ	Relative humidity 90%，under standard atmospheric pressure，500Vdc
MTBF			2×10^6		H	Typical input, typical output, Tc=25℃
Operating temperature		-40		+100	℃	T grade baseplate temperature
		-55		+100	℃	M grade baseplate temperature
Storage temperature		-55		+125	℃	Ambient temperature
Relative humidity		5		95	%	Non-condensing
Storage humidity		5		95	%	Non-condensing
Temperature coefficient				±0.02	%/℃	T grade：Tc=-40～+100℃； M grade：Tc=-55～+100℃
Dimension		61.0*57.9*12.7			mm	Length*width*height
Weight		120			g	
Parameter		**Min**	**Typical**	**Max**	**Unit**	**Remarks/Conditions**
Isolation voltage	Input to output	4250			Vdc	Test condition：1mA/60s，rate of rise 500Vdc/s；No breakdown, no arc
	Input to case	3535			Vdc	
	Output to case	1500			Vdc	
Isolation resistance		100			MΩ	Relative humidity 90%，under standard atmospheric pressure，500Vdc
MTBF		2×10^6			H	Typical input, typical output, Tc=25℃
Operating temperture		-40		+100	℃	T grade baseplate temperature
		-55		+100	℃	M grade baseplate temperature
Storage temperature		-55		+125	℃	Ambient temperature
Relative humidity		5		95	%	Non-condensing
Storage humidity		5		95	%	Non-condensing
Temperature coefficient				±0.02	%/℃	T grade：Tc=-40～+100℃； M grade：Tc=-55～+100℃
Dimension		61.0*57.9*12.7			mm	Length*width*height
Weight		110			g	

3.5 Mechanical drawing and pinouts (Unit in mm(in))



Remarks:

1. Baseplate: Aluminum + plastic case
2. Pins 5, 9∅2.0mm (0.08in)
3. Other pins ∅1.0mm (0.04in)
4. No individual tolerance： x.x ±0.5mm（±0.02in），x.xx ±0.25mm（±0.01in）

Pin assignment

Pin no.	Label	Function
1	Vin（+）	Input voltage (+)
2	ON/OFF	ON/OFF remote control
3	NC	No pin
4	Vin（-）	Input voltage (-)
5	Vout（-）	Output voltage (-)
6	Sense (-)	Remote sense (-)
7	Trim	Output voltage trim pin
8	Sense (+)	Remote sense (+)
9	Vout（+）	Output voltage (+)