



1. Description

EHDS 50 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 1/16 brick package and applied advanced potting technology. Offers input voltage 9-36 Vdc, output voltage from 3.3 – 15V With max power 50W. 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.

- 50W isolated output
- Input voltage range: 9-36Vdc
- Line regulation: $\pm 0.2\%$
- Load regulation: $\pm 0.5\%$
- Output trimming: $\pm 10\%$
- Output over current protection
- Output short circuit protection
- Input under voltage protections
- Output overvoltage protection
- Over temperature protection
- I/O dielectric strength: 1500Vdc



2. Part Number (Figure 1)

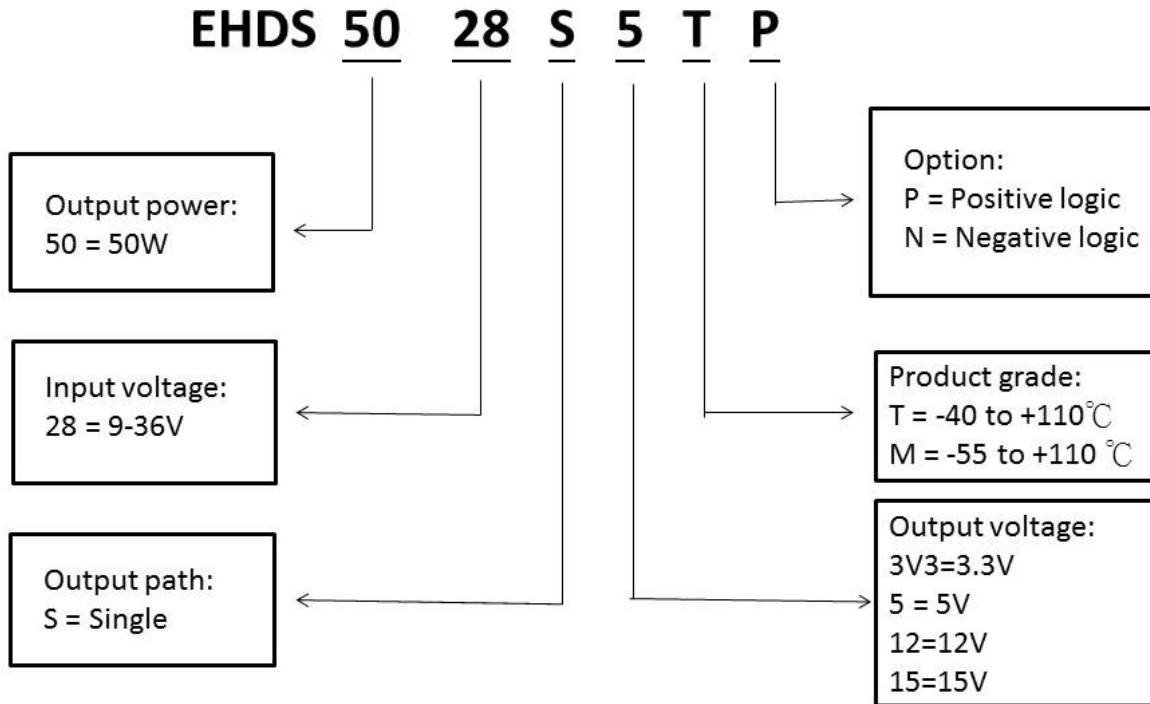
| Model | Input voltage range | Output voltage | Output current | Efficiency | Typical ripple noise |
|----------------|---------------------|----------------|----------------|------------|----------------------|
| EHDS5028S3V3TP | 9-36Vdc | 3.3Vdc | 15A | 84% | 20mV |
| EHDS5028S5TP | 9-36Vdc | 5Vdc | 10A | 84.5% | 20mV |
| EHDS5028S12TP | 9-36Vdc | 12Vdc | 4.17A | 82.5% | 20mV |
| EHDS5028S15TP | 9-36Vdc | 15Vdc | 3.33A | 85% | 20mV |

Remarks: 1, Unless otherwise noted, all specifications are tested under 25°C 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 | 9 | 28 | 36 | Vdc | | |
| Startup voltage | | 9.5 | 10 | Vdc | 50% load | |
| Input under-voltage Lockout | Turn On | 8.0 | 8.5 | 9.0 | Vdc | 50% load |
| | Turn Off | 9.0 | 9.5 | 10 | Vdc | 50% load |
| | Hysteresis Voltage | | 1 | | 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 | | 120 | 180 | mA | Typical input, output no load, Tc=25°C | |



3.2 Output characteristics

| Parameter | | Min | Typical | Max | Unit | Remarks/Conditions |
|--------------------------------|---------------------|----------------|---------|------|--------|--|
| Output voltage setpoint | | | | ±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 | | 105 | | 160 | %Iomax | Typical input, constant-current hiccup mode protection, self-recovery |
| Output over voltage protection | | 115 | | 150 | %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 | |

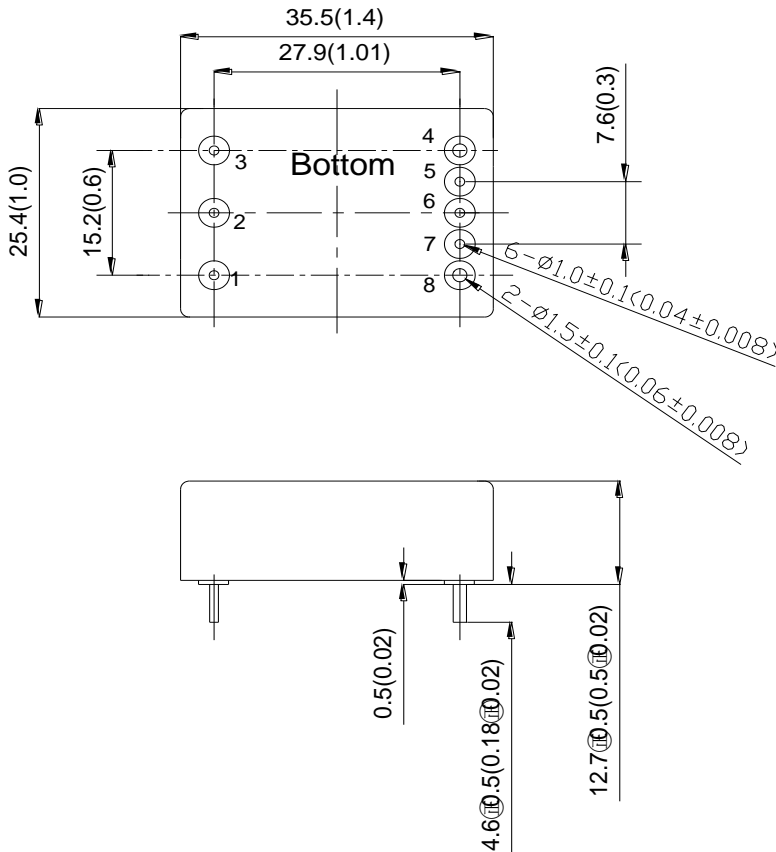
3.3 Feature characteristics

| Parameter | | Min | Typical | Max | Unit | Remarks/Conditions |
|---------------------------------|--|--|---------|-----|------|---|
| Switching frequency | | | 370 | | KHz | Full range |
| Efficiency | | Refer figure 1 | | | | Typical input, typical output, Tc=25°C |
| Over temperature protection | | 110 | 120 | 130 | °C | Shutdown, Thermistor PCB nearby temp |
| Over temperature recover | | 100 | 110 | 120 | °C | 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 case | 500 | | | Vdc | |
| Isolation resistance | | 100 | | | MΩ | Relative humidity 90%, under standard atmospheric pressure, 500Vdc |
| MTBF | | | 2 x 10 ⁶ | | H | Typical input, typical output, Tc=25°C |
| Operating temperature | | -40 | | +100 | °C | T grade baseplate temperature |
| | | -55 | | +100 | °C | M grade baseplate temperature |
| Storage temperature | | -55 | | +125 | °C | Ambient temperature |
| Relative humidity | | 5 | | 95 | % | Non-condensing |
| Storage humidity | | 5 | | 95 | % | Non-condensing |
| Temperature coefficient | | | | ±0.02 | %/°C | T grade: Tc=-40~+100°C ; M grade: Tc=-55~+100°C |
| Dimension | | 35.5*25.4*12.7 | | | mm | Length*width*height |
| Weight | | 40 | | | g | |

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





Remarks:

1. Baseplate: Copper
2. Pins 4, 8 \varnothing 1.50mm (0.06in)
3. Other pins \varnothing 1.00mm (0.04in)
4. No individual tolerance: $x.x \pm 0.5\text{mm}$ ($\pm 0.02\text{in}$), $x.xx \pm 0.25\text{mm}$ ($\pm 0.01\text{in}$)

Pin assignment

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