

# DC-DC Converter Short Form

## MPDTH\*\*040WAS/WAH (50A/60A output POL-Alliance product)

### Features

- Point-of-Load Alliance product
- Up to 50A/60A output current
- Wide-Output Voltage Adjust (0.8-2.5V or 0.8-5.5V)
- High efficiency up to 93% or 95% TYP (@5Vin 2.5V/45Aout) or (@12Vin 3.3V/35Aout)
- Wide Operating Temp - 40 °C to + 85 °C
- Open frame TH or SMT termination
- Auto-Track™ Sequencing
- Margin Up/Down Controls
- Pre-Biased start-up
- Output Over-Current Protection
- Output Voltage Sense
- ON/OFF Inhibit
- Under-Voltage Lockout
- Safety Agency Approvals: UL/cUL 60950, EN60950, VDE

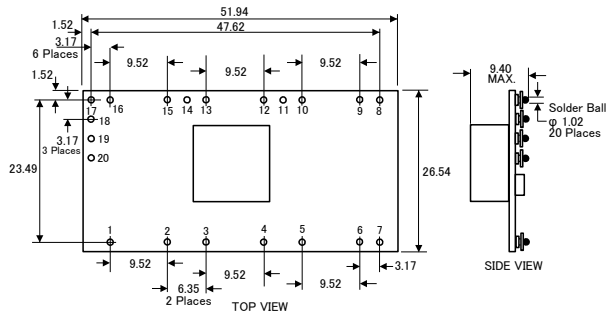


### Ordering Information

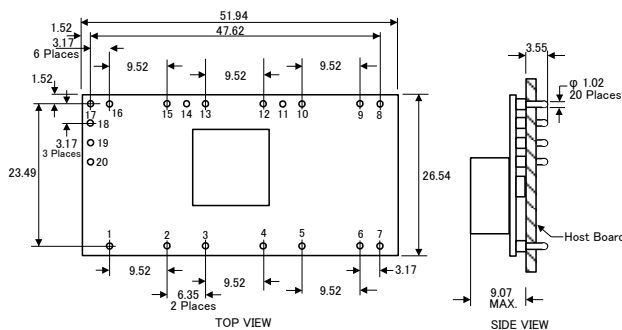
| Input Voltage | Output Voltage | Output Current | Model Number        |
|---------------|----------------|----------------|---------------------|
| 2.95V to 4.5V | 0.8V to 1.65V  | 60A            | MPDTH04040WA(S)/(H) |
| 4.5V to 5.5V  | 0.8V to 2.5V   | 60A            | MPDTH04040WA(S)/(H) |
| 8V to 14V     | 0.8V to 5.5V   | 50A            | MPDTH12040WA(S)/(H) |

OPTIONS: “WAS” -- SMT termination, “WAH” – TH termination

### Dimensions



SMT outline [in (mm)]



TH outline [in (mm)]

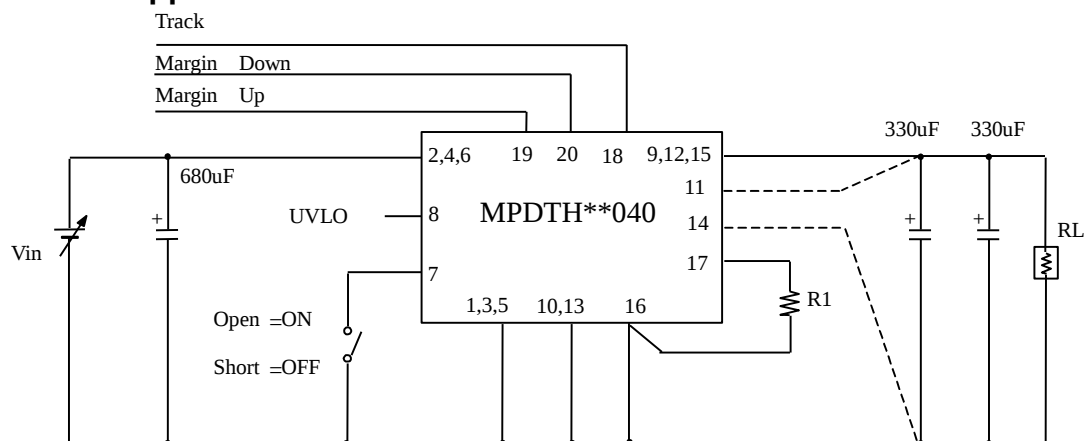
| Pin No. | Signal   | Pin No. | Signal    |
|---------|----------|---------|-----------|
| 1.      | GND      | 11.     | +Sense    |
| 2.      | Vin      | 12.     | Vout      |
| 3.      | GND      | 13.     | GND       |
| 4.      | Vin      | 14.     | -Sense    |
| 5.      | GND      | 15.     | Vout      |
| 6.      | Vin      | 16.     | GND       |
| 7.      | Inhibit  | 17.     | VoAdjust  |
| 8.      | UVLOprog | 18.     | Track     |
| 9.      | Vout     | 19.     | Margin Up |
| 10.     | GND      | 20.     | Margin    |

Down

### Note:

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## Standard Application



## Output Voltage Adjustment

$$R1 = 10k \cdot \frac{0.8V}{V_{out} - 0.8V} - 2.49k \quad : \text{MPDTH04040}$$

$$R1 = 10k \cdot \frac{0.8V}{V_{out} - 0.8V} - 1.696k \quad : \text{MPDTH12040}$$

## General Specifications

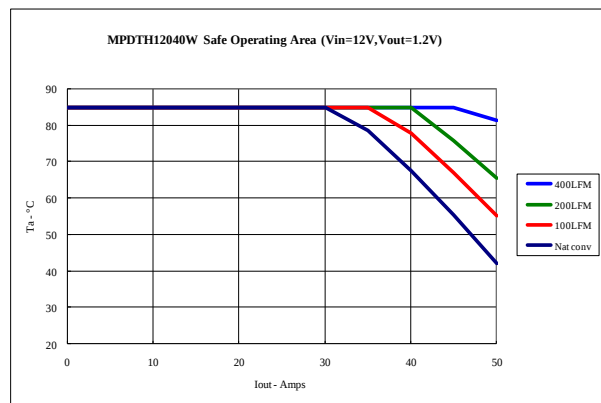
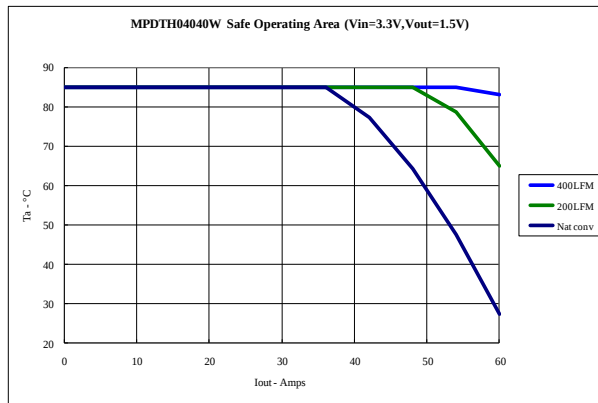
(Ta=25°C)

| Item                   | Symbol | Condition                      | Parts Number | Min. | Typ. | Max. | Unit  |
|------------------------|--------|--------------------------------|--------------|------|------|------|-------|
| Input voltage          | Vin    |                                | MPDTH04040   | 2.95 | —    | 5.5  | V     |
|                        |        |                                | MPDTH12040   | 8.0  | 12.0 | 14.0 |       |
| Output voltage         | Vout   | Vin=2.95Vto 4.5V               | MPDTH04040   | 0.8  | —    | 1.65 | V     |
|                        |        | Vin=4.5Vto 5.5V                |              | 0.8  | —    | 2.5  |       |
|                        |        | Vin=8.0Vto14.0V                | MPDTH12040   | 0.8  | —    | 5.5  |       |
| Total output variation | Regtot | Rset 1% tolerance, ±100ppm/°C  |              | —    | —    | ±3   | %Vo   |
| Output current         | Iout   | MPDTH04040                     |              | 0    | —    | 60   | A     |
|                        |        | MPDTH12040                     |              | 0    | —    | 50   |       |
| Ripple voltage         | Vrip   | Vin=5.0V, Vout=2.5V, Iout=60A  |              | —    | 15   | —    | mVp-p |
|                        |        | Vin=12.0V, Vout=3.3V, Iout=50A |              | —    | 15   | —    |       |
| Efficiency             | Eff    | Vin=5.0V, Vout=2.5V, Iout=45A  |              | —    | 93   | —    | %     |
|                        |        | Vin=12.0V, Vout=3.3V, Iout=35A |              | —    | 95   | —    |       |

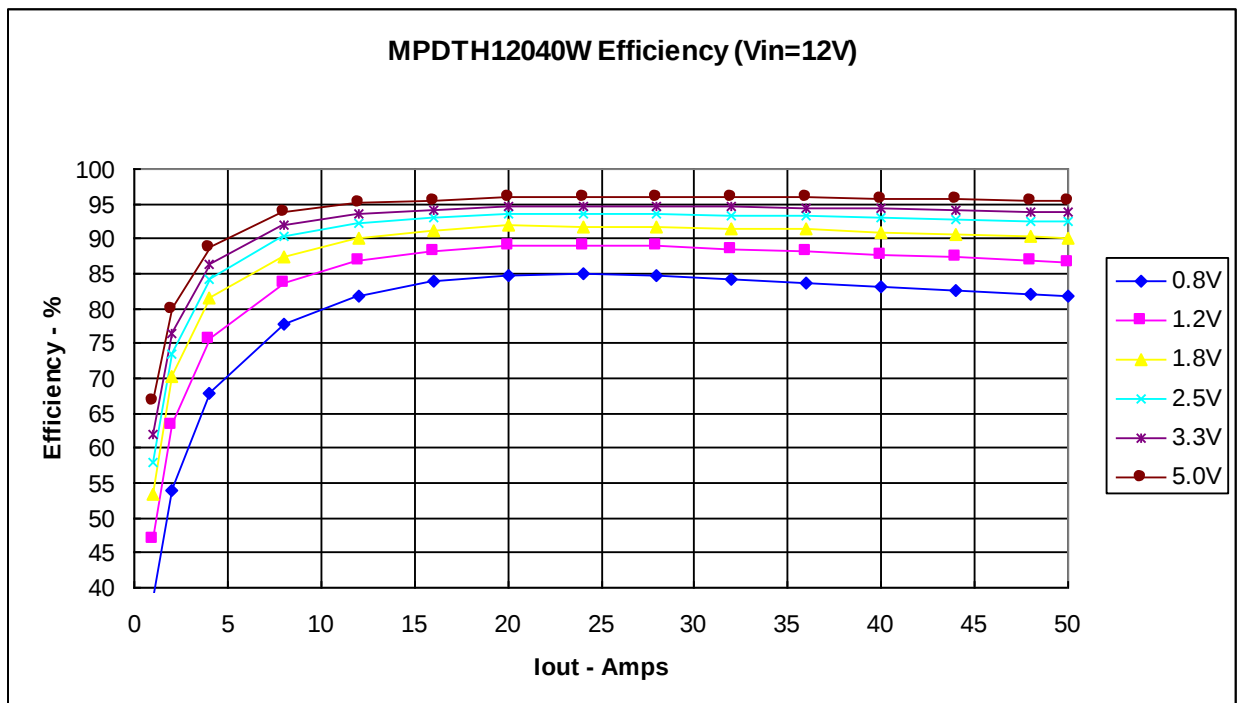
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## Thermal Derating



## Conversion Efficiency



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