

### GENERAL DESCRIPTION

The EV6001DN-00C is an evaluation board for the MP6001, a monolithic Buck DCDC converter. This evaluation board is capable of delivering up to 18W output power. The MP6001 has an internal soft-start, auto-retry, and incorporates over current, short circuit, and over-voltage protection. It can also skip cycles to maintain zero load regulation. This device is available in an 8-pin SOIC package with an exposed pad.

### ELECTRICAL SPECIFICATIONS

| Parameter      | Symbol | Value | Unit |
|----------------|--------|-------|------|
| Input Voltage  | VIN    | 43–53 | V    |
| Output Voltage | VOUT   | 12    | V    |
| Output Current | IOUT   | 1.5   | A    |

### FEATURES

- Integrated 150V Power Switch
- Integrated 100V Startup Circuit
- Cycle-by-Cycle Current Limiting
- Duty Cycle Limiting with Line Feed Forward
- Input UVLO plus Over Voltage Protection
- Thermal Shutdown

### APPLICATIONS

- Telecom Equipment
- VoIP Phones, Power over Ethernet (PoE)
- Distributed Power Conversions

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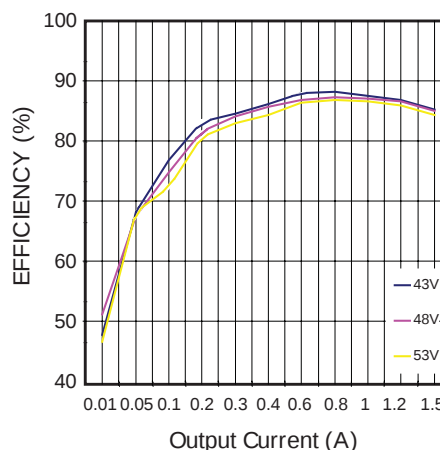
### EV6001DN-00C EVALUATION BOARD



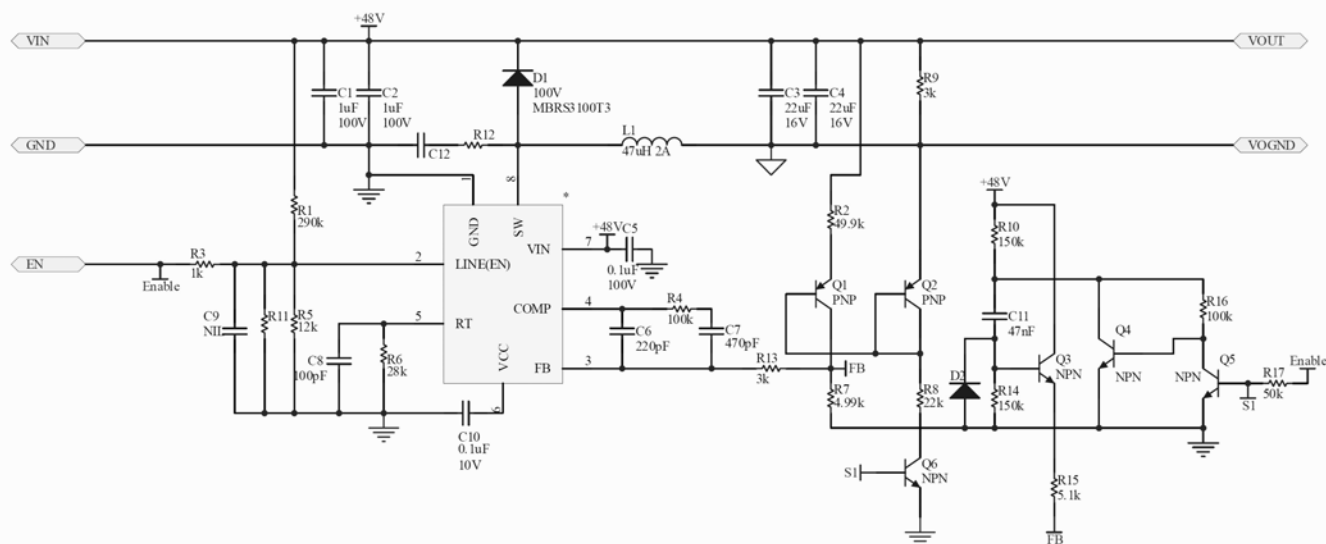
(L×W×H) 59.8"×37.3"×6.1"  
(59.8mm×37.3mm×6.1mm)

| Board Number | MPS IC Number |
|--------------|---------------|
| EV6001DN-00C | MP6001DN      |

### Efficiency Vs. Output Current



## EVALUATION BOARD SCHEMATIC



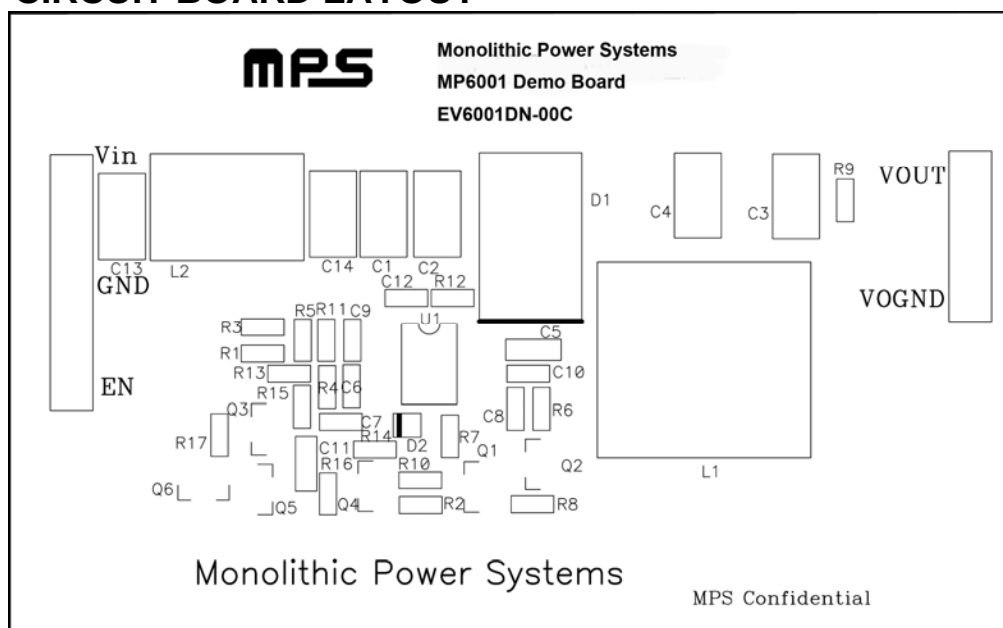
## EV6001DN-00C BOM LIST

| Qty | Ref      | Value | Description          | Package | Manufacturer | Manufacturer P/N   |
|-----|----------|-------|----------------------|---------|--------------|--------------------|
| 1   | R1       | 290k  | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R2       | 49.9k | Film Res., 1%        | 0603    | Yageo        | RC0603FR-0749K9L   |
| 1   | R3       | 1k    | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R4       | 100k  | Film Res., 1%        | 0603    | Yageo        | RC0603FR-07100KL   |
| 1   | R5       | 12k   | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R6       | 27k   | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R7       | 4.99k | Film Res., 1%        | 0603    | Yageo        | RC0603FR-074K99L   |
| 1   | R8       | 22k   | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R9       | 3k    | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R10      | 150k  | Film Res., 5%        | 0603    | ANY          |                    |
| 2   | R11, R12 | N/S   |                      |         |              |                    |
| 1   | R13      | 3k    | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R14      | 150k  | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R15      | 5.1k  | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R16      | 100k  | Film Res., 5%        | 0603    | ANY          |                    |
| 1   | R17      | 51k   | Film Res., 5%        | 0603    | ANY          |                    |
| 2   | C1,C2    | 1uF   | Ceramic Cap 100V X7R | 1210    | Murata       | GRM32ER72A105KA01L |
| 2   | C3,C4    | 22uF  | Ceramic Cap 16V X5V  | 1210    | TDK          | C3225X5R1C226M     |
| 1   | C5       | 100nF | Ceramic Cap 100V X7R | 0805    | ANY          |                    |
| 2   | C6       | 220pF | Ceramic Cap 16V X7R  | 0603    | ANY          |                    |
| 1   | C7       | 470pF | Ceramic Cap 16V X7R  | 0603    | ANY          |                    |

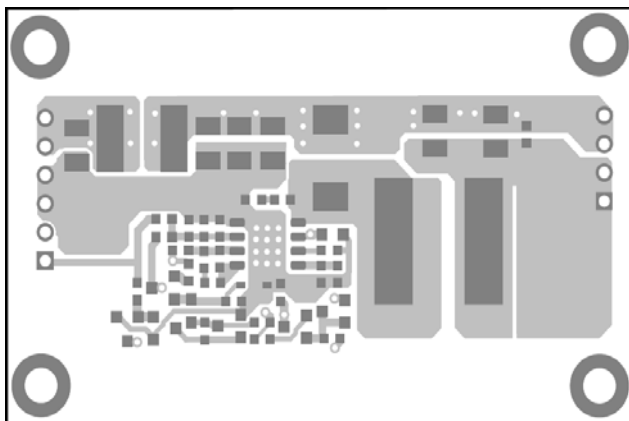
**EV6001DN-00C BOM LIST**

| Qty | Ref | Value | Description          | Package | Manufacturer | Manufacturer P/N   |
|-----|-----|-------|----------------------|---------|--------------|--------------------|
| 1   | C8  | 100pF | Ceramic Cap 16V X7R  | 0603    | ANY          |                    |
| 1   | C9  | N/S   |                      |         |              |                    |
| 1   | C10 | 0.1uF | Ceramic Cap 16V, X7R | 0603    | MuRata       | GRM188R71C104KA01D |
| 1   | C11 | 47nF  | Ceramic Cap 50V, X7R | 0603    | MuRata       | GRM188R71H473KA61D |
| 1   | C12 | N/S   |                      |         |              |                    |
| 1   | U1  |       | MPS Regulator        | SO8     | MPS          | MP6001             |
| 1   | Q1  |       | 80V PNP Transistor   | SOT-23  | On semi      | MMBTA56LT1         |
| 1   | Q2  |       | 80V PNP Transistor   | SOT-23  | On semi      | MMBTA56LT1         |
| 1   | Q3  |       | 80V NPN Transistor   | SOT-23  | On semi      | MMBTA06LT1         |
| 1   | Q4  |       | 80V NPN Transistor   | SOT-23  | On semi      | MMBTA06LT1         |
| 1   | Q5  |       | 80V NPN Transistor   | SOT-23  | On semi      | MMBTA06LT1         |
| 1   | Q6  |       | 80V NPN Transistor   | SOT-23  | On semi      | MMBTA06LT1         |
| 1   | D1  |       | Diode 100V 3A        | SMC     | On semi      | MBRS3100T3         |
| 1   | D2  |       | Diode 1N4148         | SOD323  | ANY          |                    |
| 1   | L1  |       | Inductor 47uH        | SMD     | Toko         | D104C-470M         |

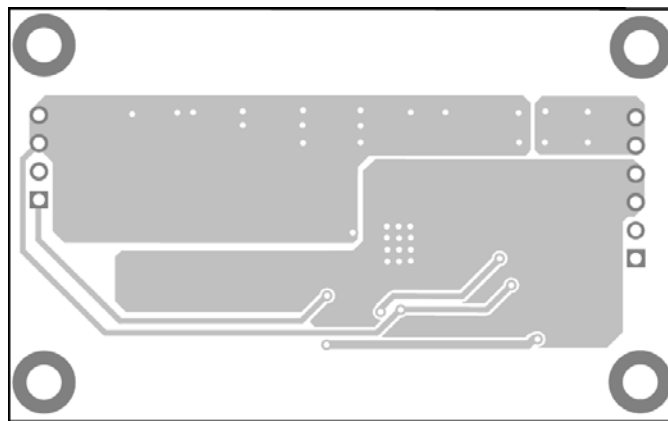
## PRINTED CIRCUIT BOARD LAYOUT



Top Silkscreen



Top Layer



Bottom Layer

## QUICK START

1. Attach input voltage  $43 \leq V_{IN} \leq 53V$  and input ground to VIN and GND pins respectively.
2. During startup EN should be left HIGH or unconnected.
3. Connect Power Supply terminals to:
  - a. Positive (+): VOUT
  - b. Negative (–): VOGND
4. Turn power supply on and the board will automatically startup.
5. To use Enable function, apply a digital input to EN pin. Drive EN with 2.5V-5V to turn on the regulator, and drive EN less than 0.7V to turn it off.

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