

DESCRIPTION

The EV1479-TF-00A Evaluation Board is designed to demonstrate the capabilities of MPS' MP1479, a fully-integrated high-frequency, synchronous rectified, step-down, switch-mode converter with internal power MOSFETs. It offers a very compact solution to achieve a 1A continuous output current over a wide input range, with excellent load and line regulation. The MP1479 has synchronous-mode operation for higher efficiency over the output current-load range.

Constant On-Time control operation provides very fast transient response and easy loop design as well as very tight output regulation.

Full protection features include SCP, OCP, UVP and thermal shutdown.

The MP1479 requires a minimal number of readily-available, standard, external components and is available in a space-saving SOT563 package.

ELECTRICAL SPECIFICATION ⁽¹⁾

| Parameter | Symbol | Value | Units |
|----------------|-----------|-------|-------|
| Input Voltage | V_{IN} | 12 | V |
| Output Voltage | V_{OUT} | 3.3 | V |
| Output Current | I_{OUT} | 1 | A |

Notes:

1) For different Input/output voltage specs and different output capacitor/inductor may need change the application circuit parameters.

FEATURES

- Wide 4.2V-to-18V Operating Input Range
- 140mΩ/60mΩ Low- $R_{DS(ON)}$ Internal Power MOSFETs
- 190μA Low I_q
- High-Efficiency Synchronous-Mode Operation
- Power Save Mode at Light Load
- Fast Load Transient Response
- 800kHz Switching Frequency
- Internal Soft-Start
- Over-Current Protection and Hiccup
- Thermal Shutdown
- Output Adjustable from 0.8V
- Available in a SOT563 package

APPLICATIONS

- Security Camera
- Digital Set-Top Boxes
- Flat-Panel Television and Monitors
- General Purposes

All MPS parts are lead-free, halogen free, and adhere to the RoHS directive. For MPS green status, please visit MPS website under Quality Assurance.

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EV1479-TF-00A EVALUATION BOARD

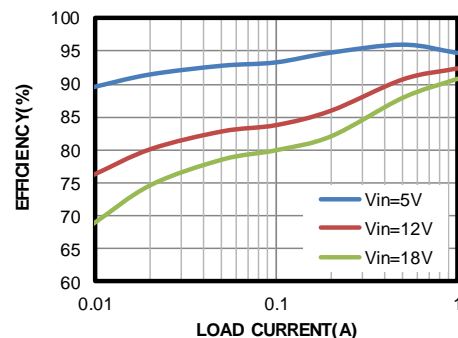


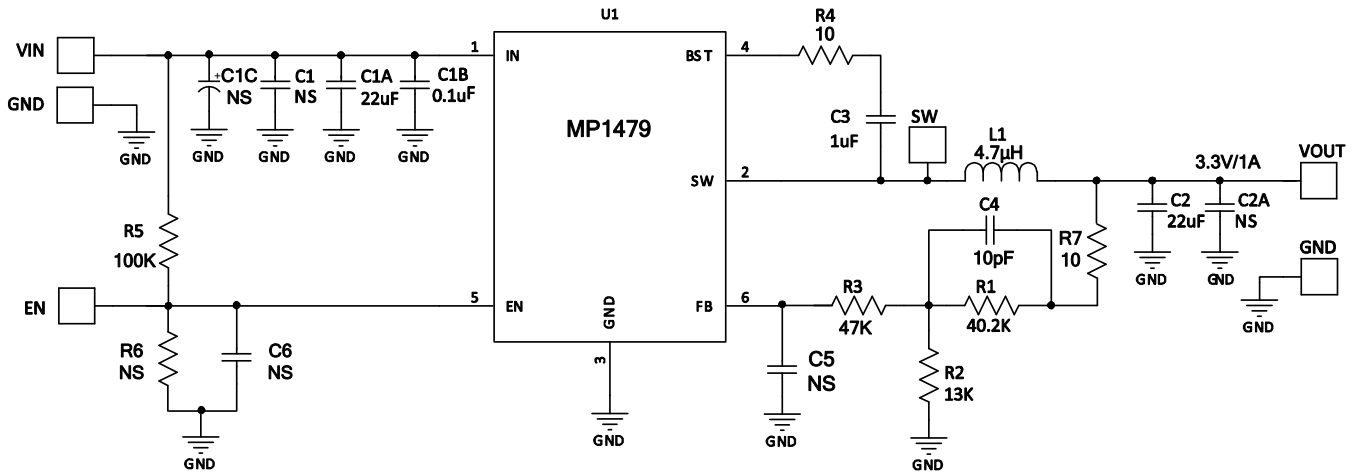
(L x W x H) 63.7mm x 48.4mm x 5.6mm

| Board Number | MPS IC Number |
|---------------|---------------|
| EV1479-TF-00A | MP1479GTF |

Efficiency

$V_{OUT}=3.3V, L=4.7\mu H, DCR=24.5m\Omega$



EVALUATION BOARD SCHEMATIC

EV1479-TF-00A BILL OF MATERIALS

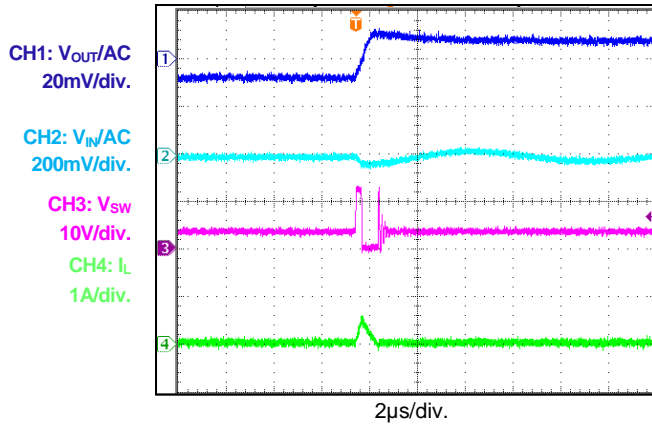
| Qty | Ref | Value | Description | Package | Manufacturer | Part Number |
|-----|----------------------|-------------|--|---------|--------------|--------------------|
| 1 | C1A | 22 μ F | Ceramic Cap., 25V, X5R | 0805 | muRata | GRM21BR61E226ME44L |
| 1 | C1B | 0.1 μ F | Ceramic Cap., 25V, X7R | 0603 | muRata | GRM188R71E104KA01D |
| 1 | C2 | 22 μ F | Ceramic Cap., 16V, X5R | 0805 | muRata | GRM21BR61C226ME44L |
| 1 | C3 | 1 μ F | Ceramic Cap., 16V, X7R | 0603 | muRata | GRM188R71C105KA12D |
| 0 | C1, C1C, C2A, C5, C6 | NS | | | | |
| 1 | C4 | 10pF | Ceramic Cap., 50V, C0G | 0603 | muRata | GRM1885C1H100JA01D |
| 1 | R1 | 40.2k | Thick Film Res., 1% | 0603 | Yageo | RC0603FR-0740K2L |
| 1 | R2 | 13k | Thick Film Res., 1% | 0603 | Yageo | RC0603FR-0713KL |
| 1 | R3 | 47k | Thick Film Res., 1% | 0603 | Yageo | RC0603FR-0747KL |
| 1 | R4 | 10 Ω | Thick Film Res., 1% | 0603 | Yageo | RC0603JR-0710RL |
| 1 | R5 | 100k | Thick Film Res., 1% | 0603 | Yageo | RC0603FR-07100KL |
| 0 | R6 | NS | | | | |
| 1 | R7 | 10 Ω | Thick Film Res., 1% | 0603 | Yageo | RC0603JR-0710RL |
| 1 | L1 | 4.7 μ H | Inductor, DCR=24.5m Ω , Is=4.7A | SMD | Würth | 744316470 |
| 1 | U1 | MP1479GTF | Synchronous Step-Down Convert | SOT563 | MPS | MP1479GTF |

EVB TEST RESULTS

$V_{IN} = 12V$, $V_{OUT} = 3.3V$, $L = 4.7\mu H$, $T_A = +25^\circ C$, unless otherwise noted.

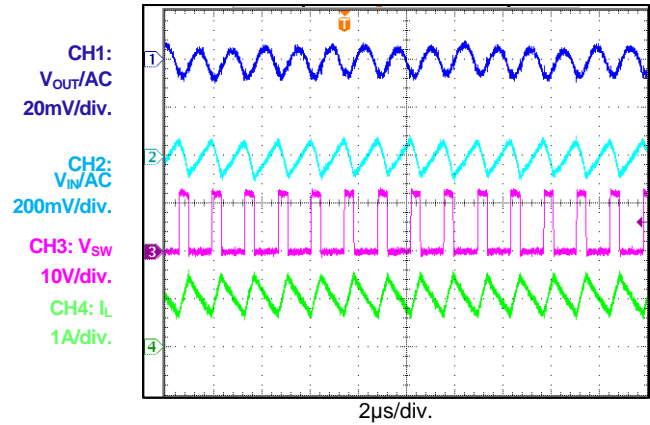
Input/Output Ripple

$I_{OUT} = 0A$



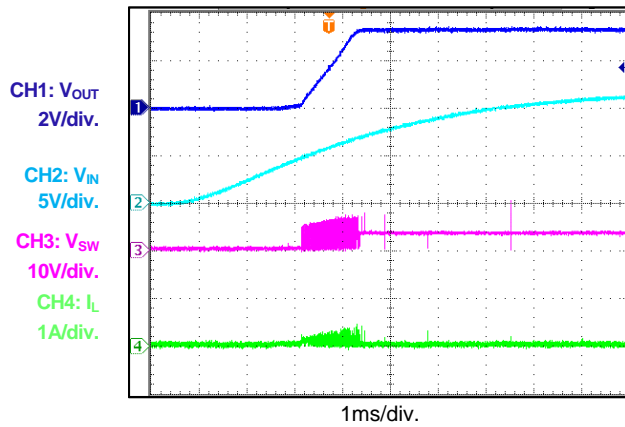
Input/Output Ripple

$I_{OUT} = 1A$



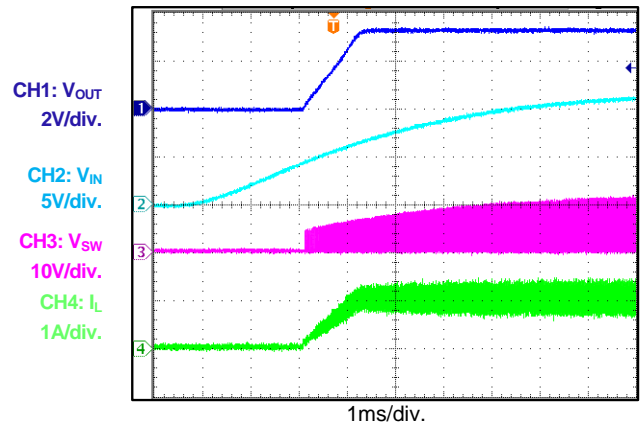
Startup through Input Voltage

$I_{OUT} = 0A$



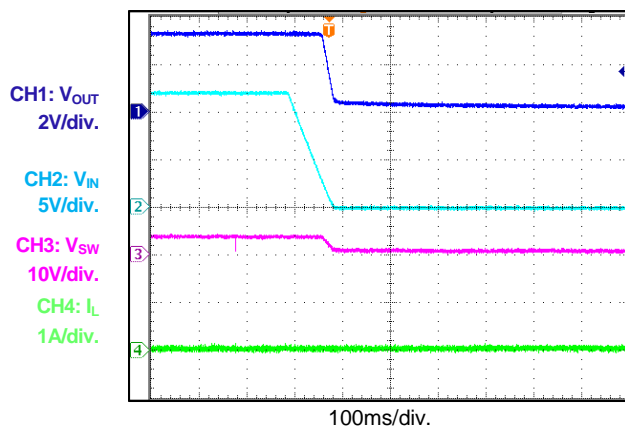
Startup through Input Voltage

$I_{OUT} = 1A$



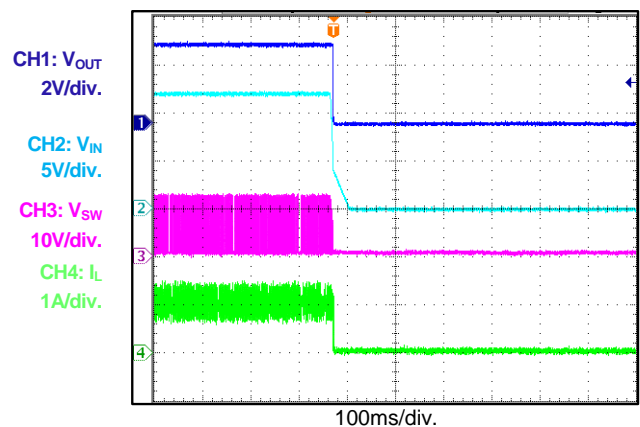
Shutdown through Input Voltage

$I_{OUT} = 0A$

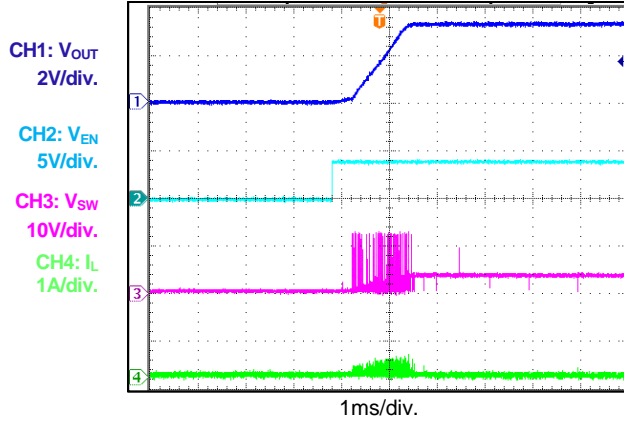
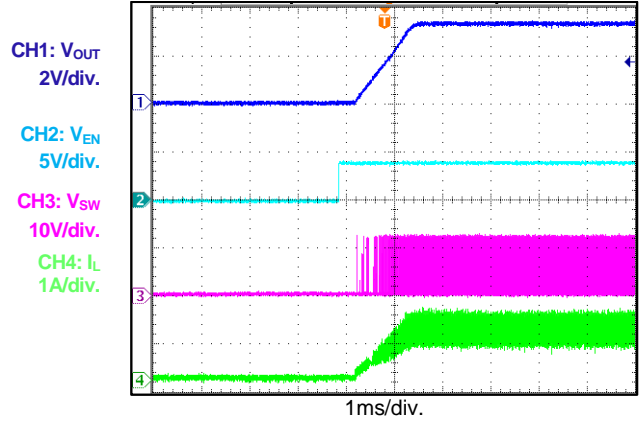
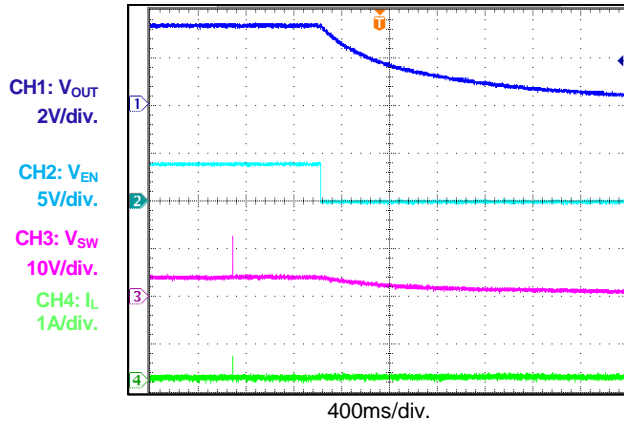
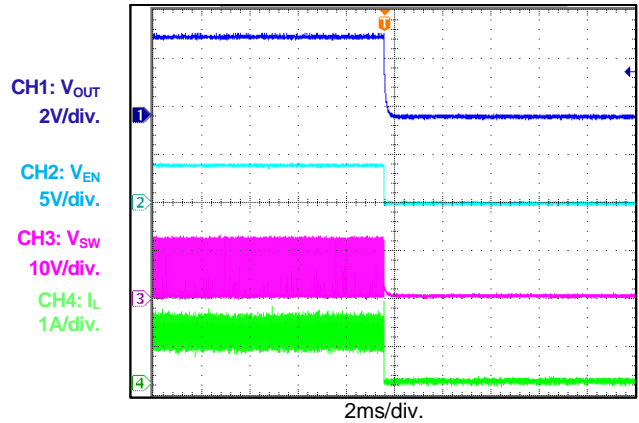
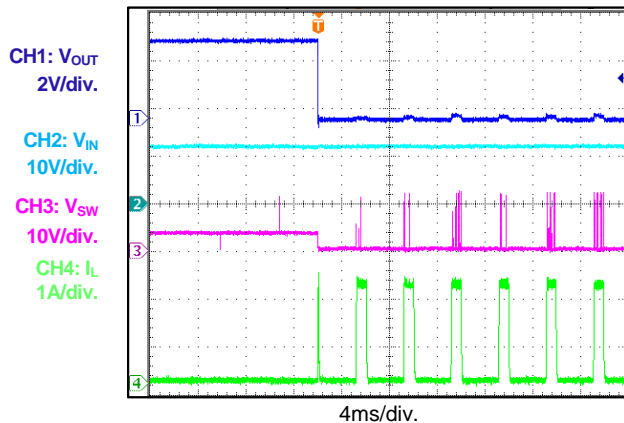
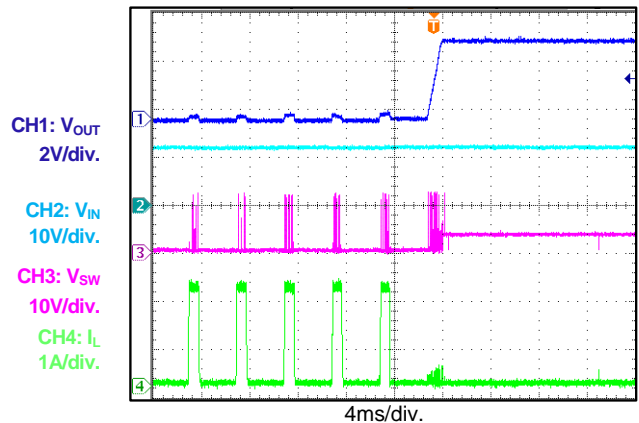


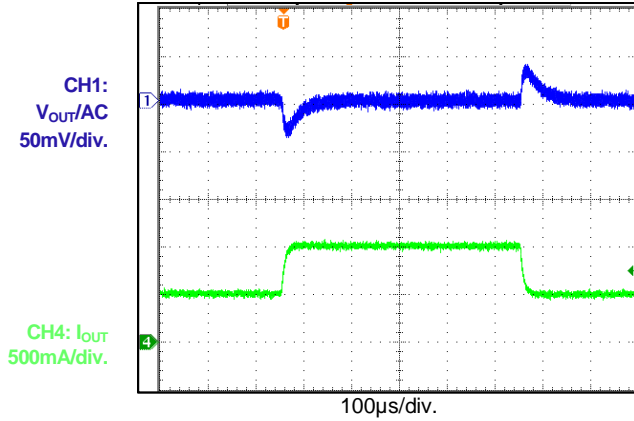
Shutdown through Input Voltage

$I_{OUT} = 1A$



EVB TEST RESULTS *(continued)*
 $V_{IN} = 12V$, $V_{OUT} = 3.3V$, $L = 4.7\mu H$, $T_A = +25^\circ C$, unless otherwise noted.

Startup through Enable
 $I_{OUT} = 0A$

Startup through Enable
 $I_{OUT} = 1A$

Shutdown through Enable
 $I_{OUT} = 0A$

Shutdown through Enable
 $I_{OUT} = 1A$

Short Circuit Entry

Short Circuit Recovery


EVB TEST RESULTS *(continued)* $V_{IN} = 12V$, $V_{OUT} = 3.3V$, $L = 4.7\mu H$, $T_A = +25^\circ C$, unless otherwise noted.**Load Transient** $I_{out} = 0.5A$ to $1A$ 

PRINTED CIRCUIT BOARD LAYOUT

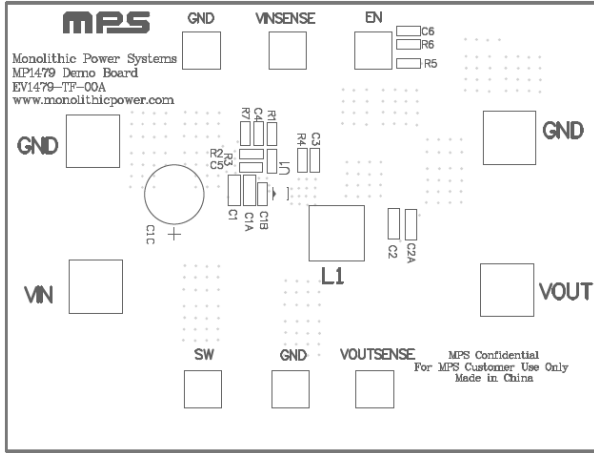


Figure1: Top Silk Layer

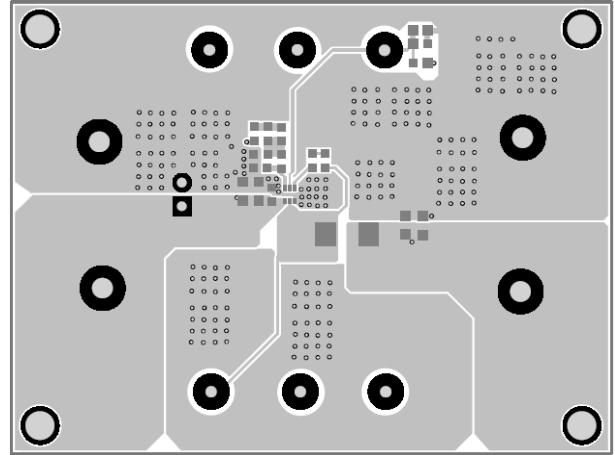


Figure2: Top Layer

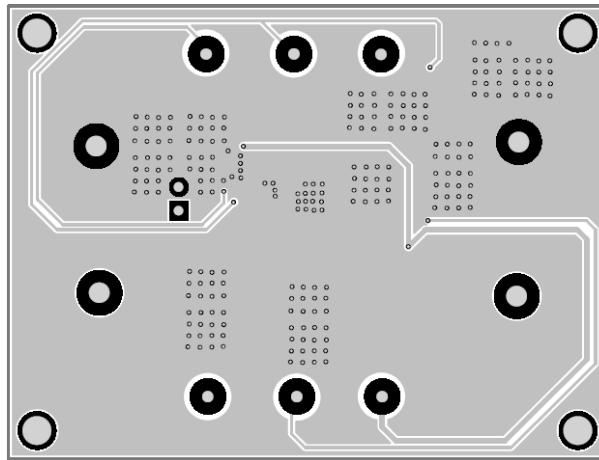


Figure3: Bottom Layer

QUICK START GUIDE

1. Preset Power Supply to 12V.
2. Turn Power Supply off.
3. Connect Power Supply terminals to:
 - a. Positive (+): VIN
 - b. Negative (-): GND
4. Connect Load to:
 - a. Positive (+): VOUT
 - b. Negative (-): GND
5. Turn Power Supply on after making connections. The board will automatically start up.
6. To use the Enable function, apply a digital input to the EN pin. Drive EN higher than 1.3V to turn on the regulator, or less than 1V to turn it off.

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