



The Future of Analog IC Technology®

# EV2490DS-00C

1.8A, 36V, 700kHz Step-Down Converter with Programmable Output Current Limit Evaluation Board

## DESCRIPTION

The EV2490DS-00C is an evaluation board for the MP2490. The MP2490 is a monolithic step-down switch mode converter with a programmable output current limit. It achieves 1.8A continuous output current over a wide input supply range with excellent load and line regulation.

The maximum output current can be programmed by sensing current through the inductor DC resistance (DCR) or an accurate sensor resistor. The current sensing of EV2490DS-00C is through the inductor DC resistance (DCR).

Fault condition protection includes cycle-by-cycle current limiting and thermal shutdown.

The MP2490 requires a minimum number of readily available standard external components.

## ELECTRICAL SPECIFICATIONS

Parameter	Symbol	Value	Units
Input Voltage	$V_{IN}$	8 - 36	V
Output Voltage	$V_{OUT}$	5	V
Output Current	$I_{LOAD}$	1.8	A

## FEATURES

- Programmable up to 1.8A Output Current
- Output Adjustable from 0.8V to 15V
- Programmable Output Current Limit without Additional Power Loss
- 0.25Ω Internal Power MOSFET Switch
- Stable with Low ESR Output Ceramic Capacitors
- 95% Efficiency @ 500mA ( $V_o=5V$ )
- Fixed 700kHz Frequency
- Thermal Shutdown
- Cycle-by-Cycle Over Current Protection
- Wide 8V to 36V Operating Input Range

## APPLICATIONS

- USB Power Supplies
- Automotive Cigarette Lighter Adapters
- Linear Chargers

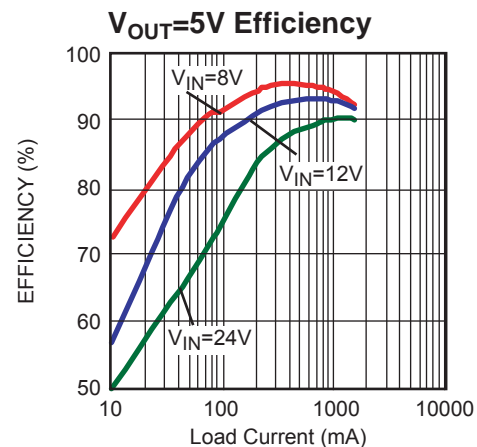
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## EV2490DS-00C EVALUATION BOARD



(L x W x H) 2.5" x 2.5" x 0.4"  
(6.3cm x 6.3cm x 1.0cm)

Board Number	MPS IC Number
EV2490DS-00C	MP2490DS





## PRINTED CIRCUIT BOARD LAYOUT

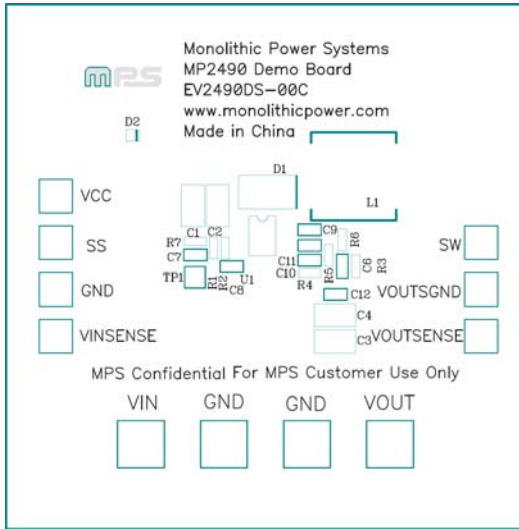


Figure 1—Top Silk Layer

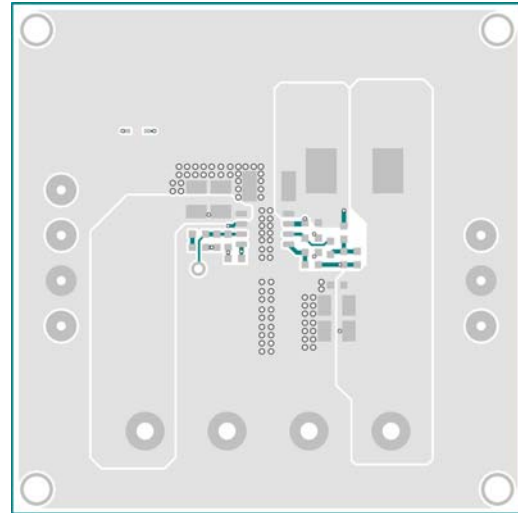


Figure 2—Top Layer

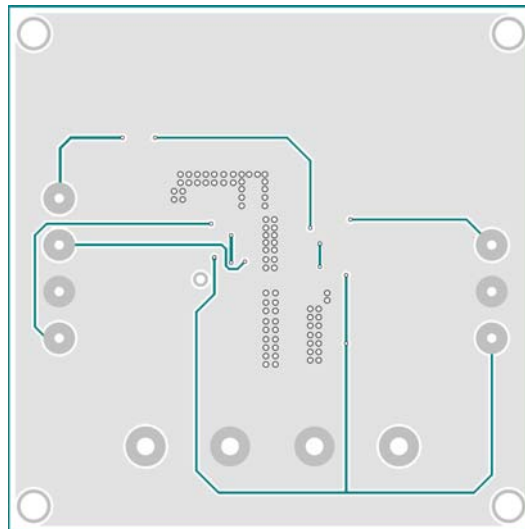


Figure 3—Bottom Layer

## QUICK START GUIDE

1. The output voltage of this board is set to 5V. The board layout accommodates most commonly used inductors and output capacitors.
2. Attach the positive and negative ends of the load to the VOUT and GND pins, respectively.
3. Attach the input voltage ( $8V \leq V_{IN} \leq 36V$ ) and input ground to the IN and GND pins, respectively.
4. The MP2490 will startup automatically without applying an external voltage to the EN pin. The output voltage  $V_{OUT}$  can be changed by varying R2. Calculate the new value using the formula:

$$R2 = R1 \times V_{FB} / (V_{OUT} - V_{FB})$$

Where  $V_{FB} = 0.8V$  and  $R1 = 300k\Omega$ .

For example, for  $V_{OUT} = 5V$ :

$$R2 = R1 \times V_{FB} / (V_{OUT} - V_{FB}) = 300K\Omega \times (0.8/5-0.8) = 57.1K\Omega$$

For the closest standard 1% value.

5. The output current limit is set as:

$$I_{OUT} = \frac{100mV}{DCR} \times \frac{R6 + R3}{R3}$$

For DCR current sense, it is desirable to keep:

$$\frac{R6 \times R3}{R6 + R3} \times C6 = \frac{L1}{DCR}$$

DCR is the DC resistance of the inductor winding.

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