MIC69502 Evaluation Board

5A, Low V_{IN}, Low V_{OUT} µCap LDO Regulator

General Description

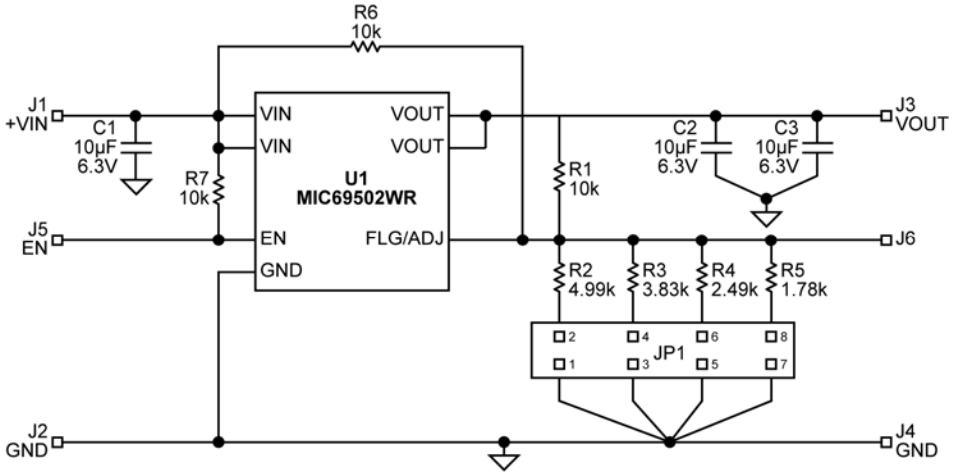
The MIC69502 is a 5A, low dropout linear regulator that provides low voltage, high current outputs with a mini mum of external components. They offer high precision and ultra low dropout of 500mV under worst case conditions.

The MIC69502 operate from an input of 1.65V to 5.5V. They are designed to drive digital circuits requiring low voltage at high currents (i.e. PLDs, DSP, microcontroller, etc.). They are available in fixed and adjustable output voltages.

Features

- Main Input voltage range: 1.65V to 5.5V
- Maximum load current: 5.0A
- Adjustable output voltage down to 0.5V
- Stable with 10uF ceramic capacitor
- Power S-Pak package

Evaluation Board Schematic



Pin Description

Pin Number	Pin Name	Pin Function
J1	VIN	Input voltage which supplies current to the output power device
J2, J4	GND	Ground (TAB is connected to ground on S-Pak)
J3	VOUT	Regulator Output
J5	Enable	Enable (Input): CMOS compatible input. (logic high = enable, logic low = shutdown)
J6	ADJ	Adjustable regulator feedback input. Connect to resistor voltage divider.

Enable

The MIC69502 features an active high enable input (EN) that allows on-off control of the regulator. Current drain reduces to “zero” when the device is in shutdown, with only microamperes of leakage current. The EN input has TTL/CMOS compatible thresholds for simple logic interfacing. EN may be directly tied to V_{IN} and pulled up to the maximum supply voltage.

Adjustable Regulator Design

The MIC69502 allows the output voltage to be set between 0.5V and 5.5V. The ADJ pin voltage is 0.5V. Once a suitable VOUT voltage is determined values for R1 and R2 can be calculated. The only requirement is that R1 should not exceed 10kΩ.

R1 = R2 x (Vout/0.5 – 1)

Target voltage for the MIC69500 is controlled via JP1. Jumper settings are:

1. Pins 1&2 – 1.5V
2. Pins 3&4 – 1.8V
3. Pins 5&6 – 2.5V
4. Pins 7&8 – 3.3V

GND

TAB is also used for ground

VIN

VIN provides the high current to the collector of the pass transistor of the regulator. The minimum input voltage for the MIC69300 is 1.65V. The suggested bypass capacitor value for VIN on the demo board is a 10uF ceramic capacitor.

VOUT

The MIC69502 requires a minimum 10mA load to maintain output voltage regulation. The suggested bypass capacitor value for VOUT on the demo board is a 10uF ceramic capacitor. An output capacitance is required on the MIC69502 to maintain stability.

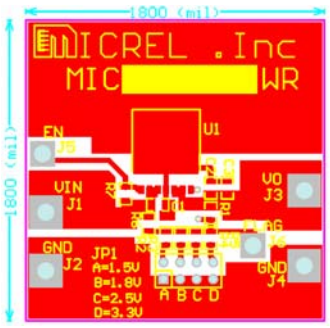
Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C1, C2, C3	0805D106MAT2A	AVX	10uF, 6.3V X5R Ceramic Capacitor	1
	VJ0805Y106KXYAT	Vishay		
	C2012X5R0J106K	TDK		
	GRM21CR70J106KA01B	muRATA		
R1, R6, R7	CRCW08051002FRT1	Vishay	1k, 1%, 1/10W, 0805	3
R2	CRCW08054991FRT1	Vishay	4.99k, 1%, 1/10W, 0805	1
R3	CRCW08053831FRT1	Vishay	3.83k, 1%, 1/10W, 0805	1
R4	CRCW08052491FRT1	Vishay	2.49k, 1%, 1/10W, 0805	1
R5	CRCW08051781FRT1	Vishay	1.78k, 1%, 1/10W, 0805	1
U1	MIC69502WR	MICREL	SPAK – 7 Pins	1

Notes:

1. **AVX:** www.avx.com
2. **Murata:** www.murata.com
3. **TDK:** www.tdk.com
4. **Vishay:** www.vishay.com
5. **Micrel Semiconductor:** www.micrel.com

PCB Layout



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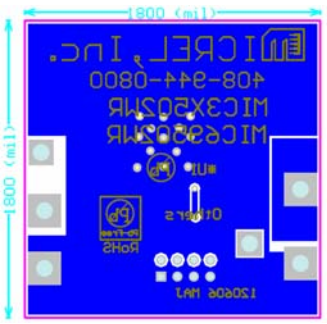

Bottom

Ordering Information

Part Number	Description
MIC69502WR EV	Evaluation board with MIC69502WR adjustable device.

NOTE: For additional voltage options, contact Micrel Marketing.

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