MIC5375/6 Evaluation Board

High Performance Low Dropout 150mA LDO

General Description

The MIC5375/6 is a low quiescent current, low dropout regulator designed for optimal performance in a small space. When the MIC5376 is disabled an internal resistive load is automatically applied to the output to discharge the output capacitor. The MIC5375/6 is capable of sourcing 150mA of output current while only consuming 29µA of operating current. This high performance LDO offers fast transient response and good PSRR while consuming a minimum of current.

Ideal for battery operated applications; the MIC5375/6 offers low dropout voltage 120mV typically @ 150mA. The MIC5375/6 can also be put into a zero-off-mode current state, drawing virtually no current when disabled.

An input capacitor may be required when the power supply is more than 4-inches from the device. The evaluation board includes an input capacitor of 10µF to compensate for long inductive test leads.

Requirements

The MIC5375/6 evaluation board requires an input power supply of 400mA with a voltage range of 2.3V to 5.5V to the V_{IN}.

Precautions

The evaluation board does not have reverse polarity protection. Applying a negative voltage to the V_{IN} terminal may damage the device.

Getting Started

1. **Connect an external supply to V_{IN}**. Apply desired input voltage to the V_{IN} (J1) and ground terminal (J2) of the evaluation board, paying careful attention to polarity and supply voltage. An ammeter may be placed between the input supply and the V_{IN} terminal to the evaluation board. Ammeter and/or power lead resistance can reduce the voltage supplied to the input.

   Ensure that the supply voltage is monitored at V_{IN} terminal. There is 10uF capacitor connected from V_{IN} (J1) to GND (J2).

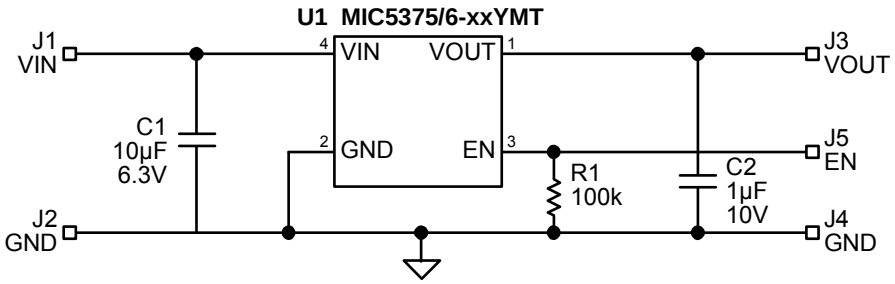
2. **Enable/Disable the MIC5375/6**. The YMT (1x1 TMLF) evaluation board is provided with a 100kΩ pull up resistor on enable pin (EN) to V_{IN}, where as the YC5 (SC-70) evaluation board is provided with a 100kΩ pull down resistor from the enable pin (EN) to GND. Simply jumper the enable pin (EN) to V_{IN} to enable the regulator output, or to GND to disable the output. The enable pin must be either pulled high or low. Removing the pull up resistor and leaving the EN pin floating will cause the regulator to operate in an indeterminate state.

3. **Connect the loads to the V_{OUT} terminal (J3) and ground terminal (J2).** The load can be either a passive (resistor) or active (electronic load). Be sure to monitor the output voltage at the V_{OUT} (J3) terminals. The evaluation board has a 1uF capacitor connected from V_{OUT} (J3) to GND (J2).

Ordering Information

Part Number	Description
MIC5375-2.8YMT	High Performance Low Dropout 150mA LDO, 1x1 TMLF,V_{OUT} = 2.8V Evaluation Board
MIC5375-2.8YC5	High Performance Low Dropout 150mA LDO, SC-70, V_{OUT} = 2.8V Evaluation Board
MIC5376-2.8YMT	High Performance Low Dropout 150mA LDO, 1x1 TMLF, V_{OUT} = 2.8V Evaluation Board
MIC5376-2.8YC5	High Performance Low Dropout 150mA LDO, SC-70,V_{OUT} = 2.8V Evaluation Board

Evaluation Board Schematic

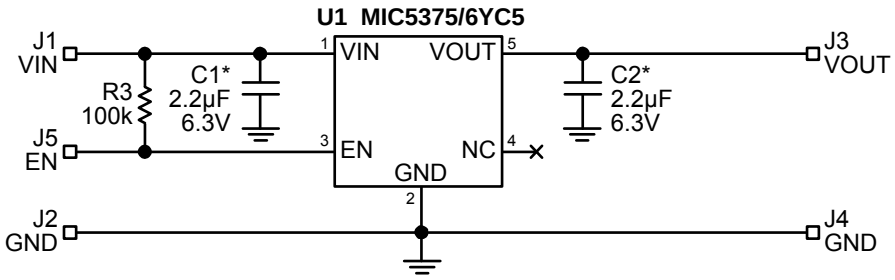


Bill of Materials

Item	Part Number	Manufacturer	Description	Qty.
C2	GRM155R61A105KE15D	Murata[1]	Capacitor, 1µF Ceramic, 10V, X5R, Size 0402	2
	C1005X5R1A105KT	TDK[2]		
	CV05X5R105K10AH	AVX/Kyocera[3]		
C1	C1608X5R0J106Z	TDK[2]	Capacitor, 10µF Ceramic, 6.3V, X5R, Size 0603	
R1	CRCW0603100KFKEA	Vishay[4]	Resistor, 100kΩ, 1%, 1/16W, Size 0603	1
U1	**MIC5375/6-xxYMT**	**Micrel, Inc.[5]**	**High Performance 150mA LDO, 4-Pin 1mm x 1mm Thin MLF®**	**1**

Notes:

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



Bill of Materials

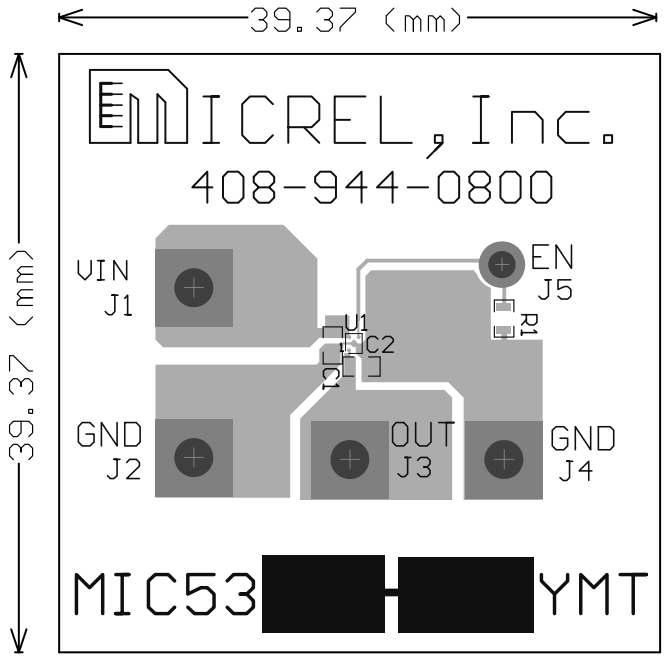
Item	Part Number	Manufacturer	Description	Qty.
C1, C2	JMK105BJ225MV-F	Taiyo Yuden(1)	Capacitor, 2.2µF, 6.3V, X5R, Size 0402	2
	GRM155R60G225ME15D	Murata(2)		
	CV05X5R225K10AB	AVX/Kyocera(3)		
C1, C2	GRM155R61A105KE15D	Murata(1)	Capacitor, 1µF Ceramic, 10V, X5R, Size 0402	2
	C1005X5R1A105KT	TDK(2)		
	CV05X5R105K10AH	AVX/Kyocera(3)		
R1	CRCW0402619KFKEA	Vishay(4)	Resistor, 619kΩ, 1%, 1/16W, Size 0402	1
R2	CRCW04022673KFKEA	Vishay(4)	Resistor, 267kΩ, 1%, 1/16W, Size 0402	1
R3	CRCW04021003KFKEA	Vishay(4)	Resistor, 100kΩ, 1%, 1/16W, Size 0402	1
U1	**MIC5375/6YC5**	**Micrel, Inc.(5)**	**High Performance 150mA LDO, 5-Pin SC-70**	**1**

Notes:

1. Taiyo Yuden:
2. Murata: www.murata.com
3. AVX/Kyocera: www.avx.com
4. Vishay: www.vishay.com
5. **Micrel, Inc.: www.micrel.com**

* $C_{IN} = C_{OUT} = 1\mu F$ for Vout ≥ 2.5V, $C_{IN} = C_{OUT} = 2.2\mu F$ for $V_{OUT} < 2.5V$

PCB Layout Recommendations (1mm x 1mm 4-Pin Thin MLF®) Fixed



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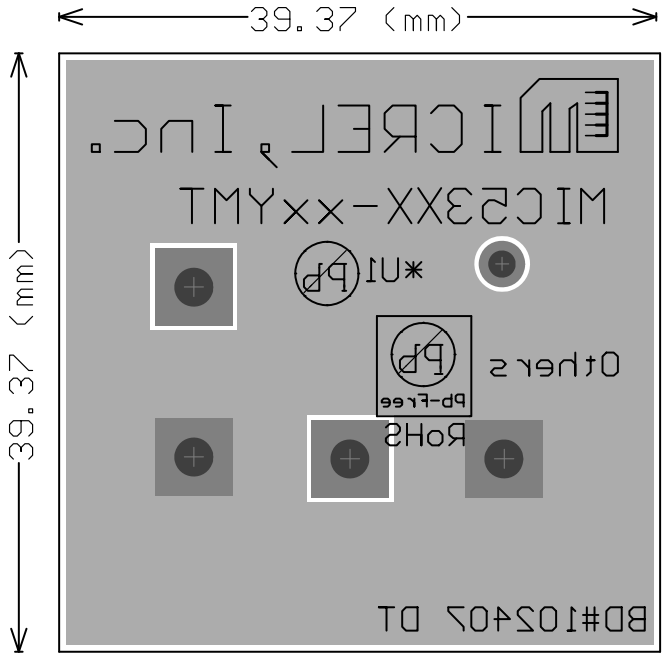

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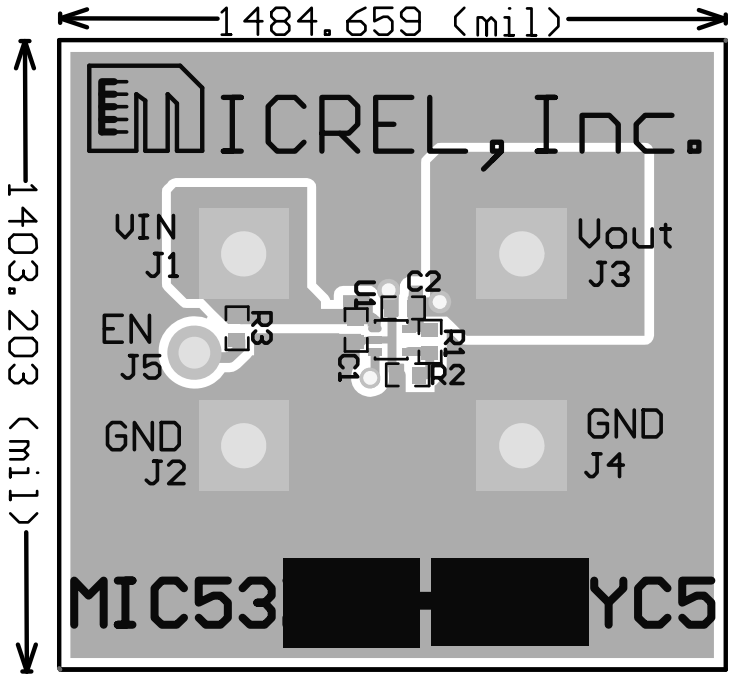
PCB Layout Recommendations (SC-70-5)



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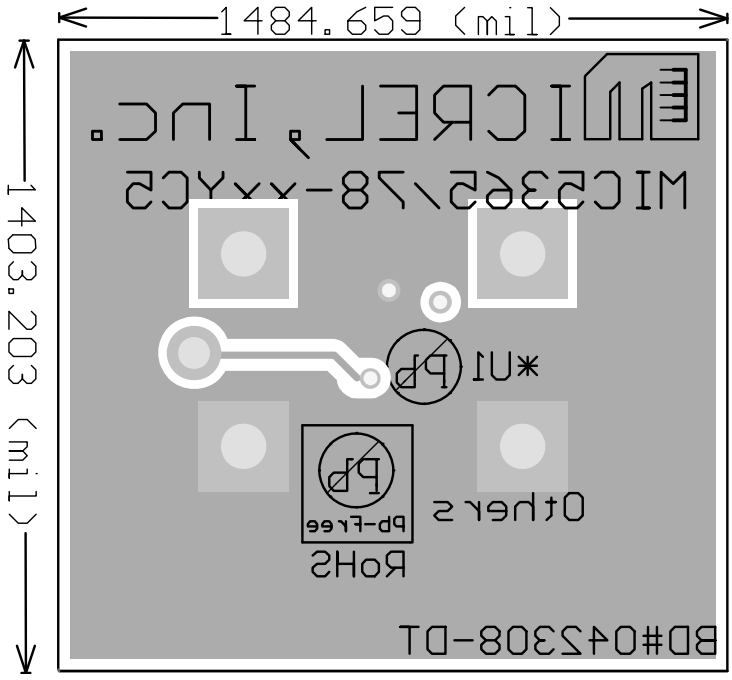

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