Evaluates: MAX38911

General Description

The MAX38911 WLP evaluation kit (EV kit) evaluates the MAX38911 in a WLP package. The MAX38911 is a lownoise, high-PSRR pMOS linear regulator. The MAX38911 WLP EV kit operates over an input range of 1.7V to 5.5V, provides a factory-preset output-voltage range of 0.8V to 5.0V in 50mV steps, and can deliver up to 500mA of current. The EV kit comes with the MAX38911ANT+ (1.8V output) installed.

Benefits and Features

- Evaluates the MAX38911 in a 6-ball (1.42mm x 0.83mm) WLP
- 1.7V to 5.5V Input Range
- 0.8V to 5.0V Factory-Preset Output Voltage (with IC Replacement)
- Up to 500mA Output Current
- Jumper-Selectable Operating Modes
- Proven 2-Layer 1oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assembled and Tested

MAX38911 WLP EV Kit Files

| FILE | DECRIPTION |
|--|------------------------------|
| MAX38911 WLP EV BOM | EV Kit Bill of Material |
| MAX38911 WLP EV PCB Layout | EV Kit Layout |
| MAX38911 WLP EV Schematic | EV Kit Schematic |
| MAX38911 WLP EV Minimal Component Schematic | Minimal Component Circuit |

Ordering Information appears at end of data sheet.

Quick Start

Required Equipment

- MAX38911 WLP EV kit
- 5.5V, 1A DC power supply
- Electronic load capable of 500mA
- Digital voltmeter (DVM)

Procedure

The EV kit is fully assembled and tested. Follow the steps below to verify board operation.

Caution: Do not turn on power supply until all connections are completed.

- Verify that jumper JU1 has a shunt across pins 1 and 2 (EV kit enabled) as shown in <u>Table 1</u>.
- 2) Verify that jumper JU2 has a shunt across pins 1 and 2 (Normal mode) as shown in <u>Table 2</u>.
- Connect the 2.1V power supply between the IN and GND terminal posts.
- 4) Connect the 500mA electronic load between the OUT and GND terminal posts.
- 5) Connect the DVM between the OUT and GND terminal posts.
- 6) Turn on the power supply.
- 7) Enable the electronic load.
- 8) Verify that the voltage at the OUT terminal post is approximately 1.8V.



Detailed Description of Hardware

The MAX38911 WLP evaluation kit (EV kit) evaluates the MAX38911 in a WLP package. The MAX38911 is a low-noise linear regulator that delivers 500mA of output current with only $11\mu V_{RMS}$ of output noise from 10Hz to 100kHz. The MAX38911 has a high PSRR of 70dB at 10Hz. This regulator requires only 62mV of input-to-output headroom at full load.

The MAX38911 WLP EV kit operates over an input range of 1.7V to 5.5V. The EV kit comes with the MAX38911ANT+ installed and a factory-preset output of 1.8V, and can deliver up to 500mA of current in Normal mode. In Low-Power mode (LPM), the output-current limit is configured up to 20mA, and has a no-load quiescent current of 19.2μ A.

Table 1. EN (JU1)

| JU1 SHUNT POSITION | DESCRIPTION | | |
|-----------------------|--------------------|--|--|
| 1-2* | Enabled. EN = IN | | |
| 2-3 | Disabled. EN = GND | | |

*Default position.

EN (Enable)

The MAX38911 WLP EV kit provides a jumper JU1 to enable or disable the MAX38911. Refer to <u>Table 1</u> for jumper JU1 settings.

MODE (Mode Selection)

The MAX38911 WLP EV kit provides a jumper JU2 to select between Normal and Lower-Power modes for the MAX38911. Refer to <u>Table 2</u> for JU2 jumper settings.

Evaluating Other Output Voltages

The MAX38911 WLP EV kit can evaluate the MAX38911 in other output voltages after IC (U1) replacement. The MAX38911 can be factory-trimmed to any voltage between 0.8V and 5.0V, in 50mV steps. Contact the factory to order the MAX38911 with the desired factory-preset output voltages.

Table 2. MODE (JU2)

| JU101 SHUNT POSITION | DESCRIPTION | | |
|-------------------------|--|--|--|
| 1-2* | Normal. MODE = IN. (Output Current up to 500mA) | | |
| 2-3 | LPM. MODE = GND. (Output Current up to 20mA) | | |

*Default position.

Ordering Information

| PART | TYPE | | |
|-----------------|--------|--|--|
| MAX38911EVK#WLP | EV Kit | | |

#Denotes RoHS

Component Suppliers

| SUPPLIER | WEBSITE |
|--|--------------------|
| Murata/TOKO | www.murata.com |
| ТDК | www.tdk.com |
| Samsung Electro-Mechanics America. Inc. | www.samsungsem.com |

Note: Indicate that you are using the MAX38911 when contacting these component suppliers.

Evaluates: MAX38911

MAX38911 WLP EV Kit Bill of Materials

| ITEM | REF_DES | | QTY | MFG PART # | MANUFACTURER | VALUE | DESCRIPTION | |
|------|--------------|-----|-----|---|--|----------------|---|--|
| 1 | C1 | | 1 | C0402C103K5RAC; GRM155R71H103KA88; C1005X7R1H103K050BE; CL05B103KB5NNN; UMK105B7103KV | KEMET; MURATA; TDK; SAMSUNG ELECTRONIC; TAIYO YUDEN | 0.01µF | CAPACITOR; SMT (0402); CERAMIC CHIP; 0.01µF; 50V; TOL = 10%; TG = -55°C TO +125°C; TC = X7R | |
| 2 | C2, C3 | | 2 | GMC10X7R475K6R3NT; CL10B475KQ8NQN; JMK107BB7475KA; CL10B475KQ8NQNC; 06036C475KAT2A | CAL-CHIP ELECTRONIC INC.; SAMSUNG; TAIYO YUDEN; SAMSUNG;AVX | 4.7µF | CAPACITOR; SMT (0603); CERAMIC CHIP; 4.7µF; 6.3V; TOL = 10%; MODEL=; TG = -55°C TO +125°C; TC=X7R; | |
| 3 | GND, IN, OUT | | 3 | 108-0740-001 | EMERSON NETWORK POWER | 108-0740-001 | CONNECTOR; MALE; PANELMOUNT; BANANA JACK; STRAIGHT; 1PIN | |
| 4 | JU1, JU2 | | 2 | PEC03SAAN | SULLINS | PEC03SAAN | CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 3PINS | |
| 5 | SU1, SU2 | | 2 | SNT-100-BK-G | SAMTEC | SNT-100-BK-G | TEST POINT; SHUNT AND JUMPER; STR; TOTAL LENGTH = 6.10MM; BLACK; INSULATION=GLASS FILLED POLYESTER; CONTACT = PHOSPHOR BRONZE | |
| 6 | U1 | | 1 | MAX38911ANT+ | MAXIM | MAX38911ANT+ | EVKIT PART - IC; MAX38911ANT+; 500MA LOW NOISE PMOS LDO WITH LOW POWER MODE; TEMPORARY FOOTPRINT | |
| 7 | PCB | | 1 | MAX38911WLP | MAXIM | PCB | PCB:MAX38911WLP | |
| 8 | BUMP1-BUMP4 | DNI | 4 | SJ-5003(BLACK) | 3M ELECTRONIC SOLUTIONS DIVISION | SJ-5003(BLACK) | BUMPER; BLACK-HEMISPHERICAL SHAPE EVKIT EH0231; 0.44D/0.2BH; RESILIENT ELASTOMER POLYURETHANE | |
| 9 | R5 | DNP | 0 | N/A | N/A | SHORT | PACKAGE OUTLINE 0603 RESISTOR | |
| 10 | C4, C5 | DNP | 0 | N/A | N/A | OPEN | PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR | |
| | TOTAL | | 16 | | | | | |



MAX38911 WLP EV Kit Schematic Diagram

MAX38911 WLP EV Kit Minimal Component Schematic Diagram



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MAX38911 WLP EV Kit PCB Layout Diagrams



MAX38911 WLP EV Kit—Top Silkscreen





MAX38911 WLP EV Kit—Bottom View

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Revision History

| REVISION | REVISION | DESCRIPTION | PAGES |
|----------|----------|-----------------|---------|
| NUMBER | DATE | | CHANGED |
| 0 | 8/20 | Initial release | _ |

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