19-0538; Rev 0; 4/06

MAX8633 Evaluation Kit

General Description

The MAX8633 evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that contains a dual-output low-dropout (LDO) linear regulator. The EV kit operates from a 2.7V to 5.5V input supply, is configured for 2.8V (OUT1) and 1.8V (OUT2), and can deliver up to 300mA at each output. The MAX8633 outputs can be set to 9 different output voltage settings. See the *Output Voltage Settings* section.

The MAX8633 EV kit can also evaluate the MAX8634, MAX8635, and MAX8636 dual-output LDO linear regulators. See the *Evaluating the MAX8634/MAX8635/MAX8636* section for details on reconfiguring and operating the EV kit for evaluation of the MAX8634, MAX8635, and MAX8636.

Component List

DESIGNATION	QTY	DESCRIPTION
C1, C2, C3	3	2.2µF ±10%, 6.3V X5R ceramic capacitors (0603) Murata GRM188R60J225K Taiyo Yuden JMK107BJ225KA
C4	0	Not installed, ceramic capacitor (0402)
JU1, JU2, JU3	3	3-pin headers
JU4	0	Not installed, 3-pin header
R1	1	100kΩ ±5% resistor (0402)
U1	**1**	**MAX8633ELA+ (8-pin µDFN 2mm x 2mm) (top mark: AAH)**
—	3	Shunts
—	1	MAX8633 EV kit PC board

Component Suppliers

SUPPLIER	PHONE	WEBSITE
Murata	770-436-1300	www.murata.com
Taiyo Yuden	408-573-4150	www.t-yuden.com

Note: *Indicate that you are using the MAX8633–MAX8636 when contacting these suppliers.*

Recommended Equipment

- 2.7V to 5.5V, 1A DC power supply
- Voltmeter

Features

- ♦ **Pin-Programmable Output Voltages**
- ♦ **300mA Output Currents**
- ♦ **2.7V to 5.5V Input Range**
- ♦ **Thin µDFN Package: 2mm x 2mm**
- ♦ **Fully Assembled and Tested**

Ordering Information

PART	TEMP RANGE	IC PACKAGE
MAX8633EVKIT	0°C to +70°C	8 µDFN (2mm x 2mm)

Note: *To evaluate the MAX8634/MAX8635/MAX8636, request a MAX8634ELA+/MAX8635ELA+/MAX8636ELA+ free sample with the MAX8633EVKIT.*

Quick Start

The MAX8633 EV kit is fully assembled and tested. Follow these steps to verify board operation. **Do not turn on the power supply until all connections are completed.**

Evaluating the MAX8633

1) Verify that a shunt is placed across jumper JU1 pins 1-2 to enable the MAX8633 outputs (OUT1 and OUT2).
2) Verify that a shunt is placed across pins 2-3 of jumpers JU2 and JU3.
3) Connect the positive terminal of the DC power supply to the VIN pad. Connect the negative terminal of the DC power supply to the GND pad.
4) Turn on the power supply and set it to 3.0V.
5) Verify that the voltage at OUT2 is 1.8V.
6) Verify that the voltage at OUT1 is 2.8V.

Detailed Description

The MAX8633 EV kit operates from a 2.7V to 5.5V input power supply and is configured to evaluate the MAX8633, a pin-programmable LDO linear regulator. The EV kit provides output control through the $\overline{\text{SHDN}}$ jumper (JU1) and output monitoring (OUT2 only) at the $\overline{\text{RESET}}$ output pad.

The OUT1 and OUT2 output voltages are set through jumpers JU2 and JU3 to 1 of 9 output voltage settings. Each output is capable of providing up to a 300mA load current, provided that the max power dissipation of the IC package is not exceeded. See the *Output Voltage Settings* section for details on configuring the OUT1 and OUT2 output voltages.

The MAX8633 EV kit can also be used to evaluate the MAX8634, MAX8635, and MAX8636 pin-programmable

LDO linear regulators. See the *Evaluating the MAX8634/MAX8635/MAX8636* section for details on reconfiguring and operating the EV kit when evaluating the MAX8634/MAX8635/MAX8636.

Shutdown Control ($\overline{SHDN}$)

The EV kit features a shutdown mode that disables all outputs, OUT1 and OUT2. The $\overline{SHDN}$ pin is set through jumper JU1. See Table 1 for jumper JU1 functions.

Table 1. Jumper JU1 Functions

SHUNT LOCATION	$\overline{SHDN}$ PIN	MAX8633 OUTPUTS
1-2 (default)	Connected to IN	Enabled
2-3	Connected to GND	Disabled

Output Voltage Settings

The MAX8633 output voltages (V_{OUT1} and V_{OUT2}) are set through jumpers JU2 and JU3 and are established at power-on. Any changes to jumper JU2 or JU3 after power-on have no affect on the output voltages. For a change to the output voltage setting to take affect, the device must be shut down and repowered. This is accomplished by either cycling the power supply or by disabling then enabling the outputs with the shutdown control jumper, JU1. See Table 2 for jumper JU2 and JU3 functions.

Table 2. Jumper JU2 and JU3 Functions

SHUNT LOCATIONS				MAX8633 OUTPUTS (V)	
JU3	P1 PIN	JU2	P2 PIN	V_{OUT1}	V_{OUT2}
Not installed	Open	Not installed	Open	2.80	1.50
Not installed	Open	2-3	GND	2.90	1.50
Not installed	Open	1-2	IN	3.00	1.50
2-3	GND	Not installed	Open	3.00	1.60
2-3*	GND	2-3*	GND	2.80	1.80
2-3	GND	1-2	IN	2.60	1.85
1-2	IN	Not installed	Open	2.90	1.85
1-2	IN	2-3	GND	2.80	2.60
1-2	IN	1-2	IN	3.00	2.80

**Default setting.*

$\overline{RESET}$

The MAX8633 features a $\overline{RESET}$ output that is used in monitoring the OUT2 voltage. $\overline{RESET}$ is pulled up to V_{OUT1} 150ms after V_{OUT2} reaches 87% of its configured voltage. As long as V_{OUT2} is below 87% of its configured voltage $\overline{RESET}$ will remain low. V_{OUT1} and V_{OUT2} are configured through jumpers JU2 and JU3. See the *Output Voltage Settings* section.

Evaluating the MAX8634/MAX8635/MAX8636

To evaluate the MAX8634/MAX8635/MAX8636 LDO linear regulator, the EV kit must be reconfigured. See Table 3 and Figure 1 for details on the EV kit configurations for each of the alternate devices. Refer to the MAX8633 IC data sheet for detailed information on the MAX8634/MAX8635/MAX8636.

Table 3. EV Kit Configuration

U1	JU4	R1	C4
MAX8634ELA+	Not installed	Not installed	0.01µF ceramic capacitor (0402)
MAX8635ELA+	Installed	Not installed	Not installed
MAX8636ELA+	Not installed	Not installed	0.01µF ceramic capacitor (0402)

Shutdown Control (MAX8634/MAX8635/MAX8636)

The MAX8634, MAX8635, and MAX8636 ICs provide shutdown capabilities for disabling the OUT1 and OUT2 outputs. The MAX8634 and MAX8635 provide shutdown controls ($\overline{SHDN1}$ and $\overline{SHDN2}$) for each output and the MAX8636 provides a single shutdown control ($\overline{SHDN}$) for both outputs. The shutdown pins are set through jumper JU1, JU2, or JU4. Refer to the appropriate MAX8634/MAX8635/MAX8636 shutdown control table (Tables 4 through 6) for jumper settings.

Table 4. MAX8634 Shutdown Control

JUMPER	SHUTDOWN PIN	SHUNT LOCATION	
		1-2	2-3
JU1	$\overline{SHDN1}$	OUT1 enabled	OUT1 disabled
JU2	$\overline{SHDN2}$	OUT2 enabled	OUT2 disabled

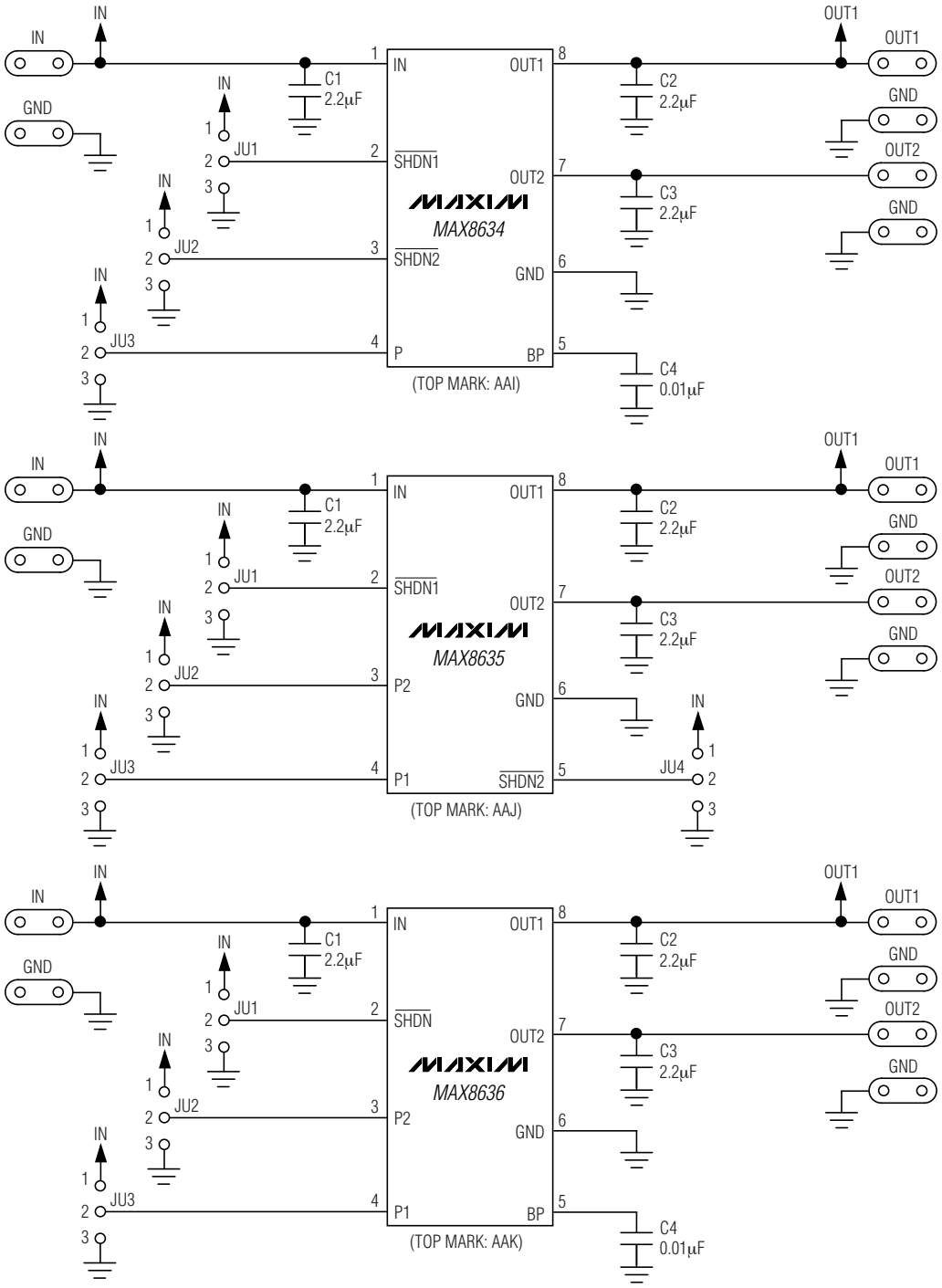

Figure 1. MAX8634, MAX8635, and MAX8636 Schematics. The above schematics illustrate the required EV kit configuration when evaluating the MAX8634/MAX8635/MAX8636

Table 5. MAX8635 Shutdown Control

JUMPER	SHUTDOWN PIN	SHUNT LOCATION	
		1-2	2-3
JU1	$\overline{SHDN1}$	OUT1 enabled	OUT1 disabled
JU4	$\overline{SHDN2}$	OUT2 enabled	OUT2 disabled

Table 6. MAX8636 Shutdown Control

JUMPER	SHUTDOWN PIN	SHUNT LOCATION	
		1-2	2-3
JU1	$\overline{SHDN}$	OUT1, OUT2 enabled	OUT1, OUT2 disabled

Output Voltage Settings (MAX8634/MAX8635/MAX8636)

The MAX8634/MAX8635/MAX8636 output voltages (OUT1 and OUT2) are established at power-on. Any subsequent output voltage setting changes will not take affect until the power supply is cycled or until all outputs are disabled then enabled with the shutdown control jumper(s). When evaluating the MAX8634, the output voltages are set through jumper JU3 (Table 7). When evaluating the MAX8635 and MAX8636, the output voltages are set through jumpers JU2 and JU3 (Table 8).

Table 7. MAX8634 Output Voltage Settings

SHUNT LOCATION		MAX8634 OUTPUTS (V)	
JU3	P PIN	OUT1	OUT2
Not installed	Open	2.85	2.85
1-2	IN	2.60	2.60
2-3	GND	3.00	2.85

Table 8. MAX8635/MAX8636 Output Voltage Settings

SHUNT LOCATIONS				OUTPUTS (V)	
JU3	P1 PIN	JU2	P2 PIN	OUT1	OUT2
Not installed	Open	Not installed	Open	2.80	1.50
Not installed	Open	2-3	GND	2.90	1.50
Not installed	Open	1-2	IN	3.00	1.50
2-3	GND	Not installed	Open	2.60	1.80
2-3	GND	2-3	GND	2.80	1.80
2-3	GND	1-2	IN	3.00	2.50
1-2	IN	Not installed	Open	3.00	2.80
1-2	IN	2-3	GND	2.85	2.85
1-2	IN	1-2	IN	3.00	3.00

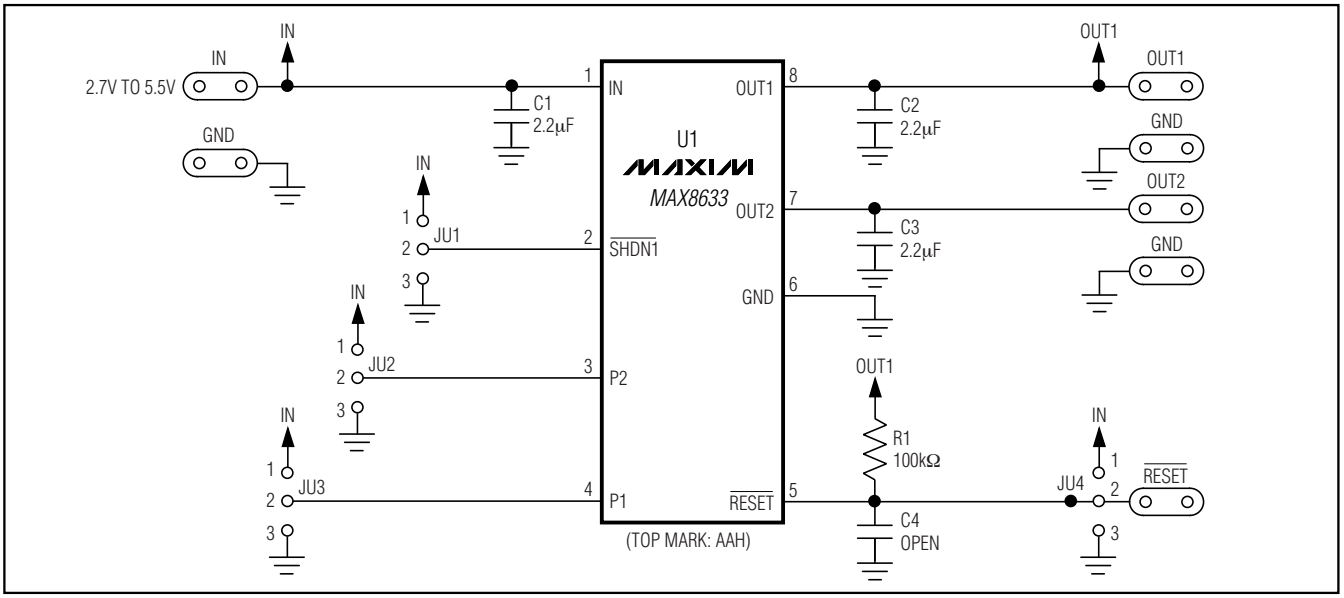

Figure 2. MAX8633 EV Kit Schematic

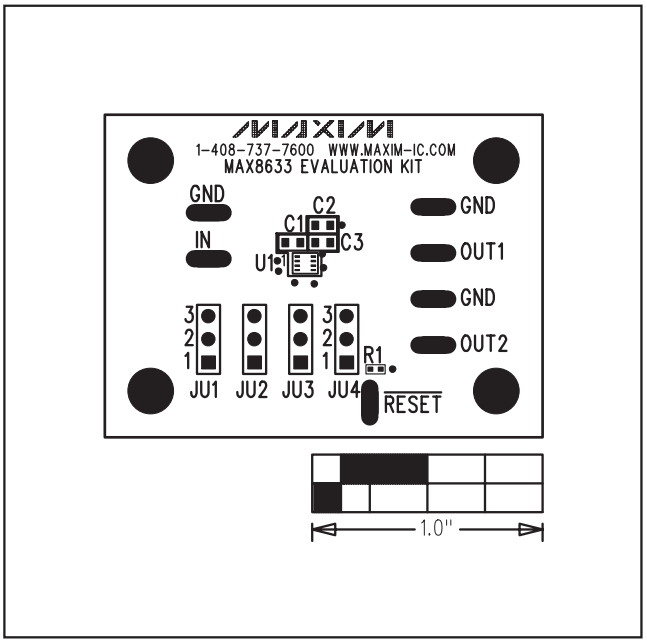

Figure 3. MAX8633 EV Kit Component Placement Guide—Component Side

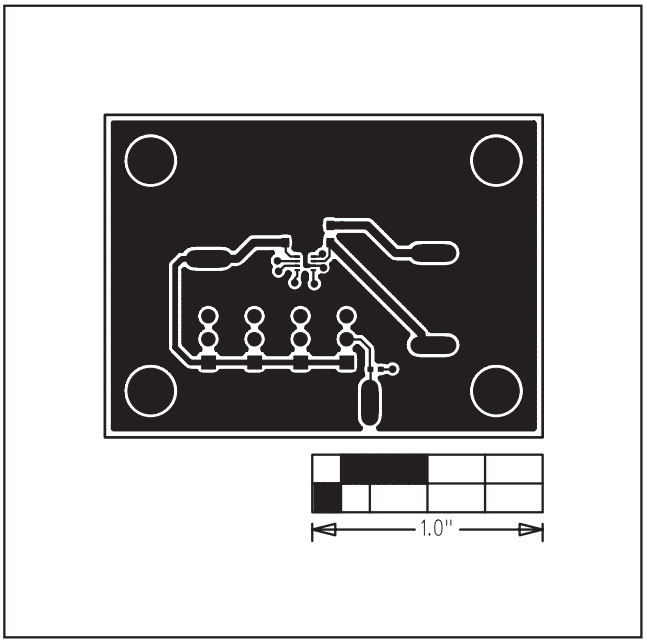

Figure 4. MAX8633 EV Kit PC Board Layout—Component Side

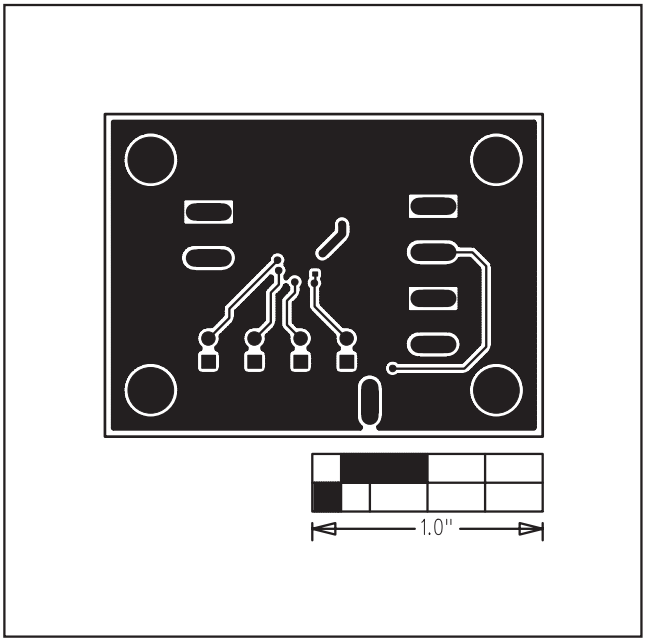

Figure 5. MAX8633 EV Kit PC Board Layout—Solder Side

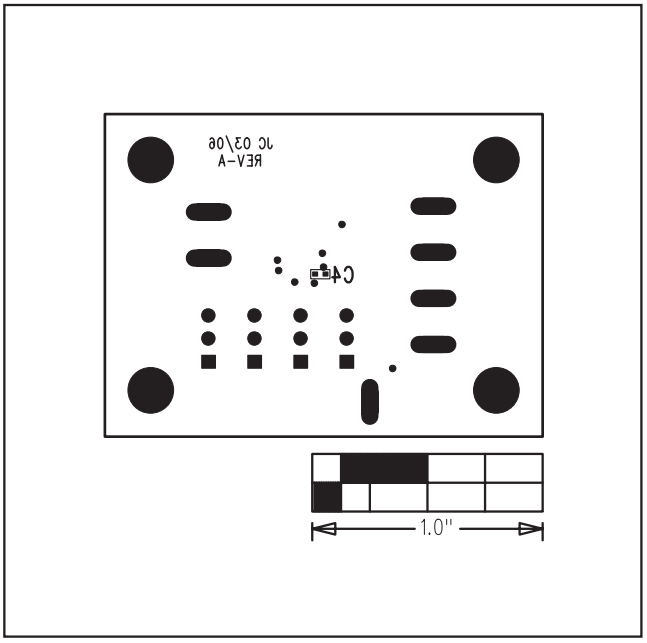

Figure 6. MAX8633 EV Kit Component Placement Guide—Solder Side