

# MAXIM

## MAX1878 Evaluation Kit

### General Description

The MAX1878 evaluation kit (EV kit) is a fully assembled and tested surface-mount circuit board that demonstrates the MAX1878 dual-output, step-up, and step-down DC-DC converter. The main output is configured for 1.8V and provides up to 400mA of current. The LCD bias output is configured for 18V and provides up to 10mA. The EV kit can support the dual output with an input voltage range of 2.0V to 5.5V.

### Features

- ◆ Dual Output Voltages
  - 1.8V Main Output at 400mA
  - 18V LCD Bias Output at 10mA
- ◆ Adjustable Output Voltages
- ◆ 2.0V to 5.5V Input Voltage Range
- ◆ Surface-Mount Construction
- ◆ Fully Assembled and Tested

### Ordering Information

PART	TEMP. RANGE	IC PACKAGE
MAX1878EVKIT	0°C to +70°C	12 QFN-EP*

\*EP = Exposed pad

### Component List

DESIGNATION	QTY	DESCRIPTION
C1	1	10µF ±10%, 6.3V X5R ceramic capacitor (1206) TDK C3216X5R0J106KT or Taiyo Yuden JMK316BJ106KL
C2	1	1.0µF ±10%, 6.3V X5R ceramic capacitor (0603) Taiyo Yuden JMK107BJ105KA or TDK C1608X5R1A105K
C3	1	0.1µF ±10%, 50V X7R ceramic capacitor (0805) Taiyo Yuden UMK212BJ104KG or TDK C2012X7R1H104KT
C4	1	22µF ±10%, 10V tantalum capacitor (B) AVX TPSB226K010R0500
C5	1	5.0pF, 50V COG ceramic capacitor (0603) TDK C1608COG1H050C or Murata GRM1885C1H5R0JA01
C6	1	22pF, 50V COG ceramic capacitor (0603) TDK C1608COG1H220JT or Murata GRM1885C1H220KA01

DESIGNATION	QTY	DESCRIPTION
D1	1	200mA diode (SOT23) Fairchild MMBD4148 (Top mark - 5H)
JU1, JU2	2	3-pin headers
L1, L2	2	10µH, 550mA inductors
R1	1	28kΩ ±1% resistor (0603)
R2	1	63.4kΩ ±1% resistor (0603)
R3	1	3.65MΩ ±1% resistor (0603) Venkel CR0603-16W-3654-F-T
R4	1	267kΩ ±1% resistor (0603)
R5	1	10Ω ±5% resistor (0603)
R6	1	2MΩ ±5% resistor (0603)
U1	1	MAX1878EGC (12-pin QFN 4 x 4 EP) Top mark-AAA0
None	2	Shunts (JU1, JU2)
None	1	MAX1878 PC board
None	1	MAX1878 data sheet
None	1	MAX1878 EV kit data sheet

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## Component Suppliers

SUPPLIER	PHONE	FAX	WEBSITE
AVX	843-946-0238	843-626-3123	www.avxcorp.com
Fairchild	888-522-5372	408-822-2104	www.fairchildsemi.com
Murata	770-436-1300	770-436-3030	www.murata.com
Sumida	847-545-6700	847-545-6720	www.sumida.com
Taiyo Yuden	800-348-2496	847-925-0899	www.t-yuden.com
TDK	847-803-6100	847-803-6296	www.component.tdk.com
Venkel	800-950-8365	512-794-0087	www.venkel.com

**Note:** Please indicate that you are using the MAX1878 when contacting these component suppliers.

### Quick Start

The MAX1878 EV kit is a fully assembled and tested surface-mount board. Follow the steps below for board operation. **Do not turn on the power supply until all connections are completed:**

- 1) Verify that shunts are across pins 1 and 2 of jumpers JU1 (ONLCD) and JU2 (ON) to enable the LCD output and the main output, respectively.
- 2) Connect a voltmeter across the VMAIN pad and the nearest GND pad to monitor the main output voltage.
- 3) Connect a voltmeter across the VLCD pad and the nearest GND pad to monitor the LCD output voltage.
- 4) Connect a 2.0V to 5.5V supply to the VIN pad. Connect the ground to the GND pad.
- 5) Turn on the power supply and verify that the main output voltmeter is at 1.8V and the VLCD output is at 18V.

### Detailed Description

The MAX1878 EV kit is a fully assembled and tested surface-mount circuit containing a dual-output, step-down, and step-up DC-DC converter. The main output (VMAIN) is configured to supply 400mA (typ) at 1.8V and the LCD bias output (VLCD) is configured to supply 10mA (typ) at 18V. The EV kit circuit requires a power supply with a 2.0V to 5.5V voltage range and rated for 0.5A. VMAIN and VLCD output voltages are adjustable.

#### Adjustable Outputs

The VMAIN output voltage is set to 1.8V by resistors R1 and R2. VMAIN can be adjusted to a different voltage ( $1.25$  to  $V_{IN}$ ) by replacing resistors R1 and R2. Refer to *Setting the Output Voltage* section of the MAX1878 data sheet for instructions on selecting R1 and R2.

The 18V LCD bias output voltage is set with voltage-divider resistors R3 and R4. VLCD can be adjusted to a different voltage (from 1V above  $V_{IN}$  to 28V) by replacing resistors R3 and R4. Refer to *Setting the Output Voltage* section of the MAX1878 data sheet for instructions on selecting R3 and R4.

#### Enable/Disable

The EV kit contains two 3-pin jumpers (JU1 and JU2) that allow the user to enable and disable the main output (VMAIN) and the LCD output (VLCD). See Table 1 for jumper configurations.

**Table 1. Jumper Table**

JUMPER	STATUS	PIN CONNECTION	EV KIT OPERATION
JU1	1 and 2	ONLCD connected to AIN	VLCD output enabled
	2 and 3	ONLCD connected to GND	VLCD output disabled
JU2	1 and 2	ON connected to AIN	VMAIN output enabled
	2 and 3	ON connected to GND	VMAIN output disabled

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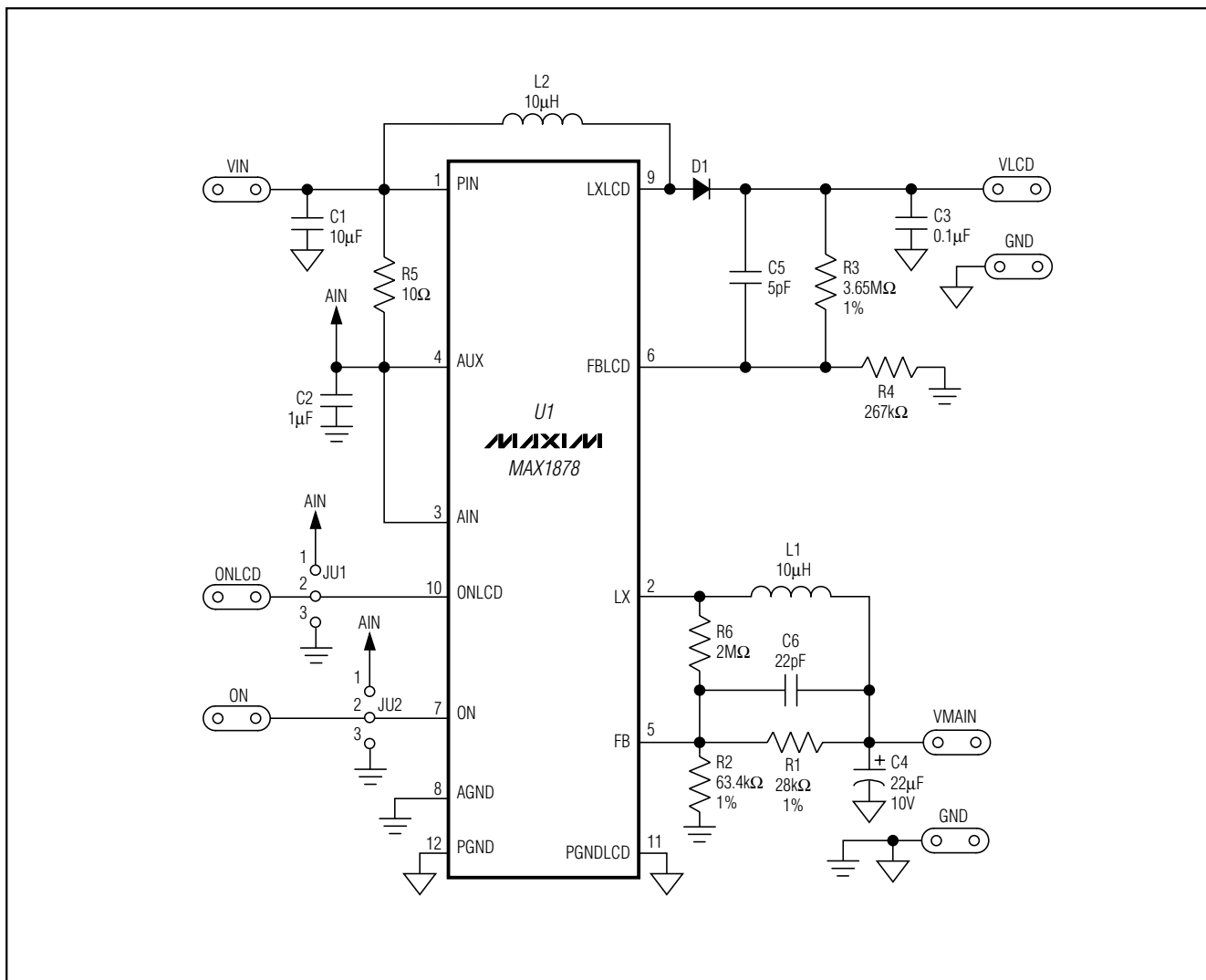


Figure 1. MAX1878 EV Kit Schematic

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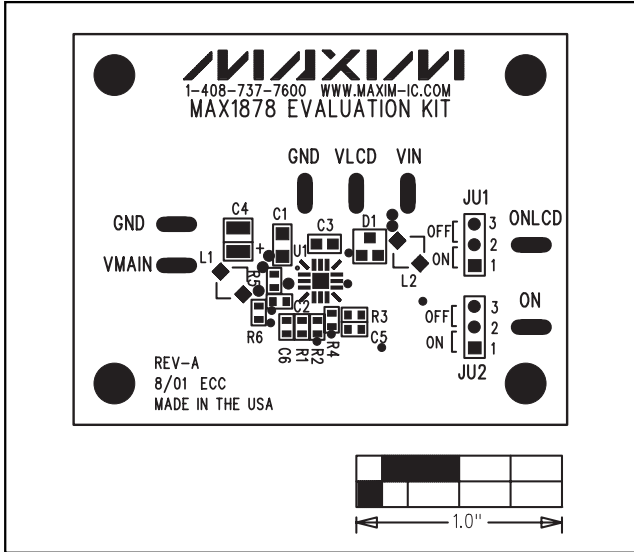


Figure 2. MAX1878 EV Kit Component Placement Guide—Component Side

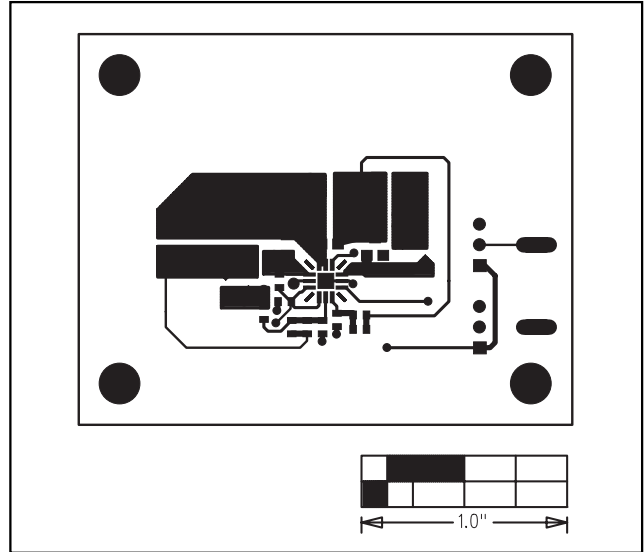


Figure 3. MAX1878 EV Kit PC Board Layout—Component Side

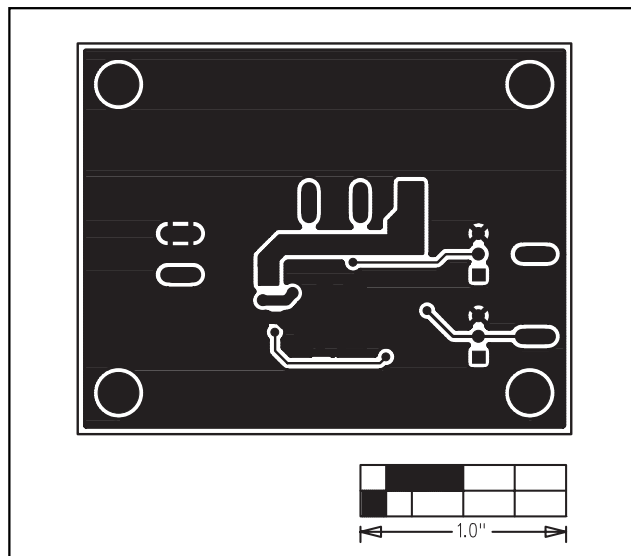


Figure 4. MAX1878 EV Kit PC Board Layout—Solder Side

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