

MAX38640 μ DFN Evaluation Kit

Evaluates: MAX38640/1/2/3 A/B in μ DFN

General Description

The MAX38640 evaluation kit (EV kit) evaluates the MAX38640/1/2/3 A/B IC family of ultra-low quiescent current step-down DC-DC converters in the μ DFN package. The EV kit operates over an input range of 1.8V to 5.5V, and provides resistor-configurable output voltages from 0.7V to 3.3V. The EV kit delivers up to 175mA/350mA/700mA of current depending on the input voltage to the output voltage ratio.

The EV kit comes with the MAX38640AELT+ installed.

Features

- Evaluates the MAX38640/1/2/3 A/B IC Family in a 6-pin μ DFN
- 1.8V to 5.5V Input Range
- 0.7V to 3.3V Configurable Output Voltage
- Up to 175mA/350mA/700mA Output Current
- Proven 2-Layer 1oz Copper PCB Layout
- Demonstrates Compact Solution Size
- Fully Assemble and Tested

Ordering Information appears at end of data sheet.

MAX38640 EV Kit Files

FILE	DESCRIPTION
MAX38640 μ DFN EV BOM	EV Kit Bill of Material
MAX38640 μ DFN EV PCB Layout	EV Kit Layout
MAX38640 μ DFN EV Schematic	EV Kit Schematic
MAX38640 μ DFN EV Minimal Component Schematic	Minimal Component Circuit

Quick Start

Required Equipment

- MAX38640 μ DFN EV kit
- 5.5V, 3A DC power supply
- Electronic load capable of 250mA
- 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.

- 1) Verify that jumpers JU1 and JU2 are in their default positions, as shown in [Table 1](#) and [Table 2](#).
- 2) Connect the 5.5V power supply between the IN and nearest GND terminal posts.
- 3) Connect the 250mA electronic load between the OUT and nearest GND terminal posts.
- 4) Connect the DVM between the OUT and nearest GND terminal posts.
- 5) Turn on the power supply.
- 6) Enable the electronic load.
- 7) Verify that the voltage at the OUT terminal post is approximately 1.8V.

Detailed Description of Hardware

The MAX38640 EV kit evaluates the MAX38640/1/2/3 A/B IC family of ultra-low quiescent current step-down DC-DC converters in the μ DFN package. The EV kit operates over an input range of 1.8V to 5.5V, and provides resistor-configurable output voltages from 0.7V to 3.3V. The EV kit delivers up to 175mA/350mA/700mA of current depending on the input voltage to the output voltage ratio.

The EV kit comes with the MAX38640AELT+ installed.

EN

The MAX38640 μ DFN EV kit provides a jumper JU1 to enable or disable the MAX38640. Refer to [Table 1](#) for jumper JU1 settings.

Table 1. EN (JU1)

SHUNT POSITION	DESCRIPTION
1-2*	EV Kit Enabled
1-3	EV Kit Controlled by External (TTL) Source Connected to EXT_EN
1-4	EV Kit Disabled

*Default position.

RSEL

The MAX38640 μ DFN EV kit provides a jumper JU2 to configure the RSEL pin of the MAX38640. Refer to [Table 2](#) for jumper JU2 settings.

Spare Inductors

The MAX38640 μ DFN EV kit provides spare inductors on the PCB's bottom side. The spare inductors can be used to reconfigure the EV kit output current ratings.

Evaluating the other MAX38640/1/2/3 A/B

The MAX38640 μ DFN EV kit can be modified to evaluate the other μ DFN ICs in the MAX38640/1/2/3 A/B family. To evaluate the other μ DFN ICs in the MAX3864x A/B family, replace U1 with the desired IC and refer to the MAX38640/1/2/3 A/B IC data sheet for additional detail.

Table 2. RSEL (JU2)

SHUNT POSITION	DESCRIPTION
1-2	OUT = 0.7V
1-3	OUT = 1.0V
1-4*	OUT = 1.8V
1-5	OUT = 3.3V

*Default position.

Component Suppliers

SUPPLIER	WEBSITE
Cal Chip Electronics	www.calchipelectronics.com/
Samsung Electronics	www.samsung.com
Würth Electronics	www.we-online.com

Note: Indicate that you are using the MAX38640/1/2/3 A/B when contacting these component suppliers.

Ordering Information

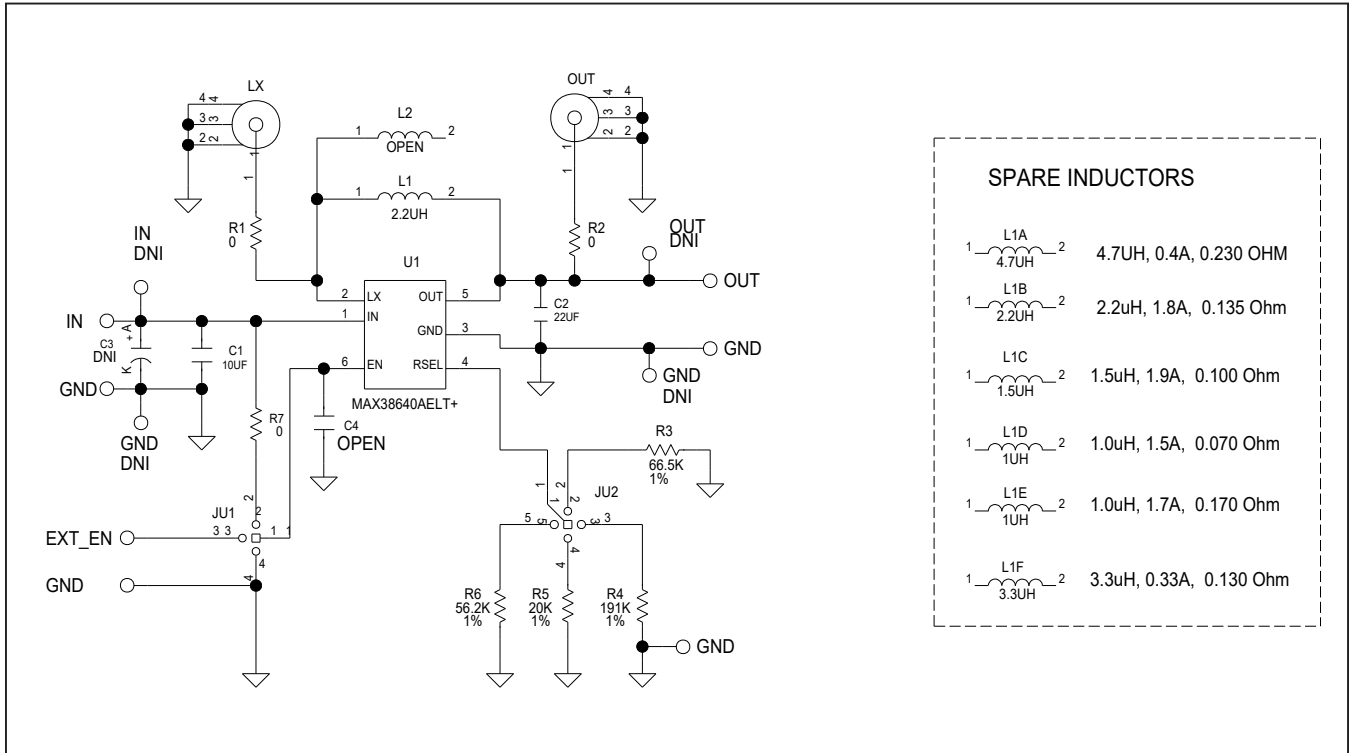
PART	TYPE
MAX38640EVKIT# μ DFN	EV Kit

#Denotes RoHS

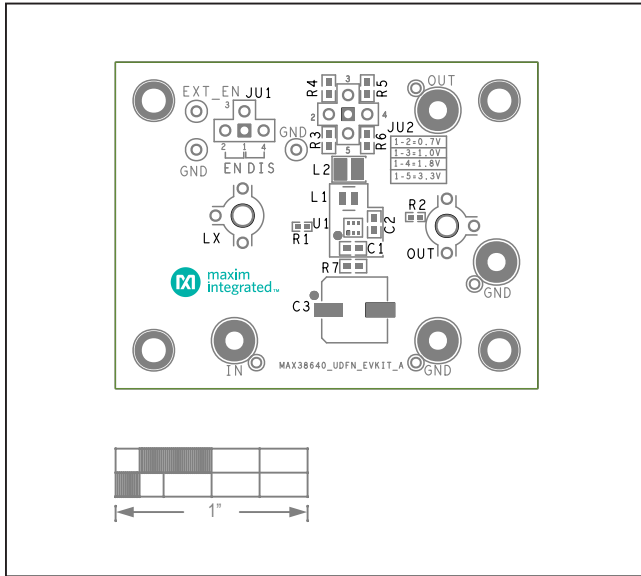
MAX38640 μ DFN EV Kit Bill of Materials

ITEM	REF_DES	DNI/DNP	QTY	MFG PART #	MANUFACTURER	VALUE	DESCRIPTION	COMMENTS
1	C1	-	1	C1608X5R1A106K	TDK	10UF	CAPACITOR; SMT (0603); CERAMIC CHIP; 10UF; 10V; TOL=10%; MODEL=;	
2	C2	-	1	CL10A226KQ8NRN	SAMSUNG	22UF	CAP; SMT (0603); 22UF; 10%; 6.3V; X5R; CERAMIC CHIP	
3	J1-J4	-	4	1514-2	KEYSTONE	1514-2	TERMINAL; TURRET; PIN DIA=0.090IN; TOTAL LENGTH=0.105IN; BOARD HOLE=0.098IN; BRASS; TIN PLATING;	
4	JU1	-	1	PEC04SAAN	SULLINS ELECTRONICS CORP.	PEC04SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 4PINS	
5	JU2	-	1	PBC05SAAN	SULLINS ELECTRONICS CORP.	PBC05SAAN	CONNECTOR; MALE; THROUGH HOLE; BREAKAWAY; STRAIGHT; 5PINS; -65 DEGC TO +125 DEGC	
6	L1	-	1	1285AS-H-2R2M	TOKO	2.2UH	INDUCTOR; SMT (2016); METAL ALLOY CHIP; 2.2UH; TOL=+/-20%; 1.4A	
7	L1A	-	1	74479887247A	WURTH ELECTRONICS INC.	4.7UH	INDUCTOR; SMT (1008); SHIELDED; 4.7UH; 20%; 1.00A	
8	L1B	-	1	74479276222□	WURTH ELECTRONICS INC.	2.2UH	INDUCTOR; SMT (0806); MOLDED CHIP; 2.2UH; 30%; 1.40A	
9	L1C	-	1	74479976215□	WURTH ELECTRONICS INC.	1.5UH	INDUCTOR; SMT (0806); SHIELDED; 1.5UH; 20%; 1.60A	
10	L1D	-	1	74479876210□	WURTH ELECTRONICS INC.	1UH	INDUCTOR; SMT (0806); SHIELDED; 1UH; 20%; 1.50A	
11	L1E	-	1	74479262210□	WURTH ELECTRONICS INC.	1UH	INDUCTOR; SMT (0603); MOLDED CHIP; 1UH; TOL=+/-20%; 1.2A	
12	L1F	-	1	74479776233A	WURTH ELECTRONICS INC.	3.3UH	EVKIT PART- COUPLED INDUCTOR; SMT; SHIELDED; 3.3UH; +/-20%; 1.25A; COMBINATION OF 2520; 2016; AND 0603	
13	L2	-	1	OPEN	N/A	OPEN	EVKIT PART- INDUCTOR; SMT; COMBINATION OF 2520; 2016; 0603; OPEN	
14	LX, OUT	-	2	131-4353-00	TEKTRONICS	131-4353-00	CONNECTOR; WIREMOUNT; CIRCUIT BOARD TEST POINT MINIATURE PROBE; STRAIGHT; 4PINS	
15	R1, R2	-	2	RC0402JR-070RL; CR0402-16W-000RJT	YAGEO PHYCOMP; VENKEL LTD.	0	RESISTOR; 0402; 0 OHM; 5%; JUMPER; 0.063W; THICK FILM	
16	R3	-	1	CRCW060366K5FK; ERJ-3EKF66S2V	VISHAY DALE; PANASONIC	66.5K	RESISTOR; 0603; 66.5K OHM; 1%; 100PPM; 0.10W; THICK FILM	
17	R4	-	1	CRCW0603191KFK	VISHAY DALE	191K	RESISTOR; 0603; 191K OHM; 1%; 100PPM; 0.10W; METAL FILM	
18	R5	-	1	CRCW060320K0FK	VISHAY DALE	20K	RESISTOR; 0603; 20K OHM; 1%; 100PPM; 0.1W; THICK FILM	
19	R6	-	1	ERJ-3EKF5622	PANASONIC	56.2K	RESISTOR; 0603; 56.2K OHM; 1%; 100PPM; 0.1W; THICK FILM	
20	R7	-	1	RC1608J000CS; CR0603-J-000ELF; RC0603JR-070RL	SAMSUNG ELECTRONICS; BOURNS; YAGEO PH	0	RESISTOR; 0603; 0 OHM; 5%; JUMPER; 0.10W; THICK FILM	
21	SU1, SU2	-	2	S1100-B; SX1100-B	KYCON; KYCON	SX1100-B	TEST POINT; JUMPER; STR; TOTAL LENGTH=0.24IN; BLACK; INSULATION=PBT; PHOSPHOR BRONZE CONTACT=GOLD PLATED	
22	TP5	-	1	5002	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; WHITE; PHOSPHOR BRONZE WIRE SILVER;	
23	TP6, TP7	-	2	5001	KEYSTONE	N/A	TEST POINT; PIN DIA=0.1IN; TOTAL LENGTH=0.3IN; BOARD HOLE=0.04IN; BLACK; PHOSPHOR BRONZE WIRE SILVER PLATE FINISH;	
24	U1	-	1	MAX38640AELT+	MAXIM	MAX38640AELT+	EVKIT PART - IC; TINY 300NANO-AMP NANOPOWER BUCK CONVERTER; PACKAGE OUTLINE: 21-0164; PACKAGE CODE: L622+1C; PACKAGE LAND PATTERN: 90-0004; DFN6	
25	PCB	-	1	MAX38640UDFN	MAXIM	PCB	PCB: MAX38640UDFN	
26	C3	DNP	0	25SVPF100M	PANASONIC	100UF	CAP; SMT (CASE_E7); 100UF; 20%; 25V; ALUMINUM-ORGANIC	
27	C4	DNP	0	N/A	N/A	OPEN	PACKAGE OUTLINE 0603 NON-POLAR CAPACITOR	
TOTAL			32					

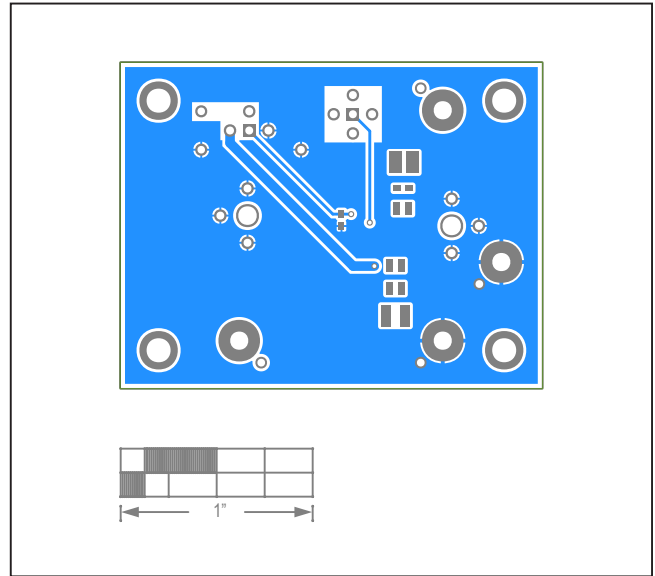
MAX38640 μ DFN EV Kit Schematic



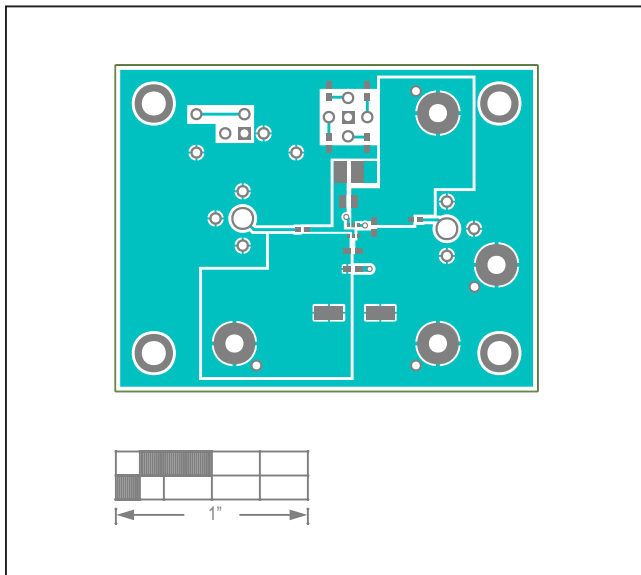
MAX38640 μ DFN EV Kit PCB Layout Diagrams



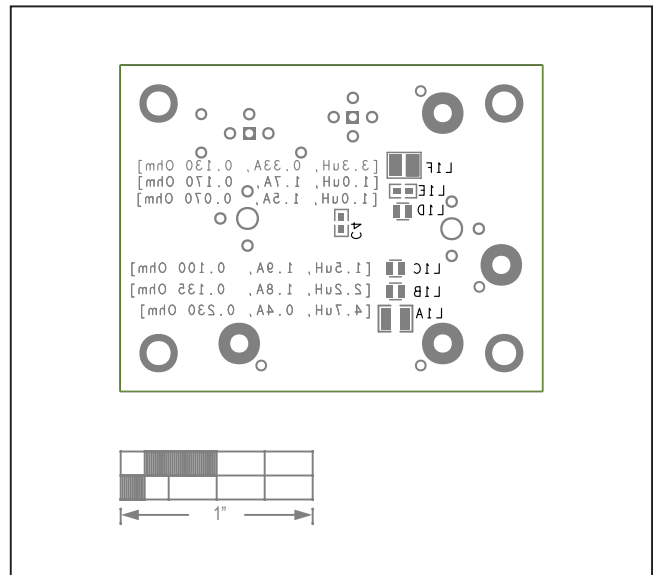
MAX38640 μ DFN EV Kit—Top Silkscreen



MAX38640 μ DFN EV Kit—Bottom



MAX38640 μ DFN EV Kit—Top



MAX38640 μ DFN EV Kit—Bottom Silkscreen

Revision History

REVISION NUMBER	REVISION DATE	DESCRIPTION	PAGES CHANGED
0	10/18	Initial release	—

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