19-0224;Rev.3;7/00

MAXIM

MAX767 Evaluation Kit

MAX767 EV Kit

General Description

The MAX767 evaluation kit (EV kit) is a fully assembled and tested printed circuit board for Maxim's synchronous, step-down power-supply controller. Providing a tightly regulated 3.3V output voltage from a 5V input source, the EV kit contains two separate, complete circuits with conversion efficiencies greater than 90%. The first all-surface-mount circuit can drive loads up to 1.5A, and the second circuit can drive loads up to 5A.

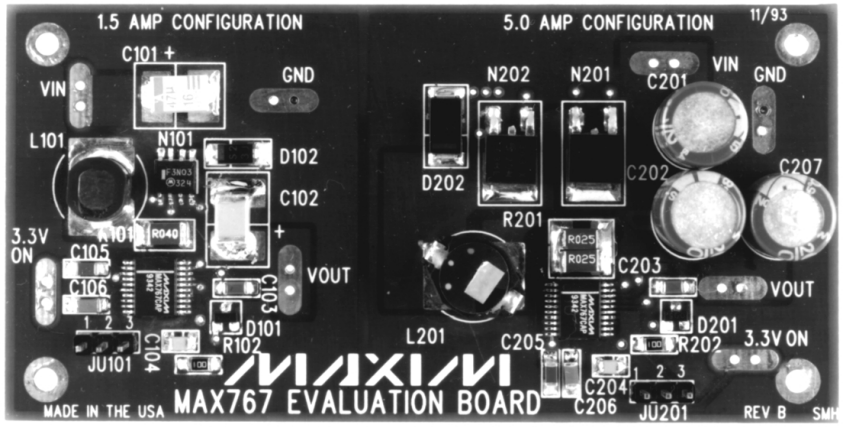
Features

- **Fixed 3.3V Output Voltage ±4%**
- **Up to 1.5A and 5A Output Currents**
- **120µA Standby Supply Current**
- **700µA Quiescent Supply Current**
- **300kHz Switching Frequency**
- **More than 90% Efficiency**
- **20-Pin Shrink-Small-Outline Package**
- **Fully Assembled and Tested**

Ordering Information

PART	TEMP. RANGE	BOARD TYPE
MAX767EVKIT-SO	0°C to +70°C	Surface Mount

EV Kit



MAX767 Evaluation Kit

Component List

DESIGNATION	QTY	DESCRIPTION
C101	1	47µF, 16V low-ESR tantalum capacitor AVX TPSD476K016R0150
C106, C206	2	0.22µF ceramic capacitors Murata-Erie GRM42-6X7R224K050
C103, C203	2	0.1µF ceramic capacitors
C201, C202, C207	3	220µF, 10V low-ESR aluminum electrolytic capacitors Sanyo OS-CON 10SA220M
C102	1	220µF, 6.3V low-ESR tantalum capacitor Sprague 595D227X06R3D2B
C105, C205	2	0.01µF ceramic capacitors
C104, C204	2	4.7µF, 16V tantalum capacitors Sprague 595D475X0016A2B
D102	1	1A, 20V Schottky (1N5817) NIEC EC10QS02 Motorola MBRS120T3
D202	1	3A, 20V Schottky (1N5820) NIEC NSQ03A02 Motorola MBRS340T3
D101, D201	2	SOT-23 diodes Central Semiconductor CMPSH-3
L101	1	10µH, 1.5A inductor Sumida CDR74B-100
L201	1	3.3µH, 5A inductor CoilCraft DO3316-332
N101	1	N-channel MOSFET (SO-8) Motorola MMDF3N03HD or Siliconix Si9936DY
N201, N202	2	N-channel MOSFETs (DPAK) Motorola MTD20N03HDL or Harris RFD16N05L
R101	1	0.040Ω, 1% resistor (SMT) IRC LR2010-01-R040-F DD WSL-2010-R040F
R102, R202	2	10Ω resistors
R201 (2 options)	1	0.012Ω, 1% resistor (SMT) DD WSL-2512-R012F
	2	0.025Ω, 1% resistor (SMT) IRC LR2010-01-R025-F
U1, U2	2	MAX767CAP ICs
JU101, JU201	2	3-pin header
None	2	Shunt
None	1	PC board
None	1	MAX767 data sheet

Component Suppliers

SUPPLIER	PHONE	FAX
AVX	803-946-0690 800-282-4975	803 626-3123
Central Semiconductor	516-435-1110	516-435-1824
Coilcraft	847-639-6400	847-639-1469
Coiltronics	561-241-7876	561-241-9339
DD	402-564-3131	402-563-6418
Harris	407-727-9100 800-442-7747	407-724-3973
IRC	512-992-7900	512-992-3377
Motorola	602-303-5454	602-994-6430
Murata-Erie	800-831-9172 814-237-1431	814-238-0490
NIEC (QMI*)	805-867-2555	805-867-2698
Sanyo USA	619-661-6835	619-661-1055
Siliconix	408-988-8000	408-970-3950
Sprague	603-224-1961	603-224-1430
Sumida	847-956-0666	847-956-0702

* Distributor

Operating Procedure

The MAX767 EV kit is a fully assembled and tested board. The following procedure verifies board operation for both 1.5A and 5A configurations.

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

1. Connect a 5V supply to the pad marked VIN. The ground connects to the GND pad.
2. Connect a voltmeter and load (if any) to the VOUT pad.
3. Place the shunt on JU101 and JU201 across pins 2 and 3 for normal operation.
4. Turn on the power and verify that the output voltage is 3.3V.

Table 1. Jumper JU101/JU201 Functions

JUMPER	CONNECTION	FUNCTION
JU101/ JU201	1 & 2	Output disabled; V_{OUT} = 0V
	2 & 3	Output enabled; V_{OUT} = 3.3V
	OPEN	Output enabled if pin 3 (ON) is connected to VCC; disabled if ON is connected to GND.

Jumper Selection

The 3-pin header JU101/JU201 selects shutdown mode. Table 1 lists the selectable jumper options.

Output Noise

MAX767 output noise is typically less than 50mV peak-to-peak. Small erroneous voltage spikes seen when the MOSFETs switch are the result of improper oscilloscope-probe grounding. EMI radiated from the circuit is picked up by the loop from the probe tip to the probe ground. Ground noise may also cause a measurement error due to the voltage difference from the output capacitor ground lead to the probe ground connection.

To reduce or eliminate these errors, use the oscilloscope-probe grounding technique shown in Figure 1. The probe is placed directly across the output capacitor, with its ground ring contacting the ground lead of the output capacitor. The normal probe ground lead is not connected to the circuit.

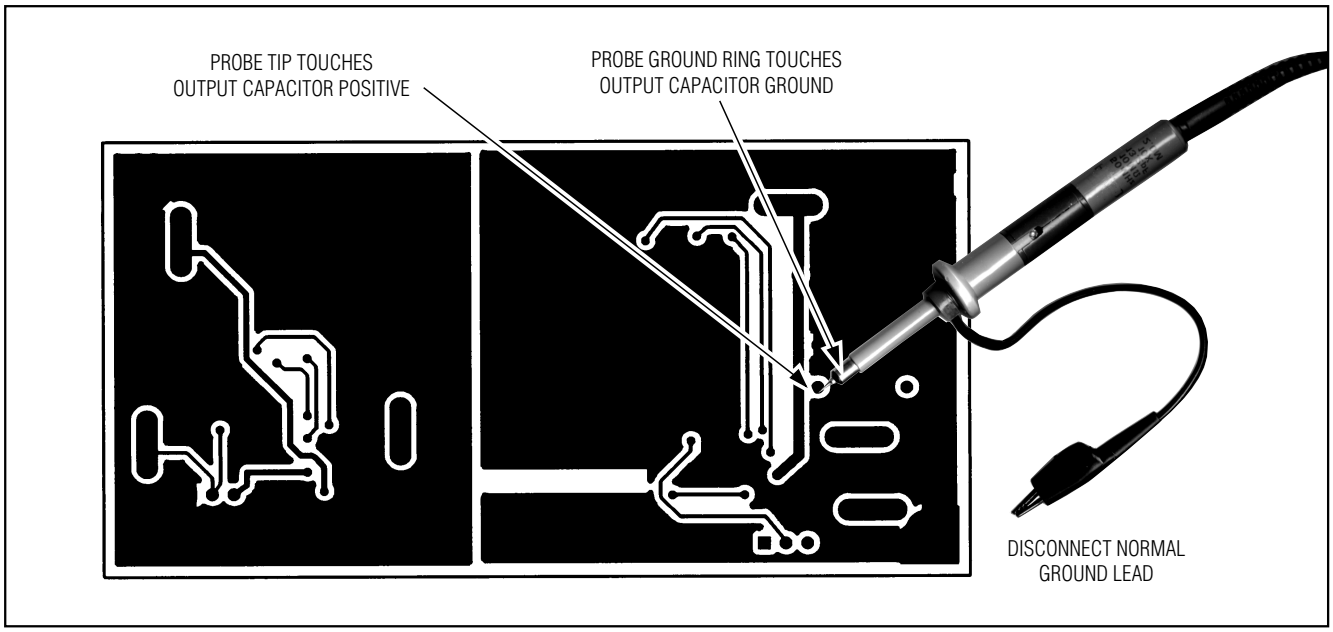


Figure 1. Noise Measurement

MAX767 Evaluation Kit

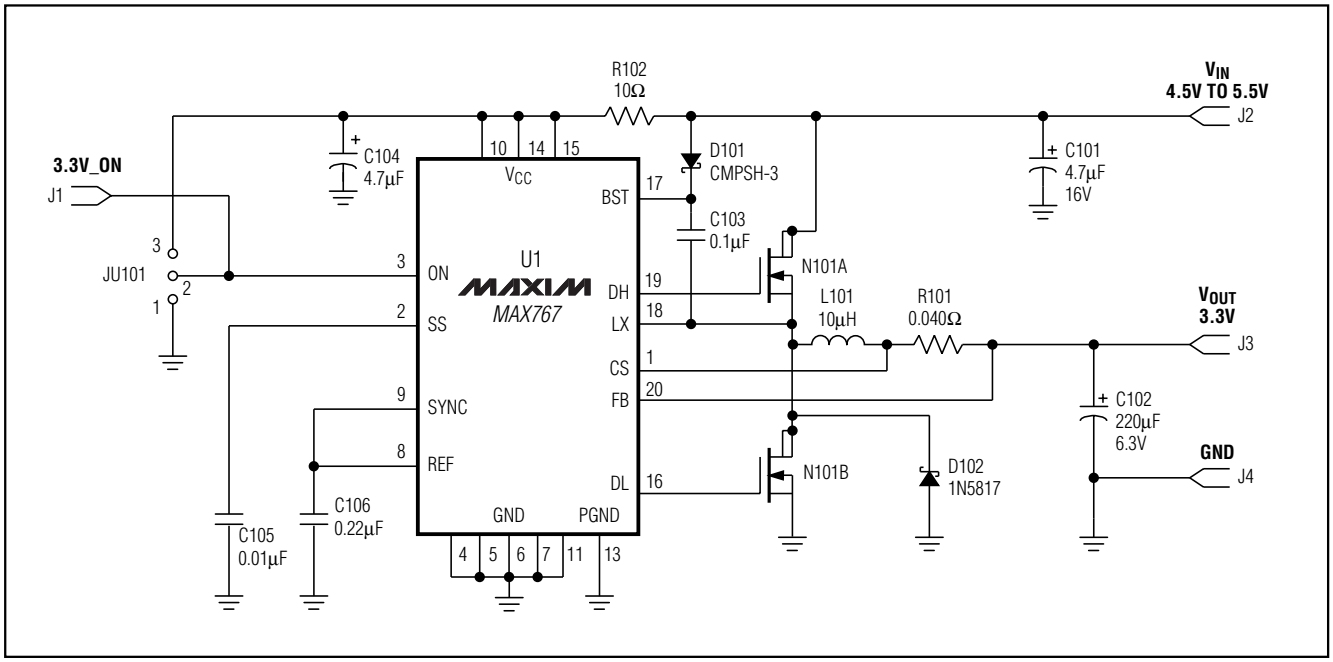


Figure 2. MAX767 1.5A Circuit

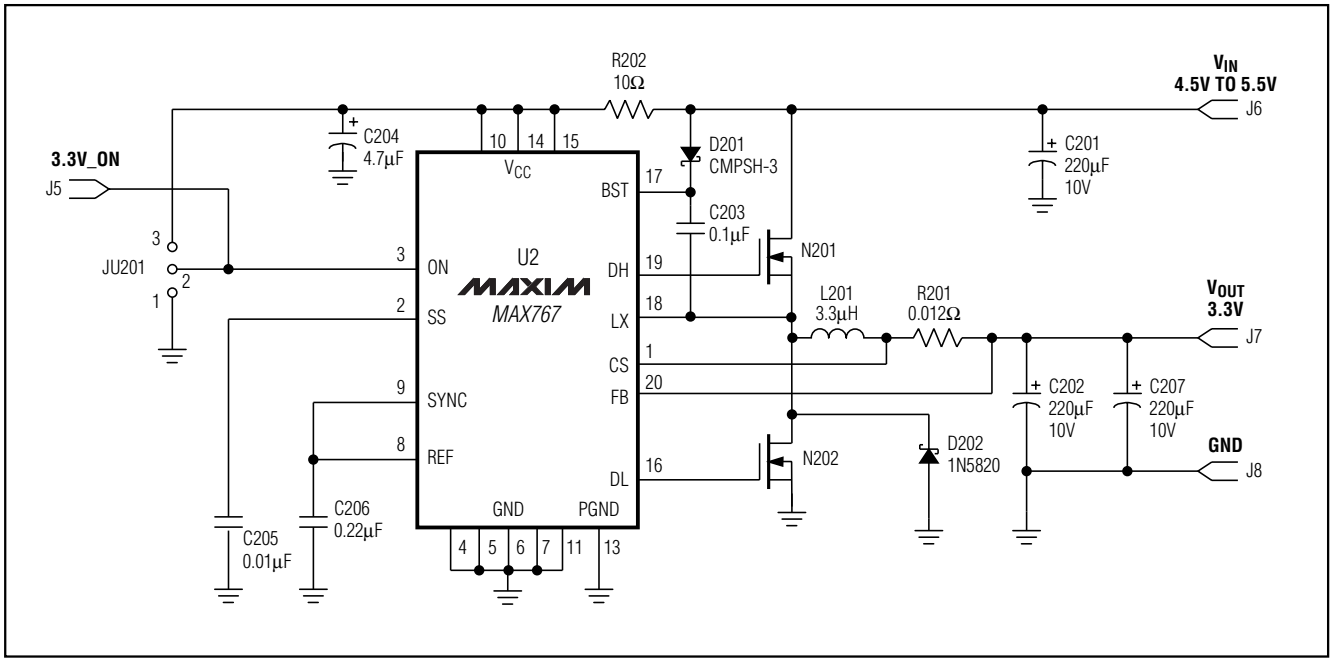


Figure 3. MAX767 5A Circuit

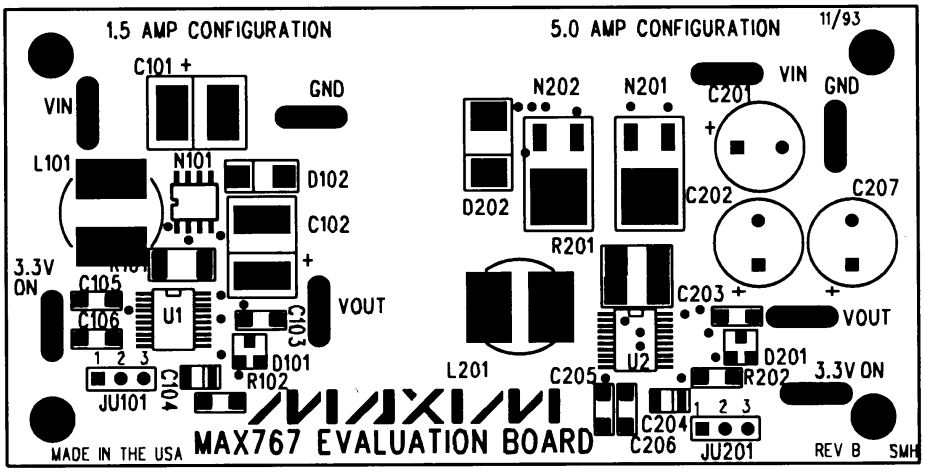


Figure 4. MAX767 EV Kit Component Placement Guide (Component Side)

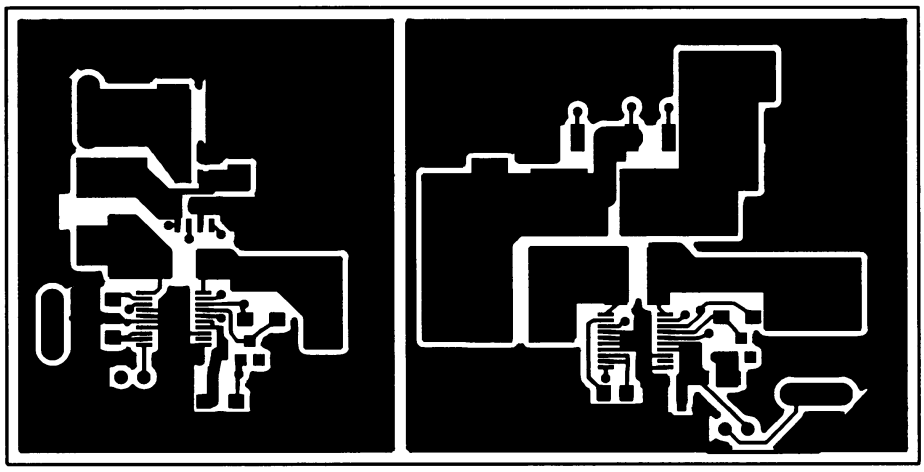


Figure 5. MAX767 EV Kit PC Layout (Component Side)

MAX767 Evaluation Kit