EV2344-J-00A

26V/2A, 600KHz, Step Down Converter Evaluation Board

The Future of Analog IC Technology

DESCRIPTION

The MP2344 is a high frequency synchronous rectified step-down switch mode converter with built in internal power MOSFETs. It offers a very compact solution to achieve 2A continuous output current over a wide input supply range with excellent load and line regulation.

The Evaluation Board can deliver a 2A continuous output current with excellent load and line regulation over a wide input supply range.

Full protection features include over-current protection and thermal shut down.

The MP2344 requires a minimum number of readily-available standard external components and is available in a space saving 6-pin TSOT23 package.

FEATURES

- Wide 7.5V to 26V Operating Input Range
- 2A Load Current
- 95mΩ/45mΩ Low Rds(on) Internal Power MOSFETs
- Power Save Mode for Light Load Condition
- 600kHz Fixed Switching Frequency at CCM
- Switching Node Ringing Reduction
- Internal Soft Start
- OCP Protection and Hiccup
- Thermal Shutdown
- Output Adjustable from 3.3V
- Available in a 6-pin TSOT23 package

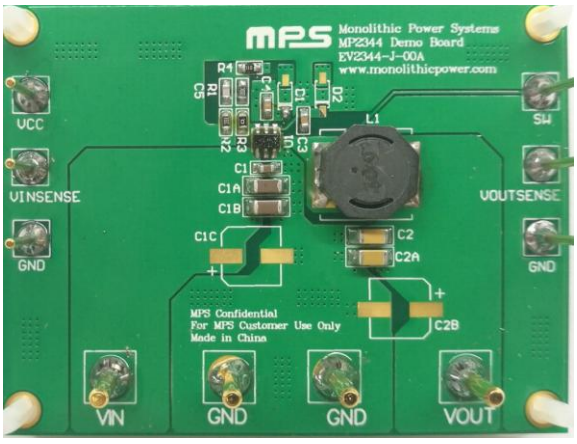
APPLICATIONS

- Standby Power Supply
- White Goods
- Flat Panel Television and Monitors

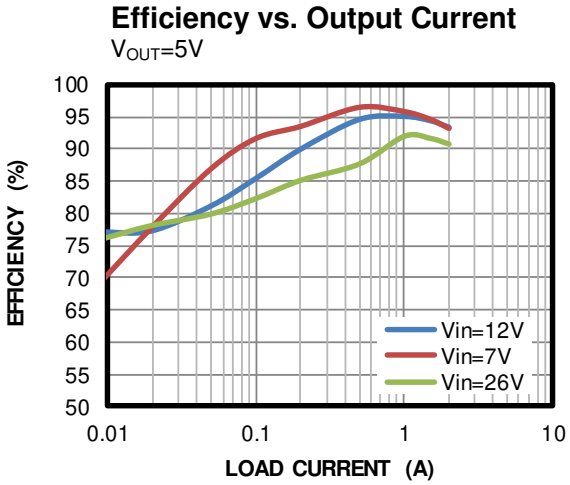
ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Input Voltage	V_{IN}	7.5 – 26	V
Output Voltage	V_{OUT}	5	V
Output Current	I_{OUT}	2	A

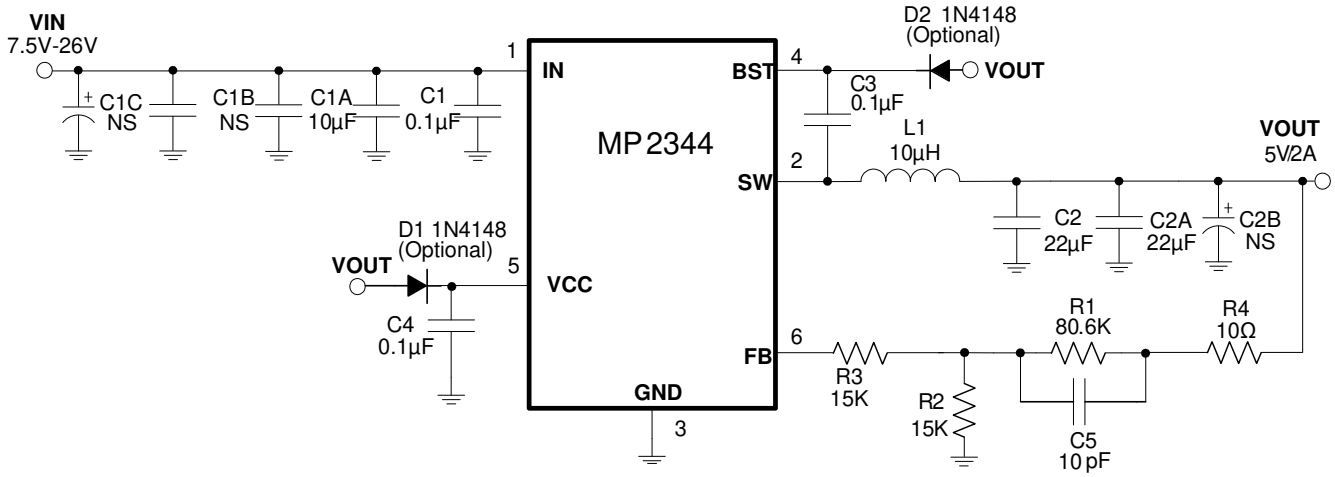
EV2344-J-00A EVALUATION BOARD



Board Number	MPS IC Number
EV2344-J-00A	MP2344GJ



EVALUATION BOARD SCHEMATIC



EV2344-J-00A BILL OF MATERIALS

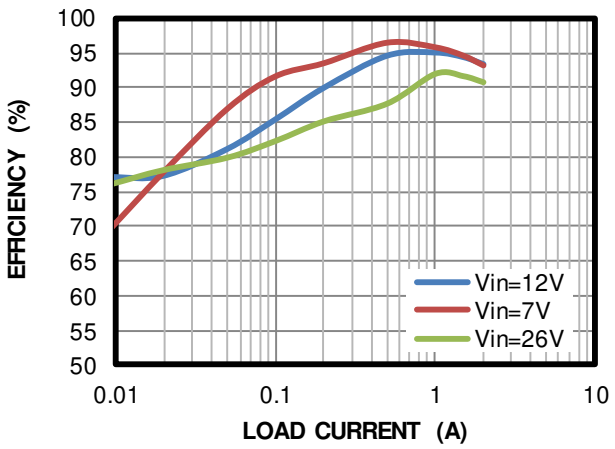
Qty	Ref	Value	Description	Package	Manufacturer	Manufacturer P/N
1	C1	0.1µF	Ceramic Cap,50V,X7R	0603	Murata	GRM188R71H104KA93D
2	C3, C4	0.1µF	Ceramic Cap,25V,X7R	0603	Murata	GRM188R71E104KA01D
1	C1A	10µF	Ceramic Cap,50V,X5R	1206	Murata	GRM31CR61H106KA12L
2	C2, C2A	22µF	Ceramic Cap, 25V, X5R	1206	Murata	GRM31CR61E226KE15L
0	C1C, C2B, C1B	NS				
1	C5	10pF	Ceramic Cap,50V,C0G	0603	Murata	GRM1885C1H100JA01D
0	D1, D2	NS				
1	R1	80.6kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0780K6L
2	R2, R3	15kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0715KL
1	R4	10 Ω	Film Res., 1%	0603	Yageo	RC0603JR-0710RL
1	L1	10µH	DCR=35mΩ, Isat=4A	SMD	Wurth	744 066 100
1	U1	MP2344	Step-Down Converter	TSOT23-6	MPS	MP2344GJ

EVB TEST RESULTS

V_{IN} = 12V, V_{OUT} = 5V, L = 10µH, DCR=35mΩ, T_A = 25°C, unless otherwise noted.

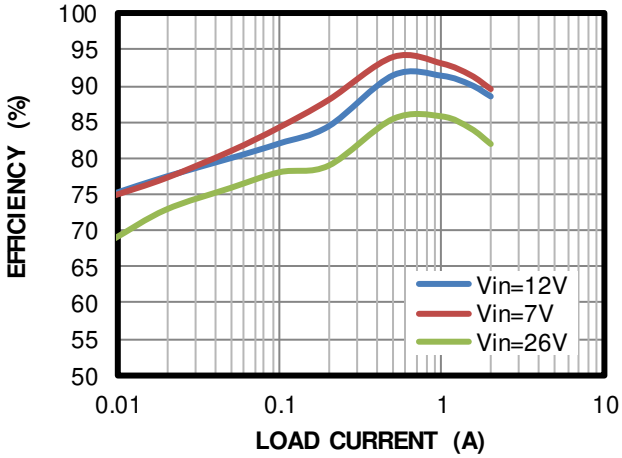
Efficiency vs. Output Current

V_{OUT}=5V

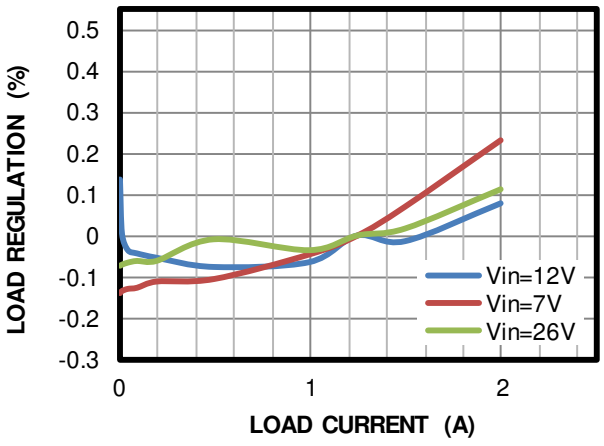


Efficiency vs. Output Current

V_{OUT}=3.3V

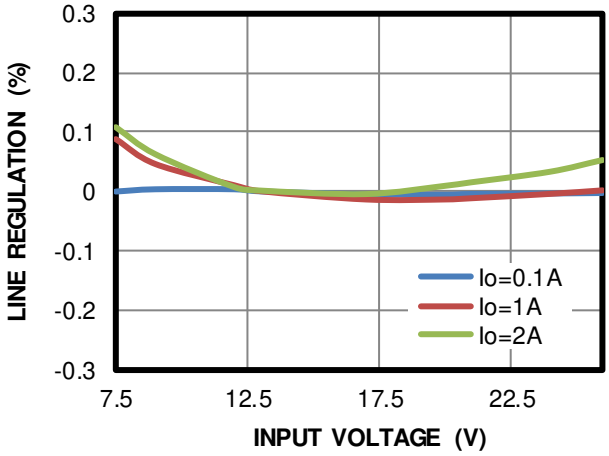


Load Regulation

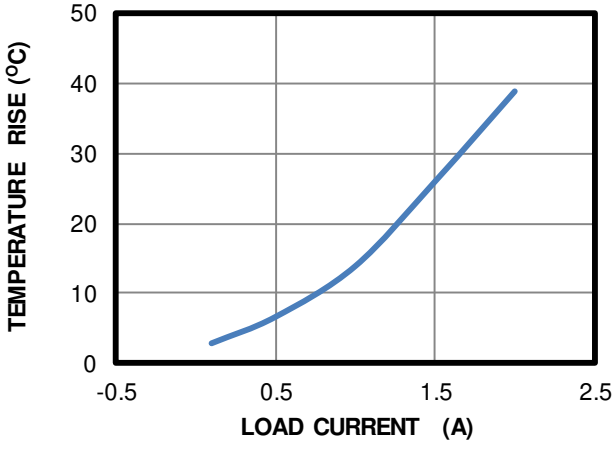


Line Regulation

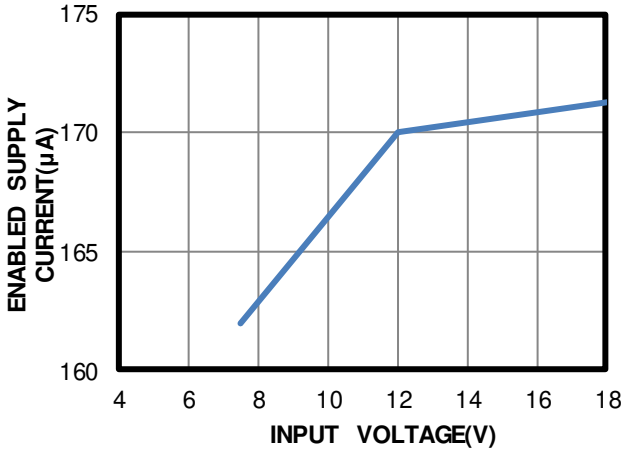
I_{OUT}=0.1A



Case Temperature



Enable Supply Current vs. Input Voltage

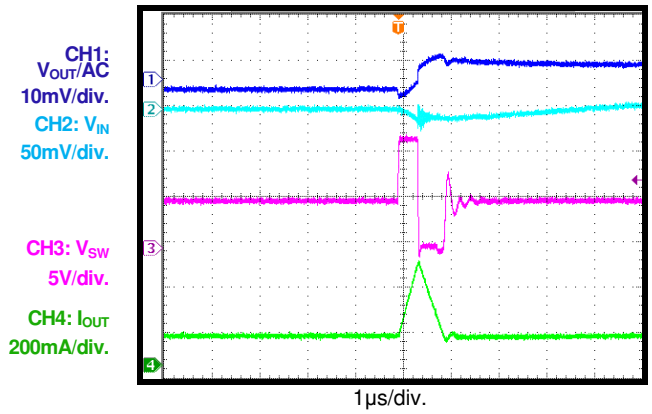


EVB TEST RESULTS *(continued)*

V_{IN} = 12V, V_{OUT} = 5V, L = 10µH, DCR=35mΩ, T_A = 25°C, unless otherwise noted.

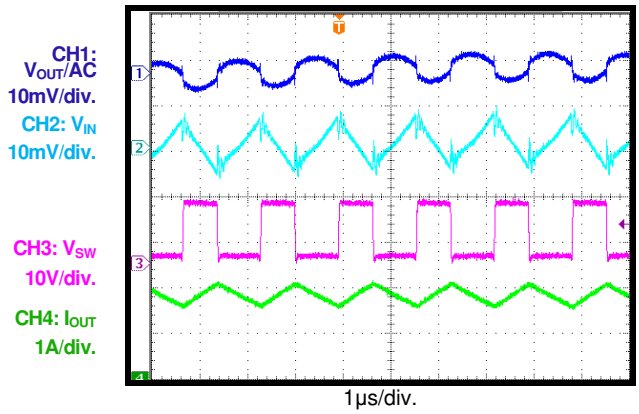
Input/Output Ripple

I_{OUT}=0A



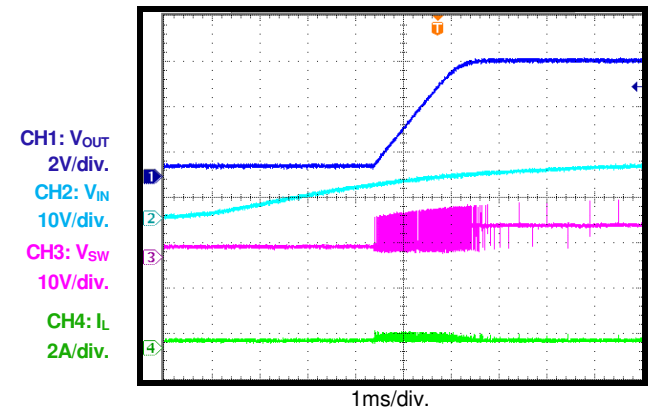
Input/Output Ripple

I_{OUT}=2A



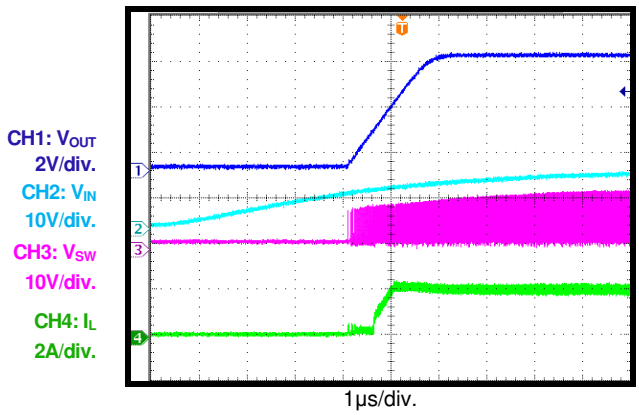
Start-Up through Input Voltage

I_{OUT}=0A



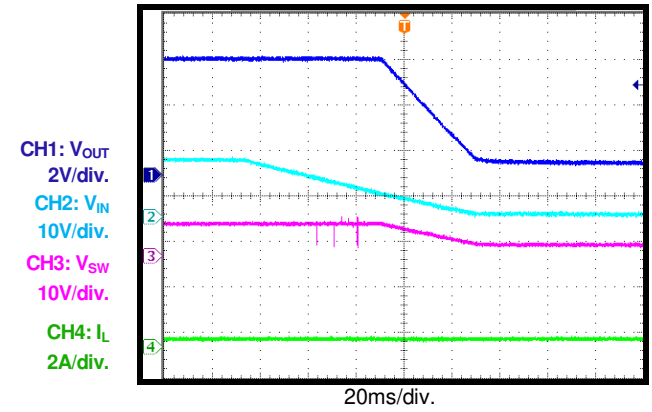
Start-Up through Input Voltage

I_{OUT}=2A



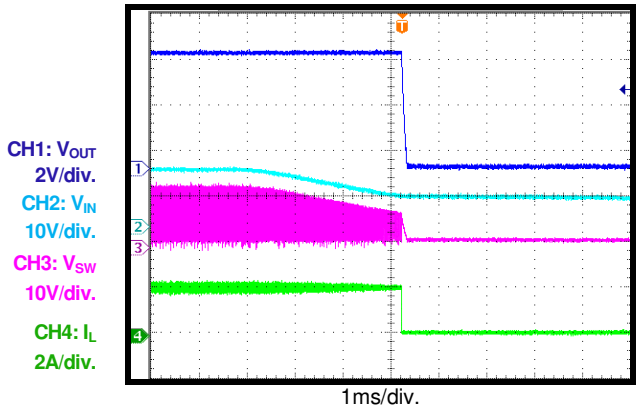
Shutdown through Input Voltage

I_{OUT}=0A



Shutdown through Input Voltage

I_{OUT}=2A

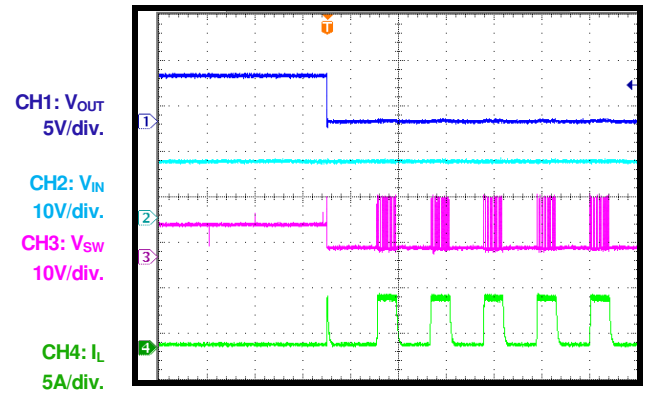


EVB TEST RESULTS *(continued)*

V_{IN} = 12V, V_{OUT} = 5V, L = 10µH, DCR=35mΩ, T_A = 25°C, unless otherwise noted.

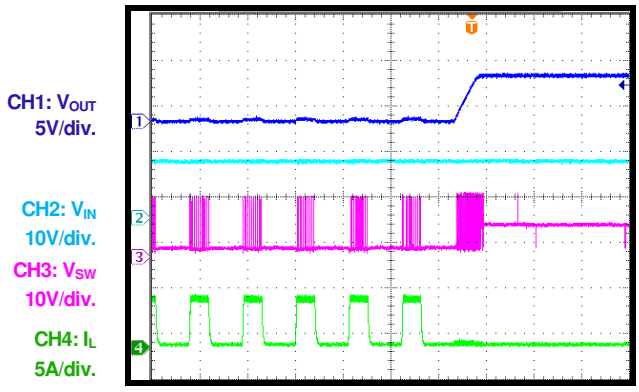
OCP Entry

I_{OUT}=0A



4ms/div.

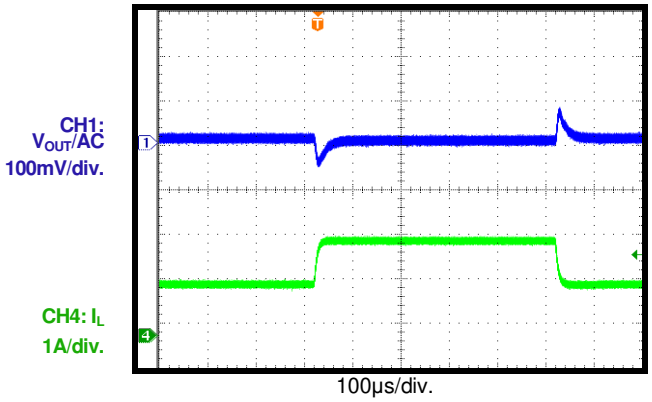
OCP Recovery



4ms/div.

Load Transient Response

1A-2A



100µs/div.

PRINTED CIRCUIT BOARD LAYOUT

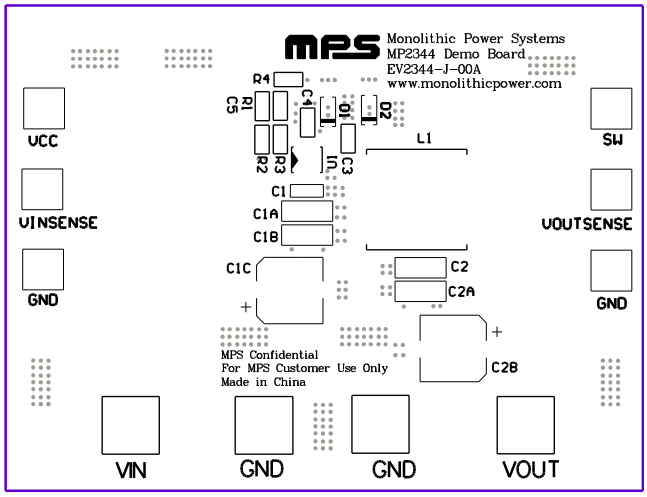


Figure 1—Top Silk Layer

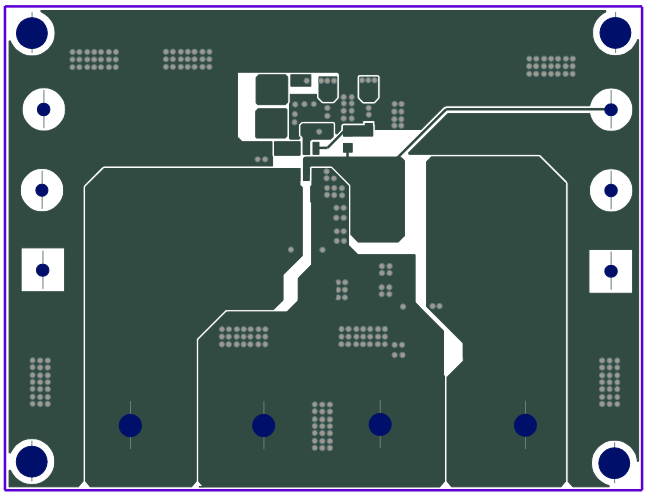


Figure 2—Top Layer

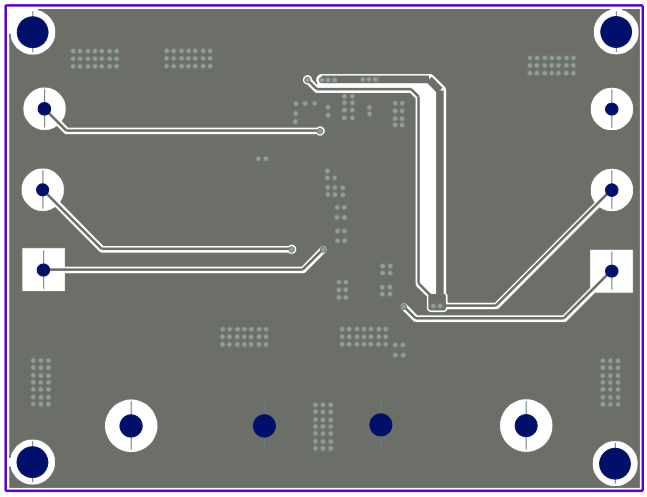


Figure 3—Bottom Layer

QUICK START GUIDE

1. Connect the positive and negative terminals of the load to the VOUT and GND pins, respectively.
2. Preset the power supply output between 7.5V and 26V, and then turn off the power supply.
3. Connect the positive and negative terminals of the power supply output to the VIN and GND pins, respectively.
4. Turn the power supply on. The board will automatically start up.