

1. Induction

The MX16171D100 evaluation board is designed to demonstrate the capabilities of the MX16171D100 OR-ing Diode Controller. One high side N-channel MOSFET MX10T03AHT is used. The evaluation board adopts two parallel structures. If users only need one channel to prevent current back flow, the other channel can not be used. And if users need OR-ing structures then the both channels need to be connected.

For more information, please refer to the datasheets of MX16171D100 and MX10T03AHT. By scanning the QR code behind the evaluation board. Users can pay attention to WUXI Maxin Micro public account for more productions and applications information.

2. Operating Range

The minimum input voltage: 5V

The maximum input voltage: 75V

The output current range: 0A to 15A

The ambient temperature range: 0°C to 45°C

The evaluation board size: 72*81mm

3. Evaluation Board

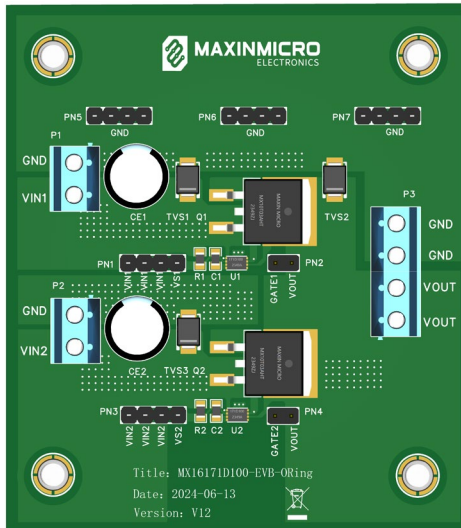


Figure1: EVB top view

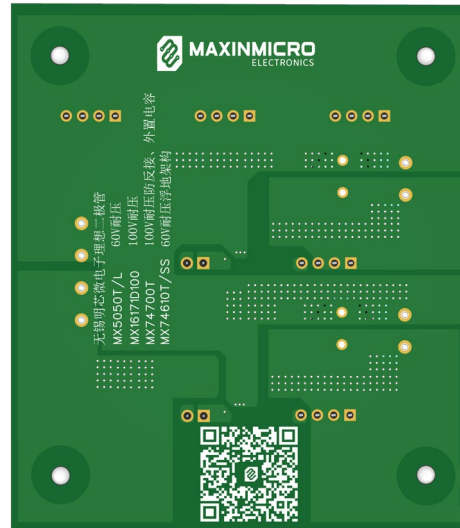


Figure2: EVB bottom view

4. Evaluation Board Schematic

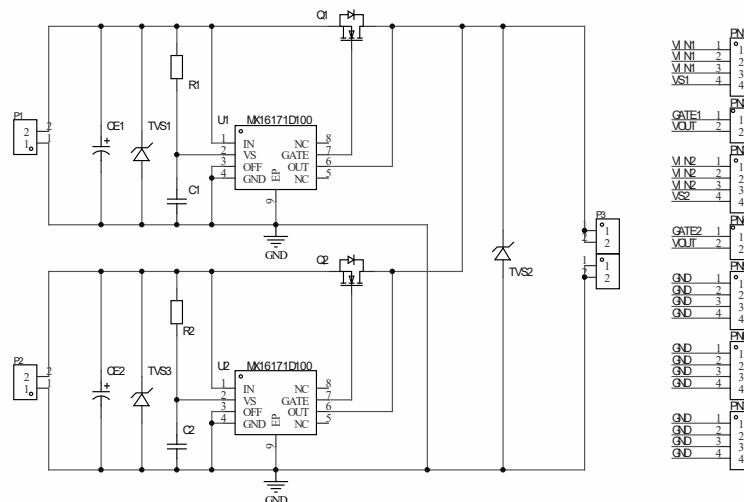


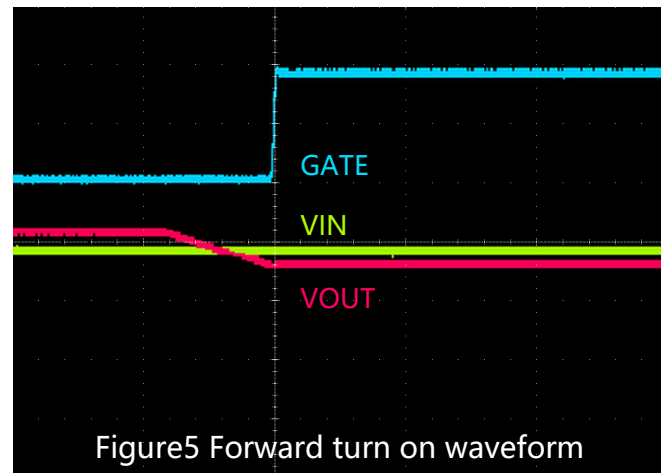
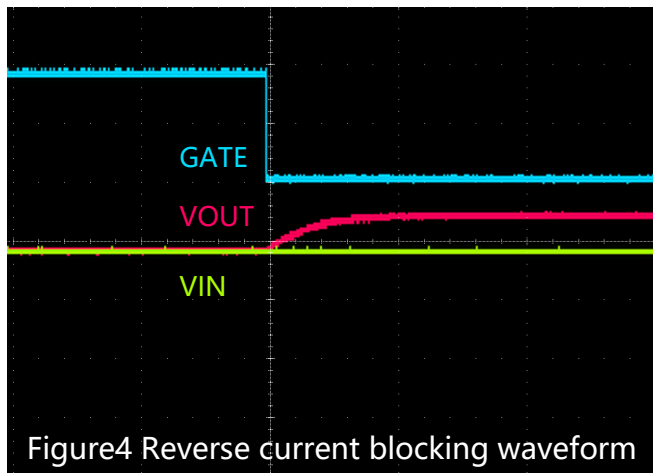
Figure3: EVB Schematic

5. The Bill of Material

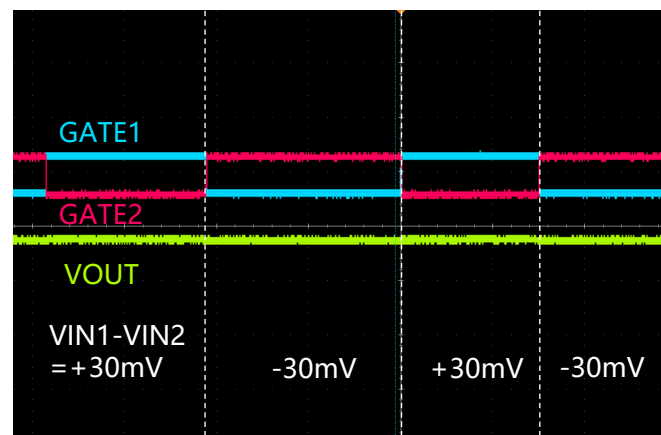
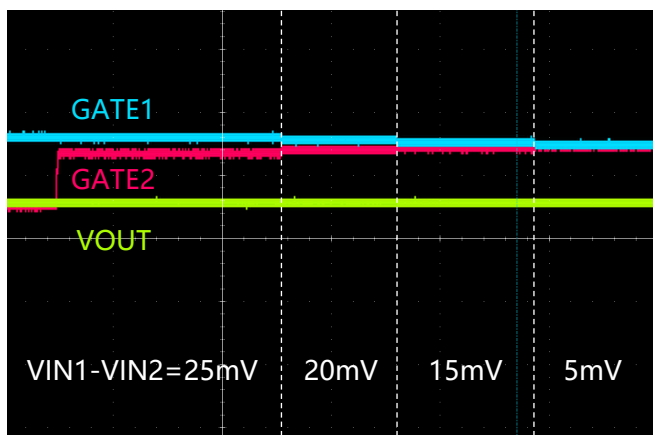
Designator	Footprint	Value/Parameter	Quantity	Supplier
R1/R2	SMT-0805	100ohm-0805-1%	2	FENGHUA
C1/C2	SMT-0805	100nF-100V-0805-X7R	2	FENGHUA
CE1/CE2	PLUG IN	33uF-100V-6.3*12mm	2	AiSHi
TVS1/TVS2/TVS3	SMT-SMB	75V-SMBJ75A	3	GOODARK
U1/U2	DFN2*3-8L	MX16171D100-Oring controller	2	Maxin Micro
Q1/Q2	TO263-2L	MX10T03AHT-100V3mohm	2	Maxin Micro
P1/P2/P3	P=5mm-2P	KF301-5.0-2P	4	
PN1/PN3/PN5/PN6/PN7	P=2.54mm-4P	PH-PZ01-04	5	
PN2/PN4	P=2.54mm-2P	PH-PZ01-02	2	

6. Test Parameters

6.1 One channel reverse current blocking



6.2 Two channel alternate ON and OFF



7. Other applications recommendation

7.1 Reverse connection protection

If users wants to augment reverse connection protection for input source, a diode should be connected between the GND pin of MX16171D100 and the power ground to block the reverse current blowing path. Like a Schottky diode 1N4148 as the following figure8.

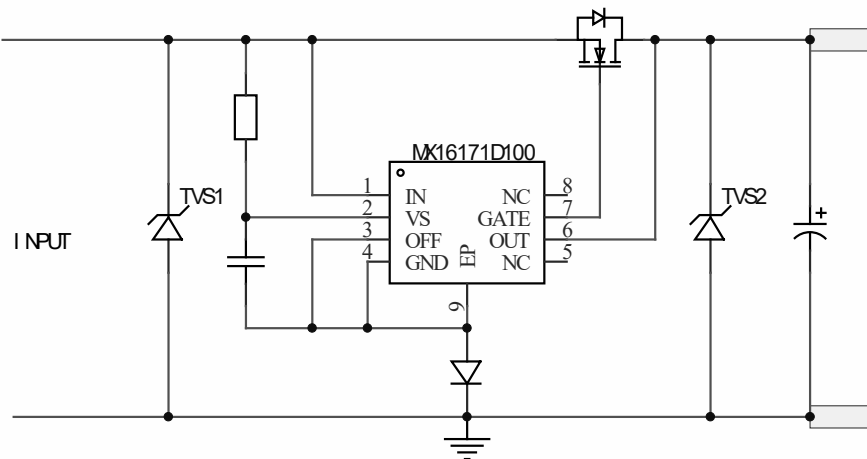


Figure 8 The reverse connection for input power protection

7.2 Low IQ application with an external N-MOSFET

In some battery as powered applications, whenever MX16171D100 functionality is not needed, the supply to the MX16171D100 can be disconnected by turn off the external MOSFET as shown in figure 9. This disconnects the ground path of the MX16171D100 and eliminates the current leakage from the battery power.

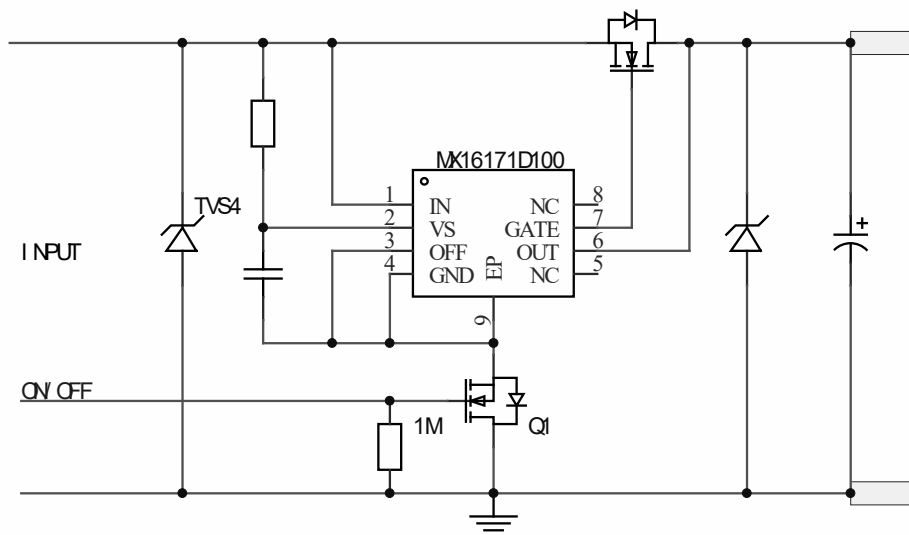


Figure9 The low IQ application for battery power

8. The function of TVS in this EVB

8.1 The function of TVS1 at input terminal

The TVS1 has two functions as shown in figure10. One is to prevent the voltage spike caused by hot-plug at input terminal. And the other function is to prevent the negative voltage spike caused by reverse current blocking for parasitic inductance at input terminal. The TVS acts as a diode to clamp this negative voltage in this case.

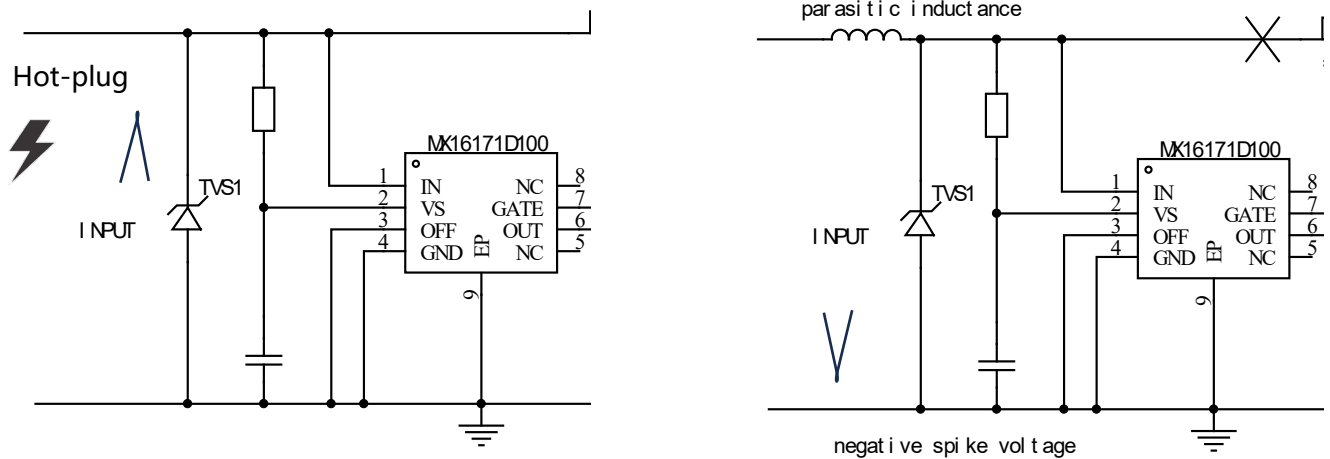


Figure 10 The function for TVS1 at input terminal

8.2 The function of TVS2 at output terminal

The main function for TVS2 is to prevent the voltage spike caused by reverse current blocking for parasitic inductance at output terminal. As shown in figure11. This parasitic inductance will produce a spike voltage that twice or even triple the output voltage. The OUT pin will be punctured by this spike voltage without TVS2 at this case.

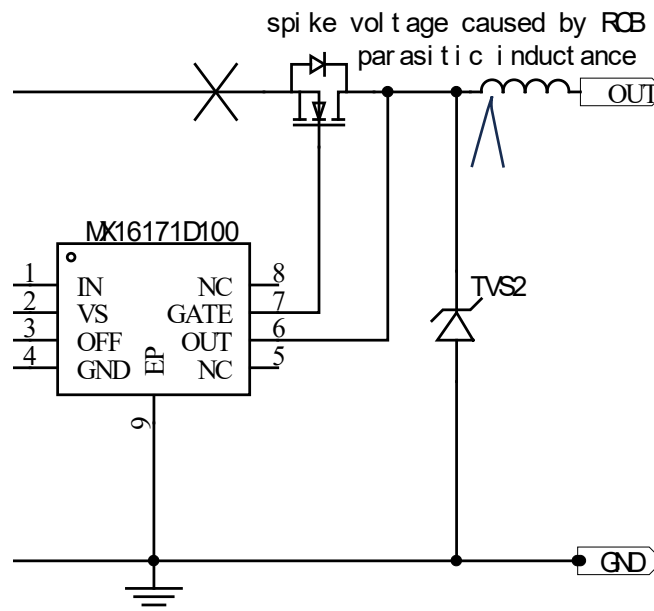


Figure11 The function for TVS2 to prevent spike voltage caused by parasitic at out terminal