

Micropackaged FETKY® Applications and Selector Guide

Typical Uses for FETKY® Devices (MOSFET + Schottky Co-packaged)

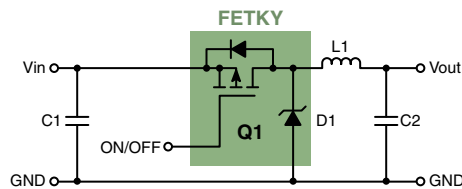
Introduction

In consumer electronic circuits, Schottky diodes are often seen working with power MOSFETs to implement system level power solutions. There are different reasons for integrating a Schottky diode with a MOSFET. Typical examples of these circuits include reverse protection, asynchronous DC/DC conversion, free-wheeling rectification, switching efficiency improvement, and more.

Examples

DC-DC Buck Circuit

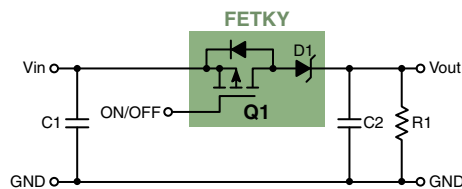
A MOSFET plus a Schottky diode is the most typical buck converter circuit seen throughout the portable electronics market. The Schottky diode is used as a commutating element closing the current loop after the main switch turns off.



DC-DC Buck Circuit

Li-Ion Charging Circuit

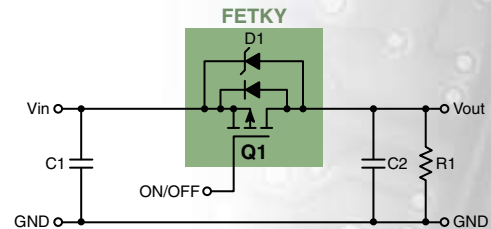
The FETKY device can be used as charging elements for multiple power sources such as car battery charger, wall charger, or USB connection. A Schottky is preferred over a standard diode because of the lower V_f rating resulting in minimum power consumption during normal operations.



Li-Ion Charging Circuit

Protection Circuit

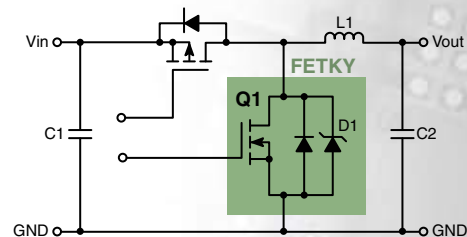
The Schottky diode actually provides a by-pass channel and keeps reverse voltage across the MOSFET to less than a P-N diode drop.



Protection Circuit

Switching Efficiency Improvement

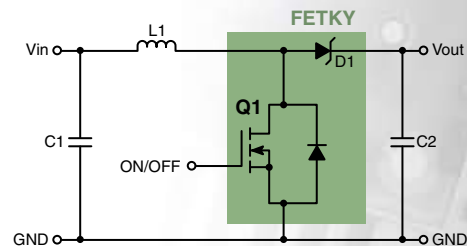
A Schottky diode can be placed in parallel with the synchronous rectifying MOSFET to improve efficiency. It conducts during the dead-time between the on/off cycle of the two power MOSFETs preventing the body diode of the bottom MOSFET from turning on and storing charge during the dead-time. This approach can improve efficiency as much as 2%.



Switching Circuit

Boost Converter

A MOSFET plus Schottky is the typical boost converter circuit seen in the portable electronics market, for such functions as the LCD screen backlight. The Schottky is used as a commutating element, closing the current loop after the main switch turns off.



Boost Converter

Portfolio

Please see our latest portfolio of FETKY devices on the reverse side of this card. For additional information on our FETKY, and other MOSFET portfolio devices, please visit our website at www.onsemi.com.

Orderable FETKY® Devices from ON Semiconductor

WDFN (2 mm x 2 mm)

Device	Polarity	BVDSS	RDS(ON) at VGS = 4.5 V	Vf at If = 1 A	Ir at Vr = 10 V	Pd
NTLJF3117P	P-Channel	-20	100 mΩ	0.47 V	2.0 μA	1.5 W
NTLJF4156N	N-Channel	30	70 mΩ	0.47 V	2.0 μA	1.5 W

ChipFET™

NTHD4N02F	N-Channel	20	80 mΩ	0.365 V	0.75 μA	0.91 W
NTHD3133PF	P-Channel	-20	80 mΩ	0.365 V	0.75 μA	1.1 W
NTHD3101F	P-Channel	-20	80 mΩ	0.51 V	1.0 μA	1.1 W

TSOP-6

NTGD3147F	P-Channel	-20	145 mΩ	0.36 V	0.04 μA	1.0 W
NTGD4169F	N-Channel	30	90 mΩ	0.41 V	2.5 μA	0.9 W

WDFN (3 mm x 3 mm)

NTLGF3402P	P-Channel	-20	140 mΩ	0.36 V	70 μA	1.6 W
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Micro8™

NTTD4401F	P-Channel	-20	90 mΩ	0.5 V	50 μA	1.42 W
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S0-8

NTMD4184PF	P-Channel	-30	165 mΩ	0.43 V	1 μA	1.6 W
NTMD4884NF	N-Channel	30	70 mΩ	0.26 V	20 μA	1.6 W
NTMS4873NF	N-Channel	30	15 mΩ	-	-	1.39 W



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