Micropackaged FETKY® Applications and Selector Guide

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

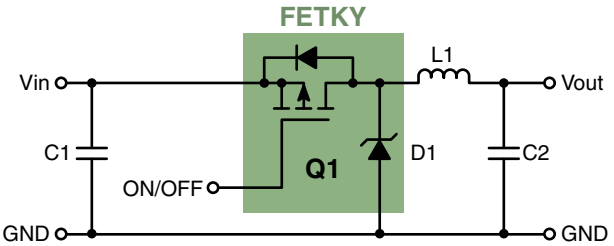
Introduction

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

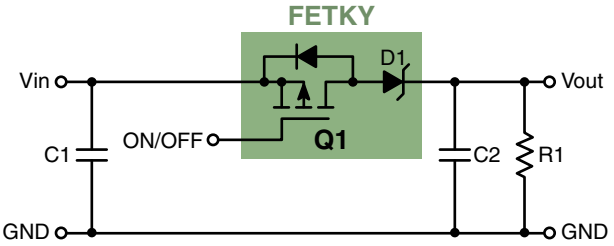
A MOSFET plus a Schottky diode is the most typical buck converter circuit seen throughout the portable electronics market. The Schottky diode is used as a rectifying element closing the current loop after the main switch turns off.



DC-DC Buck Circuit

Li-Ion Charging Circuit

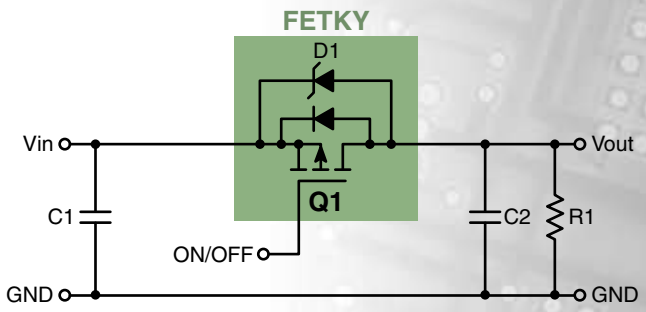
The FETKY device can be used as charging elements for multiple power sources such as car battery charger, wall charger, or USB connection. A Schottky is preferred over a standard diode because of the lower V_f rating resulting in minimum power consumption during normal operations.



Li-Ion Charging Circuit

Protection Circuit

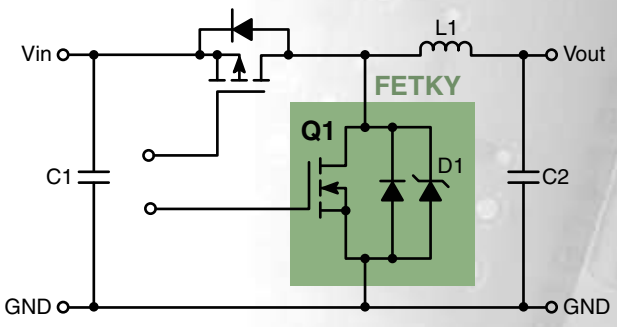
The Schottky diode actually provides a by-pass channel and keeps reverse voltage across the MOSFET to less than a P-N diode drop.



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

Portfolio

Please see our lastest 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**.

FETKY is a registered trademark of International Rectifier.

Orderable FETKY Devices from ON Semiconductor

µCool™ Products in WDFN (2 x 2 mm)

Device (Max Rating)	Polarity	B_{VDSS}	$R_{DS(on)}$ at V_{GS} = 4.5 V	V_f I_f = 1 A	I_r V_r = 10 V	P_d
NTLJF3117P	P-Channel	-20 V	100 mΩ	0.47 V	1200 µA	1.5 W
NTLJF4156N	N-Channel	30 V	70 mΩ	0.47 V	1200 µA	1.5 W
NTLJF3118N*	N-Channel	20 V	60 mΩ	0.365 V	1200 µA	1.5 W

*Coming soon.

ChipFET™ Package (3 x 2 mm)

Device (Max Rating)	Polarity	B_{VDSS}	$R_{DS(on)}$ at V_{GS} = 4.5 V	V_f I_f = 1 A	I_r V_r = 10 V	P_d
NTHD3100F	P-Channel	-20 V	80 mΩ	0.575 V	1 µA	1.1 W
NTHD4P02	P-Channel	-20 V	155 mΩ	0.575 V	1 µA	1.1 W
NTHD4N02	N-Channel	20 V	80 mΩ	0.365 V	750 µA	0.91 W

SO-8 Dual Package (5 x 6 mm)

Device (Max Rating)	Polarity	B_{VDSS}	$R_{DS(on)}$ at V_{GS} = 4.5 V	V_f I_f = 1 A	I_r V_r = 10 V	P_d
NTMSD3P303	P-Channel	-30 V	85 mΩ	0.42 V	250 µA	2.0 W
NTMSD3P102	P-Channel	-20 V	125 mΩ	0.58 V	500 µA	2.0 W
NTMSD6N303	N-Channel	20 V	40 mΩ	0.42 V	250 µA	2.0 W

ON Semiconductor®

µCool is a trademark of Semiconductor Components Industries, LLC. FETKY is a registered trademark of International Rectifier. ChipFET is a trademark of Vishay Siliconix.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free USA/Canada.
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81-3-5773-3850

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative