

# Micropackaged FETKY® Applications and Selector Guide

## Typical Uses for FETKY® Devices

(MOSFET + Schottky Co-packaged)

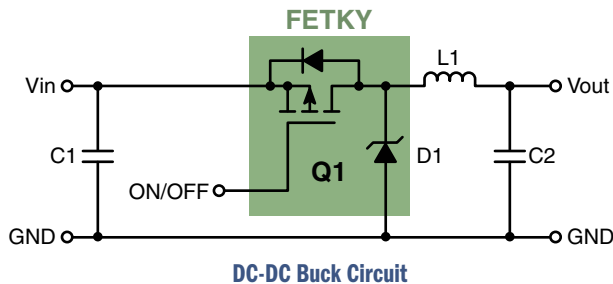
### Introduction

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

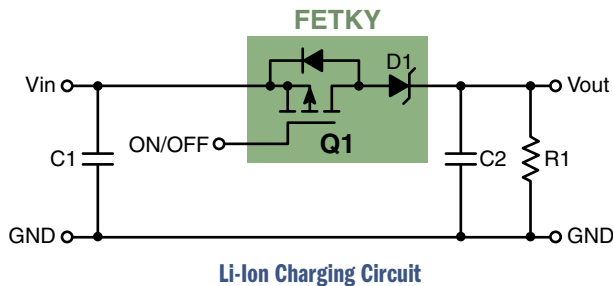
#### DC-DC Buck Circuit

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.



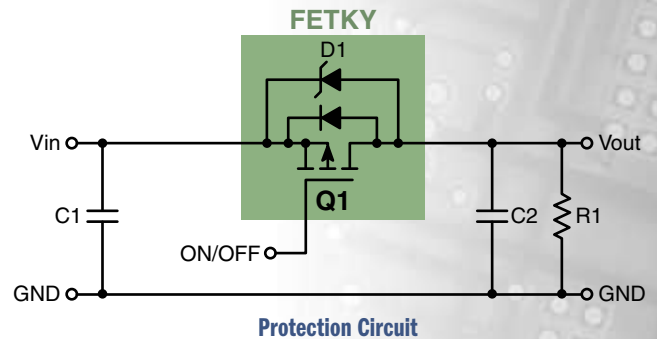
#### Li-Ion Charging Circuit

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.



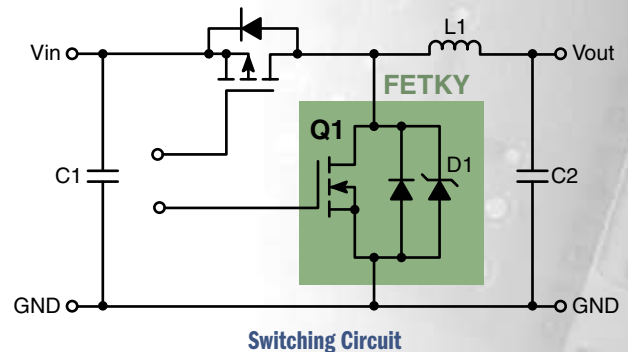
#### Protection Circuit

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



#### 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%.



#### 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](http://www.onsemi.com).

## Orderable FETKY Devices from ON Semiconductor

### μCool™ Products in WDFN (2 x 2 mm)

Device (Max Rating)	Polarity	B <sub>VDSS</sub>	R <sub>DS(on)</sub> at V <sub>GS</sub> = 4.5 V	V <sub>f</sub> I <sub>f</sub> = 1 A	I <sub>r</sub> V <sub>r</sub> = 10 V	P <sub>d</sub>
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 <sub>VDSS</sub>	R <sub>DS(on)</sub> at V <sub>GS</sub> = 4.5 V	V <sub>f</sub> I <sub>f</sub> = 1 A	I <sub>r</sub> V <sub>r</sub> = 10 V	P <sub>d</sub>
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

### S0-8 Dual Package (5 x 6 mm)

Device (Max Rating)	Polarity	B <sub>VDSS</sub>	R <sub>DS(on)</sub> at V <sub>GS</sub> = 4.5 V	V <sub>f</sub> I <sub>f</sub> = 1 A	I <sub>r</sub> V <sub>r</sub> = 10 V	P <sub>d</sub>
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.

ON Semiconductor and the ON logo are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

### 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](http://www.onsemi.com)

**Order Literature:** <http://www.onsemi.com/orderlit>

For additional information, please contact your local  
 Sales Representative