

*Torex...Powerfully Small!*

## Load Switch Product Overview

April 2026

TOREX Semiconductor

Rev. 1.3

## Applications / Purpose

Sequencing  
Power Line ON/OFF

Inrush Current Control

Interface & Board Protection  
Current Limit/Short Protection  
(USB/HDMI etc)

Input / Output  
Current Limiting

Power Multiplexer  
(Mux / OR / Backup)

Reverse Current Prevention  
Low Loss / SBD Replacement

### Simple type (P.4~)

Low Iq

XC8115	
6V, 1A Iq=0μA	Ultra-low Iq Soft start external adj. C <sub>L</sub> discharge

No Reverse  
Current  
when OFF

XC8116	
6V, 1A Iq=0μA	Ultra-low Iq Soft start external adj. Reverse Current Prevention when OFF

### Output protection for power supply lines (P.11~)

Internal  
Fixed Current  
Limit

XC8107	
5.5V, ILIM=0.5/1.0/ 1.5/2.0A	Soft start Reverse current prevention Flag, C <sub>L</sub> discharge

Externally  
Adjustable  
Current Limit

XC8108/XC8109	
5.5V, ILIM adj. 0.9~2.4A/ 0.075~1.3A	Soft start Reverse current prevention Flag, C <sub>L</sub> discharge

### Built-in Ideal Diode Function (P.16~)

1ch

XC8110/XC8111	
6V, 500m/1A Iq=3.6μA	V <sub>F</sub> =20mV True reverse current prevention IEC 62368-1 certified

2ch

XC8112/XC8113	
6V, 500m/1A Iq=3.6μA/ch	2ch V <sub>F</sub> =20mV True reverse current prevention IEC 62368-1 certified

XC8114	
6V, 3A Iq=3.6μA Ron=45mΩ	V <sub>F</sub> =20mV True reverse current prevention

# Appendix : Key Load Switch IC Products

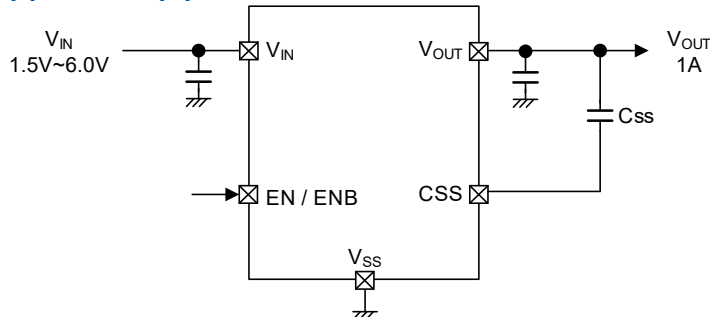
	Simple Load Switches		Low Ron Load Switches With High precision current limit		Load Switches with Ideal Diode Function		
	XC8115	XC8116	XC8107	XC8108 XC8109	XC8110 XC8111	XC8114	XC8112 XC8113
Features	I <sub>q</sub> 0.0μA Soft-start Adj.		Low Ron, High precision current limit		True Reverse Current Prevention, Small Solution	True Reverse Current Prevention Low Ron, Small Solution	2ch Small Solution True Reverse Current Prevention
Main functions	Soft-start Adj. Reverse Current Prevention @ OFF (XC8116)		Current limit (Fixed) 0.9A / 1.4A / 1.9A / 2.4A Flag output	Current limit (Adj.) 0.9A~2.4A / 75mA~1.3A Flag output	Ideal Diode Function (True Reverse Current Prevention) VF=20mV		
V <sub>IN</sub>	1.1V ~ 6.0V		2.5V ~ 5.5V		1.5V ~ 6.0V		
I <sub>OUT</sub>	1A		0.5A/1A/1.5A/2A	2A / 0.9A	500mA / 1A	3A	2ch x 500mA / 1A
I <sub>q</sub> (V <sub>IN</sub> pin)	0.0μA		40μA		at Forward Bias : 3.6μA (/ch) at Reverse Bias : 0.0μA (/ch)		
Ron	130mΩ		85mΩ		120mΩ	45mΩ	150mΩ/ch
Functions, Protections	ON/OFF, Soft-start Adj. Short Protection Thermal Shutdown		ON/OFF, Soft-start, Reverse Current Prevention, Thermal Shutdown		ON/OFF, Inrush Current Prevention, Current Limit, Thermal Shutdown		
Standard	-		-		IEC 62368-1:2023	-	IEC 62368-1:2023
Packages	DFN1515-6A (1.5x1.5x0.38mm) SOT-25 (2.8x2.9x1.3mm)		USP-6C (1.8x2.0x0.6mm) SOT-25 (2.8x2.9x1.3mm)	USP-6C (1.8x2.0x0.6mm)	WLP-4-02 (0.82x0.82x0.5mm) USP-6B06 (1.5x1.8x0.33mm) SOT-25	WLP-4-04 (0.82x1.48x0.495mm) DFN1820-6G (1.8x2.0x0.6mm) SOT-89-5	USP-8B06 (2.0x2.0x0.33mm)
Main applications	Power Multiplexing (Mux) Sequencing Power Line ON/OFF Inrush Current Prevention		USB / HDMI terminal protection Board-to-board power protection switch Input current limit/soft start switch		Multiple power sources OR connection Automatic switching Multiple power source selection switch Reverse current protection switch when input voltage drops		

## Ultra-Low Iq 0.0μA / Adjustable Soft-Start & Inrush Current Control / Reliable Protection Features

### Features

Input Voltage	: 1.1V ~ 6.0V (Absolute Maximum : 6.6V)
Output Current	: 1A
ON Resistance	: 130mΩ @ $V_{IN} = 5.0V$ (DFN1515-6A) 150mΩ @ $V_{IN} = 3.6V$ (DFN1515-6A) 320mΩ @ $V_{IN} = 1.5V$ (DFN1515-6A)
Supply Current	: 0.0μA
Standby Current	: 0.0μA
Functions	: ON/OFF Control EN Pin Logic Selectable Adjustable Soft-Start, $C_L$ Discharge
Protection	: Short-Circuit Protection Thermal Shutdown (Auto Recovery)
Package	: SOT-25, DFN1515-6A
Operating Ambient Temp.	: -40°C ~ 105°C

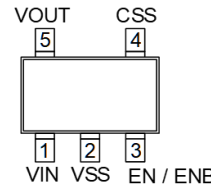
### Typical Application Circuit



### Packages

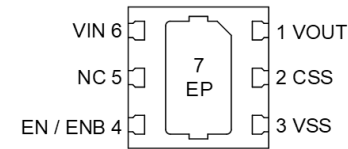
SOT-25  
(2.8x2.9x1.3mm)

TOREX Longevity Program (TLP)



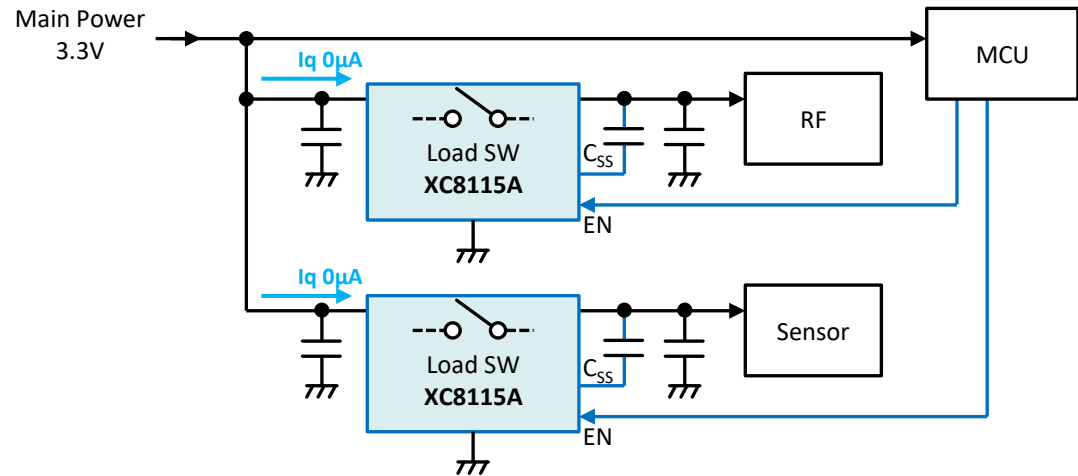
DFN1515-6A  
(1.5x1.5x0.38mm)

TOREX Longevity Program (TLP)



### Applications / Use Cases

- Power Line Distribution
- ON/OFF Control of Load Devices
- Power Sequence Configuration

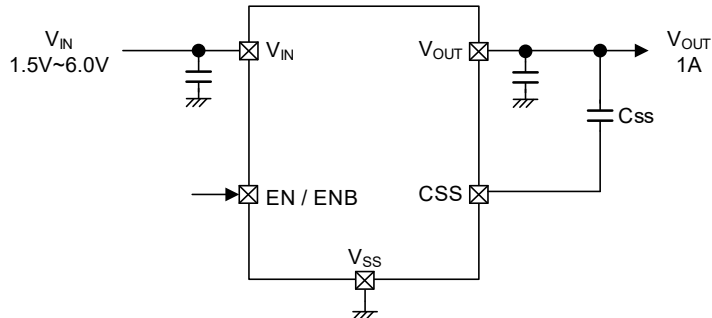


## Ultra-Low Iq 0.0μA / Adjustable Soft-Start & Inrush Current Control / Reverse Current Prevention

### Features

Input Voltage	: 1.1V ~ 6.0V (Absolute Maximum : 6.6V)
Output Current	: 1A
ON Resistance	: 130mΩ @ V <sub>IN</sub> = 5.0V (DFN1515-6A) 150mΩ @ V <sub>IN</sub> = 3.6V (DFN1515-6A) 320mΩ @ V <sub>IN</sub> = 1.5V (DFN1515-6A)
Supply Current	: 0.0μA
Standby Current	: 0.0μA
Functions	: ON/OFF Control EN Pin Logic Selectable Adjustable Soft-Start Reverse Current Prevention Active when EN = "L" (Type A) or ENB = "H" (Type B)
Protection	: Short-Circuit Protection Thermal Shutdown (Auto Recovery)
Package	: SOT-25, DFN1515-6A
Operating Ambient Temp.	: -40°C ~ 105°C

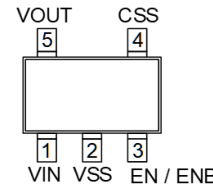
### Typical Application Circuit



### Packages

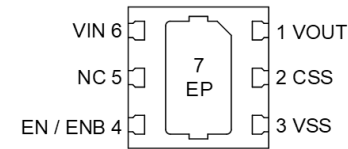
SOT-25  
(2.8x2.9x1.3mm)

TOREX Longevity Program (TLP)



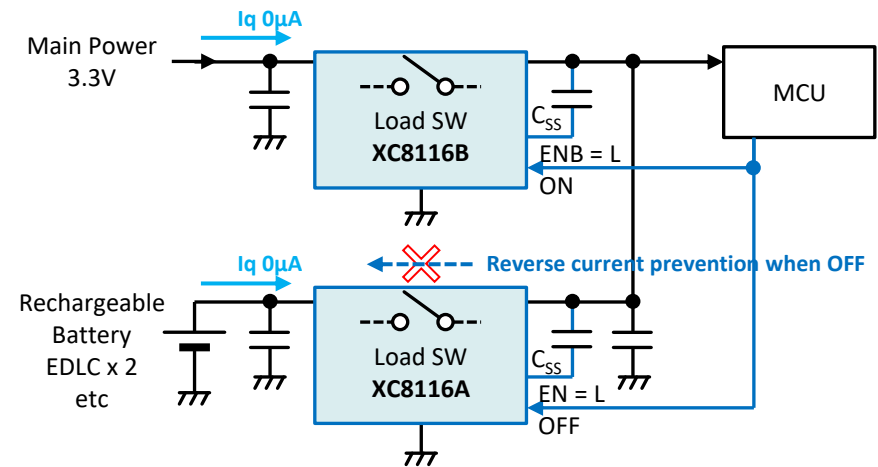
DFN1515-6A  
(1.5x1.5x0.38mm)

TOREX Longevity Program (TLP)



### Applications / Use Cases

Power Multiplexer (Multiple Power/Battery Selection)



Ideal for low-power designs with  $I_q$  0  $\mu$ A

①

Ultra-Low Power Load Switch with Adj. Soft-Start  
XC8115/XC8116



Suitable for power rail control

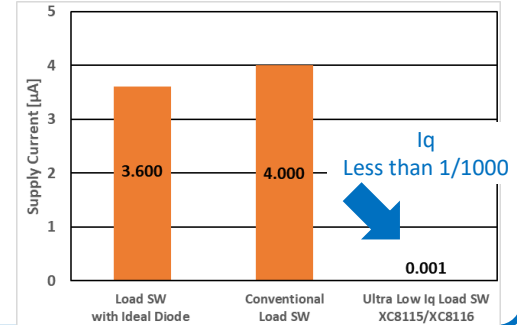
②

③

Applicable to backup power and power multiplexer configurations

## ① Ultra-low current consumption of 0.0 $\mu$ A to extend battery life

- ✓ Significantly reduced current consumption compared to conventional products  
0.0  $\mu$ A operating current contributes to longer battery life
- ✓ Reliable protection features even with ultra-low power operation  
Unlike typical ultra-low-power devices, integrated protection functions (short-circuit protection / thermal shutdown) are provided



## ② Adjustable soft-start adjustment for inrush current suppression and power sequencing

- ✓ Adjustable soft-start limits inrush current  
Ideal for applications with large output capacitance or tight input current limitations
- ✓ Soft-start adjustment also enables controlled power sequencing

## ③ Reverse current prevention (XC8116) and High/Low active enable options available

- ✓ Reverse current prevention at OFF state (XC8116)  
Reverse current prevention with 0.0  $\mu$ A current consumption when OFF  
Ideal for preventing discharge from large capacitors or secondary batteries, and for ship mode operation
- ✓ High/Low active EN logic  
Both High-active and Low-active enable logic options are available  
Enables easy implementation of power source selection(power multiplexer) circuits

■ Example: 3.3 V Rail Distribution and On/Off Control

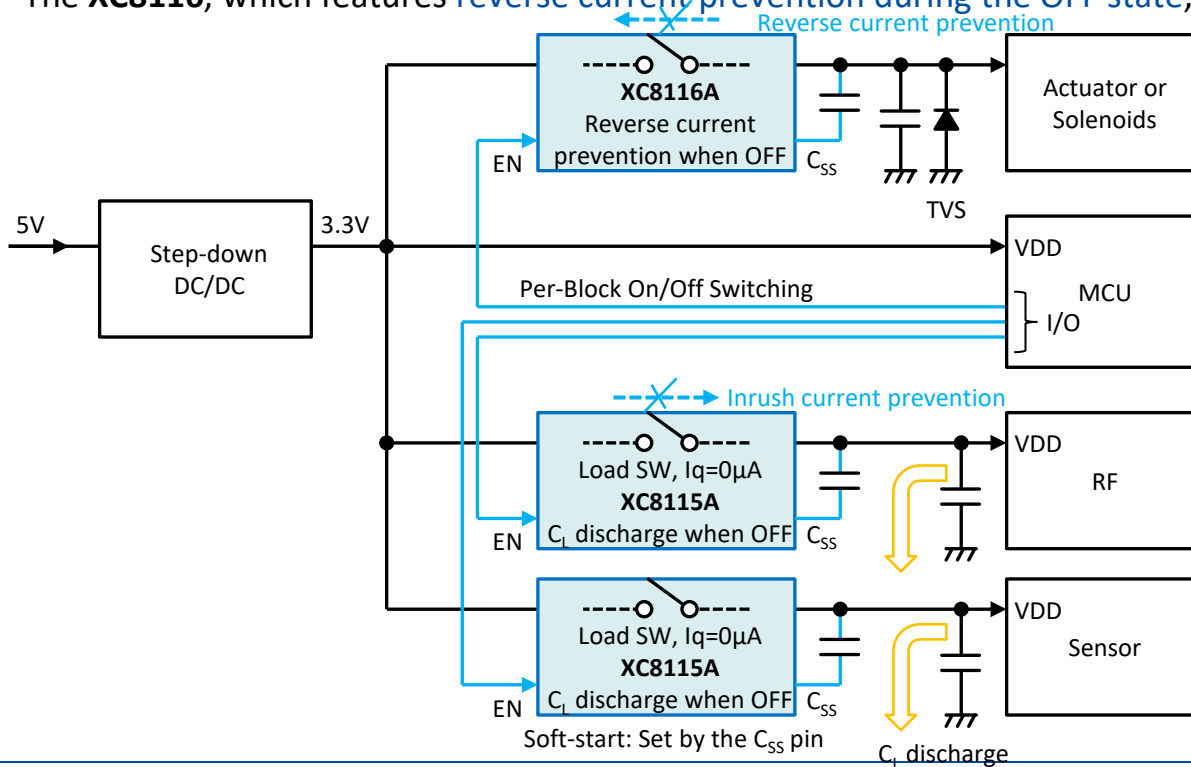
In this example, 3.3 V supplied to each functional block such as RF communication modules and sensors is switched on and off using the XC8115 and XC8116.

● Soft-start and  $C_L$  discharge

The soft-start time is set by the  $C_{SS}$  pin, enabling control of the startup timing and suppression of inrush current during turn-on. The **XC8115** rapidly discharges  $V_{OUT}$  via the  $C_L$  discharge function when turned OFF, preventing malfunction of downstream devices.

● OFF-state reverse current prevention

When actuators or solenoids are turned OFF, back EMF can cause reverse current flow from  $V_{OUT}$  to  $V_{IN}$  of the load switch. The **XC8116**, which features reverse current prevention during the OFF state, is optimal for preventing this reverse current.



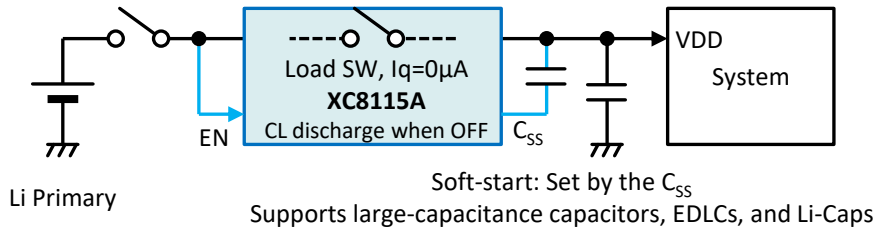
- Inrush current prevention by soft-start
- Reverse current prevention against back EMF during OFF state

- Inrush current prevention by soft-start
- Start-up timing (power sequencing) can be controlled by the  $C_{SS}$  setting and EN pin signal timing
- Prevents unintended operation by  $C_L$  discharge

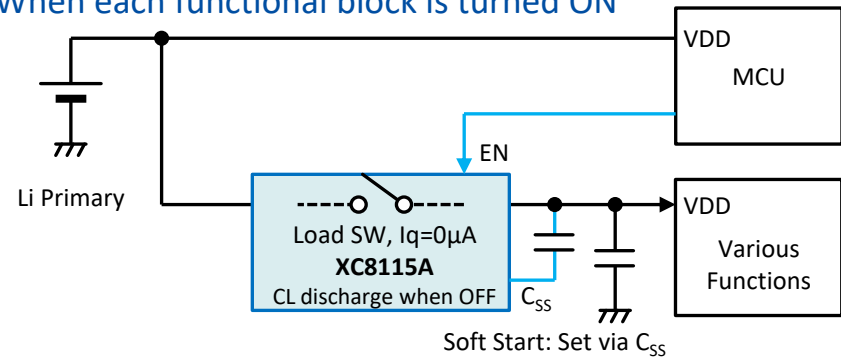
■ **Prevention of battery voltage drop**

Suppresses inrush current at turn-on by the soft-start function, preventing voltage drop caused by battery impedance.

● **During startup of battery-powered equipment**



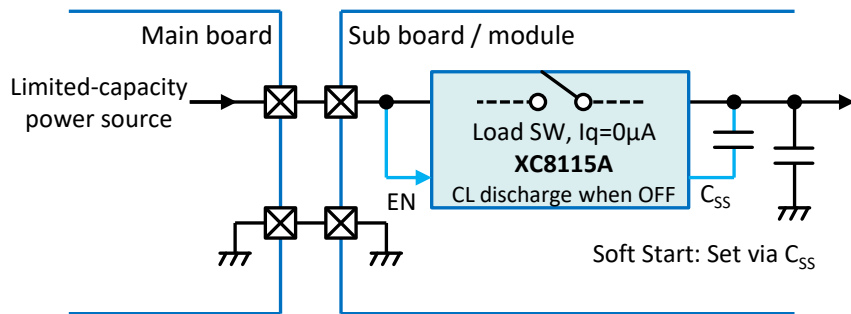
● **When each functional block is turned ON**



■ **Power transfer between boards/modules, USB and other power inputs**

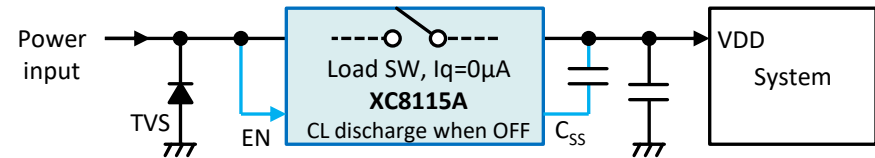
● **Case of power transfer between boards/modules**

Suppresses inrush current at turn-on, preventing voltage drop caused by limited current sourcing capability of the power supply



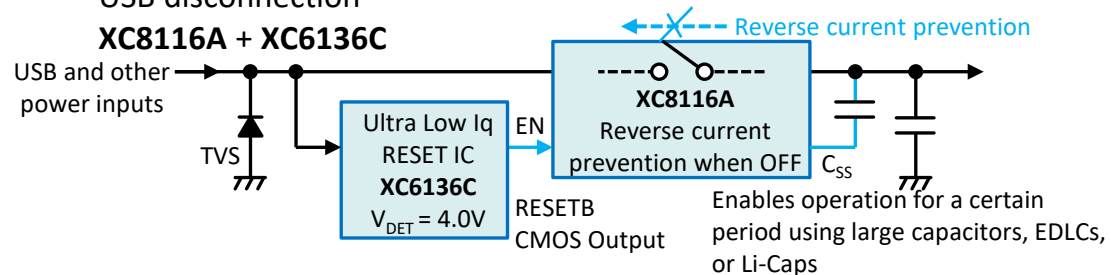
● **Case of USB and other power inputs**

Prevents activation of current limiting on the USB power source



Maintains supply voltage during power voltage drop or unexpected USB disconnection

**XC8116A + XC6136C**



Enables operation for a certain period using large capacitors, EDLCs, or Li-Caps

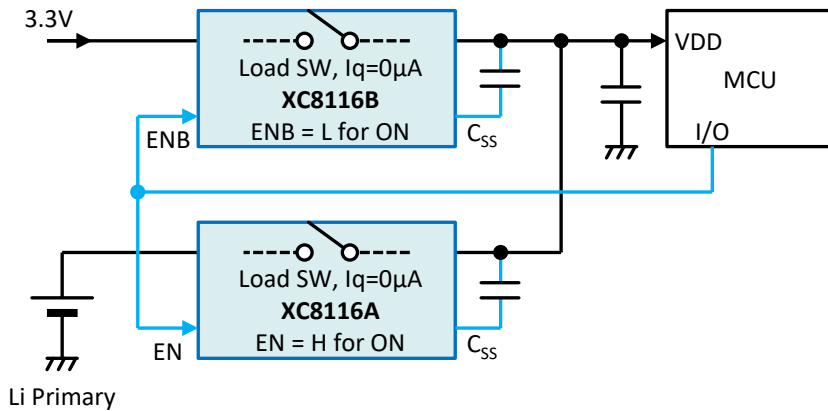
## ■ Selection from two power sources

Power source selection can be implemented with a single control line by combining the XC8116A and XC8116B types.

A-type: ON when EN = H, B-type: ON when ENB = L

### ● Selection between a battery and a 3.3 V input

To turn the battery path OFF during shipment (ship mode), use the XC8116A on the battery side (OFF when EN = L).

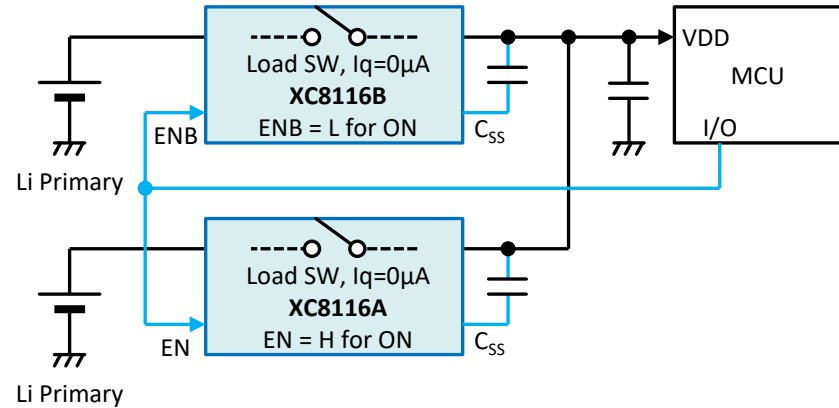


Compared with an ideal diode,

- The quiescent current ( $I_q$ ) of all pins is  $0.0 \mu A$  regardless of ON or OFF state, enabling further reduction of battery consumption.
- MCU control is required; automatic switching is not supported.

### ● Power supply selection from two batteries

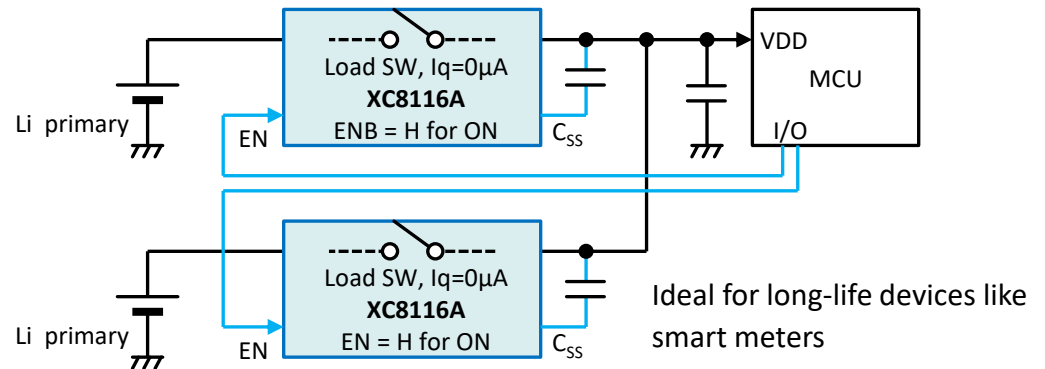
One battery is used until it is depleted, then the power source is switched to the other battery.



### ● Parallel operation of two batteries

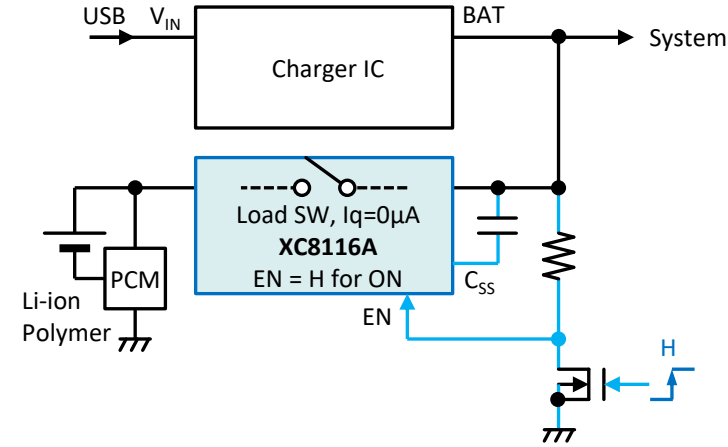
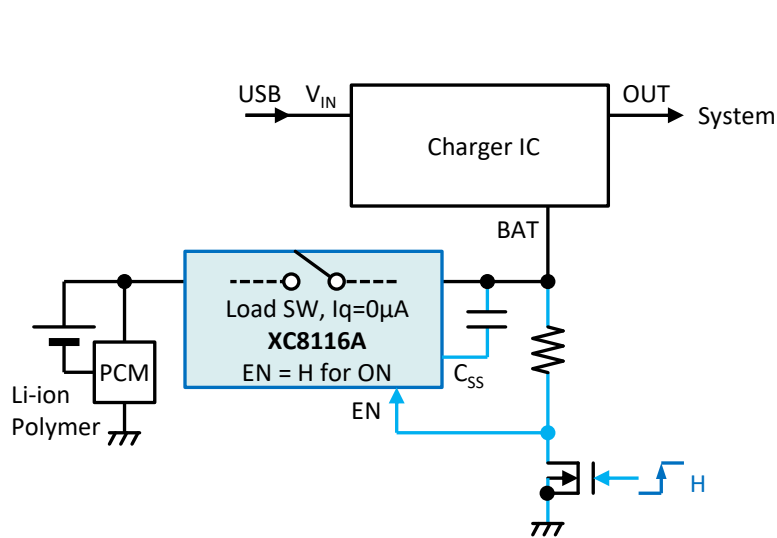
Periodically, one battery is turned ON to check the status.

A faulty battery can be disconnected and operation continued.



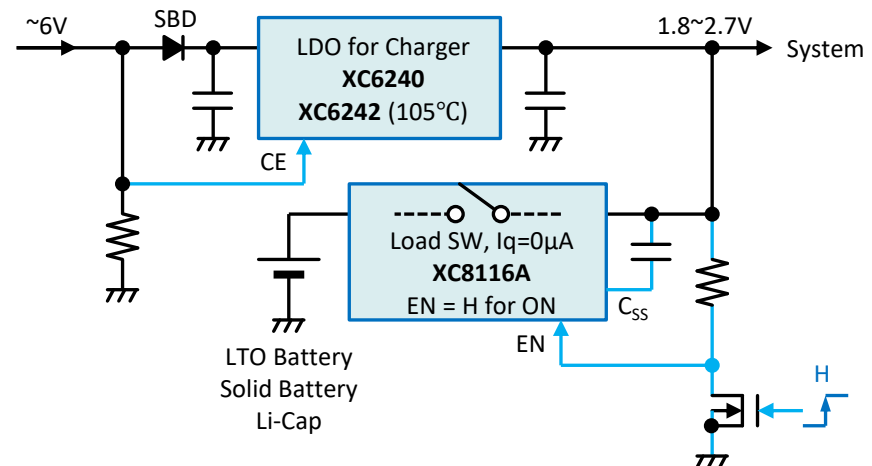
- Added Ship Mode Function (OFF at Shipment) to General-Purpose Charging IC  
Provides a Ship function to suppress battery discharge after product shipment for devices using secondary batteries such as Li-ion/Polymer batteries and all-solid-state batteries.

- When BAT and OUT Pins are Separate on Charger IC
- For Basic Charger ICs



- Ship Mode (Power-OFF for Shipping)  
Final Test: EN → Low (via Ext. FET) to isolate battery for shipping.
- Wake-up  
Applying  $V_{IN}$  raises the BAT voltage, pulling EN "H."  
The system then automatically starts and releases Ship Mode.

- Adding to LDO Charging for LTO, Solid-State Batteries, and Li-caps



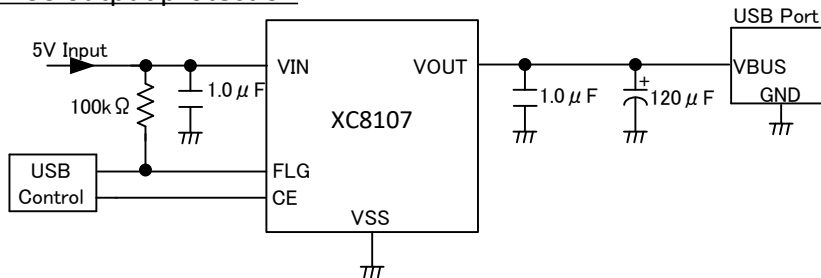
## Low ON Resistance / Selectable current limit / Flag output

### ■ Features

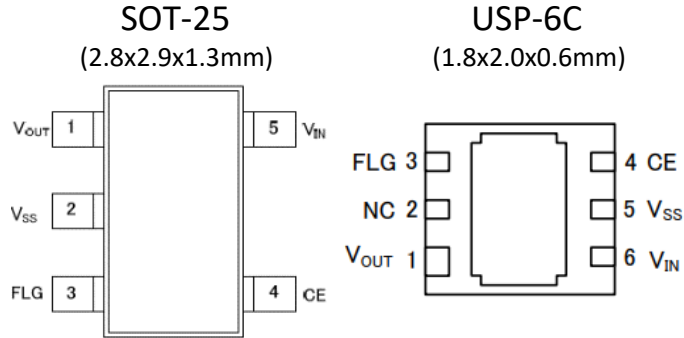
Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.0V)
Output Current	: 2A
ON Resistance	: 85mΩ@V <sub>IN</sub> =5.0V *USP-6C 100mΩ@V <sub>IN</sub> =5.0V*SOT-25 (A/B Type) 95mΩ@V <sub>IN</sub> =5.0V*SOT-25 (X,Y Type)
Supply Current	: 40μA@V <sub>IN</sub> =5.0V
Flag Delay Time	: 7.5ms * At over-current detection : 4.0ms * At reverse voltage detection
Function	: Flag function CE Pin Input Logic Selectable Soft-start, C <sub>L</sub> Discharge UVLO Reverse Current Prevention
Protection	: Thermal Shutdown
Current Limit Response Time	: 2μs *Reference value
Package	: USP-6C, SOT-25 (Au wire or Cu wire)
Operating Ambient Temp.	: -40°C ~ 105°C

### ■ Typical Application Circuit

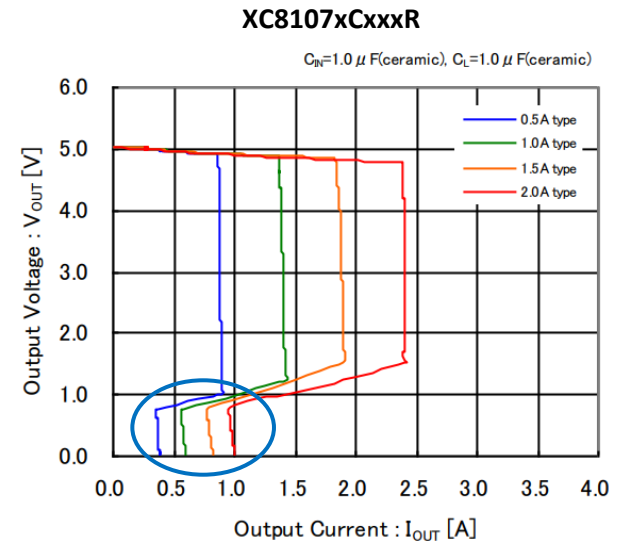
#### USB VBUS output protection



### ■ Packages



### ■ Current limit characteristics



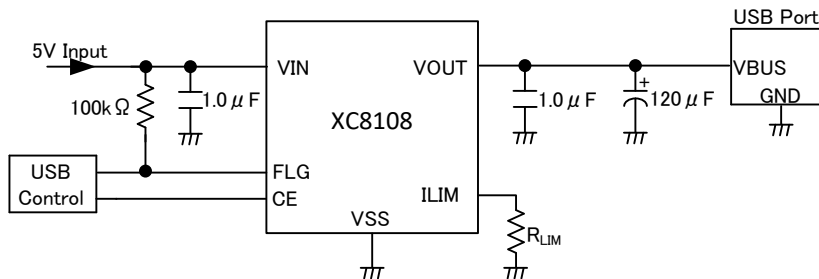
## Low ON Resistance / Adjustable current limit / Flag output

### ■ Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.0V)
Output Current	: 2A
ON Resistance	: 85mΩ@ $V_{IN}=5.0V$
Supply Current	: 40μA@ $V_{IN}=5.0V$
Flag Delay Time	: 7.5ms@Current Limit 4.0ms@Reverse Current Prevention
Function	: Flag function CE Pin Input Logic Selectable Soft-start, $C_L$ Discharge UVLO Reverse Current Prevention
Protection	: Current Limit Adjustable 0.9A ~ 2.4A Thermal Shutdown
Current Limit Response Time	: 2μs *Reference value
Package	: USP-6C
Operating Ambient Temp.	: -40°C ~ 105°C

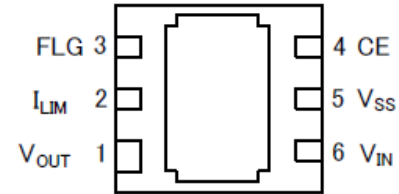
### ■ Typical Application Circuit

#### USB VBUS output protection



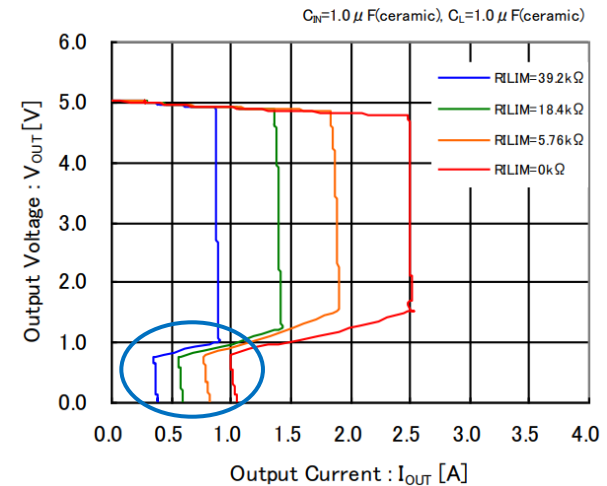
### ■ Package

USP-6C  
(1.8x2.0x0.6mm)



### ■ Current limit characteristics

XC8108xC20ER



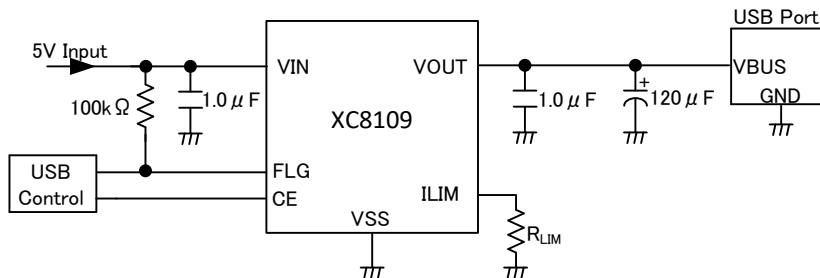
## Low ON Resistance / Adjustable current limit / Flag output

### ■ Features

Input Voltage	: 2.5V ~ 5.5V (Absolute Max.:6.0V)
Output Current	: 0.9A
ON Resistance	: 85mΩ@ $V_{IN}=5.0V$
Supply Current	: 40μA@ $V_{IN}=5.0V$
Flag Delay Time	: 7.5ms@Current Limit 4.0ms@Reverse Current Prevention
Function	: Flag function CE Pin Input Logic Selectable Soft-start, $C_L$ Discharge UVLO Reverse Current Prevention
Protection	: Current Limit Adjustable 75mA ~ 1.3A Thermal Shutdown
Current Limit Response Time	: 2μs *Reference value
Package	: USP-6C
Operating Ambient Temp.	: -40°C ~ 105°C

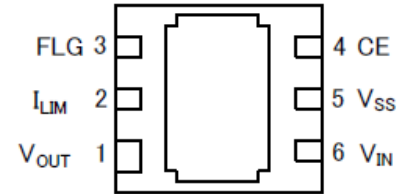
### ■ Typical Application Circuit

#### USB VBUS output protection



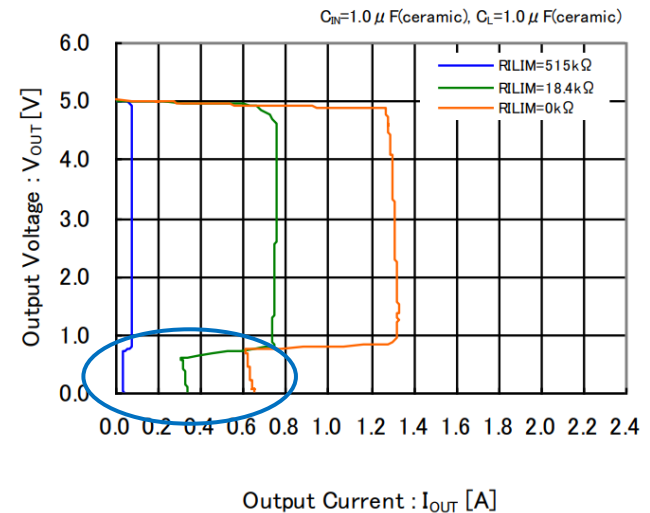
### ■ Package

USP-6C  
(1.8x2.0x0.6mm)



### ■ Current limit characteristics

XC8109xC10ER



## ■ Current Limit

### ● High-precision current limit

	I <sub>OUT MAX</sub>	Current Limit Value (XC8108/XC8109 : Adjustment range)		
		MIN.	TYP.	MAX.
<b>XC8107</b>	500mA	0.81A	0.90A	0.99A
	1A	1.26A	1.40A	1.54A
	1.5A	1.71A	1.90A	2.09A
	2A	2.16A	2.40A	2.64A
<b>XC8108</b>	500mA ~ 2A	0.9A ~ 2.4A		
<b>XC8109</b>	50mA ~ 0.9A	75mA ~ 1.3A		

Example of use)

Practical current limit that allows inrush current during start-up, with a current limit of 0.9A for the USB 0.5A standard.

## ■ Flag Output

### ● FLG: L output for overcurrent, reverse current, and overheating detection

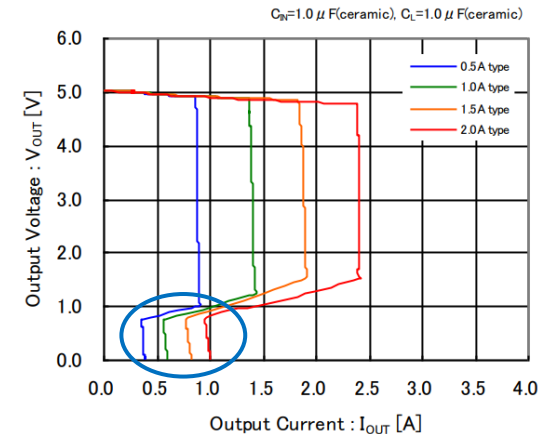
Transmits protection to USB controllers and MCUs.

FLG delay time(Over current): 7.5ms

FLG delay time(Reverse current): 4.0ms

Due to the delay time, the FLG output will not be generated if the current limit operates immediately due to inrush current, etc., thus preventing the USB controller or MCU from disconnecting the load.

XC8107xCxxxR

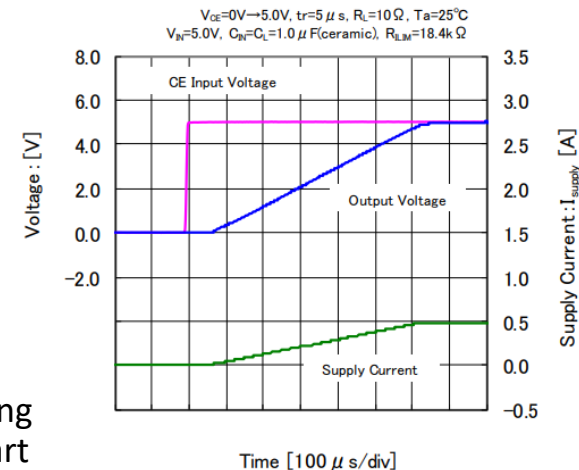


When the output voltage drops below 0.7V due to overload or short circuit, our unique function limits the current to ½ to suppress heat generation.

## ■ Soft-start (0.6ms)

Prevents fluctuations in input voltage caused by inrush current and adverse effects on USB and other host devices.

When a large load is connected, current limiting will operate after soft start to start up.

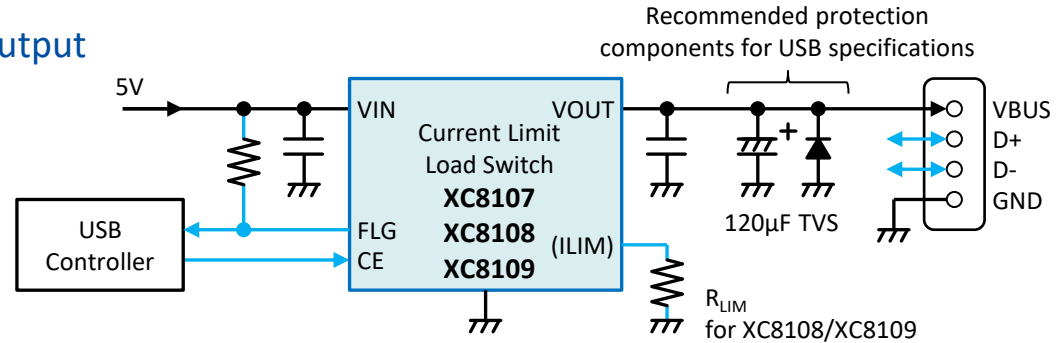


## External VBUS output via USB, HDMI, etc.

### Protection and control of external voltage output

- Overload
- Load circuit failure
- Inrush current countermeasures
- Prevention of reverse current from other USB devices

For USB, supports ON/OFF control and communication of protection status from USB controller.



## Power protection switch between boards/devices

### For transferring voltage between boards

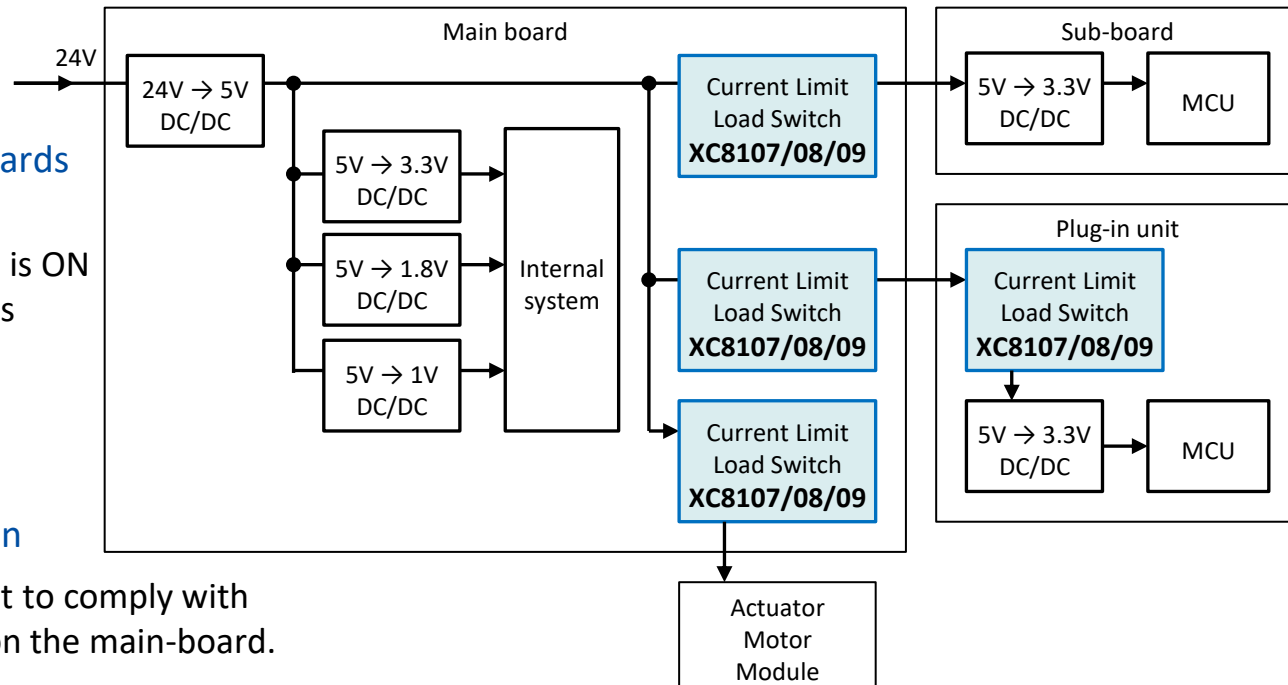
- Sub-board ON/OFF control
  - Inrush prevention when sub-board is ON
  - Disconnection when sub-board fails
- Important functions for industrial

## Input/Device Current Limit

### Input current limit/inrush prevention

Placed on the sub-board/device input to comply with the maximum current specification on the main-board.

### Prevention of inrush current in actuators, etc.

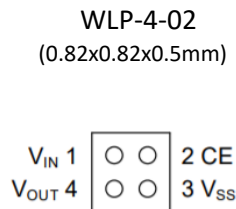
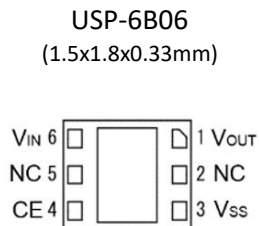
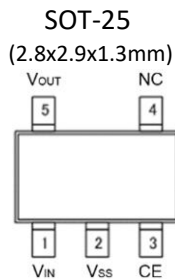


## Ideal Diode Function / No Input Current under Reverse bias / Small Solution / IEC 62368-1 Certified

### ■ Features

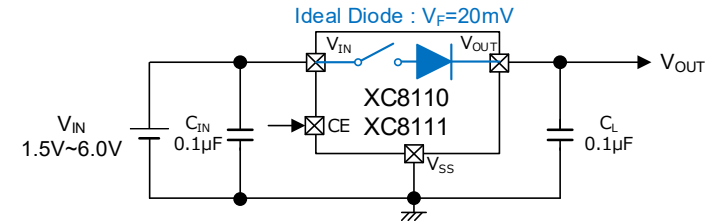
Input Voltage	: 1.5V ~ 6.0V
Output Current	: XC8110 / 500mA ( $V_{IN} > 1.7V$ ) XC8111 / 1A ( $V_{IN} > 2.0V$ )
Stand-by Current	: 0.65 $\mu$ A
$V_{IN}$ Supply Current	: 3.6 $\mu$ A (at Forward bias) 0.0 $\mu$ A (at Reverse bias)
$V_{OUT}$ Supply Current	: 0.8 $\mu$ A (at Reverse bias)
Reverse Current	: 0 $\mu$ A
Forward Voltage	: 20mV
Current Limit	: XC8110 / 850mA XC8111 / 1700mA
Short Current Function	: 50mA Ideal diode function Inrush Current Prevention
Protection Standard	: Current limit, Thermal Shutdown IEC 62368-1:2023 Certified
Packages	: WLP-4-02, SOT-25, USP-6B06
Operating Ambient Temp.	: -40°C ~ 105°C

### ■ Packages

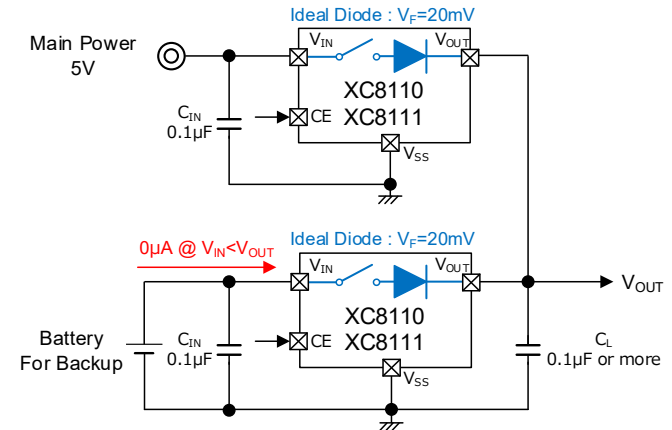


### ■ Typical Application Circuit

Alternative to diodes and load switches



OR circuit: backup circuit, etc.

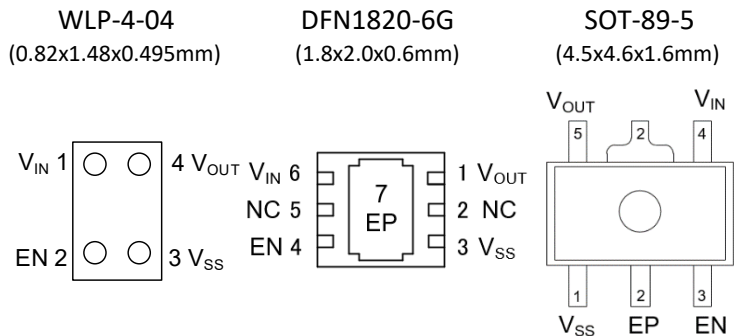


Ideal Diode Function / No Input Current under Reverse bias / High current support

## ■ Features

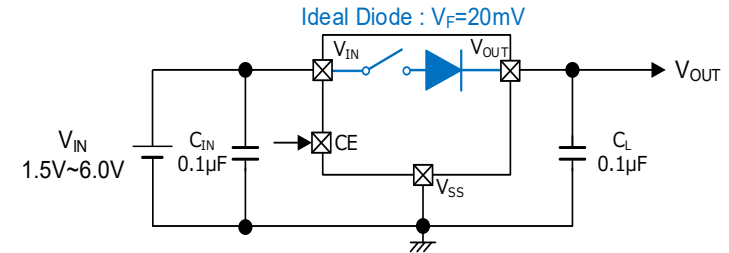
Input Voltage	: 1.5V ~ 6.0V
Output Current	: 3A ( $V_{IN} > 2.6V$ )
Stand-by Current	: 0.65 $\mu$ A
$V_{IN}$ Supply Current	: 3.6 $\mu$ A (at Forward bias) 0.0 $\mu$ A (at Reverse bias)
$V_{OUT}$ Supply Current	: 0.8 $\mu$ A (at Reverse bias)
Reverse Current	: 0 $\mu$ A
Forward Voltage	: 20mV
Current Limit	: 4500mA
Short Current	: 60mA
Function	: Ideal diode function Inrush Current Prevention
Protection	: Current limit, Thermal Shutdown
Packages	: WLP-4-04, DFN1820-6G, SOT-89-5
Operating Ambient Temp.	: -40 ~ 105°C

## ■ Packages

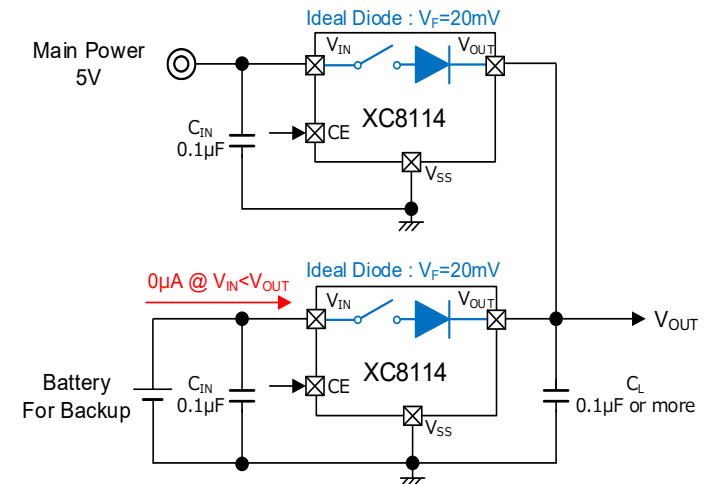


## ■ Typical Application Circuit

Alternative to diodes and load switches



OR circuit: backup circuit, etc.



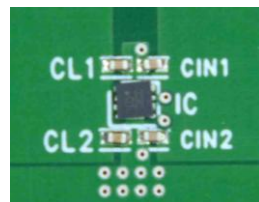
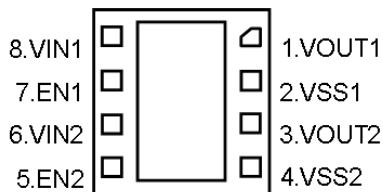
## Ideal Diode x 2ch / Vout OR Connection, Parallel connection Supports high current and low Ron

### ■ Features

Input Voltage	: 1.5V ~ 6.0V (Absolute Max.:6.6V)
Output Current	: XC8112 : 2ch x 500mA ( $V_{IN} > 1.7V$ ) XC8113 : 2ch x 1000mA ( $V_{IN} > 2.0V$ )
Stand-by Current	: 0.65μA/ch
$V_{IN}$ Supply Current	: 3.6μA/ch (at Forward bias) 0.0μA (at Reverse bias)
$V_{OUT}$ Supply Current	: 0.8μA/ch (at Reverse bias)
Reverse Current	: 0μA
Forward Voltage	: 20mV
Current Limit	: 2ch x 850mA (XC8112) 2ch x 1700mA (XC8113)
Short Current	: 50mA
Function	: Ideal diode function, Inrush Current Prevention
Protection	: Current limit, Thermal Shutdown
Standard	: IEC 62368-1:2023 Certified
Package	: USP-8B06
Operating Ambient Temp.	: -40°C ~ 105°C

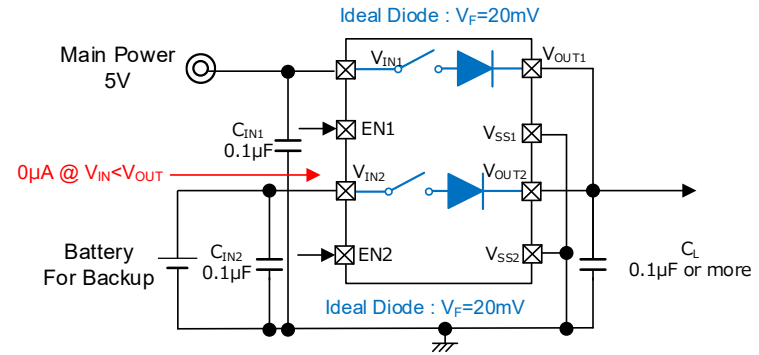
### ■ Packages

USP-8B06  
(2.0x2.0x0.33mm)

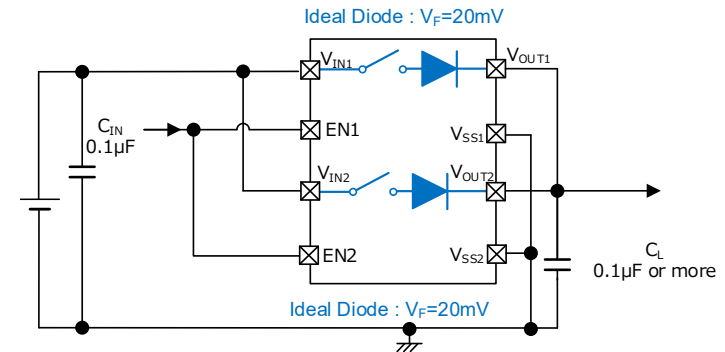


### ■ Typical Application Circuit

- OR Circuit: Backup circuit etc(XC8112/XC8113)



- Parallel connection(XC8112/XC8113)



# List of Load Switch ICs with Ideal Diode Function

	XC8110	XC8111	XC8114	XC8112	XC8113
$V_{IN}$	1.5V ~ 6.0V				
$I_{OUT}$	500mA	1000mA	3000mA	2ch x 500mA	2ch x 1000mA
$I_q$ ( $V_{IN}$ pin)	Forward bias : 3.6 $\mu$ A Reverse bias : 0.0 $\mu$ A			Forward bias : 3.6 $\mu$ A/ch Reverse bias : 0.0 $\mu$ A/ch	
Function	Ideal Diode function EN function				
Protection Function	Inrush Protection Current Limit (Fold-Back+Drop) Thermal Shutdown				
Package	WLP-4-02 (0.82x0.82x0.5mm) USP-6B06 (1.5x1.8x0.33mm) SOT-25 (2.8x2.9x1.3mm)		WLP-4-04 (0.82x1.48x0.495mm) DFN1820-6G (1.8x2.0x0.6mm) SOT-89-5 (4.5x4.6x1.6mm)	USP-8B06 (2.0x2.0x0.33mm)	
Standard	IEC 62368-1:2023		-	IEC 62368-1:2023	
Feature	Small Space		high current	2ch product Small Space	

## ■ Ideal Diode function

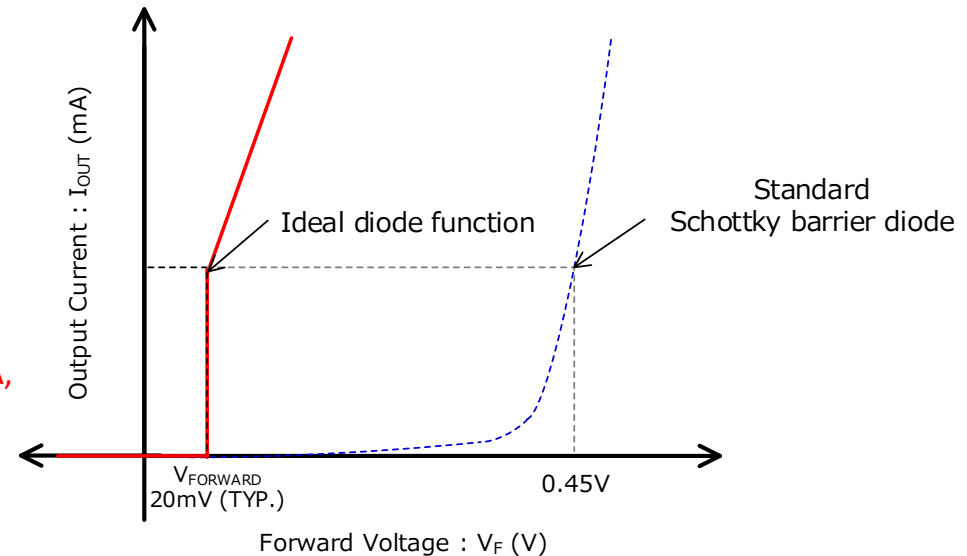
### VF and leakage current are much smaller than SBD.

- VF of SBD is around 0.3~0.4V. When an SBD is inserted in series with a battery, the battery life is shortened due to VF losses. With ideal diodes, VF losses can be reduced and battery life can be prolonged.
- Good to avoid heat issue as well.

### Lower leakage current from $V_{OUT}$ to $V_{IN}$

- SBDs have a leakage current of several  $\mu\text{A}$  to several hundred  $\mu\text{A}$ , which have a negative impact on battery life. Whereas the ideal diodes have almost no leakage current.

### IV curve of Ideal diode



## ■ True Reverse Current Prevention Function

### ✓ True Reverse Current Prevention: XC8110/XC8111, XC8112/XC8113, XC8114

Normally  $V_{OUT}$  is maintained at " $V_{IN}-20\text{mV}$ ". If  $V_{OUT}$  becomes higher than this, the reverse current prevention is activated. This function provides **complete reverse current prevention** like a diode.

### ✓ Reverse current prevention: usual load SWs

This is a function that prevents backflow when the voltage on the input side becomes low. It cannot completely prevent reverse flow like "True Reverse Current Prevention Function", as it detects when a larger reverse flow current has flowed and stops the reverse flow.

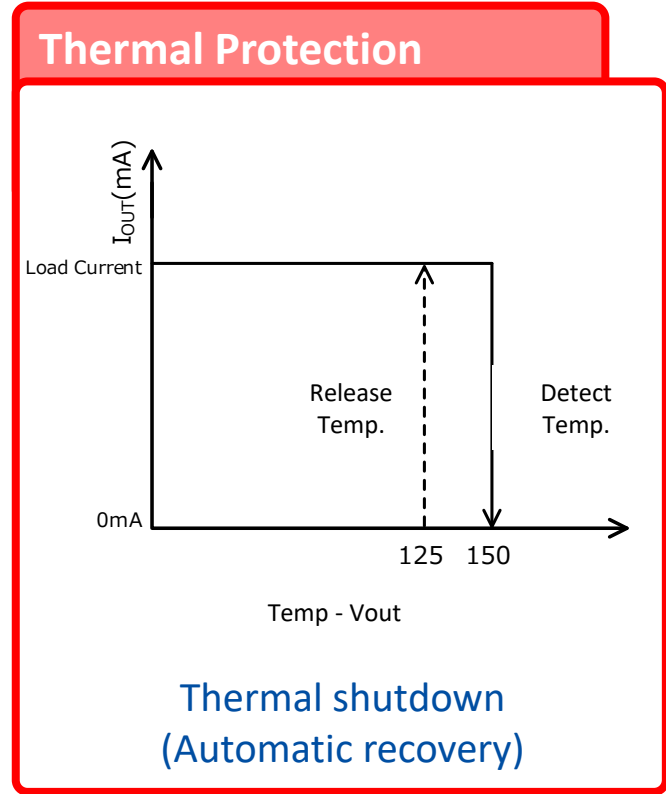
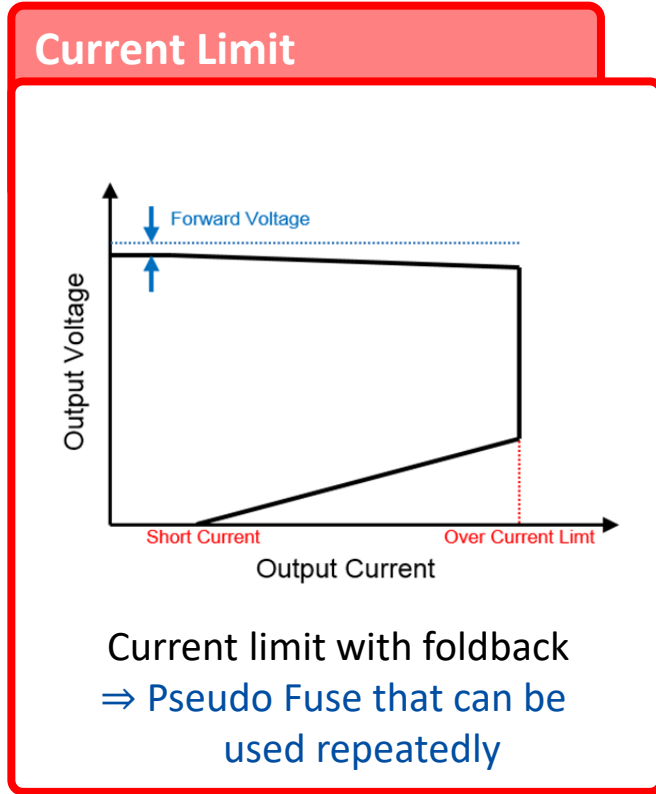
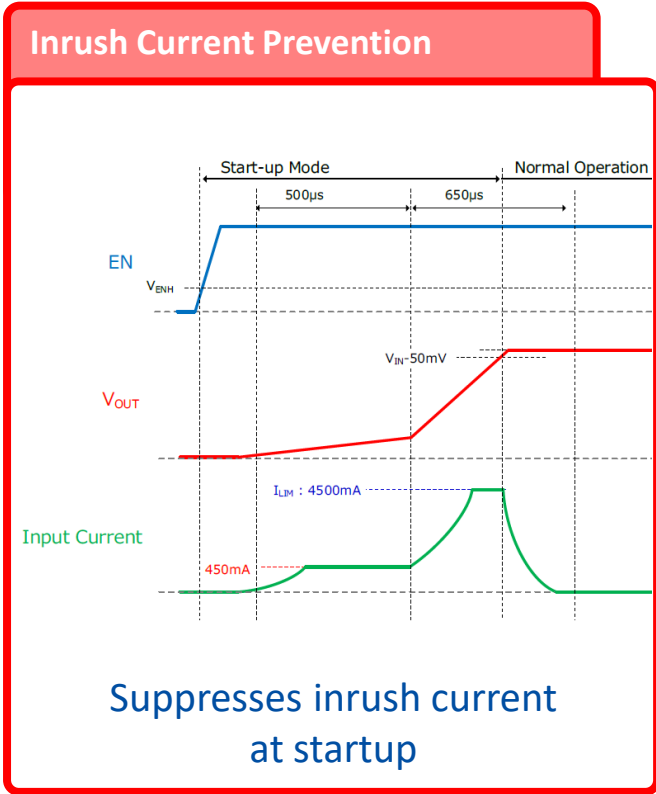
\* When  $EN(CE) = "L"$ , reverse current prevention is possible without reverse current flow.

	Load Switches with Ideal Diode Function	Schottky Barrier Diode (SBD)
	XC8114	SBD : 30V/3A
Forward Voltage VF	20mV @I <sub>OUT</sub> =100mA 45mV @I <sub>OUT</sub> =1A	350mV @I <sub>OUT</sub> =100mA 450mV @I <sub>OUT</sub> =1A
Reverse Current (Leak Current)	0μA @25°C 0.15μA @75°C	1μA @25°C 60μA @75°C
Switching Speed	Several μs ~ 10μs	Several ns ~ Several10ns
Package Size	Small WLP-4-02 (0.82x0.82x0.5mm)	2.5 x 4.7mm (11.75mm <sup>2</sup> )
Protection function	Inrush Protection Current Limit (Fold-Back+Drop) Thermal Shutdown	None

## ■ Advantages of ideal diode ICs

- Forward Voltage : Significantly reduced compared to SBDs
- Reverse Current(Leakage Current) : Significantly reduced compared to SBDs  
Leakage current remains almost unchanged even at high temperatures.
- Protective function ensures safety even during abnormal conditions

- Equipped with protective functions which are not found in diodes.

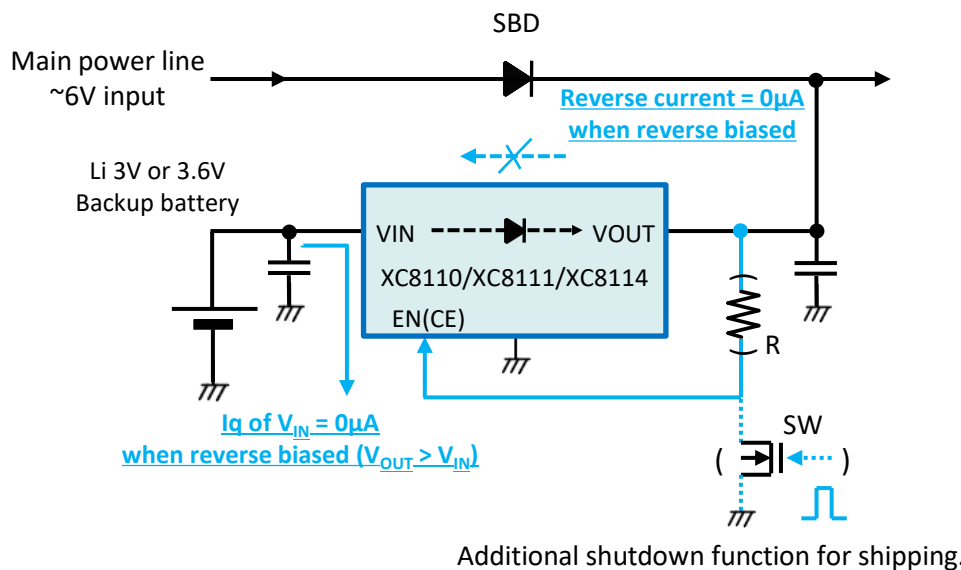


- Equipped with protection functions such as current limit function. Significantly improved safety.

IEC 62368-1:2023 certified, enabling simplification of stand-alone failure testing of the post-stage components. (XC8110/XC8111, XC8112/XC8113)

## ■ OR Connection / Backup circuit

- There is no voltage drop such as  $V_F$  of SBD.
- $I_q$  of  $V_{IN}$  is  $0.0\mu A$  at when reverse biased, so suitable for a backup circuit.
- Easy automatic switching of power supply path without control



Basic use as ideal diode.

It is ideal for OR connection applications as it is equipped with true reverse current prevention.

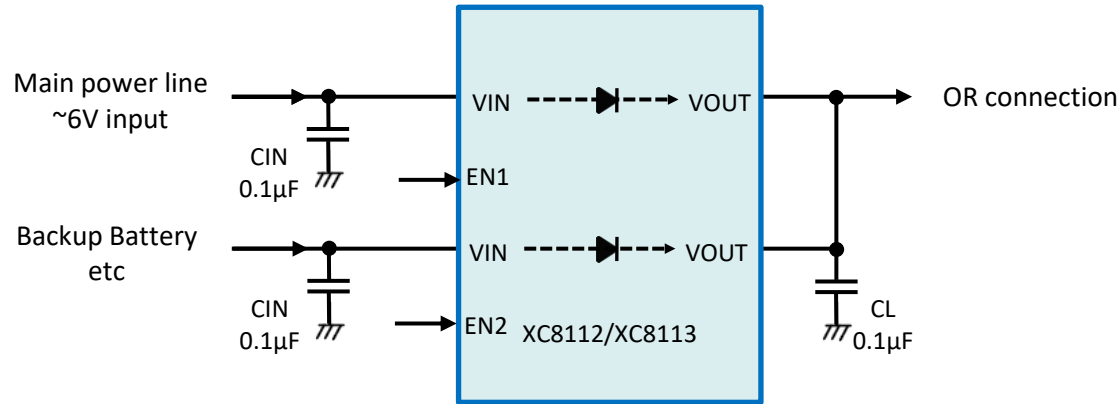
A shutdown function at the time of shipment can also be installed by making the EN(CE) connection point on the output side.

Condition	EN(CE)	Usual case	$I_{V_{IN}}$ ( $I_q$ )	$I_{V_{OUT}}$	$I_{EN(CE)}$
Forward bias	"H"	Forward bias as a diode	$3.6\mu A$	$0\mu A$	$0.48\mu A$
Reverse bias		Reverse bias as a diode	$0\mu A$	$0.8\mu A$	
Forward bias	"L"	SW off as Load SW, Ship mode	$0.65\mu A$	$0\mu A$	$0\mu A$
Reverse bias		SW off as Load SW with Reverse bias	$0\mu A$	$0.8\mu A$	

## Backup circuit (OR connection) / Reverse current protection when batteries are in parallel

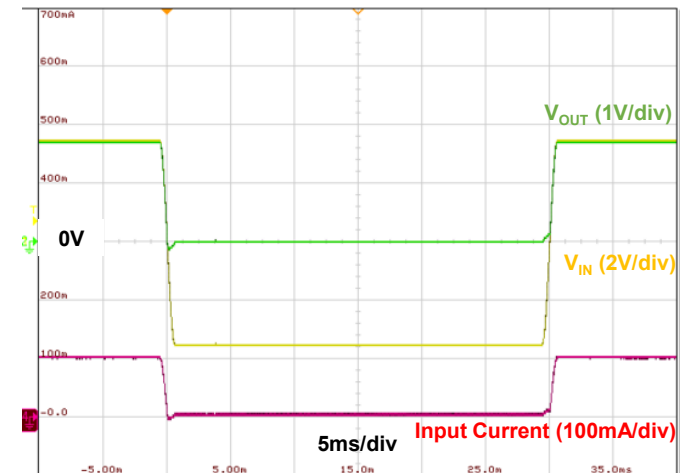
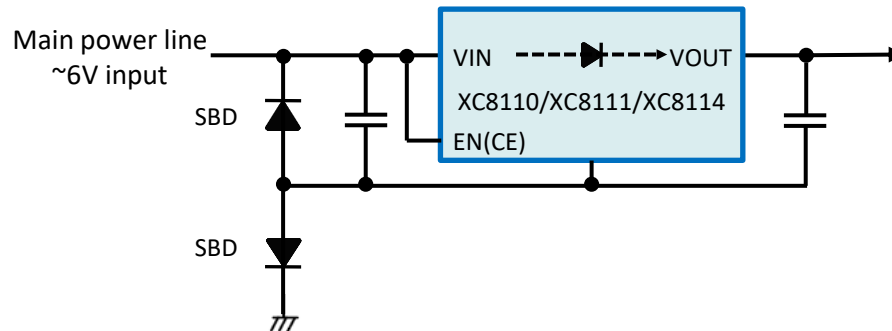
### Backup circuit

For switching power to a back-up power supply in the event of loss of main line power.



### Reverse connection prevention circuit

Application Circuit using Schottky Barrier Diodes.

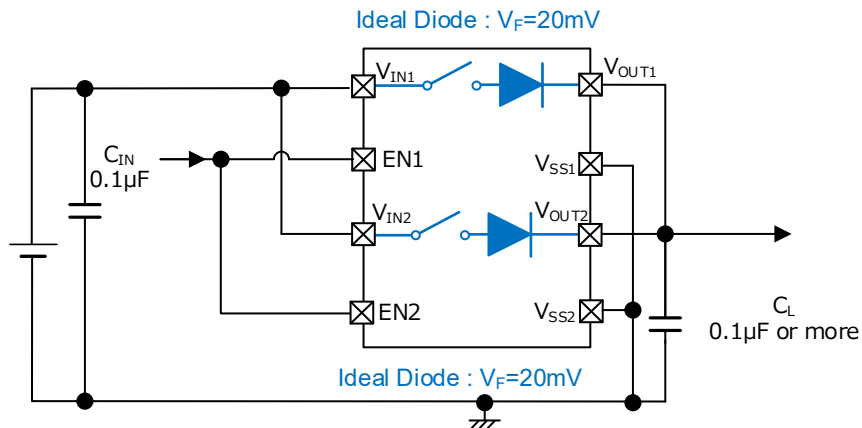


## ■ Parallel connection for high current / low Ron

XC8110 ~ XC8114 can be connected in parallel.

By connecting the 3A product XC8114 in parallel, it can be used for output currents of 3A or more. When connected in parallel, the Ron is  $\frac{1}{2}$ .

By increasing the number of ICs, more than two in parallel can be supported.



XC8113 Parallel Connection

