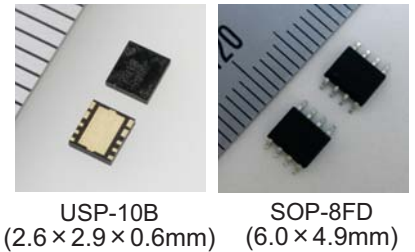


2A Synchronous Step-Down DC/DC Converters

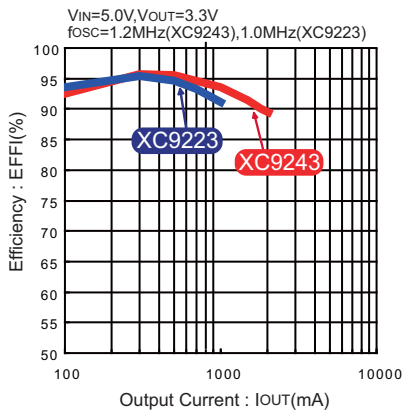
# XC9242/XC9243 Series



The XC9242/XC9243 series of step-down DC/DC converters support ceramic capacitors, use a synchronous rectification circuit, and have an output current of 2A. A 0.11 Ω (TYP.) P-channel MOS driver transistor and a 0.12 Ω (TYP.) N-channel MOS switch transistor are built in. By reducing the on-resistance of the internal transistors, a stable voltage can be supplied with high efficiency up to an output current of 2A. The output voltage can be set as desired by connecting two external resistors to the FB pin.



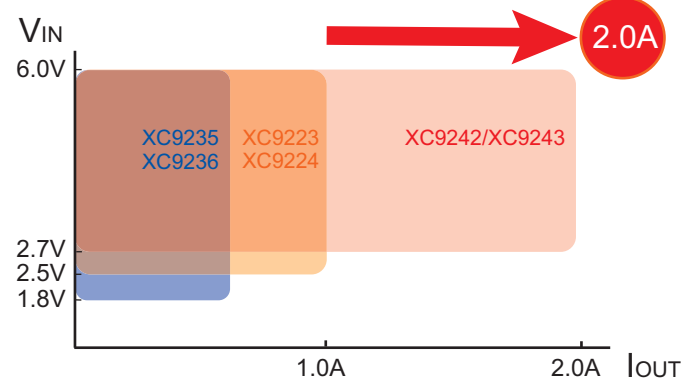
**POINT 1** Reduced on-resistance in the same package



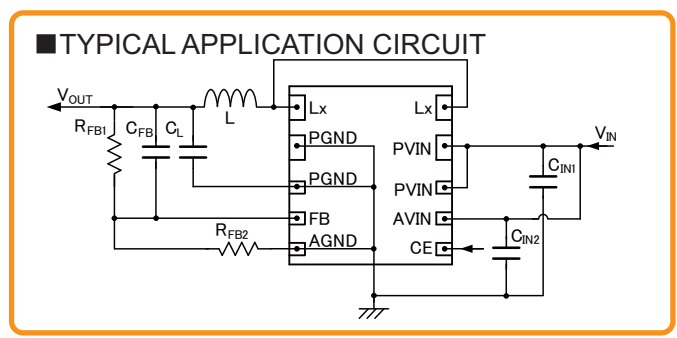
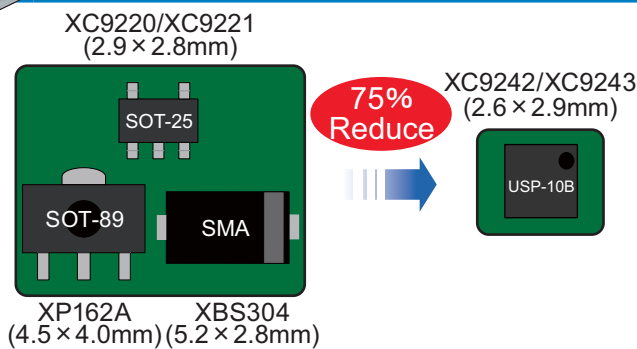
The XC9243 achieves high efficiency over a wide output current range through the use of PWM/PFM auto switching control. Thanks to a lower on-resistance, the XC9243 exhibits a higher efficiency at higher current than the previous product (XC9223).

**POINT 2** 2.0A support is possible!

A built-in switch type step-down DC/DC converter can now support up to 2.0A with an input voltage of 6V or less.



**POINT 3** Miniaturization is achieved!



In previous products, a P-ch power MOSFET and Schottky diode were necessary to achieve 2A output; however, these switching functions are built into the XC9242/XC9243 to reduce the number of components and achieve miniaturization.

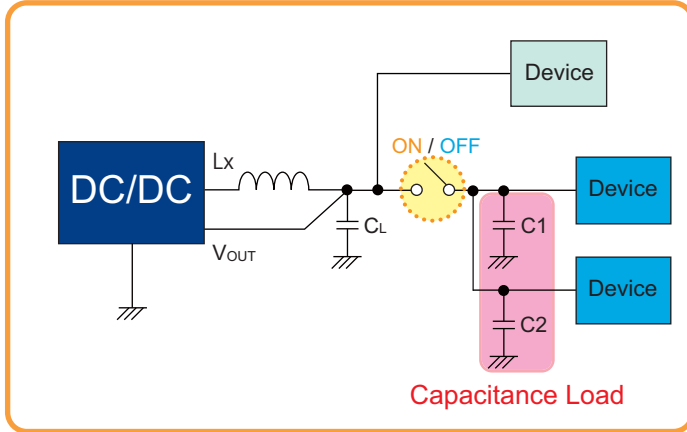
Features			
Driver Transistor Built-In	0.11 Ω (TYP.) P-ch Driver Tr.	Maximum Duty Cycle	100%
	0.12 Ω (TYP.) N-ch Switching Tr.	Function	Soft Start, C <sub>L</sub> Discharge Thermal Shutdown Current Limit Circuit (Automatic Return), UVLO
Input Voltage Range	2.7V~6.0V	Capacitor	Ceramic Capacitor
Output Voltage Setting	0.9V~V <sub>IN</sub>	Control Methods	PWM (XC9242) PWM/PFM Auto(XC9243)
FB Voltage	0.8V±2.0%	Packages	USP-10B, SOP-8FD
High Efficiency	95% (TYP.) (V <sub>IN</sub> =5.0V, V <sub>OUT</sub> =3.3V)		
Output Current	2.0A		
Oscillation Frequency	1.2MHz±15%, 2.4MHz±15%		



2A Synchronous Step-Down DC/DC Converters **KC9242/KC9243 Series**

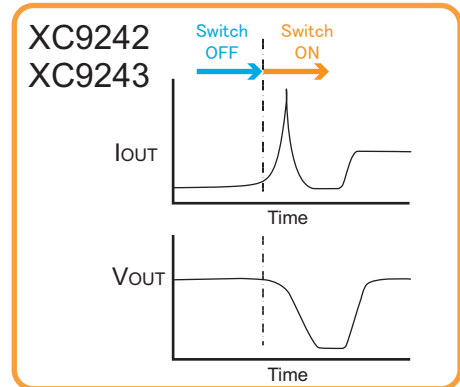
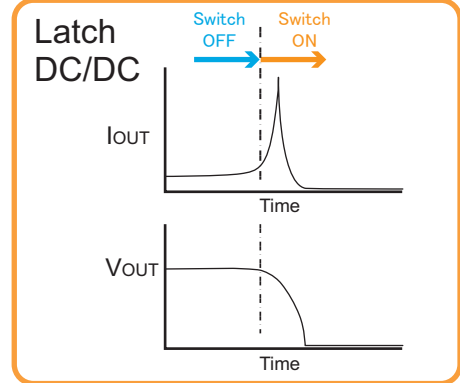


Automatic return vs. Latch



When a DC/DC converter with a latch-type overcurrent protection function is used in a circuit similar to that shown above and the circuit switches ON/OFF, the charge that goes to the capacitors (C1 and C2) becomes a large load and the output voltage drops suddenly. This may cause the short circuit protection function to activate, or the current limitation state may last longer than the latch time causing the latch function to activate and stop operation.

When the XC9242/XC9243 is used in this type of situation, instead of the latch function activating and causing operation to stop, restart is automatically performed from the soft-start sequence without an external signal. This is convenient for restart by capacitor loads.



Comparison of step-down synchronous DC/DC converter characteristics

【The optimum product can be selected for the current】

	XC9242/XC9243	XC9235/XC9236/XC9237	XC9223/XC9224
Maximum Output Current	2000mA	600mA	1000mA
Output Voltage	0.9V~VIN can be set with using externally connected resistors	0.8V~4.0V (0.05V Increments)	0.9V~VIN can be set with using externally connected resistors
Input Voltage	2.7V~6.0V	1.8V~6.0V	2.5V~6.0V
Oscillation Frequency	1.2MHz±15% 2.4MHz±15%	1.2MHz±15% 3MHz±15%	1MHz±15% (Synchronous external clock) 2MHz±15% (Synchronous external clock)
Control	PWM: (XC9242) PWM/PFM Auto: (XC9243)	PWM: (XC9235) PWM/PFM Auto: (XC9236) Manual: (XC9237)	PWM/PFM Auto (With PWM Fixed Pin): (Both XC9223/XC9224)
High Side P-ch ON Resistance	0.11Ω @ VIN=5.0V	0.35Ω @ VIN=5.0V	0.19Ω @ VIN=5.0V
Low Side N-ch ON Resistance	0.11Ω @ VIN=5.0V	0.45Ω @ VIN=5.0V	0.21Ω @ VIN=5.0V
Supply Current	41 μA (1.2MHz)	15 μA (1.2MHz)	30 μA (1MHz)
Package (mm)	USP-10B (2.9×2.6×0.6) SOP-8FD (6.0×4.9)	SOT-25 (2.9×2.8) USP-6C (1.8×2.0×0.6) USP-6EL (1.8×2.0×0.4)	MSOP-10 (3.0×4.9) USP-10B (2.9×2.6×0.6)
Function	<ul style="list-style-type: none"> <li>•CE Function</li> <li>•Current Limiter Circuit (Constant Current &amp; Automatic Return)</li> <li>•Thermal Shutdown</li> <li>•CL High Speed Discharge</li> <li>•Soft Start</li> </ul>	<ul style="list-style-type: none"> <li>•CE Function</li> <li>•Current Limiter Circuit (Constant Current &amp; Latching)</li> <li>•CL High Speed Discharge</li> <li>•High Speed Soft Start</li> </ul>	<ul style="list-style-type: none"> <li>•Synchronous External Clock</li> <li>•CE Function</li> <li>•Current limit binary switching selection (Constant Current &amp; Latching)</li> <li>•Short-circuit Protection</li> <li>•Thermal Shutdown</li> <li>•Soft Start</li> <li>•Voltage Detector (This function is always on with the XC9224)</li> </ul>

