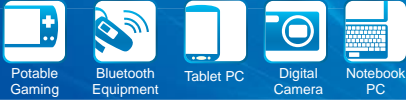


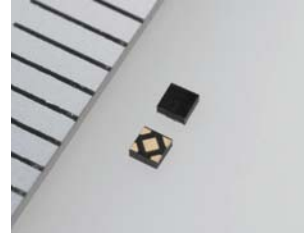
Ultra Small Package (USPQ-4B03, USPQ-4B04)

XC6223, XC6233, XC6504 Series

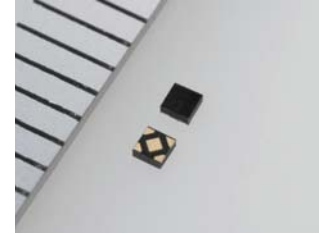


USPQ stands for Ultra Small Package Quad. The USPQ-4B03/04 is an ultra-small 1.0mm x 1.0mm size package.

A lineup of three products, the XC6223 (300mA high-speed LDO), the XC6233 (200mA high-speed LDO) and the XC6504 (150mA ultra-low consumption LDO), assembled in this package. These three products have the same pin configuration and the same pattern, making it possible to select the IC by the load specifications of each product.



USPQ-4B03
(1.0 × 1.0 × 0.4mm)



USPQ-4B04
(1.0 × 1.0 × 0.6mm)



USPQ-4 Series Line up

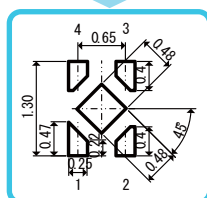
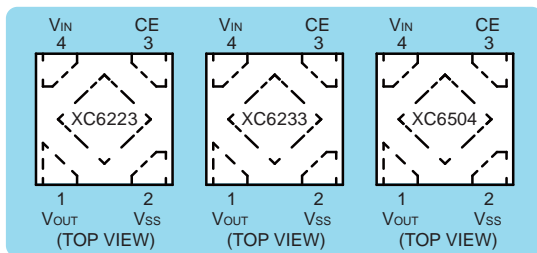
	High Speed LDO	High Speed LDO	Low Supply Current LDO
	XC6223	XC6233	XC6504
Maximum Output Current	300mA	200mA	150mA
Input Voltage Range	1.6V ~ 5.5V	1.7V ~ 5.5V	1.4V ~ 6.0V
Output Voltage Range	1.2V ~ 4.0V (0.05V Increments)	1.2V ~ 3.6V (0.05V Increments)	1.1V ~ 5.0V (0.1V Increments)
Low Power Consumption	100 μA	45 μA	0.65 μA
High Ripple Rejection	80dB@1kHz	75dB@1kHz	-
Function	Inrush Current Protection, Current Limit Over Heat Protection Short Circuit Protection	Inrush Current Protection, Current Limit Short Circuit Protection	C. Capacitor-Less Compatible Current Limit Short Circuit Protection
Packages (mm)	USPQ-4B03 (1.0 × 1.0) USP-4 (1.2 × 1.6) SSOT-24 (2.0 × 2.1) SOT-25 (2.8 × 2.9) SOT-89-5 (4.35 × 4.5)	USPQ-4B04 (1.0 × 1.0) USP-4 (1.2 × 1.6) SSOT-24 (2.0 × 2.1) SOT-25 (2.8 × 2.9)	USPQ-4B04 (1.0 × 1.0) USPN-4B02 (0.95 × 0.75) SSOT-24 (2.0 × 2.1) SOT-25 (2.8 × 2.9)



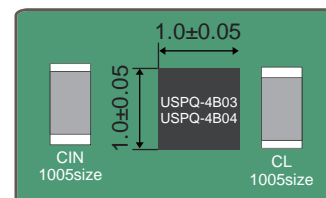
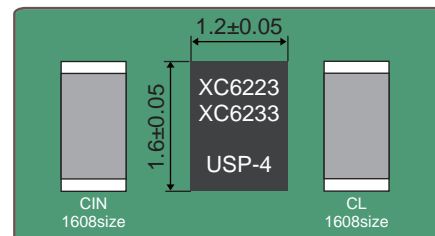
Same IC pattern, achieves space conservation

The XC6223, XC6233 and XC6504 series have the same pin configuration and the same pattern, make it possible to select the IC by the board pattern.

When a small capacitor (1005 size) is used, the IC and the capacitor are the same size and even more space conservation is possible.



Same Pattern



Space Conservation
50%
Reduction

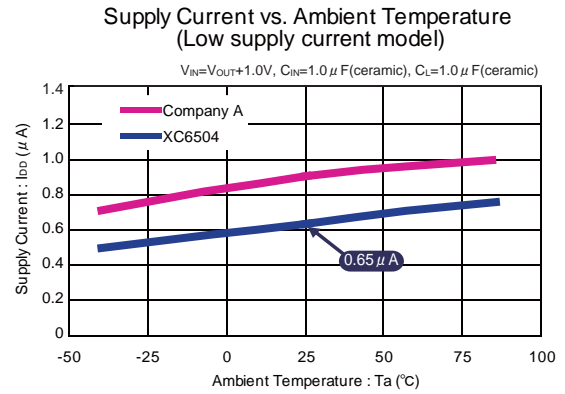
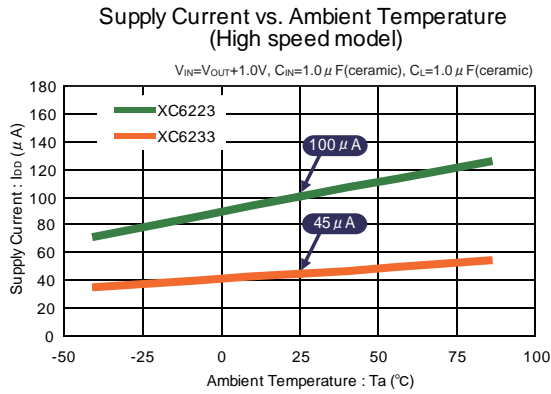


Ultra Small Package XC6223, XC6233, XC6504 Series



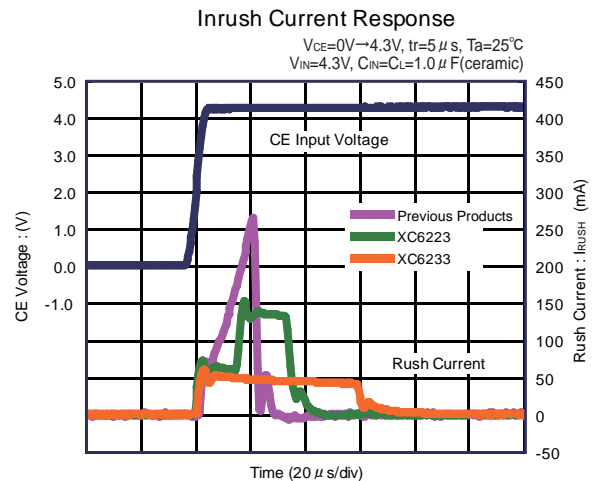
USPQ-4 Series comparison of quiescent current

The USPQ-4 series is a lineup of three products with different IC characteristics. In particular, the XC6504 series achieves one of the lowest quiescent currents in the world, making this product ideal for portable devices and other applications that require low consumption. The XC6223 and XC6233 series are fast LDO products (fast response characteristics, high PSRR) that are ideal for analog devices.



An inrush current can be reduced than the previous products

The XC6223 and XC6233 series have internal inrush current protection circuits (XC6223: F, G, and H types). When the IC starts, the output stabilization capacitor (C_L) is charged in order to limit the current that suddenly flows from the input pin (V_{IN}) to the output pin (V_{OUT}). When $C_L = 1\mu F$, the rush current is limited to 150mA on the XC6223 series and 50mA on the XC6233 series, allowing a safer circuit to be designed.



Load-transient response comparison

The XC6223 and XC6233 series, which are a fast type of LDO, can respond quickly to even more sudden fluctuations of load (I_{OUT}) than our previous products. For this reason, these products are ideal for use in analog devices that require responsiveness.

