

MCP1252/1253, Low Noise, Positive Regulated Charge Pump DC-to-DC Converters

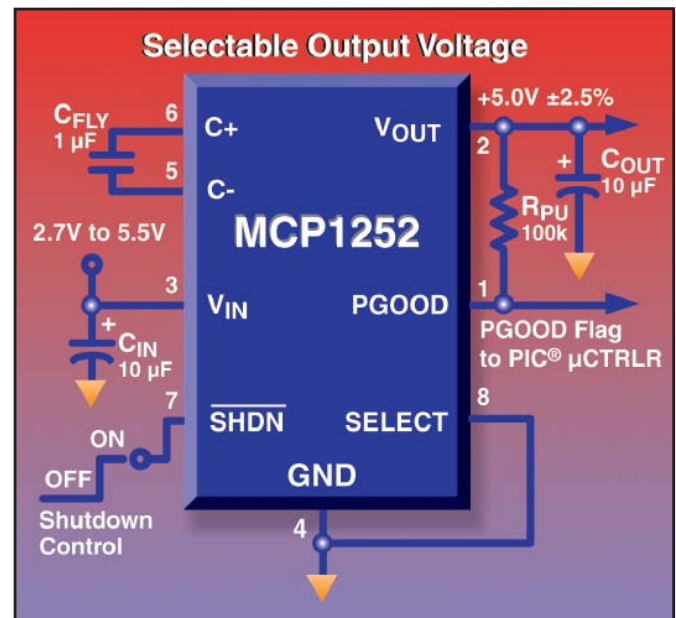
The **MCP1252** and **MCP1253** are inductorless, positive regulated charge pump DC-to-DC converters. These devices are capable of delivering 120 mA of load current at a regulated output voltage with an input voltage above or below the output by utilizing an automatic buck/boost feature. They are specifically designed for applications requiring low noise and high efficiency power conversion.

This family of converters consists of four product variations, two for operating frequency and two for either selectable fixed output voltages, or an adjustable output voltage version. Specifically, the MCP1252 operates at 650 kHz to minimize operating current and to avoid sensitive IF bands. The MCP1253 operates at 1.0 MHz to allow for the use of smaller external capacitors to save board space and cost. For the selectable version, the output voltage can be set at 3.3V by connecting the select pin to V_{IN} . Conversely, when the select pin is grounded, the output is set at 5.0V. For the adjustable version the output can be regulated between 1.5V and 5.5V with two external resistors.

Both devices feature a power-good (PGOOD) output that monitors the output for out-of-regulation conditions and a shutdown mode to further minimize power consumption when the output is not required. Because these converters feature thermal and short circuit protection, they provide protection for both the load and the power source.

These products operate at extremely low quiescent currents and only require minimal external components, which makes them ideally suited for small, battery powered applications, such as, pagers, cellular phones, personal digital assistants, lap tops, MP3 players and hand-held or remote meters. Functions that might incorporate these devices include, color display bias, local 3V to 5V conversions, flash memory supply voltage, white LED backlighting, PCMCIA local 5V supplies and smart card readers.

The MCP1252 and MCP1253 are available in small 8-pin MSOP packages and are specified over a temperature range of -40°C to $+85^{\circ}\text{C}$.



Features:

- Low operating current: 80 μA (typical)
- Supply voltages as low as 2.0V
- High output current: 120 mA minimum
- Output voltage accuracy: $\pm 2.5\%$
- Power-good (PGOOD) output indicator with hysteresis
- Thermal shutdown protection with hysteresis
- Short circuit protection
- Logic level shutdown mode
- Over-current and over-temperature protection
- Small 8-pin MSOP package



Additional Information:

- Microchip's web site: www.microchip.com
- Microchip's *Technical Library CD-ROM*, Order No. DS00161
- *Product Line Card*, Order No. DS00148
- *Analog & Interface Families Data Book 2002*, Order No. DS00207
- *2002 Technical Documentation Analog & Interface Product Families CD-ROM*, Order No. DS51205
- *MCP1252/MCP1253, Data Sheet*, DS21752

MCP1252/1253 Charge Pump DC-to-DC Converters

Product	Output Voltage	V _{OUT} Accuracy (typical)	Switching Frequency	V _{CC} Range	Operating Temperature Range	Power-good Indicator	Supply Current (typical)	# of Pins/ Package
MCP1252 - 33X50	Selectable, 3.3V or 5.0V	±0.5%	650 kHz	2.0V to 5.5V	-40°C to +85°C	Yes	60 µA	8MS
MCP1252 - ADJ	Adjustable, 1.5V to 5.5V	±0.5%	650 kHz	2.0V to 5.5V	-40°C to +85°C	Yes	60 µA	8MS
MCP1253 - 33X50	Selectable, 3.3V or 5.0V	±0.5%	1.0 MHz	2.0V to 5.5V	-40°C to +85°C	Yes	60 µA	8MS
MCP1253 - ADJ	Adjustable, 1.5V to 5.5V	±0.5%	1.0 MHz	2.0V to 5.5V	-40°C to +85°C	Yes	60 µA	8MS

Package Key: MS = MSOP

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