USB PD Source Controller with 7 Configurable PDOs and Load-Shedding

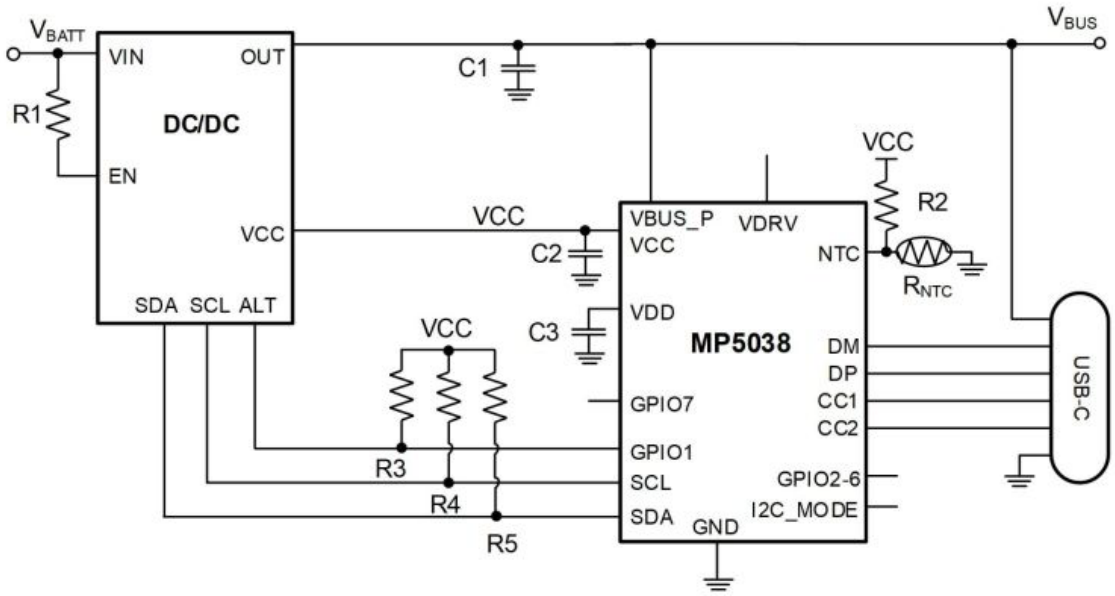
The MP5038 is a USB power delivery (PD) controller compatible with USB Type-C 2.1 and USB PD 3.0 specifications. It targets downstream-facing port (DFP) provider applications, such as charging-only USB PD ports and USB hubs.

The MP5038 is backwards compatible, supporting downstream-charging port (DCP) schemes for Quick Charge (QC) 3.0, BC1.2 battery charging specifications, Apple Divider mode, Huawei fast charge protocol (FCP), and 1.2V/1.2V mode without outside user interaction. It also supports BC1.2 charging downstream port (CDP) handshaking. The I^2C interface and GPIO pins provide good communication with an external power converter.

The MP5038 supports up to 100W of PD power as well as programmable power supplies (PPS). It can flexibly configure the PDO list, select slave devices, configure charging protocols, and set the protection mode.

Two NTC pins can be used to monitor for any abnormal temperature rise, such as on the USB Type-C receptacle and PCB. Power-sharing functionality supports smart power budget management between two USB PD ports. Power delivery object (PDO) capability is reduced when the car battery or input voltage (V_{CC}) is low. High-voltage I/O pins support short-to-battery and short-to-VBUS protection.

The MP5038 is available in a QFN-20 (4mmx4mm) package with wettable flanks.



Features & Benefits

- Supports 3.3V to 21V Bus Voltage (V_{BUS}) Range
- 4.6V to 5.5V Supply Voltage (V_{CC}) Range
- Support Up to 7 Configurable Power Delivery Objects (PDOs)
- Integrated Physical Layer for Battery Management Controller (BMC)
- Integrated Protocol Layer
- Integrated Policy Engine
- Low Standby Quiescent Current (I_Q): 100µA
- Supports One USB Type-C Downstream-Facing Port (DFP) with USB PD 3.0 and Programmable Power Supply (PPS)
- Supports Downstream-Charging Port (DCP) Schemes for BC1.2
- Apple Divider 3 Mode and 1.2V/1.2V Mode
- Supports QC 3.0, Huawei Fast Charge Protocol (FCP)
- V_{BUS} Isolated N-Channel MOSFET Driver
- Enable (EN) Off Timer Up to 120 Minutes
- I^2C Master/Slave Interface and Interrupt
- Configurable PD Power (PDP) Management when Negative Temperature Coefficient (NTC), Power-Sharing, or Input/Battery Low Is Tripped
- Supports Configurable Input/Battery Low Detection Threshold and Blanking Time
- High-Voltage Pins for CC1, CC2, DP, and DM
- Integrated High-Voltage VCONN Supply Power Switch
- Available in a QFN-20 (4mmx4mm) Package with Wettable Flanks