

Features

- Linear, constant voltage, push-pull (source-sink) low-dropout regulator
- Ideal for DDR, DDR2, DDR3, low-power DDR, and DDR4 memory termination (V_{TT}) applications
- Maximum output current: Defined by selected device 1A=AmP8D1, 3A=AmP8D3, 6A=AmP8D6
- Integrated current sense
- Short-circuit protection (SCP)
- Adjustable protection: Under-Voltage Lockout, (UVLO), Overcurrent (OCP), Overvoltage (OVP), and Over Temperature (OTP)
- Power-good flag output and Enable input
- Soft start/stop, sequencing
- 52-, 58-, or 74-pin VQFN package
- -40°C to $+125^{\circ}\text{C}$ operating junction temperature
- Two SIM elements; integrate up to six C730 Power Components in one AmP platform

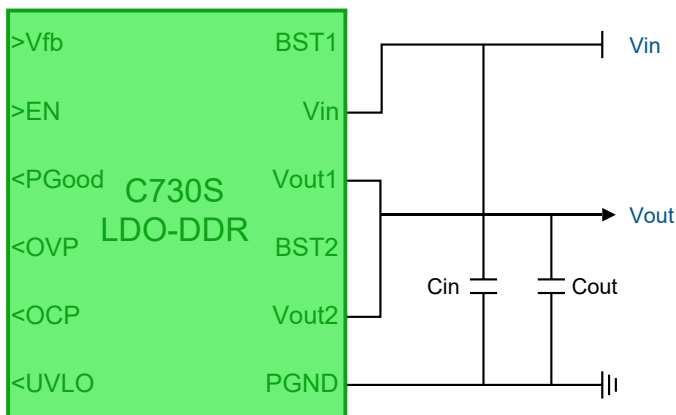
Applications

- On-demand power management, multi-rail power integration
- DDR, DDR2, DDR3, low-power DDR, and DDR4 memory termination (V_{TT})
- Notebooks, servers, desktop computers
- Telecommunications and data communications

Typical Application Circuit

Figure 1 provides a typical schematic for the C730 Power Component when integrated with other power rails in an AmP application.

Figure 1: C730 application schematic



Description

The C730 Power Component is a customizable, push-pull (source-sink) Low-Dropout Voltage Regulator, ideal for DDR memory termination applications. Combine the C730 component with other Power Components to create a highly-integrated, custom-defined, AnDAPT AmP™ on-demand power management device.

The integrated linear Scalable Integrated MOSFETs (SIMs) provides up to 6A, source- or drain-side output current. The maximum current is defined by the AmP device selected. Both the push and pull LDO regulators provide a user-controlled current limit fold-back. The integrated current sense provides over-current protection (OCP) and a programmable current limit.

The customizable output voltage is specified by the power engineer during customization using AnDAPT's cloud-based WebAmp development software. The C730 has customizable control and status pins including an optional enable input, an optional power-good output, and optional output flags to signal when the system triggers an overvoltage (OVP), overcurrent (OCP), or undervoltage lockout (UVLO) condition. The threshold values are specified by the power engineer using the WebAmp tool.

The customizable soft-start and soft-stop slew rates plus ramp timing are also specified by the power engineer using the WebAmp tool.

Customizable Options

Table 1 lists the various customizable options available for the C730 Power Component. These options are set graphically in the WebAmp development software.

Table 1: C730 Customizable Options

| Option | Units |
|---|--------|
| Input voltage | V |
| Output voltage | V |
| Use optional En input to enable supply | On/Off |
| Use optional UVLO output to signal under-voltage lockout condition | On/Off |
| Input voltage threshold for under-voltage lockout | V |
| Use optional OVP output to signal when over-voltage protection is triggered | On/Off |
| Over-voltage protection threshold | V |
| Use optional OCP output to signal when over-current protection is triggered | On/Off |
| Over-current protection threshold | A |
| Soft start delay after enable | ms |
| Soft start rise time after initial delay after enable | ms |
| Soft stop delay after disable | ms |
| Soft stop fall time after initial delay after disable | ms |
| Use optional PGood output to signal "power good" | On/Off |
| "Power good" threshold, percentage of output | % |
| Delay from "power good" until PGood asserted | ms |

Package Options

Table 2 lists the package options available for the C730 Power Component.

Table 2: Package Options for C730

| Pins | Dimension | SIM Bonding | Part Number |
|------|-----------|-------------|-------------|
| 52 | 6 x 6 mm | Paired | C730P |
| 58 | 7 x 7 mm | Paired | C730P |
| 74 | 8 x 8 mm | Single | C730S |

Advanced Capabilities and Options

Table 3 lists derivatives of the C730 component with additional capabilities plus other similar components potentially suitable for this application.

Table 3: C730 Advanced Capabilities Options

| Description | Part Number |
|--|-------------|
| Standard version (this component) | C730 |
| LDO with source-side regulation, typical for most applications | C710S |
| LDO with drain-side regulation for battery power path applications | C720S |

System Characteristics

Table 4: C730 System Characteristics

| Parameters | Min | Typ | Max | Units |
|---|-----|------------|------|---------------|
| Power | | | | |
| Bias Supply Voltage (V_{BIAS}) | 6 | | 13.2 | V |
| Input Drain Voltage (V_{IN}) | 1.0 | | 3.3 | V |
| Output Voltage (V_{OUT}) | | $V_{IN}/2$ | | V |
| Output Current (I_{OUT}) | D6 | | 6 | A |
| | D3 | | 3 | |
| | D1 | | 1 | |
| Load regulation ($\Delta V_{OUT}/\Delta I_{OUT}$) | | 4 | | %/A |
| Line regulation ($\Delta V_{OUT}/\Delta V_{IN}$) | | 4 | | %/V |
| Short-circuit current (I_{SC}) | | TBD | | A |
| Power-supply ripple rejection (PSRR) | | TBD | | dB |
| Output noise voltage (V_n) | | TBD | | μV_{RMS} |
| Control | | | | |
| Soft start/stop delay | 2 | | 10 | ms |
| Current Limit – OCP | 0.2 | | 6 | A |

For other device specifications, see the AnDAPT AmP Platform datasheet.

Additional Resources

- AnDAPT AmP Platform datasheet