

Product Description

The C860 Power Component is a customizable, high-output-current PWM Synchronous Buck, Voltage Mode Switching controller to control a DrMOS powertrain. Combine the C860 component with other Power Components to create a custom-defined, AnDAPT AmP on-demand PMIC.

Power components are software components, accessible from WebAmP™, which allows users to create their own PMIC. The C860 has been developed to interface with standard DrMOS such as the Vishay SiC645A or Intersil/Renesas ISL99227B devices. DrMOS are fully integrated power stages that integrate a high side and low side MOSFET, and a high-performance driver with integrated bootstrap FET. Maximum output current will be based on the selected external DrMOS.

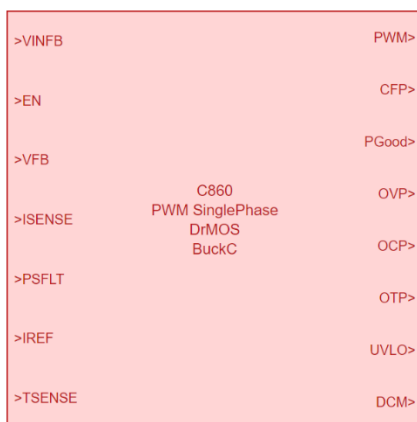
Features

- PWM, voltage mode, DrMOS controller
- Adjustable output voltage with down to 2.4 mV resolution
- 1% regulation
- Efficiency up to 95%
- Adjustable switching frequency
- Adaptable bandwidth, gain & phase margin
- Adjustable protection: Input Undervoltage Lockout, (ViUVLO), Output Undervoltage (VoUVLO), Overcurrent (OCP), Overvoltage (OVP), Over temperature (OTP)
- Short-circuit protection (SCP)
- Power-good flag output and Enable input
- -40°C to +125°C operating junction temperature
- Included in the WebAmP™ development tool

Applications

- On-demand power management, multi-rail power integration
- Powering server, processor, memory, storage, network switcher and router platforms
- FPGA, processor, SSD, subsystem power control & sequencing

Figure 1: C860 Power Component



Product Detail

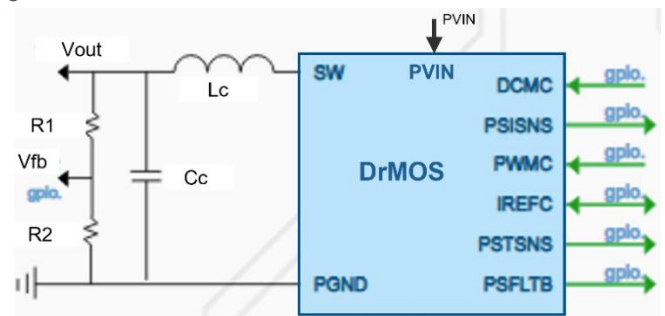
The C860 Synchronous Buck controller power component symbol is shown in Figure 1. The controller drives a DrMOS integrated power stage with connections as shown in Figure 2 and described in the Pin Function and Description Table. A typical application diagram is shown in Figure 3.

Output voltage feedback is compared against an internal reference using a high-performance, voltage-error digitizer that provides tight voltage regulation accuracy under transient conditions. Pulse-width modulated (PWM), voltage-mode regulation is implemented with PID compensation. The switching frequency is either generated internally via an oscillator with selectable frequencies or provided via an external pin.

The customizable output voltage is specified by the power engineer during customization using AnDAPT's cloud-based WebAmp development software. The C860 component has customizable control and status pins including 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.

Customizable soft-start and soft-stop slew rates are also specified by the power engineer using the WebAmp tool. Additional sequencing options are available when used in conjunction with the C420 Sequencer, by interconnecting signals EN and PGood to provide customizable dependencies and customizable delays between each sequence step.

Figure 2: DrMOS Interface



Pin Function and Description Table

Port Name	DrMOS Name	SiC645 Name	I/O	Description
OVP			O	Over Voltage Protection fault flag for internal connection to AmP fault manager
OCP			O	Over Current Protection fault flag for internal connection to AmP fault manager
OTP			O	Over Temperature Protection fault flag for internal connection to AmP fault manager
UVLO			O	Input Under Voltage Lock Out fault flag for internal connection to AmP fault manager
PGood			O	Controller Power Good signal
CFP			O	Catastrophic Fault Protection fault flag for internal connection to AmP fault manager.
VINFB			I	Internal - Input voltage measurement for ViUVLO protection
TSENSE	PSTSNS	TMON	I	Temperature monitor input from DrMOS Power Stage to C860 controller
PSFLT	PSFLTb	FAULT#	I	Open drain fault input pin from DrMOS Power Stage to C860 controller.
ISENSE	PSISNS	IMON	I	Current monitor input from DrMOS Power Stage to C860 controller.
IREF	IREFC	REFIN	I	Reference voltage connected to DrMOS power stage REFIN signal and to C860 controller. Recommend using AmP auxiliary 1.2V LDO to drive the signal.
DCM	DCMC	LGCTRL	O	DrMOS power stage lower gate control signal output from DrMOS controller. Used for Discontinuous current mode operation for light load efficiency when available on the DrMOS.
EN			I	Enable DrMOS controller
PWM	PWMC	PWM	O	DrMOS power stage gate driver control signal output from DrMOS controller
VFB	Vfb		I	VOU feedback for DrMOS controller

Figure 3: Typical Application Diagram

