

Features

- Adjustable, programmable sequencer
- Up to eight independent input and output controls
- Connect inputs and outputs to status outputs and control inputs on other regulators or switches
- Cascadable with selectable dependencies
- Adjustable delays, up to 4 ms
- 52-, 58-, or 74-pin VQFN package
- -40°C to +125°C operating junction temperature
- Included free with WebAmP™ development tool

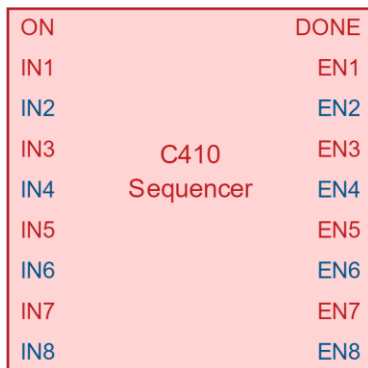
Applications

- Control the power-on or power-off sequence of individual power rails or switches
- Ensure required power sequencing of power rails within an application

Typical Application Circuit

Figure 1 provides a typical schematic for the C410 Power Component when integrated with other power rails in an AmP application. Signal names alternate in color on Group boundaries.

Figure 1: C410 application schematic



Description

The C410 Power Component is a customizable Sequencer. Combine the C410 component with other Power Components to create a highly-integrated, custom-defined, AnDAPT AmP™ on-demand power management device.

The C410 component has a customizable number of sequencer inputs and outputs with customizable dependencies and with customizable delays between each sequence step, ranging for 0.25 to 4 ms. The inputs and outputs connect to various control inputs and status outputs of the regulators and switches in the application. These customizable values are specified by the power engineer using AnDAPT's cloud-based WebAmP™ development software.

Customizable Options

Table 1 lists the various customizable options available for the C410 Power Component. These options are set graphically in the WebAmP development software.

Table 1: C410 Customizable Options

Option	Units
Enable input (ON)	
Number of trigger inputs	
Number of outputs	
Groups	
Channels	
Sequencer dependency	
Delay on each output	ms
Sequence complete output (DONE)	

Package Options

Table 2 lists the package options available for the C410 Power Component.

Table 2: Package Options for C410 Power Component

Pins	Dimension	SIM Bonding	Packages
52	6 x 6 mm	Paired	QN52
58	7 x 7 mm	Paired	QF58
74	8 x 8 mm	Single	QF74

System Characteristics

Table 3: C410 System Characteristics

Parameters	Min	Typ	Max	Units
Control				
Delay from input to output, each output	0.25		4	ms

Fault Conditions

A PGood condition that de-asserts before DONE goes high results in a shut-down sequence. It is the responsibility of the controller driving the ON signal to monitor for time out in the event DONE never goes high. In that case ON must be toggled low to restart the sequence. PGood signals going low after done initiates a normal shut-down sequence ending with DONE going low.

Sequencer behavior may be affected when Telemetry Interfaces I480 or P480 disable the EN inputs to I or P series Power Components.

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

Application Example, Two Groups, two Channels

The C410 Sequencer application example, Figure 4, sequences a C750 Load Switch with a C710 LDO. When ON pin 24 is asserted high, C410 Sequencer asserts EN1 high after Group 1, Delay1, 0.25 ms as shown in Figure 3 and specified in Parameters entry, Figure 2. When C750 Load Switch determines that power is good, it asserts PGood1 connected to Sequencer IN1. After specified Group 2 Delay2, 0.25 ms the C410 Sequencer asserts EN2, enabling C710 LDO. When C710, LDO determines that power is good, it asserts PGood2 connected to Sequencer IN2. Then C410 Sequencer asserts DONE high, completing the turn on sequence. When ON pin 24 is asserted low, C410 Sequencer, in reverse order, sequences down until DONE is asserted low, completing the turn off sequence.

Figure 2: C410 Sequencer Parameter entry: Two Groups, two Channels

Sequencer		
	Channels	Delays (ms)
Group 1	1	0.25
Group 2	1	0.25

Figure 3: C410 Sequencer example waveform Two Groups, two Channels

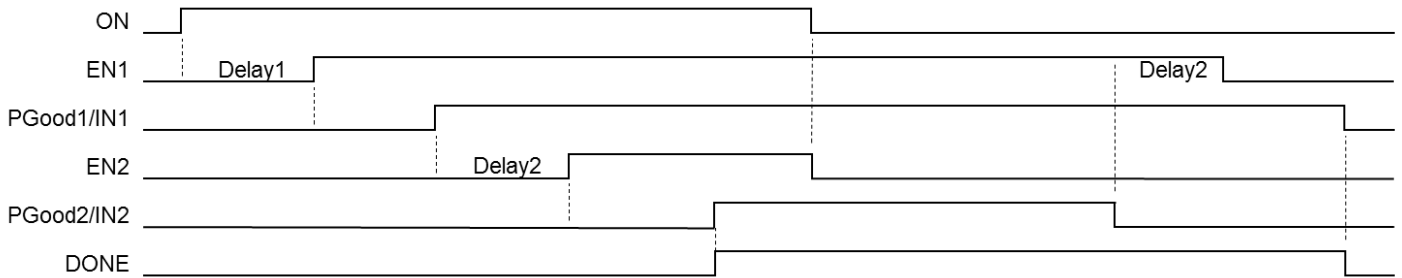


Figure 4: C410 Sequencer example schematic Two Groups, two Channels

