General Description

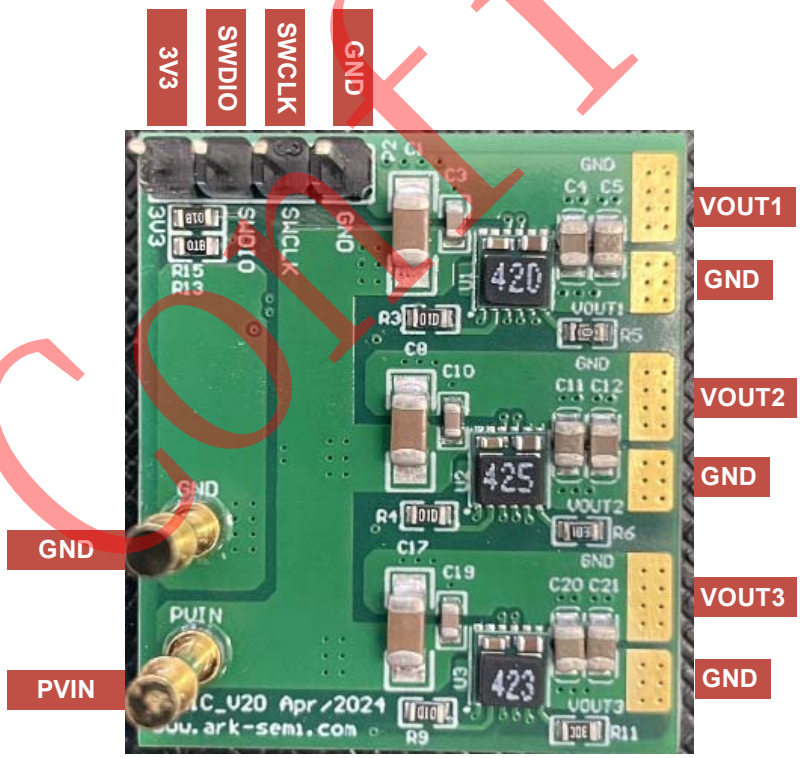
The AKM2700A00BMC uPMIC module is a high-density DC-to-DC buck converter module. It measures only 28.5x25x13.4 millimeters. It contains three buck converter power modules, i.e., the AKM2800A power module, which supports wide input voltage range from 4.5V to 16V, and Vout voltage range from 0.6V ~2.6V. Each AKM2800A is capable of supplying up to 6A continuous load current with peak efficiency up to 87%.

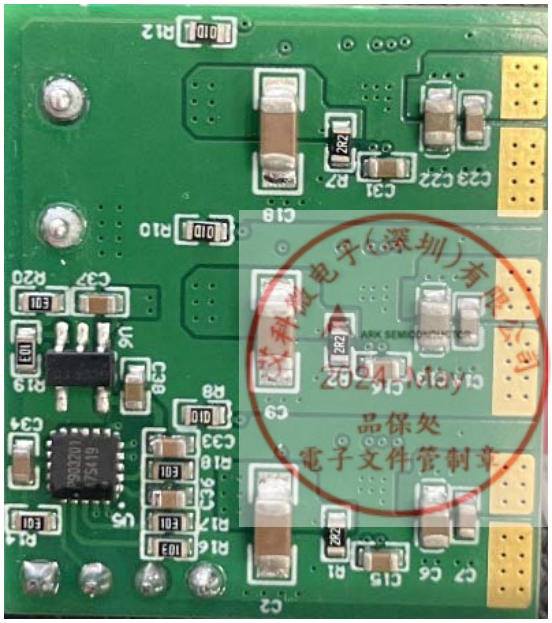
The AKM2700A00BMC uPMIC module is equipped with two-wire serial interface -to-USB dongle connected to PC. Users can run Windows-based GUI tool on PC to adjust several electrical parameters for each output channel, including Power-on delay time, Soft-Start rate, Power good threshold, OVP, OCP, OTP DCM or CCM mode.

Features

- Three buck Vout channels each capable pf 6A (max) continuous current
- Ultra-High power density within very compact dimension 28.5x25x13.4mm
- Each Vout Channel is output from AKM2800A power module in which an inductor is included in
- VIN range: 4.5V ~ 16V
- Vout range of each individual AKM2800A channel: 0.6V ~ 2.6V
- 87% peak efficiency with AKM2800A
- Adjustable parameters for each Vout channels
  - ✓ Power-on delay time, Soft-Start Rate, Power-Good Threshold
  - ✓ OVP, OCP, OTP, DCM/CCM mode
- ARM debug serial interface (SWCLK, SWDIO) connected to USB dongle
- User friendly MS-Windows GUI tool for programming

Device Outlook





Interface Connector Definition

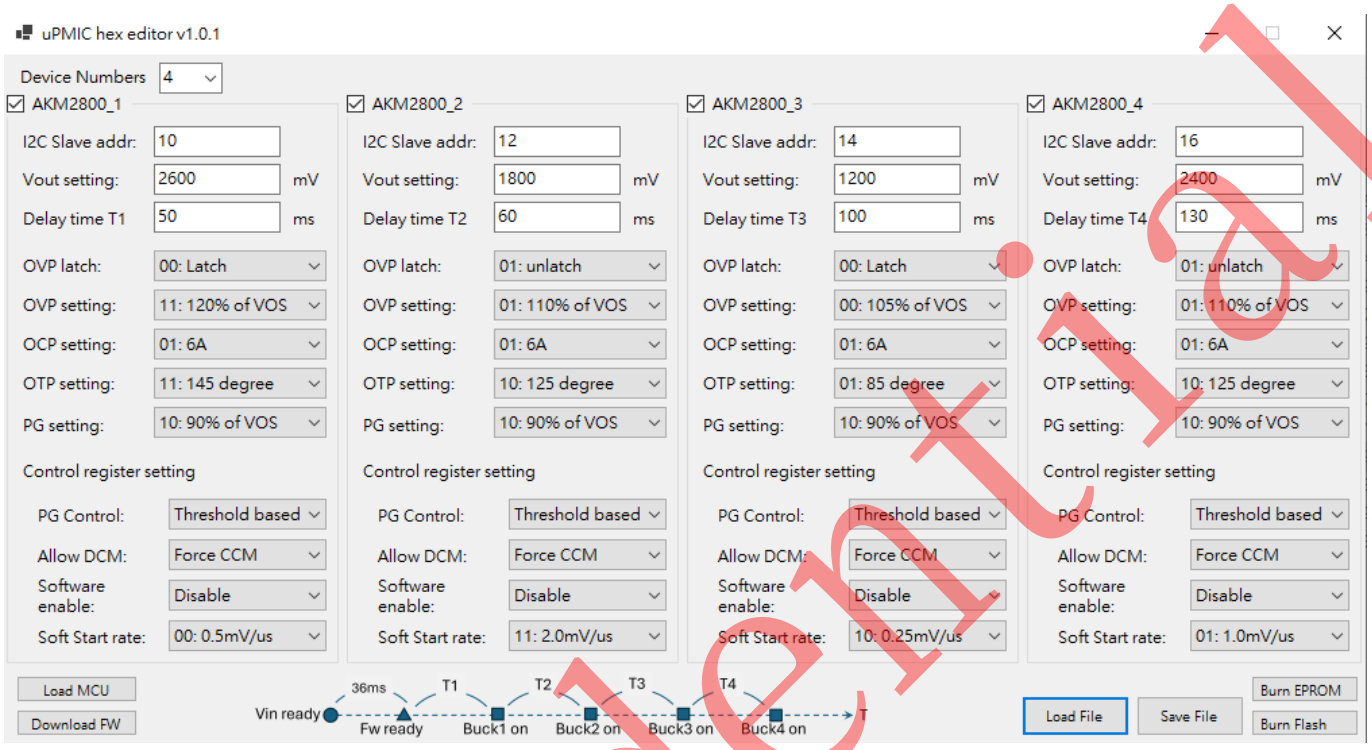
Name	Function Description
PVIN	Power source Input
VOUT1	Buck channel Vout1 from AKM2800A output
VOUT2	Buck channel Vout2 from AKM2800A output
VOUT3	Buck channel Vout3 from AKM2800A output
3V3	The 3.3V voltage supply from dongle
SWCLK	The serial clock from dongle
SWDIO	The serial data to/from dongle
GND	Device Ground

GUI Tool user guide

Step 1: Unzip the GUI toolkit

Step 2: Double-click the *uPMIC tool.exe*

Step 3: The following windows will appear



I2C Address: channel 1:**10**; channel 2:**12**; channel 3:**14**; channel 4:**16**

Vout Setting: 0.6V ~2.6V with resolution 5mV

Delay time: User adjustable delay time with 1ms resolution

OVP Latch: **00**: Latch; **01:** Unlatch

OVP Setting: **00**: 105%; **01**: 110%; **10**: 115%; **11**: 120% of VOS

OCP Setting: **00**: 6A; **01**: 4A

OTP Setting: **00**: 75C; **01**: 85C **10**: 125C; **11**: 145C

PG Setting: **00**: 80%; **01**: 85%; **10**: 90C; **11**: 95% of VOS

PG Control: **DAC Based** or **Threshold Base**

Allow DCM: **Force CCM** or **Allow CCM**

Software Enable: **Disable** or **Enable**

Soft Start Rate: **00**: 0.5mV/us; **01**: 1mV/us; **10**: 0.25mV/us; **11**: 2mV/us

Load MCU: Load MCU's default settings (stored in flash) onto the screen

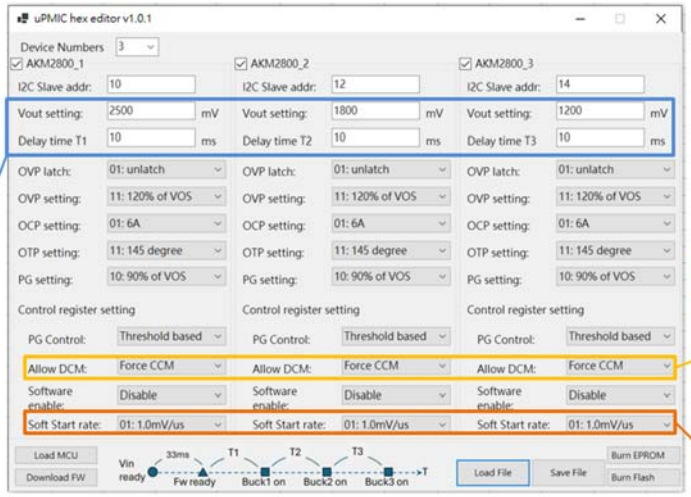
Download FW: Update new MCU firmware version

Load File: Load the previous saved setting file from PC onto the screen

Save File: Save the current settings shown on screen into a file in PC

Burn EPROM: Program the settings into AKM2800A's OTP memory (up to three times only, use with caution)

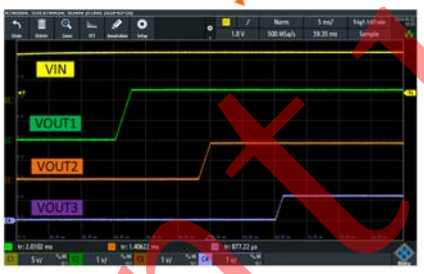
Burn Flash: Store the current settings shown on screen into the MCU's flash, and then the MCU will auto reset and afterwards the AKM2800A's register will be updated.



FCCM Observation

Vout Setting & DelayTime Overservation

SoftStart Rate Observation



Revision History

Revision	Date	Description of change
P001	2024/05/15	Preliminary Version