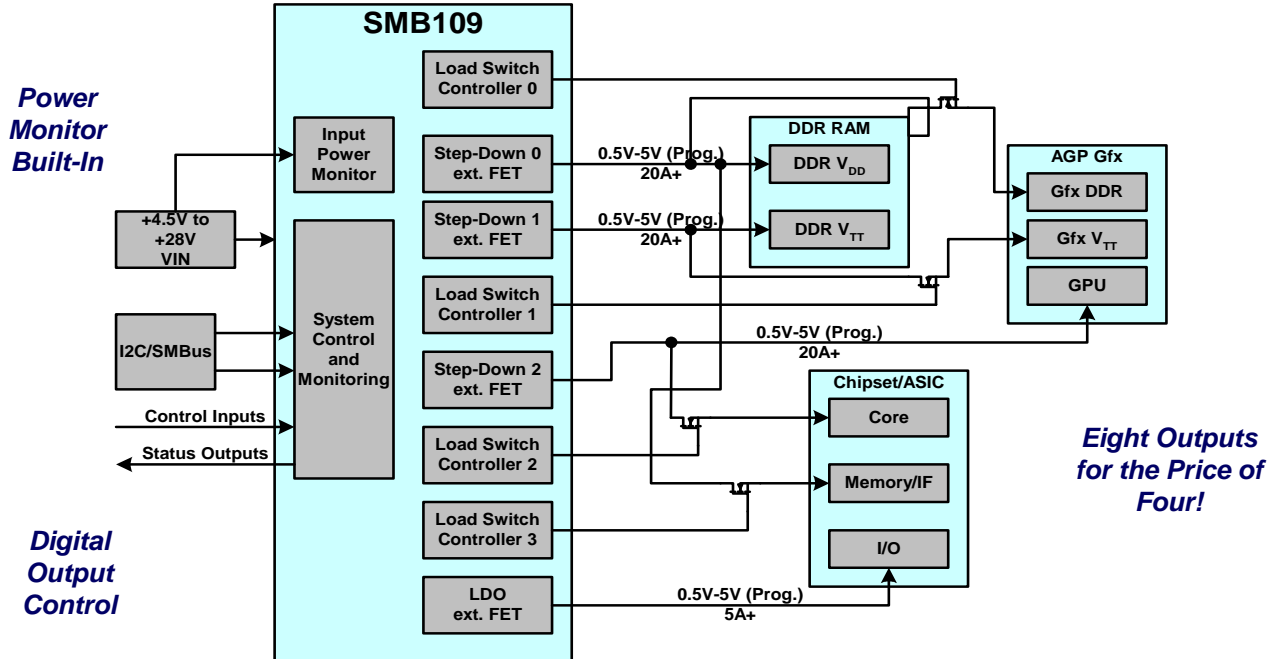


# Multi-Output Programmable DC-DC Controller Tames Complex Power Designs

*Eight Step-Down Outputs up to 20A+, Dynamic Voltage, Sequencing/Margining, Power Monitor, Digital Control*



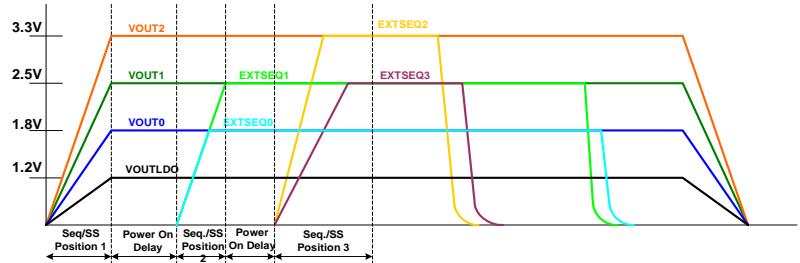
## Features

- Up to Eight Outputs with Embedded Control
  - 3 DC-DC, 1 LDO
  - 4 load switch controllers, built-in charge pump
  - DDR V<sub>TT</sub> Mode
- Digitally Programmable with Non-Volatile Configuration
  - Static/dynamic output voltage/margining
  - Output sequencing/timing/enable
  - Softstart timing/slew rate
  - RESET/PGOOD behavior
- Input current/voltage power monitoring
  - 8-bit ADC with digital readout
- Built-in Safety and Protection
  - Programmable UV/OV monitors
  - Cycle-by-cycle current limit
  - Over-temperature protection
- Small 7mm x 7mm QFN-56 Package

## Applications

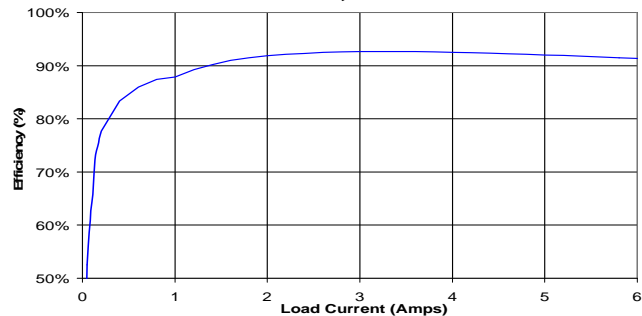
- Notebook/Netbook/Tablet PC's
- Servers/Datacom/Storage Equipment
- Gaming Consoles/Media Centers

## Fully Programmable Output Control: Enable/Sequence/Softstart/Dynamic Voltage



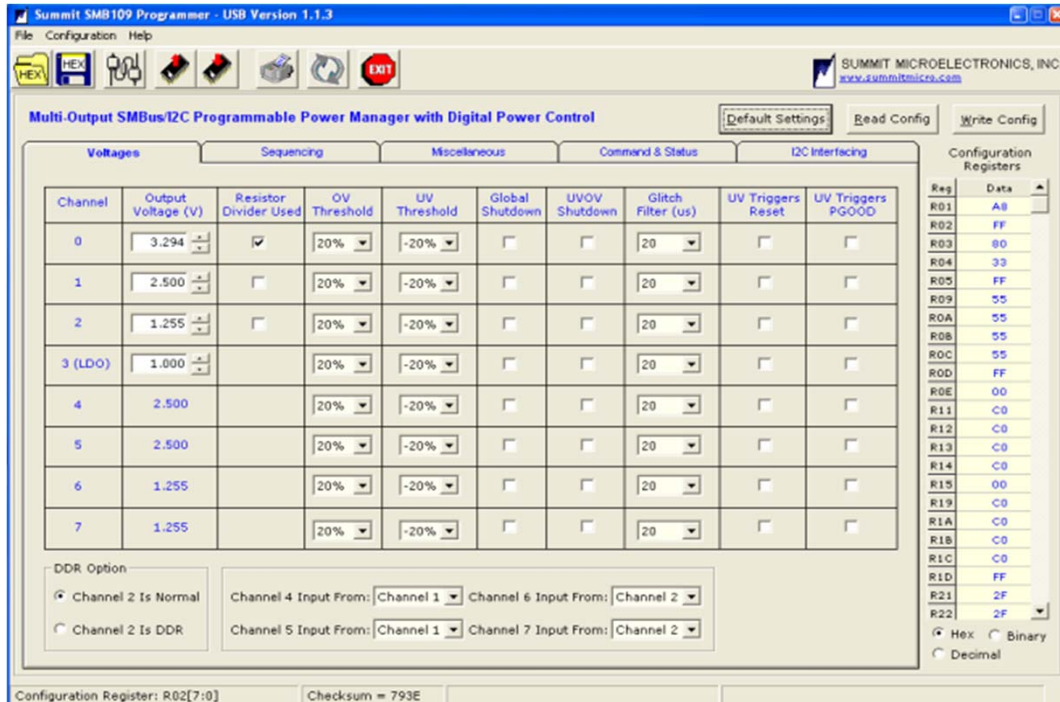
## Efficiency

V<sub>in</sub> = 12V, V<sub>out</sub> = 3.3V



# Multi-Output Programmable DC-DC Controller Tames Complex Power Designs

*PC or GPIO Control, OTP Configuration, Easy-to-Use GUI Design  
Tools Simplify Design and Reduce Time-to-Market*



## Summit Programmable Power Manager Family

|                                | SMB109          | SMB207/A        | SMB208/A        | SMB209/A        | SMB211/212      | SMB113/4/7      | SMB214          |
|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Input Voltage Range (V)        | 4.5 to 28       | 4.5 to 16       | 4.5 to 16       | 4.5 to 16       | 4.5 to 13.5     | 2.7 to 6.0**    | 2.7 to 6.0**    |
| # of Outputs                   | 8               | 2               | 2               | 1               | 1               | 4               | 3               |
| # of Buck Outputs              | 3               | 2               | 2               | 1               | 1               | 4               | 3               |
| # of LDO Outputs               | 1               | 0               | 0               | 0               | 0               | 0               | 0               |
| # of Load Switch Outputs       | 4               | 0               | 0               | 0               | 0               | 0               | 0               |
| Output Current (A)             | >20             | 1+1             | 2+2             | 4               | >20             | >5/>5/>10       | >5              |
| Control Mode                   | Current         | Current         | Current         | Current         | Current         | Voltage         | Voltage         |
| Switching Frequency (kHz)      | 300-1200        | 500/1000        | 500/1000        | 500/1000        | 250-1000        | 400/800/1000    | 400/800/1000    |
| Output Voltage Range (V)       | 0.5-5.0 (Prog)* | 0.8-5.0 (Prog)* | 0.8-5.0 (Prog)* | 0.8-5.0 (Prog)* | 0.5-5.0 (Prog)* | 0.5-5.0 (Prog)* | 0.5-VIN (Prog)* |
| Output Voltage Accuracy (%)    | 1               | 2.5             | 2.5             | 2.5             | 1               | 1.5/2.5         | 2.5             |
| Internal/External FETs         | External        | Internal        | Internal        | Internal        | External        | External        | External        |
| Output FET Configuration       | N-N boot        | N-boot          | N-boot          | N-boot          | N-N boot        | P-N             | P-N             |
| Synchronous/Asynchronous       | Sync            | Async           | Async           | Async           | Sync            | Both            | Both            |
| Sequencing                     | Prog            | Prog            | Prog            | Prog            | Prog            | Prog            | Prog            |
| Soft-start                     | Prog            | Prog            | Prog            | Prog            | Prog            | Prog            | Prog            |
| OC Limit                       | Prog            | √               | √               | √               | Prog            | √               | √               |
| Frequency Compensation         | External        | Internal        | Internal        | Internal        | External        | External        | External        |
| Static Output Voltage Prog     | √               | √               | √               | √               | √               | √               | √               |
| Dynamic Output Voltage Control | √               | √               | √               | √               | √               | √               | √               |
| Fine Step Voltage Margining    | √               | √ ("A" only)    | √ ("A" only)    | √ ("A" only)    | √               | √               | √               |
| Output UV/OV Monitor           | Prog            | √               | √               | √               | Prog            | Prog            | Prog            |
| RESET/POWER GOOD Output        | √               | √               | √               | √               | √               | √               | √               |
| PWM/PFM Light Load             | √               | √               | √               | √               | √               | √               | √               |
| Phase Interleaving (degrees)   | 120             | 180             | 180             | N/A             | N/A             | 180             | 180             |
| I2C/SMBus Interface            | √               | √               | √               | √               | √               | √               | √               |
| Package                        | 7x7 QFN-56      | 3x3 QFN-20      | 3x3 QFN-20      | 3x3 QFN-20      | 3x3 QFN-20      | 5x5 QFN-32      | 5x5 QFN-32      |

\* External resistor divider can be used for higher output voltages  
\*\* External bootstrap circuit allows operation from higher input voltages.