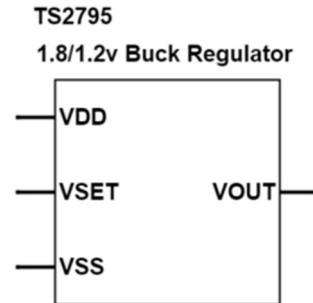


FEATURES

- Triad reusable IP, Silicon proven
- 180nm, low voltage CMOS process
- 1.8V digital logic, 3.3V analog
- Internal PMOS and NMOS FETs
- Selectable 1.8V or 1.2V output voltage
- Configurable PFM-PWM control
- Up to 500mA output current

FUNCTIONAL BLOCK DIAGRAM

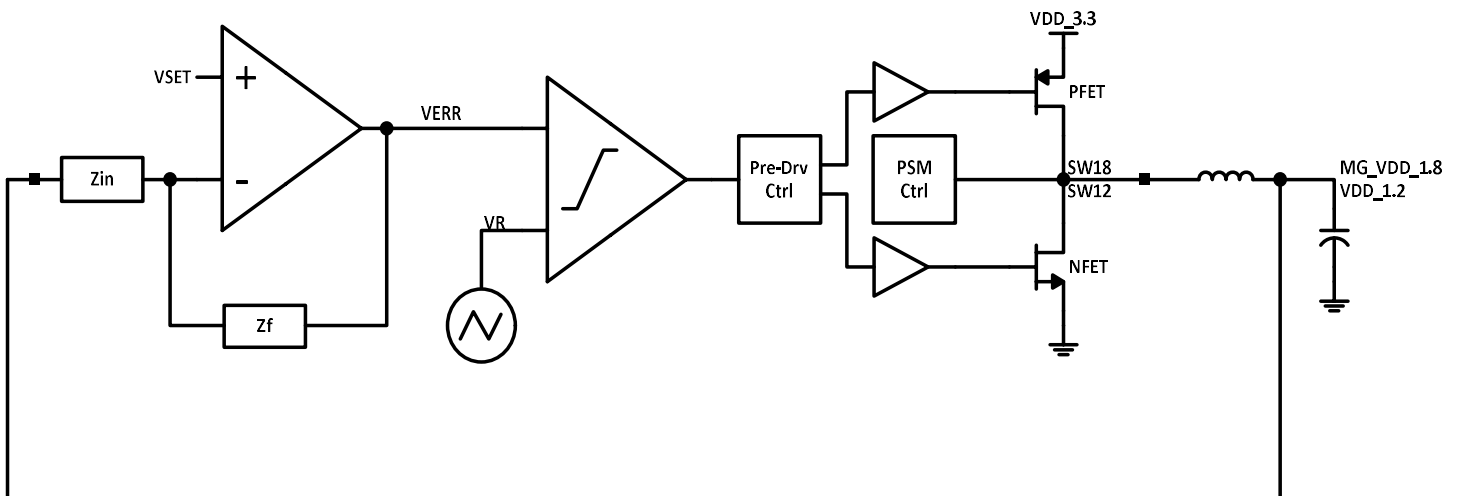


GENERAL DESCRIPTION

The TS2795 is a PFM-PWM, voltage mode, synchronous switched-mode buck regulator designed to provide a fixed output voltage of 1.2v or 1.8v. Includes a soft-start operational mode and can be designed to operate out-of-phase when multiple buck regulators are implemented on the same Agile ASIC™. Full step-down or buck regulation is achieved by using internal FET's, a high-side PFET and low-side NFET for each converter.

PFM-PWM transitioning can be configured to be automatic through either a pin configuration detection or through the internal SPI Register Control set.

SIMPLIFIED INTERNAL BLOCK DIAGRAM



To maintain small output ripple voltages while using small value, and size, inductors and capacitors in the output filter, the buck regulators switch at 2.1898MHz nominally. This frequency is created by dividing down an internally generated

PFM-PWM Synchronous Buck Regulator

oscillator as part of the overall Agile ASIC™ integration. MG_VDD_1.8 should use L = 3.3μH and C = 10μF, while VDD_1.2 should use L = 2.2μH and Cload = 10μF. The absolute capacitor range for MG_VDD_1.8 is 2.2μF to 15μF, while NVDD_1.2 is 3μF to 20μF. Capacitance of at least 10μF should be placed as close to VDD_3.3 supply inputs as possible.

KEY PERFORMANCE PARAMETERS

Parameter	Notes/Conditions	min	typ	max	units
MG_VDD_1.8 Buck Regulator					
Output Voltage	Load current = 150mA	1.751	1.8	1.849	V
Output Current				150	mA
Efficiency	Efficiency: Load Curr = 100mA, Vin = 3.3V		90		%
	Efficiency: Load Curr = 50mA, Vin = 3.3V		87		
	Efficiency: Load Curr = 25mA, Vin = 3.3V		80		
VDD_1.2 Buck Regulator					
Output Voltage	Load current = 500mA	1.164	1.2	1.236	V
Output Current				500	mA
Efficiency	Load current = 400mA, Vin = 3.3V		86		%
	Load current = 300mA, Vin = 3.3V		88		
	Load current = 150mA, Vin = 3.3V		89		

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