Device Information

ISL6364C

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Dual 4-Phase + 1-Phase PWM Controller for VR12 Desktop Applications

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Datasheet

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Dual 4-Phase + 1-Phase PWM Controller for VR12 Desktop Applications

V_{IN} (min) (V)	4.75
V_{OUT} (min) (V)	.25
V_{OUT} (max) (V)	1.52
I_{OUT} (max) (A)	130
V_{BIAS} (V)	5
Applications	VR12
Max # of outputs	2
Max # of phases	4
Droop	Y
Integrated MOSFET Driver	N

Product Information

Key Features

Support Intel VR12 for 0/1 Address
    SerialVID with Programmable IMAX, TMAX, and BOOT Registers
Intersils Proprietary Enhanced Active Pulse Positioning (EAPP) Modulation Scheme (Patented)
    Variable Frequency Control During Load Transients to Reduce Beat Frequency Oscillation
    Linear Control with Evenly Distributed PWM Pulses for Better Phase Current Balance During Load Transients
    Voltage Feed-Forward and Adjustable Ramp Options
    High Frequency and PSI Compensation Options
Dual Outputs
    Output 1 (VR0): 1 to 4-Phase for Core or Memory
    Output 2 (VR1): Single Phase for Graphics, System Agent, or Processor I/O
    Differential Remote Voltage Sensing
    ±0.5% Closed-loop System Accuracy Over Load, Line and Temperature
Proprietary Active Phase Adding and Dropping Scheme For Enhanced Light Load Efficiency
Droop Option
Programmable 1 or 2-Phase Operation in Low Power Mode
Precision Resistor or DCR Differential Current Sensing
    Integrated Programmable Current Sense Resistors
    Integrated Thermal Compensation
    Accurate Load-Line (Droop) Programming
    Accurate Channel-Current Balancing
    Accurate Current Monitoring
Average Overcurrent Protection and Channel Current Limit With Internal Current Comparators
Independent Oscillators, up to 1MHz Per Phase, for Cost, Efficiency, and Performance Optimization
Dual Thermal Monitoring and Thermal Compensation
Start-up Into Pre-Charged Load
Pb-Free (RoHS Compliant)
Not Controlled by Intersil Standard PCN Process

Description

The ISL6364C is a dual PWM controller; its 4-phase PWMs control the microprocessor core or the memory voltage regulator, while its single-phase PWM controls the peripheral voltage regulator for graphics, system agent, or processor I/O.

The ISL6364C utilizes Intersils proprietary Enhanced Active Pulse Positioning (EAPP) modulation scheme to achieve extremely fast transient response with fewer output capacitors.

The ISL6364C is designed to support Intel VR12 Desktop specifications. It accurately monitors the load current via the IMON pin and reports this information via the IOUT register to the microprocessor, which sends a PSI# signal to the controller at low power mode via SVID bus. The controller enters 1 or 2-phase operation in low power mode. In low power modes, the magnetic core and switching losses are significantly reduced, yielding high efficiency at light load. After the PSI# signal is de-asserted, the dropped phase(s) are added back to sustain heavy load transient response and efficiency.

Todays microprocessors require a tightly regulated output voltage position versus load current (droop). The ISL6364C senses the output current continuously by measuring the voltage across a dedicated current sense resistor or the DCR of the output inductor. The sensed current flows out of the FB pin to develop a precision voltage drop across the feedback resistor for droop control. Current sensing also provides information for channel-current balancing, average overcurrent protection and individual phase current limiting. The TM and TMS pins sense an NTC thermistors temperature, which is internally digitized for thermal monitoring and for integrated thermal compensation of the current sense elements of the respective regulator.

The ISL6364C features remote voltage sensing and completely eliminates any potential difference between remote and local grounds. This improves regulation and protection accuracy. The threshold-sensitive enable input is available to accurately coordinate the start-up of the ISL6364C with other voltage rails.

Pricing / Packaging / Samples / Ordering

	iBuy direct from Intersil		iBuy direct - out of stock		Request samples
	Check distributor inventory		Available in RoHS/Pb-Free		

Part No.	Design-In Status	Temp.	Package	MSL	Price US $	Pb	
ISL6364CCRZ	Active	Comm	48 Ld QFN	3		✔	⬤ ⓘ
ISL6364CCRZ-T	Active	Comm	48 Ld QFN T+R	3		✔	⬤

The price listed is the manufacturer's suggested retail price for quantities of 1K units. However, prices in today's market are fluid and may change without notice.

MSL = Moisture Sensitivity Level - per IPC/JEDEC J-STD-020

SMD = Standard Microcircuit Drawing

Technical Documentation

Datasheet(s):

EN Dual 4-Phase + 1-Phase PWM Controller for VR12 Desktop Applications

Tools And Support

iSim Design Simulation
No Models Available

Related Devices

PT Parametric Table

ISL6353	Multiphase PWM Regulator for VR12 DDR Memory Systems
ISL6363	Multiphase PWM Regulator for VR12™ Desktop CPUs
ISL6364	Dual 4-Phase + 1-Phase PWM Controller for VR12/IMVP7 Applications
ISL6366	Dual 6-Phase + 1-Phase PWM Controller for VR12/IMVP7 Applications
ISL95831	3+1 Voltage Regulator for IMVP-7/VR12 CPUs
ISL95835	3+1 and 1+1 Voltage Regulator for IMVP-7/VR12™ CPUs
ISL95837	3+1 and 1+1 Voltage Regulator for IMVP-7/VR12™ CPUs