

IR35221 Digital Multi-phase Controller

8-phase Dual Loop PWM Voltage Regulator

Quality Requirement Category: Industrial

Features

- Low Quiescent Power PWM Controller with dual loop configurations
- Compliant to PMBus Rev 1.3 with AVSBus
- Flexible Phasing for both loops (8+0, 7+1, ... 4+4)
- Switching frequency from 194 kHz to 2 MHz per phase
- IR Efficiency Shaping Features including Dynamic Phase Control and Automatic Power State Switching
- Programmable 1- or 2-phase operation for Light Loads & Active Diode Emulation for Very Light Loads
- Digitally programmable load line - no external components needed to set load line.
- IR Adaptive Transient Algorithm (ATA) on both loops minimizes output bulk capacitors and system cost
- Auto-Phase Detection with PID Coefficient auto-scaling
- Fault Protection: OVP, UVP, OCP, OTP, CFP, cycle-by-cycle current limit
- I2C/SMBus/PMBus system interface for reporting of Temperature, Voltage, Current & Power telemetry for both loops
- Multiple Time Programming (MTP) with up to 29 writes for the USER section
- Compatible with 3.3 V tri-state drivers
- +3.3 V supply voltage; -40 °C to 85 °C ambient operation
- Pb-Free, RoHS, 5x5 mm 40-pin, 0.4 mm pitch QFN

Applications

- AVSBus based systems
- Server VR
- Memory VR

Description

The IR35221 is a dual loop, digital, multi-phase buck controller designed for CPU voltage regulation. It can support up to 8 phases and allows flexible phase assignment between the two loops.

The IR35221 includes IR's Efficiency Shaping Technology to deliver exceptional efficiency at minimum cost across the entire load range. IR's Dynamic Phase Control adds/drops phases based upon load current. The IR35221 can be configured to enter 1- or 2-phase operation and active diode emulation mode automatically or by command.

The IR35221 offers a digitally programmable load line thereby eliminating the need for any external load line setting component. The controller is designed to work with RDSO and DCR current sense PowIRstages and provides accurate input and output current reporting.

IR's unique Adaptive Transient Algorithm (ATA), based on proprietary non-linear control algorithms provides excellent transient response with reduced output capacitance. The controller also supports programmable cycle-by-cycle current limit per phase for superior dynamic current limiting.

The device configuration can be easily defined using the IR PowIRCenter GUI and is stored in the on-chip memory.

IR35221 Digital Multi-phase Controller

8-phase Dual Loop PWM Voltage Regulator



Description

The IR35221 provides extensive OVP, UVP, OCP, OTP & CFP fault protection. The controller requires the fewest possible external components and supports a clean interface with the power stages resulting in a simplified Bill Of Materials (BOM).

Note: "Infineon strongly recommends pairing Infineon's OptiMOS™ Power Stages with our Digital XDP™ family of controllers to ensure correct interoperability. Interoperability when pairing with other vendor power stages/ discrete power components cannot be guaranteed by Infineon and requires thorough evaluation and characterization by the power stage/ discrete power component vendor."

IR35221 Digital Multi-phase Controller

8-phase Dual Loop PWM Voltage Regulator

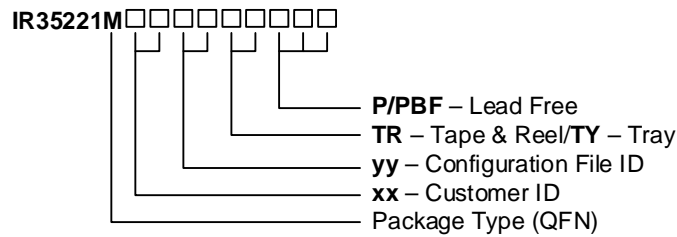


Description

1 Ordering Information

Base Part Number	Package Type	Standard Pack Form and Qty		Orderable Part Number
IR35221	QFN 5 mm x 5 mm	Tape and Reel	3000	IR35221MxxyyTRP ¹
IR35221	QFN 5 mm x 5 mm	Tape and Reel	3000	IR35221MTRPBF

Note: 1) Customer Specific Configuration File, where xx = Customer ID and yy = Configuration File (Codes assigned by IFX Marketing).



IR35221 Digital Multi-phase Controller

8-phase Dual Loop PWM Voltage Regulator



Description

2 Typical Application Diagram

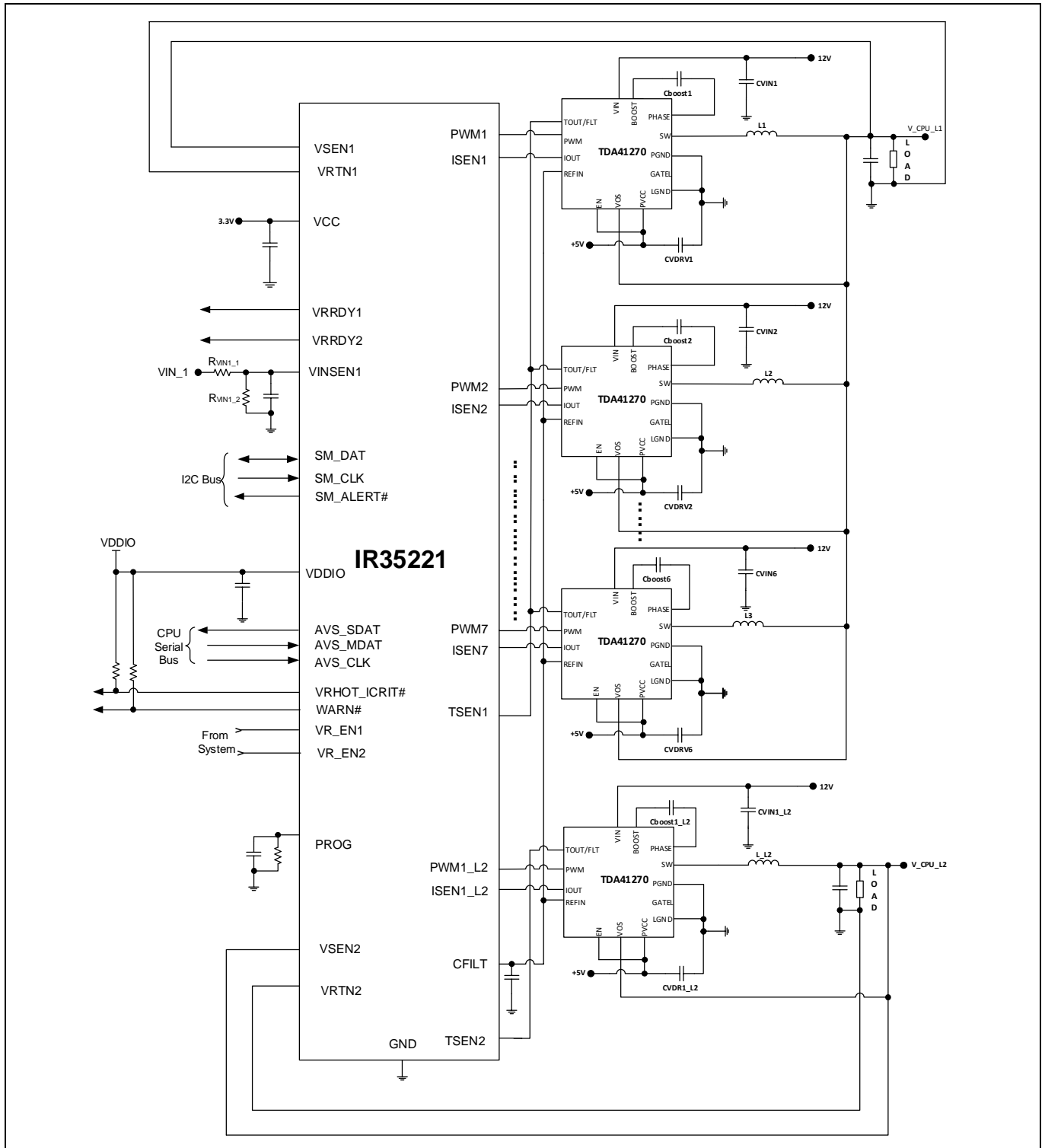


Figure 1 VR using IR35221 Controller and IR354xx PowIRstage in 7+1 configuration

Trademarks of Infineon Technologies AG

μ HVIC™, μ IPM™, μ PFC™, AU-ConvertIR™, AURIX™, C166™, CanPAK™, CIPOS™, CIPURSE™, CoolDP™, CoolGaN™, COOLiR™, CoolMOS™, CoolSET™, CoolSiC™, DAVE™, DI-POL™, DirectFET™, DrBlade™, EasyPIM™, EconoBRIDGE™, EconoDUAL™, EconoPACK™, EconoPIM™, EiceDRIVER™, eupec™, FCOS™, GaNpowIR™, HEXFET™, HITFET™, HybridPACK™, iMOTION™, IRAM™, ISOFACE™, IsoPACK™, LEDrivr™, LITIX™, MIPAQ™, ModSTACK™, my-d™, NovalithIC™, OPTIGA™, OptiMOS™, ORIGA™, PowIRaudio™, PowIRstage™, PrimePACK™, PrimeSTACK™, PROFET™, PRO-SIL™, RASIC™, REAL3™, SmartLEWIS™, SOLID FLASH™, SPOC™, StrongIRFET™, SupIRBuck™, TEMPFET™, TRENCHSTOP™, TriCore™, UHVIC™, XHP™, XMC™

Trademarks updated November 2015

Other Trademarks

All referenced product or service names and trademarks are the property of their respective owners.

Edition 2021-07-15

Published by

Infineon Technologies AG

81726 München, Germany

© 2021 Infineon Technologies AG.

All Rights Reserved.

Do you have a question about this document?

Email: erratum@infineon.com

Document reference

IR35221

IMPORTANT NOTICE

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics ("Beschaffheitsgarantie").

With respect to any examples, hints or any typical values stated herein and/or any information regarding the application of the product, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of any third party.

In addition, any information given in this document is subject to customer's compliance with its obligations stated in this document and any applicable legal requirements, norms and standards concerning customer's products and any use of the product of Infineon Technologies in customer's applications.

The data contained in this document is exclusively intended for technically trained staff. It is the responsibility of customer's technical departments to evaluate the suitability of the product for the intended application and the completeness of the product information given in this document with respect to such application.

For further information on the product, technology delivery terms and conditions and prices please contact your nearest Infineon Technologies office (www.infineon.com).

WARNINGS

Due to technical requirements products may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by Infineon Technologies in a written document signed by authorized representatives of Infineon Technologies, Infineon Technologies' products may not be used in any applications where a failure of the product or any consequences of the use thereof car reasonably be expected to result in personal injury.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Infineon\(英飞凌\)](#)