



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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## FEATURES

- Dual output (2+1) Digital Controller with proprietary control algorithm
- Two-phase operation available on Output #1 for powering very high current ASICs and DSPs
- I2C /PMBus interface for configuration & telemetry with pin programmable address
- Operating ambient temperature: -40°C to 85°C
- 3.3V bias operation
- Independent loop switching frequencies from 200kHz to 2MHz per phase
- IR Efficiency Shaping with Dynamic Phase Control (DPC)
- Active Diode Emulation modes for light load efficiency
- IR Adaptive Transient Algorithm (ATA) minimizes output bulk capacitors and system cost
- Independent OVP, UVP, OCP for each output
- Thermal Protection (OTP) and VRHOT# flag
- Multiple time programmable (MTP) memory for custom configuration
- Flexible I2C bus security features
- Pb-Free, RoHS, 32-pin 5mm X 5mm QFN package

## DESCRIPTION

The IR36021 is a dual-loop digital multi-phase buck controller designed for point of load applications.

The IR36021 include Efficiency Shaping Technology to deliver exceptional efficiency at minimum cost across the entire load range. Dynamic Phase Control adds/drops active phases based upon load current and can be configured to enter 1-phase operation and diode emulation mode automatically or by command.

IR's unique Adaptive Transient Algorithm (ATA), based on proprietary non-linear digital PWM algorithms, minimizes output bulk capacitors and Multiple Time Programmable (MTP) storage saves pins and enables a small package size. Device configuration and fault parameters are easily defined using the IR Intuitive Power Designer (IPD) GUI and stored in on-chip MTP.

The IR36021 provides extensive OVP, UVP, OCP and OTP fault protection and includes thermistor based temperature sensing with VRHOT signal.

The IR36021 includes numerous features like register diagnostics for fast design cycles and platform differentiation, truly simplifying VRD design and enabling fastest time-to-market (TTM) with “set-and-forget” methodology.

## APPLICATIONS

- Embedded Telecom Systems
- Netcom Applications
- Server Application
- Distributed Point of Load Power Architectures

## BASIC APPLICATION

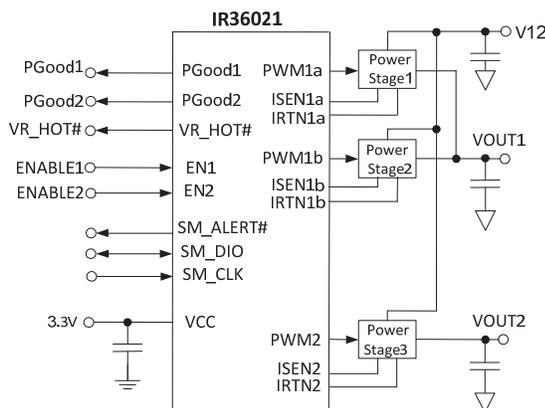


Figure 1: IR36021 Basic Application Circuit

## PIN DIAGRAM

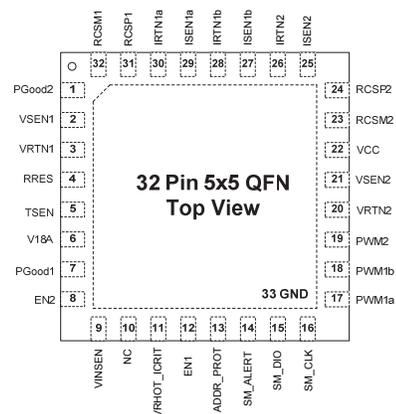


Figure 2: IR36021 Package Top View

**PIN DIAGRAM**

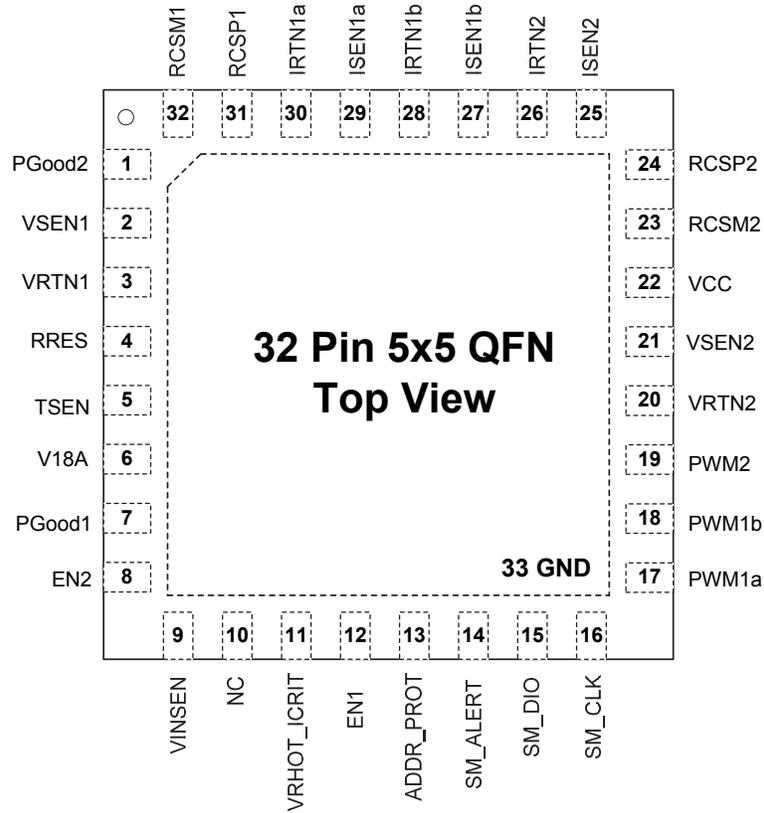
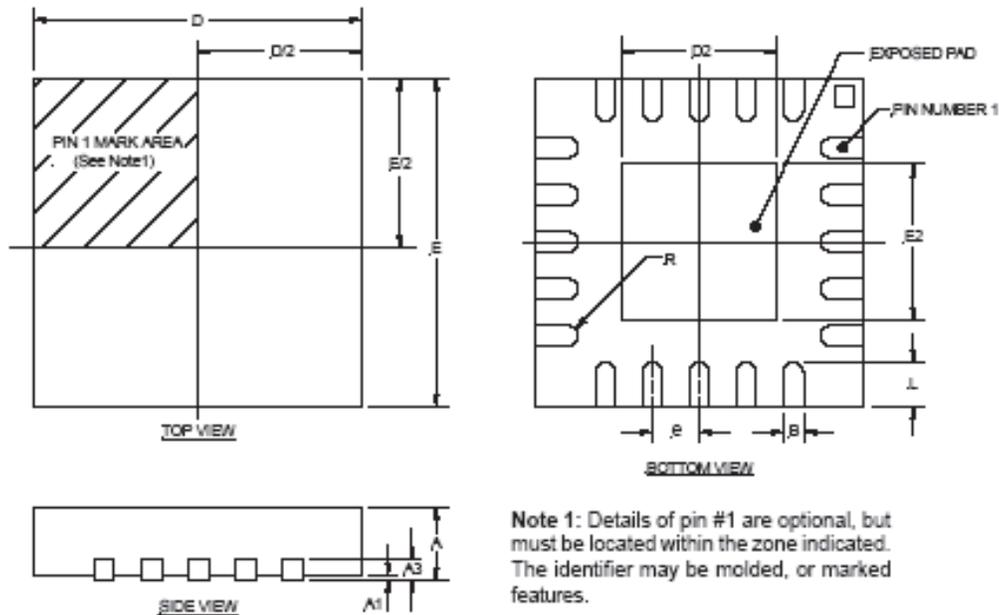


Figure 3: IR36021 Package Bottom View  
5mm X 5mm QFN

**ORDERING INFORMATION**

Package	Tape and Reel Qty	Part Number
M	3000	IR36021MTRPbF

## QFN Package; 5x5-32 Lead



SYMBOL DESIG	32-PIN 5x5		
	MIN	NOM	MAX
A	0.80	0.90	1.00
A1	0.00	0.02	0.05
A3	0.20 REF		
B	0.18	0.23	0.30
D	5.00 BSC		
D2	3.30	3.45	3.55
E	5.00 BSC		
E2	3.30	3.45	3.55
e	0.50 BSC		
L	0.30	0.40	0.50
R	0.09	---	---

NOTE: ALL MEASUREMENTS  
ARE IN MILLIMETERS.

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**This product has been designed and qualified for the consumer market.**

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*Data and specifications subject to change without notice. 02/2013*