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 4+1 and 3+2 phase PWM Controllers

- Easiest layout and fewest pins in the industry

- Fully supports AMD® SVI1 & SVI2 with dual OCP and Intel® VR12 & VR12.5

- ***Complies with VR12.5 Rev 1.3 requirement for SVID register 15h to have <200 μSec filter***

- Overclocking & Gaming Mode

- Switching frequency from 200kHz to 2MHz per phase

- IR Efficiency Shaping Features including Dynamic Phase Control and Automatic Power State Switching

- IR Adaptive Transient Algorithm (ATA) on both loops minimizes output bulk capacitors and system cost

- Auto-Phase Detection with auto-compensation

- Per-Loop Fault Protection: OVP, UVP, OCP, OTP

- I2C/SMBus/PMBus system interface for telemetryof Temperature, Voltage, Current & Power for both loops

- Multiple Time Programming (MTP) with integrated charge pump for easy custom configuration

- Compatible with IR ATL and 3.3V tri-state Drivers

- +3.3V supply voltage; -40°C to 85°C ambient operation

- Pb-Free, Halogen Free, RoHS, 5x5mm, 40-pin, 0.4mm pitch QFN

# DESCRIPTION

The IR3564B/70B is a dual loop digital multi-phase buck controller designed for CPU voltage regulation and is fully compliant with AMD® SVI1 & SVI2 Rev 1.06 and Intel® VR12 Rev 1.5 PWM specification and VR12.5 Rev 1.3 PWM specification.

The IR3564B/70B 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 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 Digital Power Design Center (DPDC) GUI and stored in on-chip MTP.

The IR3564B/70B provides extensive OVP, UVP, OCP and OTP fault protection and includes thermistor based temperature sensing with VRHOT signal.

The IR3564B/70B includes numerous features like register diagnostics for fast design cycles and platform differentiation, simplifying VRD design and enabling fastest time-to-market (TTM) with "set-and-forget" methodology.

# APPLICATIONS

- AMD® SVI1 & SVI2, Intel® VR12 & VR12.5 based systems

- Desktop & Notebook CPU VRs

- GPU & Memory VRs

# ORDERING INFORMATION

| Base Part Number | Package Type | Standard Pack | | Orderable Part Number |
|---|---|---|---|---|
| | | Form | Quantity | |
| IR3564B IR3570B | QFN 5 mm x 5 mm | Tape and Reel | 3000 | IR3564BMxxyyTRP[1] R3570BMxxyyTRP[1] |
| IR3564B IR3570B | QFN 5 mm x 5 mm | Tape and Reel | 3000 | IR3564BMTRPBF IR3570BMTRPBF |
| IR3564B IR3570B | QFN 5 mm x 5 mm | Tray | 4900 | IR3564BMTYPBF IR3570BMTYPBF |

**1.** Customer Specific Configuration File, where xx = Customer ID and yy = Configuration File (Codes assigned by IR Marketing).
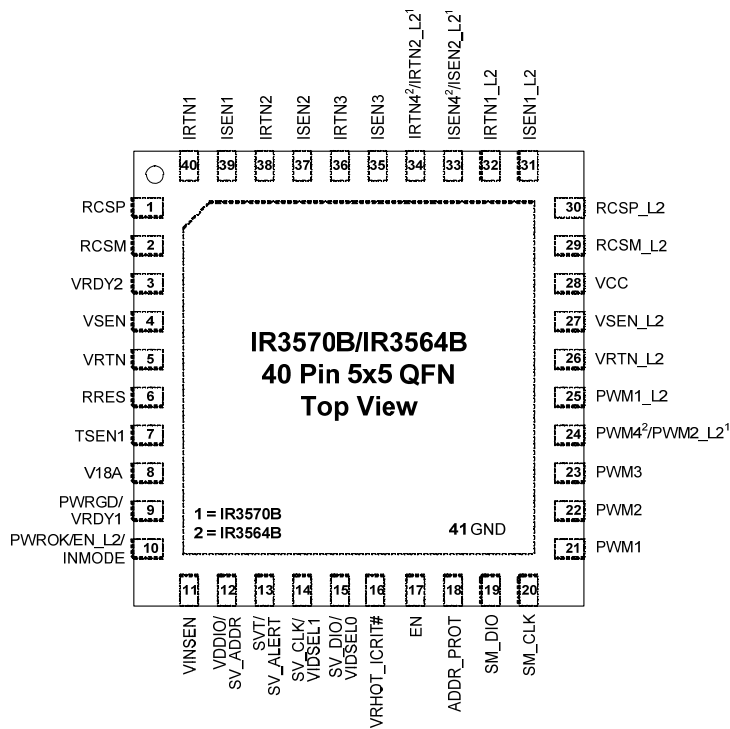
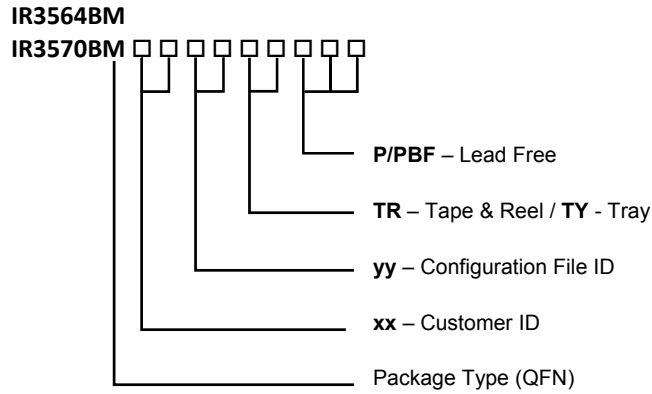## ORDERING INFORMATION

**IR3564BM**
**IR3570BM** ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

**P/PBF** – Lead Free

**TR** – Tape & Reel / **TY** - Tray

**yy** – Configuration File ID

**xx** – Customer ID

Package Type (QFN)



**Figure 1: IR3564B/70B Pin Diagram Enlarged**

# MARKING INFORMATION



PIN 1

**IƟR**

PART # — **35XXB**

ASSEMBLER (A)/DATE(YWW)/MARKING CODE(X) — **AYWWX**

LOT CODE — **XXXX**
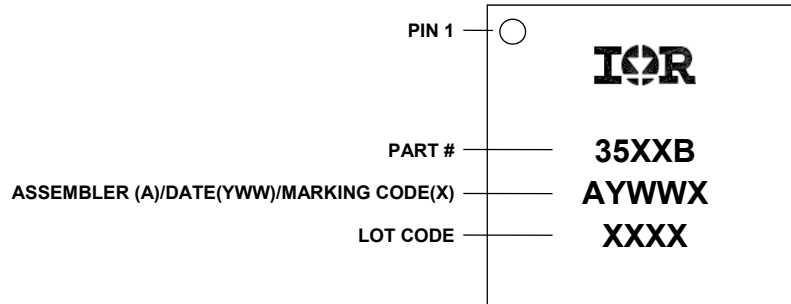
**Figure 60: Package Marking**

# PACKAGE INFORMATION

QFN 5x5mm, 40-pin



QFN40 5X5 / 0.4 Lead Pitch
Package Dimensions

PIN 1 LOCATION

5.00±0.10 [0.197]

5.00±0.10 [0.197]

TOP VIEW

UNLESS OTHERWISE SPECIFIED
TOLERANCE ON DIMENSIONS:
.XX    ±0.05
.XXX   ±0.030
ALL DIMENSIONS ARE IN mm [INCH]

0.20 [0.008]   0.1

0.85 [0.033]

0.45 ref [0.018]

0.0-0.05 [0-.002]   0.08

SIDE VIEW

3.60 Ref [0.142]

PIN 1 I.D.

3.7±0.10 [0.145]

3.7±0.10 [0.145]

3.60 ref [0.142]

0.25 ref [0.010]

0.40 [0.0157]

0.20 [.008]   0.40 [0.0157]

BOTTOM VIEW

Recommended PCB Land Pattern
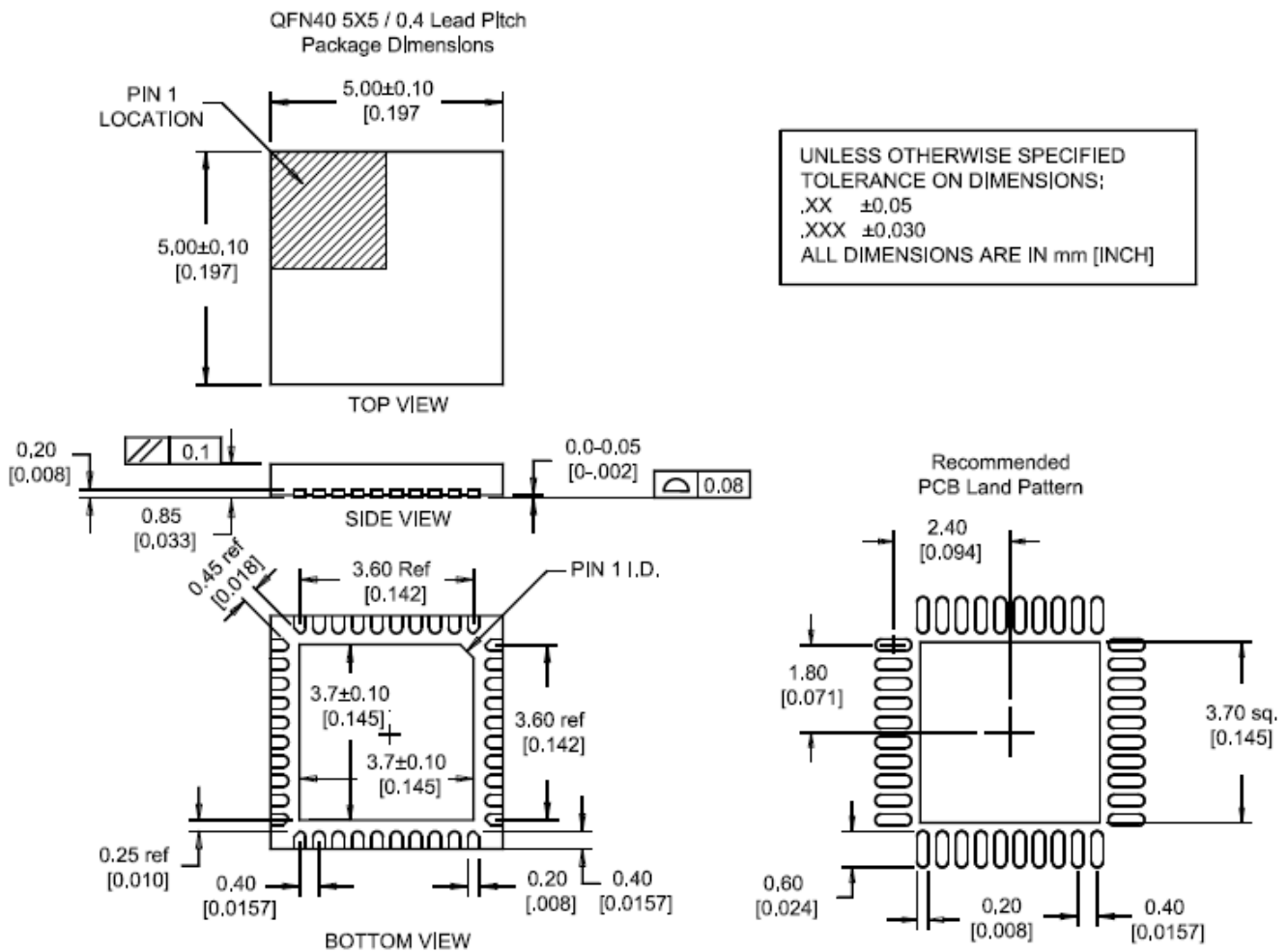
2.40 [0.094]

1.80 [0.071]

3.70 sq. [0.145]

0.60 [0.024]

0.20 [0.008]   0.40 [0.0157]

**Figure 61: Package Dimensions**