

## Description

The P9382A is a highly-integrated single-chip wireless medium power transmitter/receiver IC (TRx). The device can be configured to receive or transmit an AC power signal through magnetic induction. When the device is configured as a wireless power transmitter, it uses on-chip full/half-bridge inverter, PWM generator, modulator/demodulator for communication and micro controller to produce an AC power signal to drive external L-C tank. As a receiver, the device receives an AC power signal from a wireless transmitter and converts it into rectified output voltage, which can be used to power devices or supply the charger input in mobile applications. The P9382A integrates a high-efficiency Synchronous Full Bridge Rectifier and control circuitry to modulate the load to send message packets to the Transmitter (Tx) to optimize power delivery.

The P9382A feature Multiple-time programmable (MTP) non-volatile memory to easily update control firmware and device functions.

The device includes over-temperature and voltage protection. Fault conditions associated with power transfer are managed by an industry-leading 32-bit ARM® Cortex®-M0 processor offering high level of programmability while consuming extremely low standby power to minimize power losses and heat generation. The processor can also control GPIOs to indicate operating and fault modes. The P9382A is available in an ultra-small 53-DSBGA package.

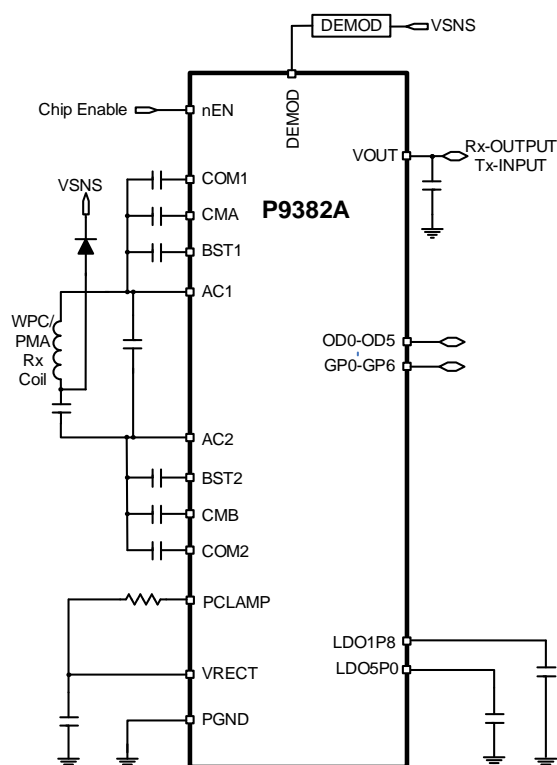
## Typical Applications

- Wireless power Rx, Tx, TRx solution for mobile applications
- Mobile phones
- Notebooks and tablets
- Water or dust proof portable devices
- Smart home and IoT devices

## Features

- Single-chip medium power wireless solution
- Multiple-time programmable (MTP) non-volatile memory
- WPC 1.2.4 compatible
- Delivers up to 20W as a receiver
- TRx mode with up to 6W Tx capability
- Embedded 32-bit ARM® Cortex®-M0 processor
- Reliable over voltage clamping
- Best in class EMI
- Proprietary Rx-to-Tx modulation/demodulation for two-way communication
- High-performance LDO
- Tx-to-Rx (backchannel) communication
- Supports proprietary mode magnetic induction wireless power solutions
- Supports I2C 400kHz standard interface and GPIOs
- Package:
  - 6 × 9 ball array, 2.80 × 4.0mm, 53-DSBGA package with 0.4mm ball pitch

## Typical Applications Diagram

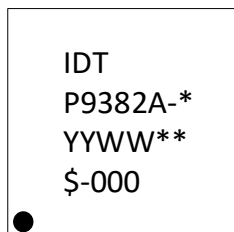


## 1. Package Outline Drawings

The package outline drawings are appended at the end of this document and are accessible from the link below. The package information is the most current data available.

[www.idt.com/document/psc/53-dsbga-package-outline-drawing-2800-x-4010-x-0600-mm-body-040-mm-pitch-ahg53d1](http://www.idt.com/document/psc/53-dsbga-package-outline-drawing-2800-x-4010-x-0600-mm-body-040-mm-pitch-ahg53d1)

## 2. Marking Diagram



1. The IDT Company Logo
2. The part number.
3. "YYWW" is the last 2 digits of the year and week that the part was assembled. "\*\*\*" denotes sequential lot number.
4. "\$" denotes assembly mark code. "000" denotes dash code.

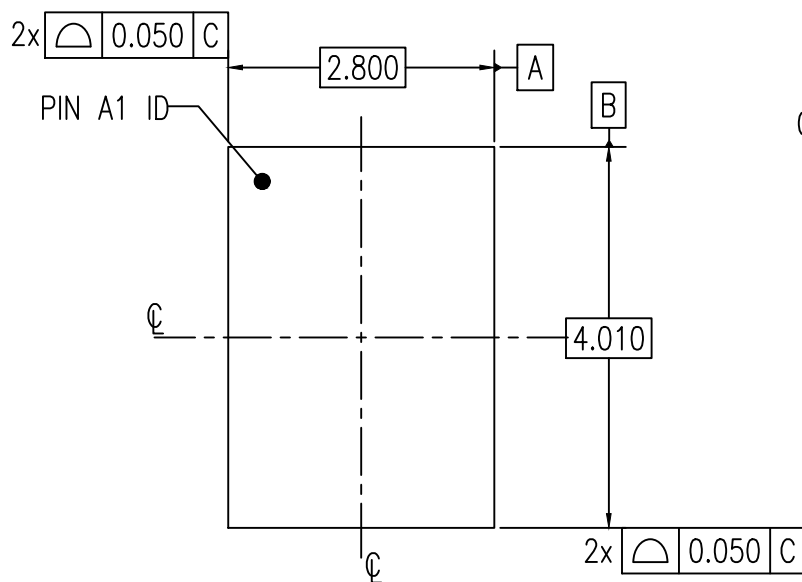
## 3. Ordering Information

Orderable Part Number	Package	MSL Rating	Shipping Packaging	Ambient Temperature
P9382A-0*AHGI8	2.80 × 4.00 × 0.4 mm pitch, 53-DSBGA	MSL 1	Tape and Reel	-40° to +85°C

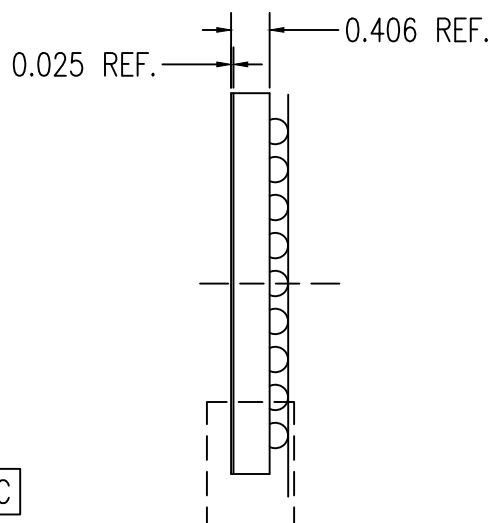
\* Note: This field is a custom value that is specific to each customer application. Please contact your local sales team for your particular value for this field.

## 4. Revision History

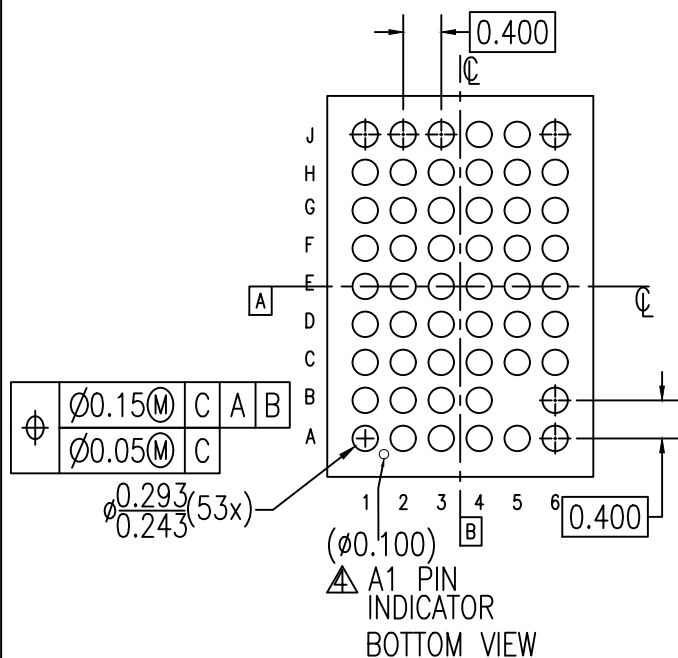
Revision Date	Description of Change
July 17, 2019	Initial release.



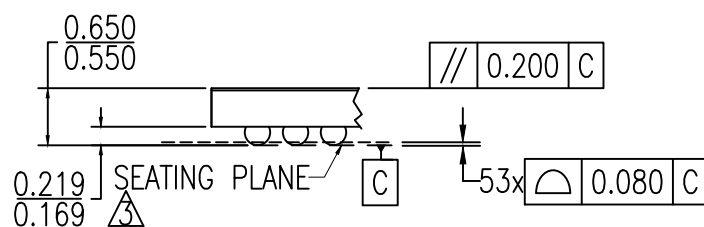
TOP VIEW



- DETAIL A



BOTTOM VIEW

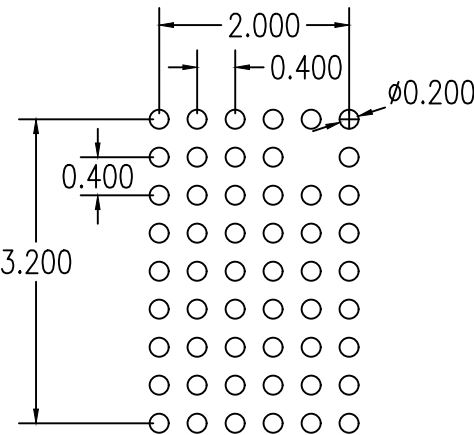


DETAIL A  
(ROTATED 90 DEG CW)

NOTES:

1. ALL DIMENSIONS AND TOLERANCES ARE PER ASME Y14.5M-1994.  
2. ALL DIMENSIONS ARE IN MILLIMETERS.

- ③ SEATING PLANE AND PRIMARY DATUM -C- ARE DEFINED BY THE CONTACT POINTS OF THREE OR MORE SOLDER BALLS THAT SUPPORT THE DEVICE WHEN PLACED ON A TOP OF A PLANAR SURFACE.
- ④ BOTTOM PIN#1 INDICATOR OPTIONAL.
5. BALL SIZE BEFORE REFLOW IS 0.25mm.



RECOMMENDED LAND PATTERN DIMENSION

- NOTE:
- 1. ALL DIMENSIONS ARE IN MM, ANGLES IN DEGREES.
  - 2. TOP DOWN VIEW, AS VIEW ON PCB.
  - 3. NSMD LAND PATTERN ASSUMED.
  - 4. LAND PATTERN RECOMMENDATION AS PER IPC-7351  
GENERIC REQUIREMENT FOR SURFACE MOUNT DESIGN AND LAND PATTERN.

Package Revision History		
Date Created	Rev No.	Description
Jan 31, 2019	Rev 00	Initial Release

## IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES ("RENESAS") PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01)

### Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,  
Koto-ku, Tokyo 135-0061, Japan  
[www.renesas.com](http://www.renesas.com)

### Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit [www.renesas.com/contact-us/](http://www.renesas.com/contact-us/).

### Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.