# PI5USB68
# PI5USB68A

**⚡PERICOM**®

## USB Host Charger Controller IC for Single USB Port

## Features

➔ Manages communication to allow charging to occur

➔ Provides multiple modes of charging to ensure all of the following specs can be met:

  ▫ USB BC1.0, 1.1, & 1.2 spec
  ▫ YD/T - 1591 charger spec
  ▫ Samsung fast charging
  ▫ Sony Ericsson fast charging
  ▫ Apple fast charging 1A and 2A
  ▫ Amazon Kindle Fire
  ▫ Certain modes available can also support devices using non standard approaches to charges such as Apple products.

➔ Automatic USB Device Identification Circuit (used to determine charging mode required)

➔ ±4kV High ESD contact Protection on D+/D- per IEC61000-4-2 specification

➔ -40°C to + 85°C Operating Temperature Range

➔ AEC-Q100 certified

➔ Packaging (Pb-free & Green available):

  ▫ 8-pin W8

## Applications

➔ Laptops, Netbooks

➔ Universal Charger including IPod ®/ IPhone ® Chargers

➔ Automotive

## Description

USB ports have become the charging connector of choice for the majority of handheld devices such as MP3 players, Mobile phones, MP4 players, DSC, and even tablet/slate type devices.

Although the mechanical connector has converged such that these handheld devices can charge using the same cable, the communication scheme followed by each USB device is different when it comes to setting up a charging link.

Pericom's PI5USB68/A solves the multiple communication protocol problem by supporting all protocols available in the market. Therefore, regardless of what USB device is connected to a charger enabled by Pericom, the USB device will be able to understand the charging setup communication and in turn the USB device will be able to efficiently draw current to charge itself.

## Pin Configuration



**PI5USB68 Pinout**
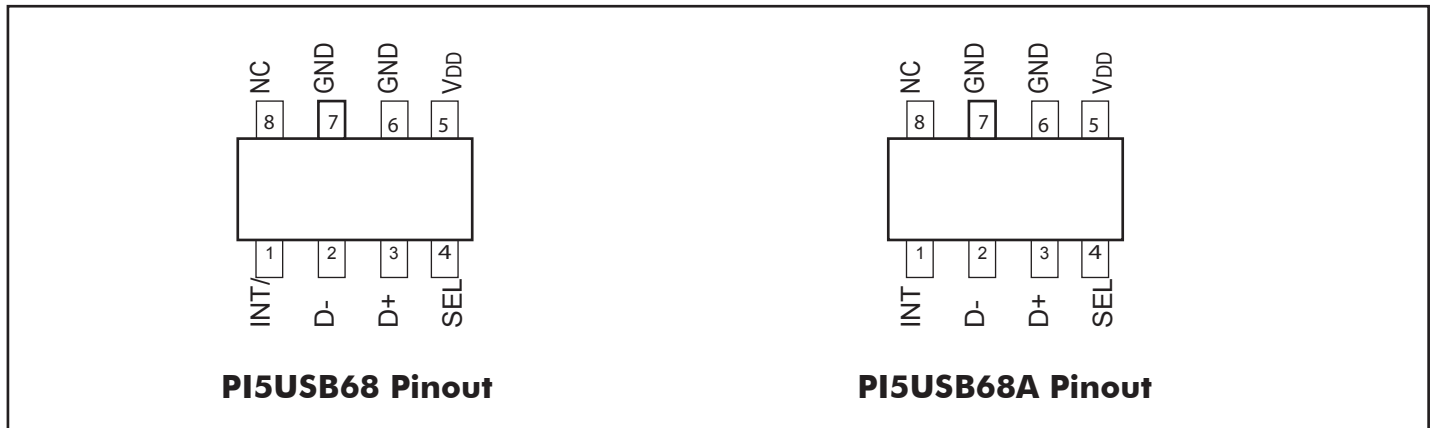
**PI5USB68A Pinout**

**Block Diagram**                    USB Host Charge Controller IC for Single USB Port

**Internal Block Diagram of PI5USB68**
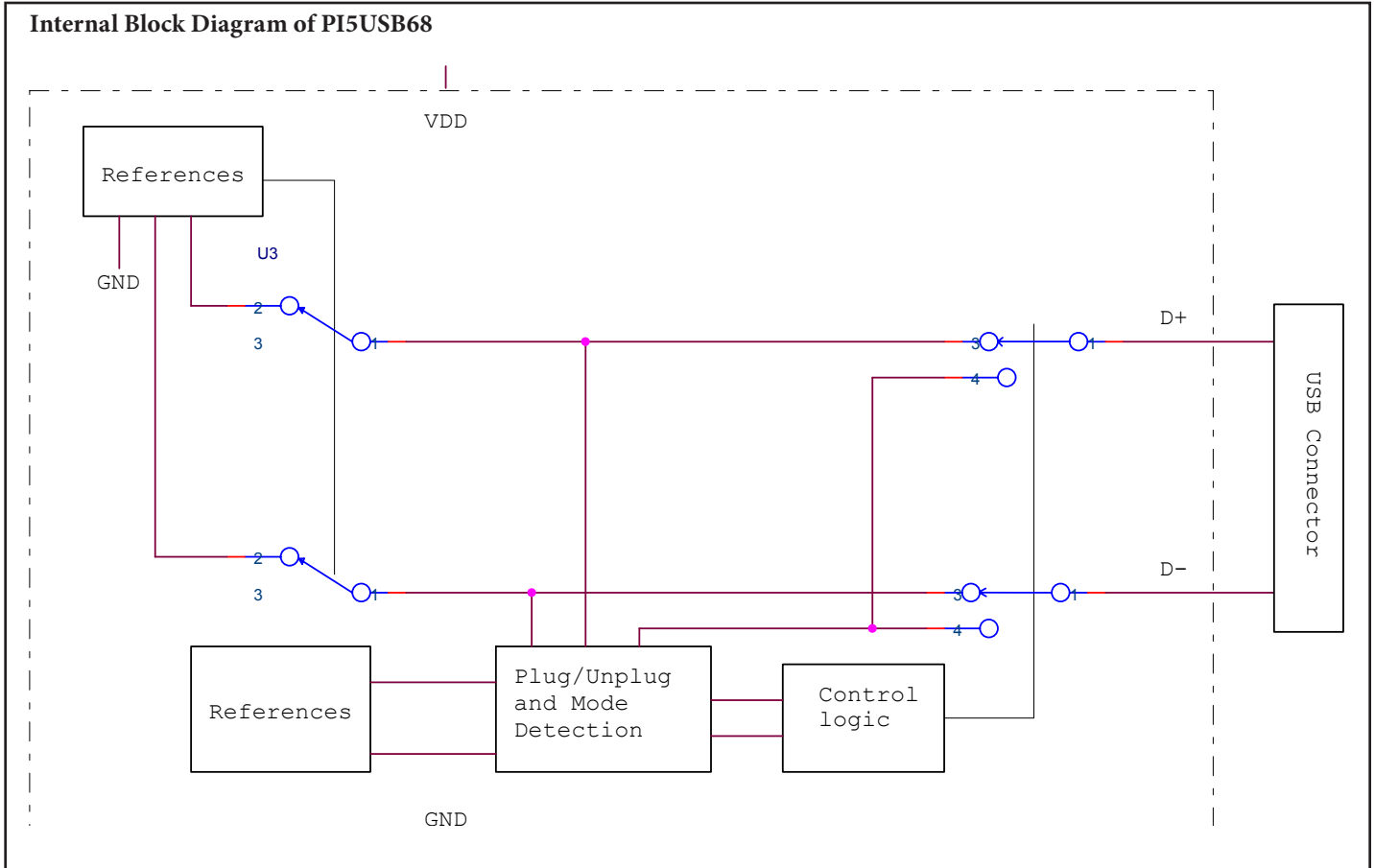


## Pinout Table

| PI5USB68 | PI5USB68A | Pin Name | I/O Type | Description |
|---|---|---|---|---|
| 8 | 8 | NC | N/A | Do Not Connect to GND or V$_{DD}$. Leave floating |
| 7 | 7 | GND | Ground | Ground |
| 6 | 6 | GND | Ground | Ground |
| 5 | 5 | V$_{DD}$ | Power | 5V Power Supply. Connect a 0.1 µF capacitor between V$_{DD}$ and GND as close as possible to the device |
| 4 | 4 | SEL | I | Control pin. Tie to ground for normal operation |
| 3 | 3 | D+ | I/O | USB connector, D+ Connection |
| 2 | 2 | D- | I/O | USB connector, D- Connection |
| * | 1 | INT | O | n-mosfet open drain output. When observe a logic change (from H to L or from L to H). INT is LOW for ~ 2.4 seconds, otherwise, INT is hi-z. External pull-up is required |
| 1 | * | INT/ | O | p-mosfet open source output. When observe a logic change (from H to L or from L to H). INT/ is high for ~ 2.4 seconds, otherwise INT/ is hi-z. External pull-down is required. |

## Maximum Ratings (Above which the useful life may be impaired. For user guidelines, not tested)

All Inputs and Outputs ...................................-0.5V to $V_{DD}$ +0.5V

Storage temperature................................................. -65 to +150ºC

Ambient Operating Temperature............................ -40 to +85ºC

Supply Voltage to Ground Potential ($V_{DD}$) ........................ +5.5V

Junction Temperature ........................................................+150ºC

Soldering Temperature (Max of 10 seconds) ....................+260ºC

**Note:**

Stresses greater than those listed under MAXIMUM RATINGS may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

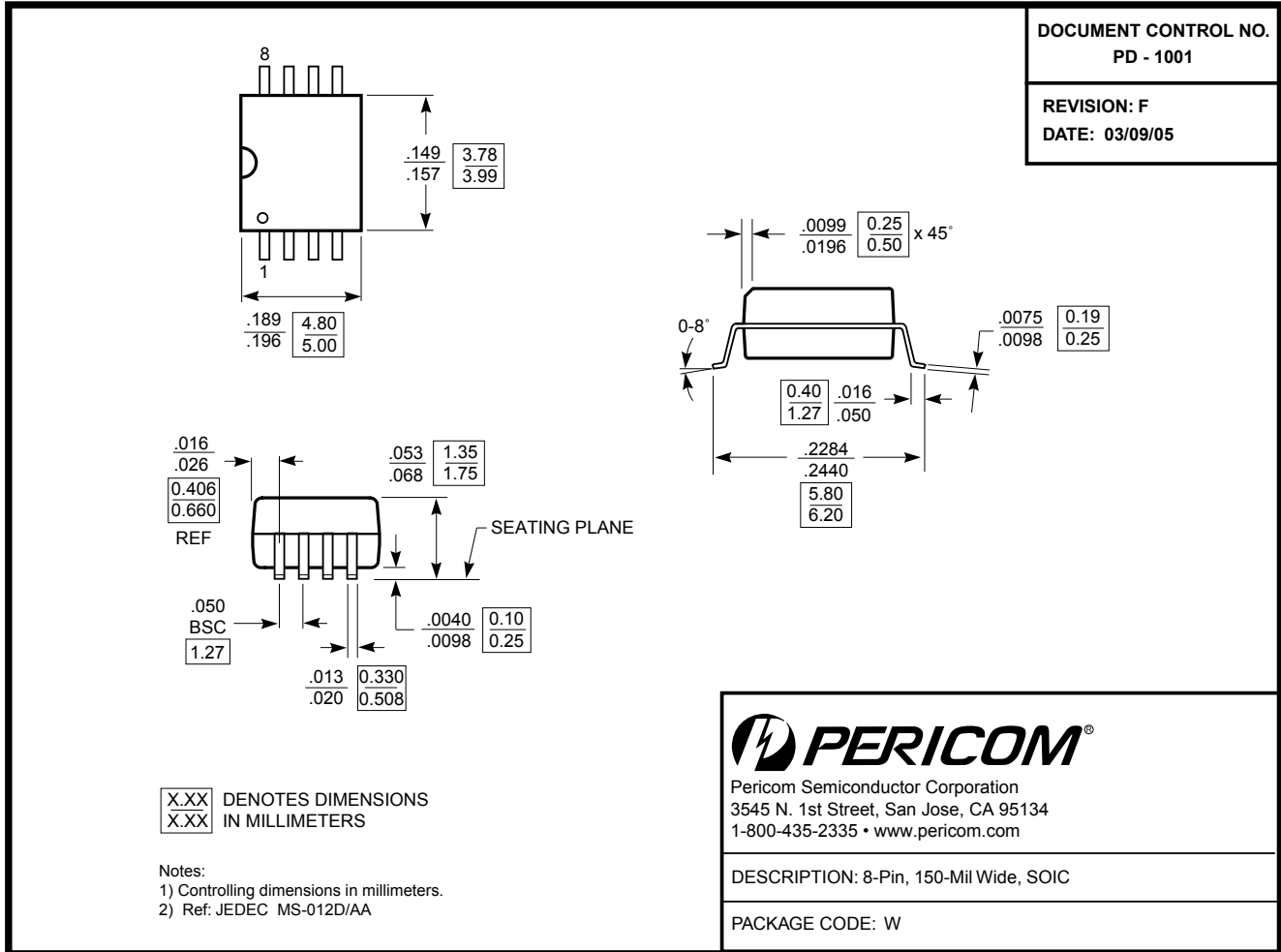Stress beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device.

## Electrical Parameters/Characteristics Recommended Operation Conditions

| Parameter | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|
| Ambient Operating Temperature | -40 | | +85 | ºC |
| $V_{DD}$ Power Supply Voltage (measured in respect to GND) | +4.75 | | +5.25 | V |

## DC Electrical Characteristics ($V_{DD}$ = 5.0V +/- 5%, Ambient Temperature -40 to +85ºC)

| Symbol | Parameter | Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $V_{DD}$ | Operating Voltage | | | 4.75 | | 5.25 | V |
| $I_{DD}$ | Supply Current | $V_{DD}$ = 5.25V | SEL = LOW | | 280 | 400 | µA |
| $V_{IL}$ for SEL | Input Low Voltage | For SEL pin | | | | 0.6 | |
| $V_{OH}$ for INT/ | Output high voltage | For INT/ pin | PI5USB68 only, $I_{OH}$=-4mA | 4.0 | | | V |
| $V_{OL}$ for INT | Output Low voltage | For INT pin | PI5USB68A only, $I_{OL}$=4mA | | | 0.25 | |
| $I_{OFF}$ | Signal voltage on D+/D- when chip is OFF | $V_{dd}$ = 0v, $V_{IN}$ = 0v to 5.25v | | -5 | | +5 | µA |

| DOCUMENT CONTROL NO. |
| --- |
| PD - 1001 |

REVISION: F
DATE: 03/09/05

8

.149 / .157 — 3.78 / 3.99

.189 / .196 — 4.80 / 5.00

1

.0099 / .0196 — 0.25 / 0.50 x 45˚

0-8˚

.0075 / .0098 — 0.19 / 0.25

0.40 / 1.27 — .016 / .050

.2284 / .2440 — 5.80 / 6.20

.016 / .026 — 0.406 / 0.660 REF

.053 / .068 — 1.35 / 1.75

SEATING PLANE

.050 BSC — 1.27

.0040 / .0098 — 0.10 / 0.25

.013 / .020 — 0.330 / 0.508

X.XX / X.XX DENOTES DIMENSIONS IN MILLIMETERS

Notes:
1) Controlling dimensions in millimeters.
2) Ref: JEDEC MS-012D/AA

Pericom Semiconductor Corporation
3545 N. 1st Street, San Jose, CA 95134
1-800-435-2335 • www.pericom.com

DESCRIPTION: 8-Pin, 150-Mil Wide, SOIC

PACKAGE CODE: W

Note:

For latest package info, please check: http://www.pericom.com/products/packaging/mechanicals.php

## Ordering Information

| Ordering Code | Package Code | Package Type | Top Mark |
| --- | --- | --- | --- |
| PI5USB68WE | WE | Pb-free & Green, 8pin W8 | PI5USB68WE |
| PI5USB68AWE | WE | Pb-free & Green, 8pin W8 | PI5USB68AWE |

- Thermal characteristics can be found on the company web site at www.pericom.com/packaging/
- E = Pb-free and Green
- Adding an X suffix = Tape/Reel

Pericom Semiconductor Corporation • 1-800-435-2336