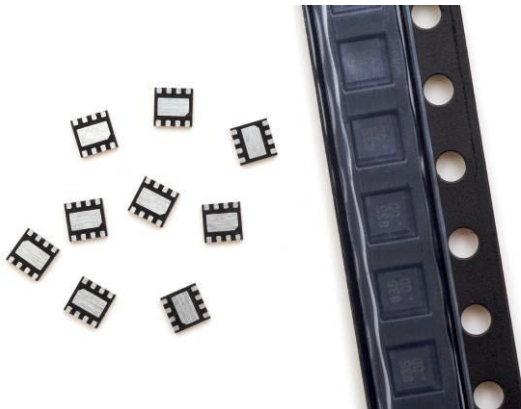


UHF Gen 2 RFID Tag Chip (IPJ-P5003, IPJ-P5005)



# Monza<sup>®</sup> 4 Dura Product Brief

Rev. 6.0 May 2nd, 2016



## Overview

With availability of Monza<sup>®</sup> 4 tag chips in a packaged format (Monza 4 Dura), Impinj extends the advantages of fully EPCglobal-compliant, high-performance, Monza-powered tags to printed circuit board (PCB) applications and enables ruggedized tag designs.

Monza 4 Dura is supported by standard PCB surface mount assembly techniques, meaning easy integration into products designed with PCBs, as well as other electronic applications where soldered connections are preferred. Impinj encased the Monza 4 tag chips in a  $\mu$ DFN package, making it the industry's smallest and lowest profile tag chip part.

Electronics manufacturers can leverage RFID to monitor work in progress, track inventory, follow board revision history, and prevent counterfeiting. The protection the package offers enables many new opportunities to use UHF RFID in the industrial marketplace.

Monza is supported by a family of innovative antenna designs that not only optimize tag performance for wide-ranging requirements and specific market applications, but also enable whole new categories of use.

## Features

- ❖ **True3D antenna technology**—patented, dual-differential antenna ports enable compact omnidirectional tags, improving read reliability
- ❖ Superior read sensitivity of  $-17.4$  dBm (with single port operation,  $19.9$  dBm with True3D) combined with excellent interference rejection yields a read range of 16 meters (21 meters with True3D)
- ❖ Industry-leading write sensitivity of  $-14.6$  dBm for unparalleled commissioning and bulk encoding reliability.
- ❖ Available memory options to support large user-memory applications
- ❖ **Block permalocking** adds flexibility in memory usage
- ❖ Field-rewritable NVM provides programming flexibility and 100,000-cycle/50-year retention reliability
- ❖ Write rate of 5 ms for 32-bit writes enables 2500 tags/minute programming
- ❖ 8-pin uDFN package accommodates surface-mount assembly
- ❖ Industrial temperature range ( $-40$  °C to  $+85$  °C) yields reliable performance under harsh conditions

## Applications

- ❖ PCB Tracking
- ❖ Ruggedized tag designs
- ❖ Asset inventory and management, especially those with high reliability requirements
- ❖ Item-level tracking
- ❖ Work-in-progress tracking

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## Operating Conditions and Electrical Characteristics

Parameter	Min	Typ	Max	Units	Comments
Operating Frequency	860		960	MHz	
Read Sensitivity Limit (Single Port)		-17.4		dBm	
Read Sensitivity Limit (True3D)		-19.9		dBm	
Write Sensitivity Limit (Single Port)		-14.6		dBm	
Write Sensitivity Limit (True3D)		-17.1		dBm	
Operating Temperature	-40		85	°C	
Data Retention		50		Years	
Programming Cycles		100,000		Cycles	
Recommended Source Admittance		0.6 – j7.2		mS	Single Antenna Port
Package Intrinsic Inductance		24		nH	Parallel RL model of recommended Admittance
Package Intrinsic Resistance		1650		Ω	
ESD			2000	V	Human Body Model
DC Input Voltage			± 3.5	Volts	Applied across two pins
DC Input Current			± 0.5	mA	Into any input pin

## Package Dimensions

Parameter	Min	Typ	Max	Units	Comments
Package Length (P <sub>l</sub> )	1.9	2.0	2.1	mm	
Package Width (P <sub>w</sub> )	1.9	2.0	2.1	mm	
Package Height (P <sub>h</sub> )	0.45	0.50	0.55	mm	

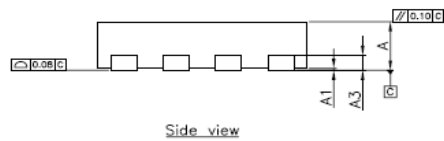
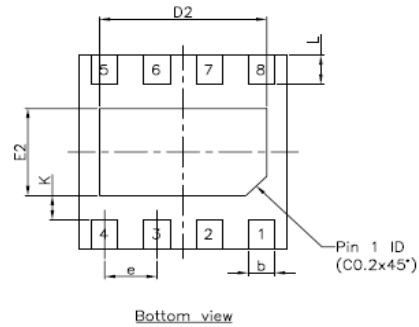
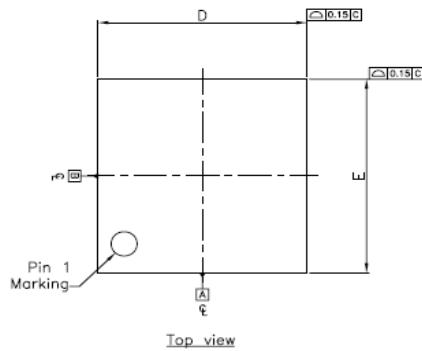
## Package Pin Out

Pin Name	Pin No.	Description
RF1+	8	<b>Differential RF Input Pads for Antenna 1</b> —isolated from the RF Input Pads for Antenna 2
RF1-	4	
RF2+	1	<b>Differential RF Input Pads for Antenna 2</b> —isolated from the RF Input Pads for Antenna 1
RF2-	5	
—	2,3,6,7	No connects (NC)

## Tape and Reel Format

Parameter	Value	Comments
Reel Size	7 in (17.8 cm)	Outside diameter
Hub Size	2.16 in (5.5 cm)	Inside hub diameter
Quantity/reel	3000	Units

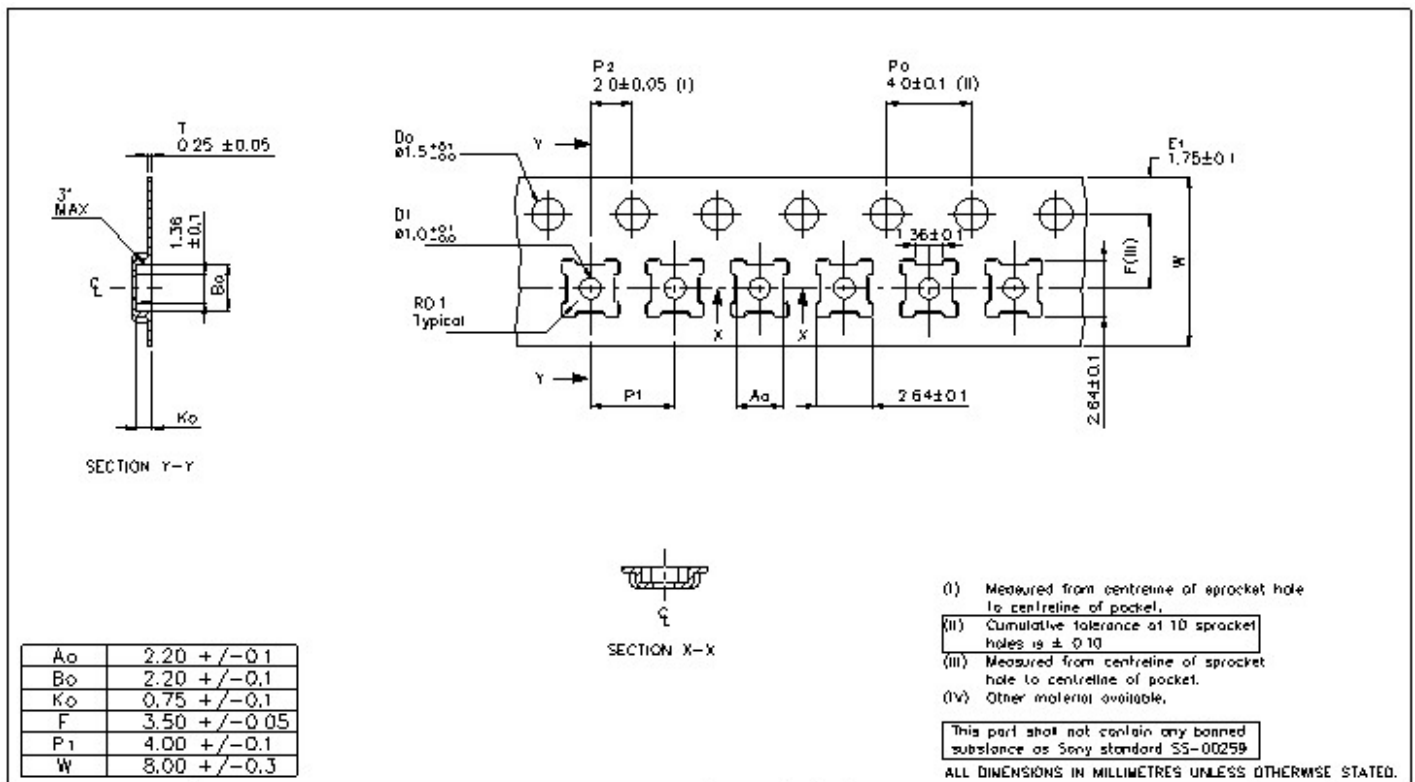
## Detailed Package Drawing



SYMBOL	MIN.	NOM.	MAX.
A	0.45	0.50	0.55
A1	0.00	0.02	0.05
A3	0.152 REF		
b	0.18	0.25	0.30
D	1.90	2.00	2.10
D2	1.50	1.60	1.70
E	1.90	2.00	2.10
E2	0.80	0.90	1.00
e	0.50 BSC		
K	0.20		
L	0.20	0.30	0.45

- NOTES:
1. ALL DIMENSIONS IN MILLIMETER, ANGLES IN DEGREE.
  2. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS. COPLANARITY SHALL NOT EXCEED 0.08 MM.
  3. WARPAGE SHALL NOT EXCEED 0.10 MM.
  4. PACKAGE LENGTH/PACKAGE WIDTH ARE NOT CONSIDERED AS SPECIAL CHARACTERISTIC.
  5. REFER JEDEC MO-229.
  6. MARKING IS FOR PACKAGE ORIENTATION REFERENCE ONLY.

## Tape And Reel Drawing



## Ordering Information

Part	Description
IPJ-P5003	Monza 4QT Dura (packaged silicon), industrial temperature range
IPJ-P5005	Monza 4E Dura (packaged silicon), industrial temperature range

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