

Customer Notification

μPD780948A Subseries

8-Bit Single-Chip Microcontroller

Injected Current Specification

μPD780948A(A)

μPD78F0948A

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(A) General description

This document is an addendum to the standard electrical specification and documentation with respect to the injected current. This Injected Current Specification is not valid for the μ PD780948A(A1) devices with the operating temperature range of $T_a = -40^{\circ}\text{C} \sim +110^{\circ}\text{C}$.

(B) Definition of the Injected Current Specification

No. 1	Injected Current Specification																																																																						
<p><u>Details</u></p> <p>This injected current specification is valid for the μPD780948A Subseries and the injected currents are defined as follows:</p> <p>Absolute maximum ratings ($T_a = 25^\circ\text{C}$)</p> <table border="1" data-bbox="368 517 1337 831"> <thead> <tr> <th>Parameter</th> <th colspan="2">Test condition</th> <th>Rating</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td rowspan="4">$V_{in} > V_{dd}$</td> <td rowspan="2">Per pin</td> <td>Input port pins</td> <td>5.00</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note1}</td> <td>3.00</td> <td>mA</td> </tr> <tr> <td rowspan="2">Total</td> <td>Input port pins</td> <td>40.00</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note2}</td> <td>5.00</td> <td>mA</td> </tr> <tr> <td rowspan="4">$V_{in} < V_{ss}$</td> <td rowspan="2">Per pin</td> <td>Input port pins</td> <td>-0.50</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note1}</td> <td>-0.05</td> <td>mA</td> </tr> <tr> <td rowspan="2">Total</td> <td>Input port pins</td> <td>-4.00</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ - 7) ^{Note2}</td> <td>-0.05</td> <td>mA</td> </tr> </tbody> </table> <p>DC Characteristics ($T_a = -40^\circ\text{C} \sim +85^\circ\text{C}$, $V_{dd} = 4.0\text{V} \sim 5.5\text{V}$)</p> <table border="1" data-bbox="368 976 1337 1290"> <thead> <tr> <th>Parameter</th> <th colspan="2">Test condition</th> <th>Rating</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td rowspan="4">$V_{in} > V_{dd}$</td> <td rowspan="2">Per pin</td> <td>Input port pins</td> <td>0.50</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note1}</td> <td>0.30</td> <td>mA</td> </tr> <tr> <td rowspan="2">Total</td> <td>Input port pins</td> <td>4.00</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note2}</td> <td>0.50</td> <td>mA</td> </tr> <tr> <td rowspan="4">$V_{in} < V_{ss}$</td> <td rowspan="2">Per pin</td> <td>Input port pins</td> <td>-0.05</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note1}</td> <td>-0.02</td> <td>mA</td> </tr> <tr> <td rowspan="2">Total</td> <td>Input port pins</td> <td>-0.40</td> <td>mA</td> </tr> <tr> <td>Port 1n/ANIn ($n = 0$ to 7) ^{Note2}</td> <td>-0.02</td> <td>mA</td> </tr> </tbody> </table> <p><u>Notes:</u></p> <ol style="list-style-type: none"> 1. Injected currents generated due to over-voltage applied to an analog input pin would affect the A/D conversion result. The affected A/D conversion result is the sum of the A/D conversion result without injected current and +/- 2 LSB. 2. The total injected current generated due to over-voltage applied to all analog input pins would affect the A/D conversion result. The affected A/D conversion result is the sum of the A/D conversion result without injected current and +/- 4 LSB. 		Parameter	Test condition		Rating	Unit	$V_{in} > V_{dd}$	Per pin	Input port pins	5.00	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note1}	3.00	mA	Total	Input port pins	40.00	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note2}	5.00	mA	$V_{in} < V_{ss}$	Per pin	Input port pins	-0.50	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note1}	-0.05	mA	Total	Input port pins	-4.00	mA	Port 1n/ANIn ($n = 0$ - 7) ^{Note2}	-0.05	mA	Parameter	Test condition		Rating	Unit	$V_{in} > V_{dd}$	Per pin	Input port pins	0.50	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note1}	0.30	mA	Total	Input port pins	4.00	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note2}	0.50	mA	$V_{in} < V_{ss}$	Per pin	Input port pins	-0.05	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note1}	-0.02	mA	Total	Input port pins	-0.40	mA	Port 1n/ANIn ($n = 0$ to 7) ^{Note2}	-0.02	mA
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(C) Valid Specification

Item	Date published	Document No.	Document Title
1	April 2003	U16506EE1V0UD00	Preliminary User's Manual, μ PD780948A Subseries

(D) Revision History

Item	Date published	Document No.	Comment
1	Nov. 06, 2003	TPS-LE-IC-F0948A-1	Initial release