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**300 Watt Wireless Power Receiver Controller IC**

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**Operating Conditions**

- 4.8V to 5.2V, -40°C to +85°C
- Up to 300 Watts of Wireless Transfer

**Key Features**

- Controller for 300 Watt Wireless Power Receiver
- Supports a Wide Range of Input Voltages (11~37V) for the Wireless Power Transfer System when Used in the Microchip Recommended Hardware configuration
- Enables System Efficiency of Up to 90%
- Implements Reliable Foreign Object Detection (FOD) Scheme
- Simplifies Wireless Power Transfer System Design
- 300W Wireless Power Transfer Reference Design Available for Purchase from:  
[www.microchipdirect.com](http://www.microchipdirect.com)
- Refer to “300W Wireless Power Transfer Reference Design User’s Guide” for Setup Details

**Wireless Power Transfer (WPT) System Protection Features**

- Overvoltage Protection (OVP)
- Undervoltage Protection (UVP)
- Overcurrent Protection (OCP)
- Overpower Protection (OPP)
- Overtemperature Protection

**Qualification**

- AEC-Q100 REVG Grade 3 (-40°C to +85°C)

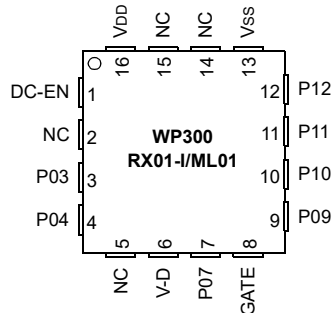
**Introduction**

The WP300RX01 is a Fixed Function Device (FFD) designed to perform the Wireless Power Transfer Receive function. This chip is paired with the WP300TX01 as a Wireless Power Transmitter function. 300 Watts is the maximum power that can be transferred using the digital controller function.

Microchip recommends using the schematic and layout as provided in the “300 Watts Wireless Power Transfer Reference Design User’s Guide”.

# WP300RX01-I/ML01

## Pin Diagram



**Legend:** See [Table 1](#) for a complete description of pin functions.

**TABLE 1: PIN FUNCTION DESCRIPTIONS**

Pin	Name	Function	Description
1	DC-EN	Digital Output	Enable/Disable Buck DC-DC Converter
2	NC	No Connect	No Connect
3	P03	Digital Input	Master Clear/ $\overline{\text{MCLR}}$
4	P04	Digital Output	Capacitive Load Modulation Control Signal to QM1
5	NC	No Connect	No Connect
6	V-D	Analog Input	Rectified DC Voltage Measurement
7	P07	Digital Output	PWM Drive for Main Bridge MOSFET (Q13) <sup>(1)</sup>
8	GATE	Analog Input	Coil Signal Detection Input to the Comparator
9	P09	Digital Output	PWM Drive for Main Bridge MOSFET (Q23) <sup>(1)</sup>
10	P10	Digital Output	Sync Clock for the Buck Controller IC (U5) <sup>(1)</sup>
11	P11	Digital Output	Capacitive Load Modulation Control Signal to QM2 <sup>(1)</sup>
12	P12	Digital Input	STOP
13	Vss	Power	System Ground
14	NC	No Connect	No Connect
15	NC	No Connect	No Connect
16	VDD	Power	Power Supply

**Note 1:** Refer to the “300W Wireless Power Transfer Reference Design User’s Guide”.

## ELECTRICAL CHARACTERISTICS

Absolute maximum ratings for the WP300RX01-I/ML01 are listed below. Exposure to these maximum rating conditions for extended periods may affect device reliability. Functional operation of the device at these, or any other conditions above the parameters indicated in the operation listings of this specification, is not implied.

### Absolute Maximum Ratings<sup>(1)</sup>

Ambient temperature under bias.....	-40°C to +85°C
Storage temperature .....	-65°C to +150°C
Voltage on VDD with respect to VSS .....	-0.3V to +6.5V
Maximum current out of VSS pin .....	80 mA
Maximum current into VDD pin .....	80 mA
Maximum current sourced/sunk by any I/O pin.....	25 mA

**Note 1:** Stresses above those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at those, or any other conditions above those indicated in the operation listings of this specification, is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.

**TABLE 2: ELECTRICAL CHARACTERISTICS**

Parameters	Symbol	Condition	Min	Typ	Max	Units
Operating Voltage	VDD	Standard <sup>(1)</sup>	4.8	5	5.2	V
Supply Current (in operation)	I	Standard <sup>(1)</sup>	—	1.5	2	mA

**Note 1:** Design for typical use of circuit.

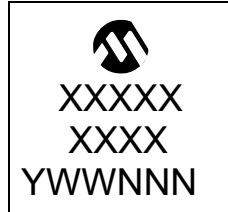
# WP300RX01-I/ML01

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## PACKAGING INFORMATION

### Package Marking Information

16-Lead QFN



Example



<b>Legend:</b>	XX...X	Customer-specific information
	Y	Year code (last digit of calendar year)
	WW	Week code (week of January 1 is week '01')
	NNN	Alphanumeric traceability code
<b>Note:</b>	In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line, thus limiting the number of available characters for customer-specific information.	

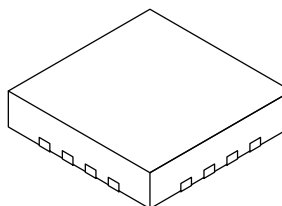
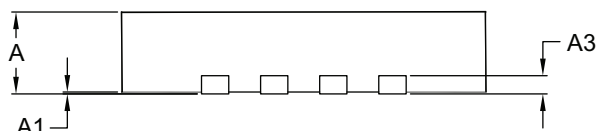
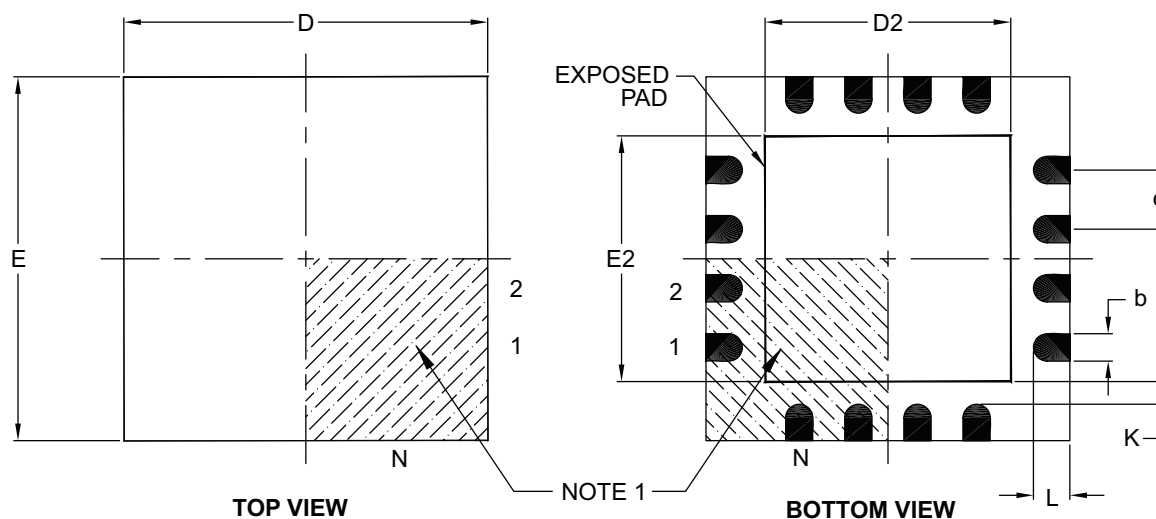
# WP300RX01-I/ML01

## Package Details

The following sections give the technical details of the packages.

### 16-Lead Plastic Quad Flat, No Lead Package (ML) – 4x4x0.9 mm Body [QFN]

**Note:** For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



Dimension Limits	Units	MILLIMETERS		
		MIN	NOM	MAX
Number of Pins	N	16		
Pitch	e	0.65 BSC		
Overall Height	A	0.80	0.90	1.00
Standoff	A1	0.00	0.02	0.05
Contact Thickness	A3	0.20 REF		
Overall Width	E	4.00 BSC		
Exposed Pad Width	E2	2.50	2.65	2.80
Overall Length	D	4.00 BSC		
Exposed Pad Length	D2	2.50	2.65	2.80
Contact Width	b	0.25	0.30	0.35
Contact Length	L	0.30	0.40	0.50
Contact-to-Exposed Pad	K	0.20	-	-

**Notes:**

- Pin 1 visual index feature may vary, but must be located within the hatched area.
- Package is saw singulated.
- Dimensioning and tolerancing per ASME Y14.5M.

BSC: Basic Dimension. Theoretically exact value shown without tolerances.

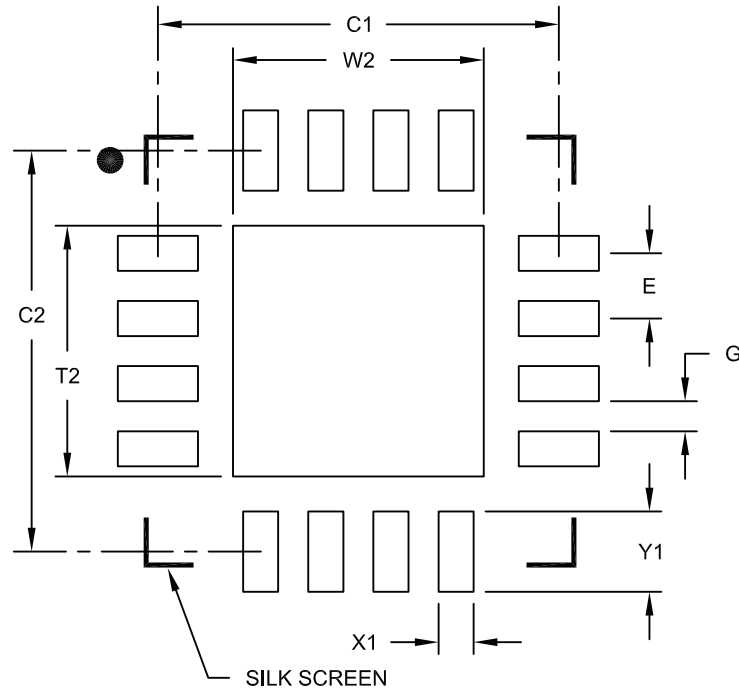
REF: Reference Dimension, usually without tolerance, for information purposes only.

Microchip Technology Drawing C04-127B

# WP300RX01-I/ML01

16-Lead Plastic Quad Flat, No Lead Package (ML) - 4x4x0.9mm Body [QFN]

**Note:** For the most current package drawings, please see the Microchip Packaging Specification located at <http://www.microchip.com/packaging>



RECOMMENDED LAND PATTERN

Dimension	Units	MILLIMETERS		
		MIN	NOM	MAX
Contact Pitch	E	0.65 BSC		
Optional Center Pad Width	W2			2.50
Optional Center Pad Length	T2			2.50
Contact Pad Spacing	C1		4.00	
Contact Pad Spacing	C2		4.00	
Contact Pad Width (X28)	X1			0.35
Contact Pad Length (X28)	Y1			0.80
Distance Between Pads	G	0.30		

Notes:

1. Dimensioning and tolerancing per ASME Y14.5M

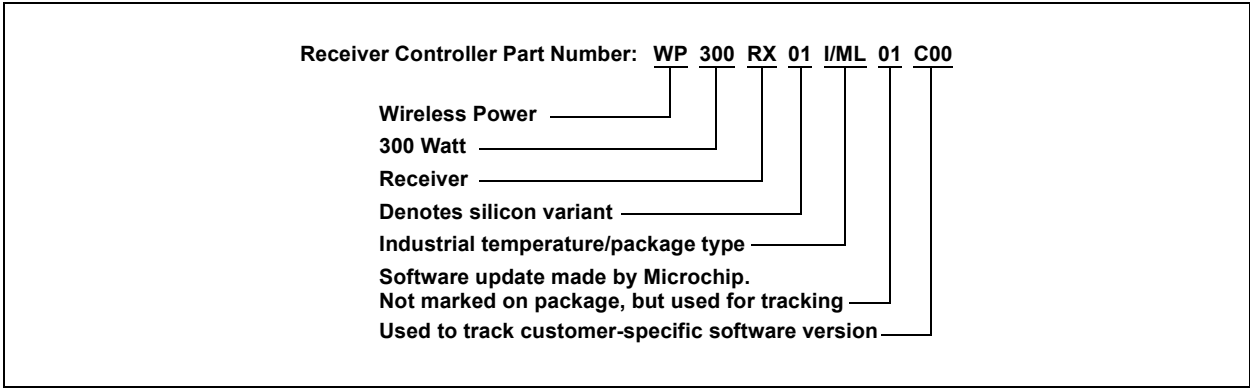
BSC: Basic Dimension. Theoretically exact value shown without tolerances.

Microchip Technology Drawing No. C04-2127A

# WP300RX01-I/ML01

## PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.



# WP300RX01-I/ML01

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NOTES:



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ISBN: 978-1-5224-7954-3

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