RF DIGITAL CORPORATION
www.RFdigital.com • sales@rfdigital.com
1601 Pacific Coast Hwy • Suite 290
Hermosa Beach • CA • 90254
Tel: 949.610.0008

RF Module
RFD22301
RFD22302

Preliminary

Model R25

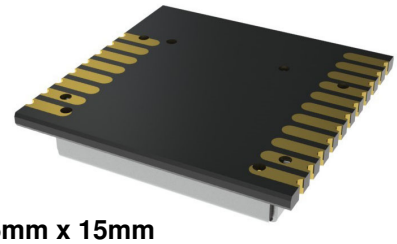
Compliance Approved
Bluetooth 4.0 Low Energy RF Module

READY-TO-USE, Bluetooth 4.0 Low Energy wireless solution. No RF knowledge required. Be up and running with a wireless solution in minutes. Footprint and compatible with the RFD21733 line of RF Modules.

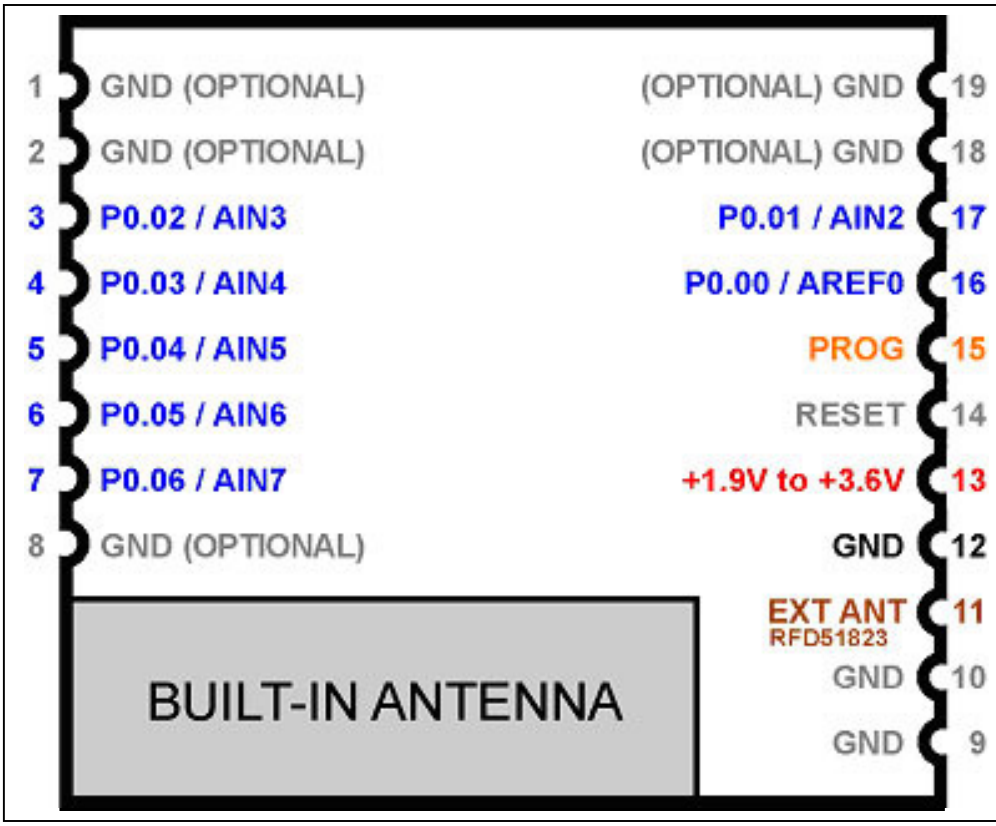
RFD22301 (FCC & IC Approved)

CE • ESTI TESTED & COMPLIANT

Easy to solder 0.050 Inch SMT pads



15mm x 15mm
(0.600 x 0.600 Inch)



RFD22302

Optional Configuration

Coming Soon.

KEYFOBs & RFID

Available Soon

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Specifications

Description	Min	Nom	Max	Notes
VDD - Supply Voltage	2.1 V	3.0 V	3.6 V	
ESD - Human Body Model Class 2			4 kV	
Crystal Frequency		16 MHz		
Crystal Frequency Tolerance			+/- 10ppm	
RC Oscillator Frequency		32.768 kHz		
RC Oscillator Tolerance		+/- 2%		
RC Oscillator Tolerance after calibration			250 ppm	
Reset pin time for successful reset	600 ns			
Radio Operating Frequencies	2400 MHz		2483 MHz	1 MHz channel spacing
Radio Frequency Deviation @ BLE	+/- 225 kHz	+/- 250 kHz	+/- 275 kHz	
Radio On-Air data rate	250 kbps		2000 kbps	
Radio Output Power	-40 dBm		+4 dBm	
Receiver Sensitivity @ BLE		-93 dBm		Ideal transmitter
Radio RSSI Accuracy			+/- 6 dB	
UART Baud Rate	1.2 kbps		921.6 kbps	
SPI Bit Rate	.125 Mbps		8 Mbps	
TWI Bit Rate	100 kbps		400 kbps	
Analog-to-Digital Converter (ADC) ENIB	10 bit			
ADC Internal Reference Voltage	1.182 V	1.20 V	1.218 V	
ADC External Reference Voltage	0.83 V	1.20 V	1.30 V	
Internal Temperature Sensor Range	-25 ℃		75 ℃	
Internal Temperature Sensor Accuracy	-4 ℃		4° C	
General Purpose I/O (GPIO) input high voltage	0.7 * VDD		VDD	
General Purpose I/O (GPIO) input low voltage	VSS		0.3 * VDD	
Output standard drive current		0.5 mA		
Output high drive current		5 mA		Max 3 pins
Pull-up resistance	11k	13k	16k	
Pull-down resistance	11k	13k	16k	

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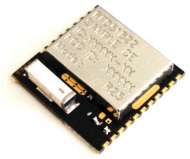
TYPICAL APPLICATIONS

- Active RFID
- Long Range RFID
- Remote Control
- Light Controls
- Home Automation
- Alarm Security
- Keyless Entry
- Perimeter Monitoring
- PC Keyboard Security
- Wireless Keyboard
- Wireless Mouse
- TV Remote
- Home Stereo Remote
- Asset Tracking
- Wireless PTT
- Remote Switches
- Remote Terminals
- Wireless RS232 DB9
- Wireless RS485
- Temperature Control
- HV/AC
- Meter Reading
- Data Acquisition
- Inventory Control
- Keyfob Remotes
- Industrial Controls
- Vending Machines
- Pan-Tilt-Zoom Control
- Camera Flash Control
- Biometrics
- Seismic Monitoring
- M2M & many more…

PINOUTs

There are 11 total active signal pins including power and ground. The MODULEs have 7 additional ground pins. Also the MODULES have one extra pin for a total of 19 pins, this is pin 11, which applies only to the RFD22302 which is for external antenna, however the RFD22301 pin 11 is a no-connect since it has a built-in antenna.

RFD22301 • RFD22302 MODULEs

RFD22301	RFD22302
	Coming Soon.

There are a total of 8 ground pins, you only need just one ground pin for an electrical connection to make the module function. The additional ground pins are for convenience and also performance with layout configurations. The pin 12, 10 and 9 are recommended to always be connected since they help provide some ground area for the module as well as on the opposing side of the antenna. However just one single ground out any of the 8 GND pins are adequate for proper function.

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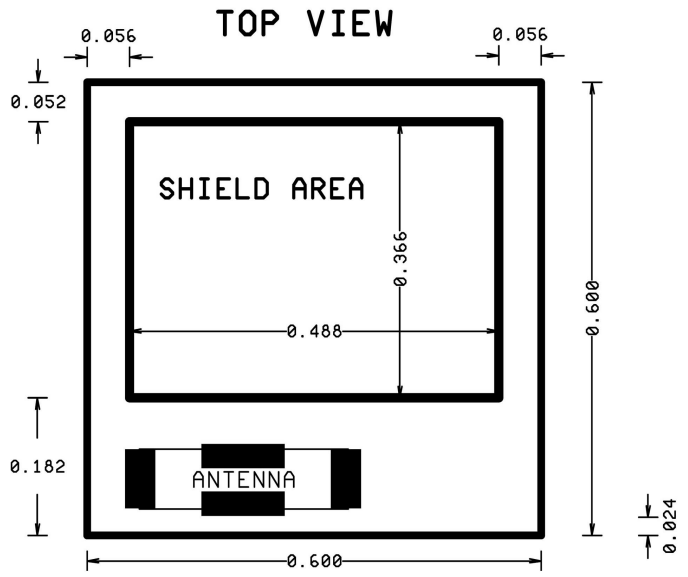
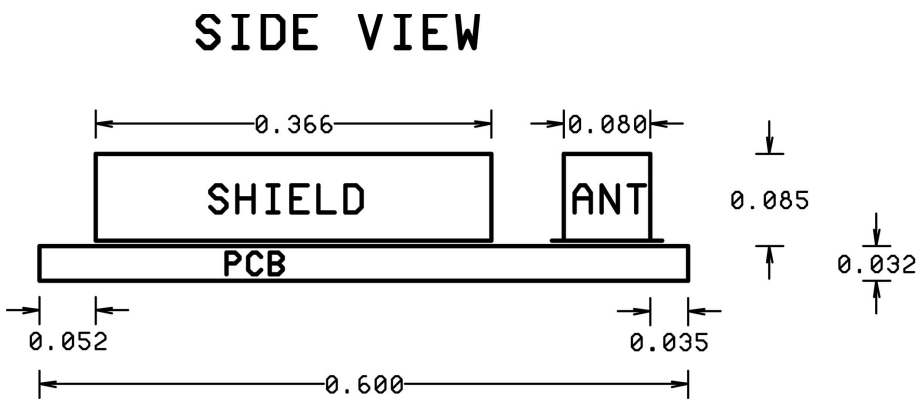
Overall Dimensions • Top View



Overall Dimensions • Side View



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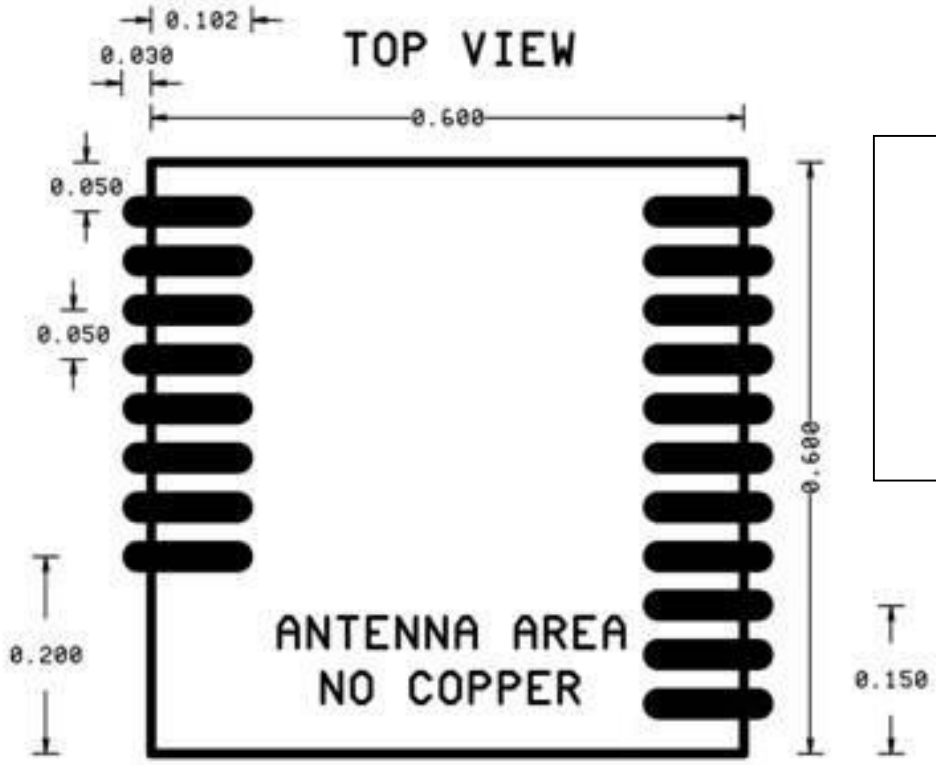
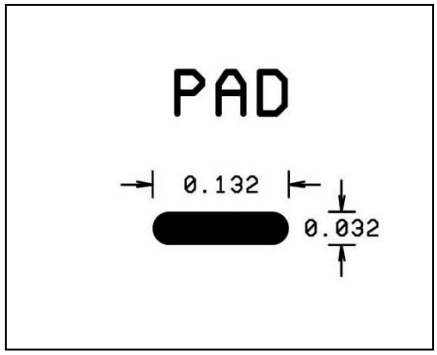
PCB Layout





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Industry Canada Information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC LABEL

Relating to Model Number R25 (RFD Stock Code: RFD22301)

The unit should have a permanently attached label in a conspicuous location with the following statement:

Contains IC: 6992A-25

NOTES:
1. Industry Canada does not specify the size of the label or the lettering thereon. The only requirement is that the text be legible.

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SAMPLE FCC STATEMENT TO BE INCLUDED IN USER'S MANUAL

Relating to Model Number R25 (RFD Stock Code: RFD22301)

INSTRUCTION TO THE USER (if device DOES NOT contain a digital device)

The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

INSTRUCTION TO THE USER (if device contains a digital device)

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.

* Increase the separation between the equipment and receiver.

* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

* Consult the dealer or an experienced radio/TV technician for help.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

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FCC LABEL

Relating to Model Number R25 (RFD Stock Code: RFD22301)

The unit should have a permanently attached label in a conspicuous location with the following statement:

Contains FCC ID: UYI25

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference and

(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTES:

1. The FCC does not specify the size of the label or the lettering thereon. The only requirement is that the text be legible.

2. If the entire label can not be placed on the unit due to space constraint, only FCC ID may be displayed on the unit. In such cases, the compliance statement will have to be included in the "user's manual". NOTE: Device must be smaller than a man's palm.

** If the unit also interfaces with phone line, it requires additional information on the label - refer to part 68 information **

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Washing

The RFD22301 and RFD22302 are NOT washable.

Use no-clean flux, leaded or lead-free. If you attempt to wash the modules, water will enter beneath (inside) the RF shield and get trapped, which may cause device failure or damage once powered on. There is no way to make sure all water has been removed before powering the module so do NOT wash the modules.

Potting, Encapsulation and Conformal Coating

Do NOT pot or conformal coat the RFD22301 or RFD22302.

If you plan on encapsulating the RFD22301 or RFD21735 in a potting compound or conformal coating, you must assure that the compound in liquid or solid form does not enter under the shield where there are sensitive RF components. Some of the capacitive values are as low as half a picofarad and sensitive to contacting materials such as potting compounds. There are potting compounds and conformal coatings which have very good dielectric constants and are suitable for 2.4 GHz potting applications, however, when you apply any of these, they were accounted for in the circuit design and might reduce performance of the device or all together cause it not to function.

Applying any compound, conformal coating or potting directly to the module voids any and all warranty and support service.

If your application requires 100% sealing of the module, there is a way to do this very successfully without impacting the module performance. Simply place the module on your PCB. Place a plastic cover over the module (like a hat), make the cover large enough to cover the whole module. Apply glue around the bottom perimeter of the cover where it sits on the PCB. This allows the module to function in free airspace while there is a complete seal around it. This information is only for reference and you should do your own testing with your application to find the best suitable fit for your own design.

Reflow Profile

Use standard lead-free or leaded reflow profile for the RFD22301 and RFD22302. Your CM (Contract Manufacturer) should profile this module along with your PCB and all other parts on it through their reflow oven to properly set a profile suitable for all the parts on the board combined.

USE CAUTION: If you are building a double-sided placement board, place this device last so it will not be subjected to being reflowed upside-down.

As with building any RF devices, you should always build a small quantity through your production process, test and verify, then increase your quantities to make sure the process is not harmful to the performance of your RF system. This is true with any RF system, including use of these modules.

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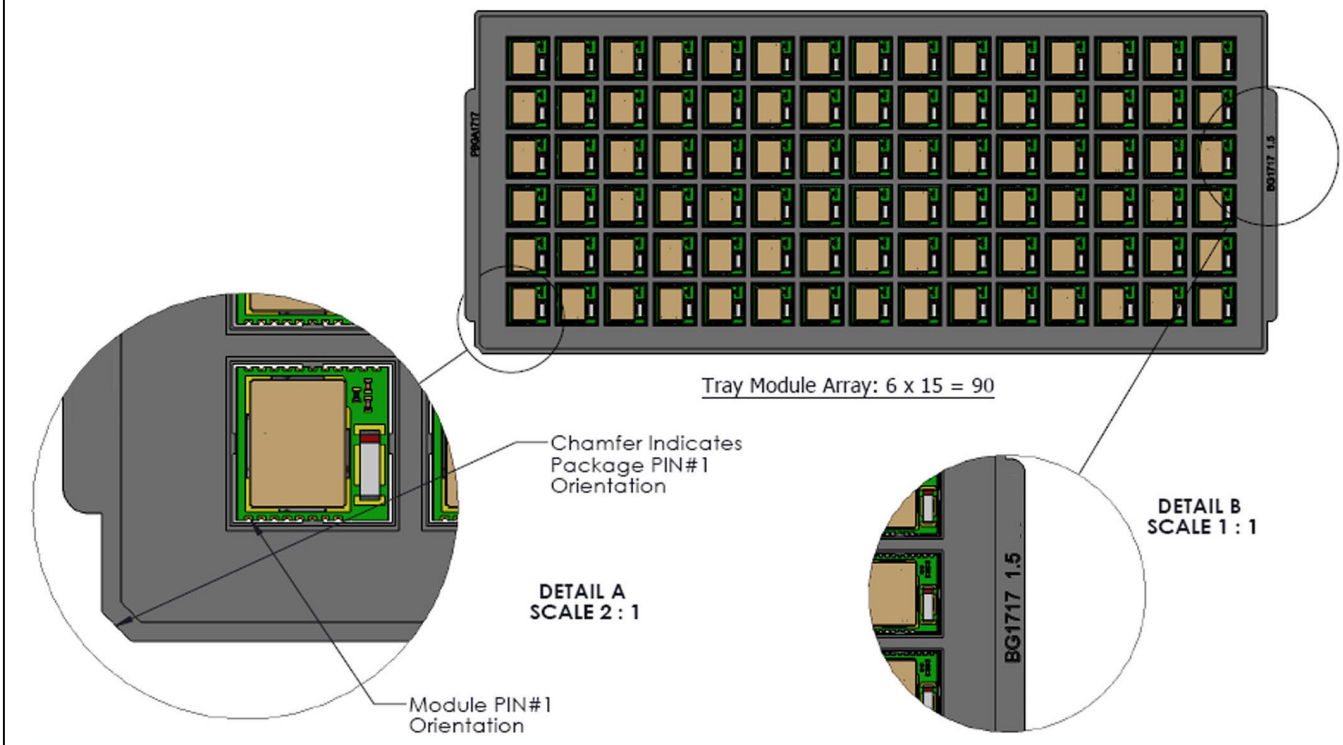
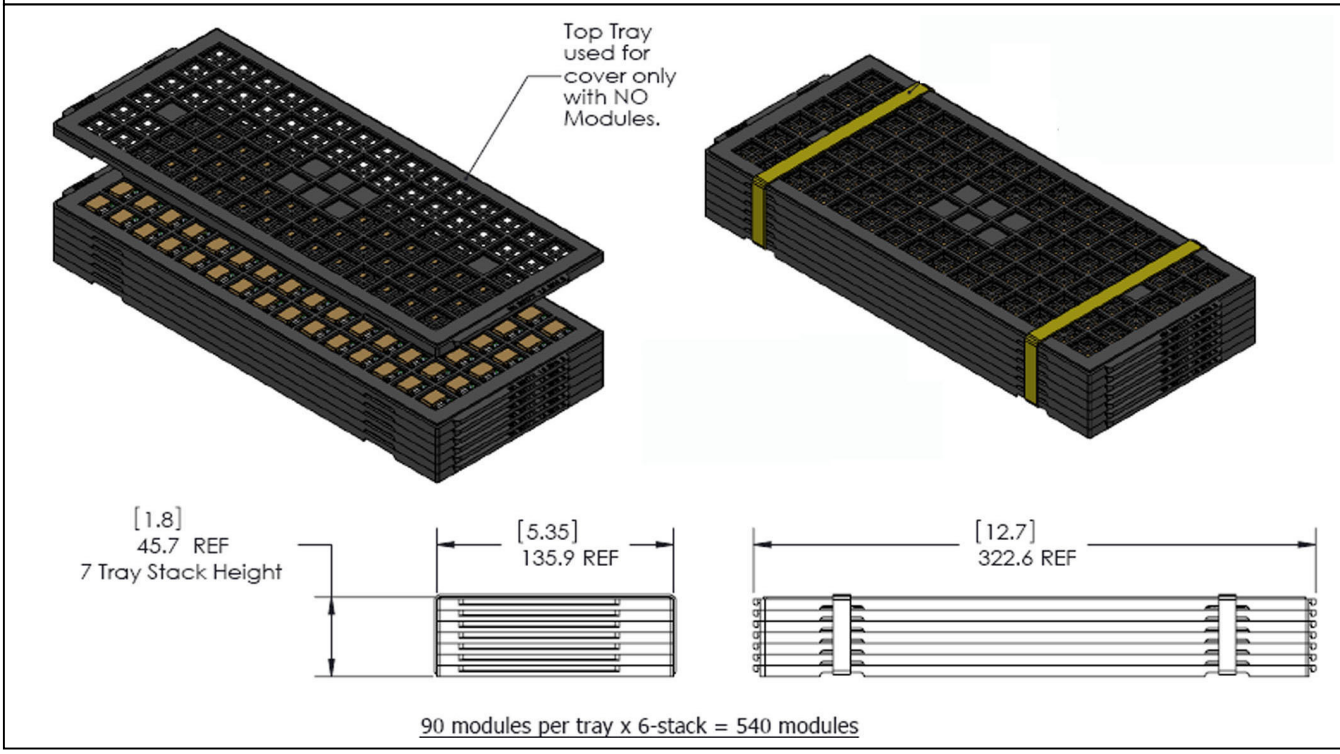
RFD22301 / RFD22302 Tray Packaging





90 modules per tray x 6-stack = 540 modules

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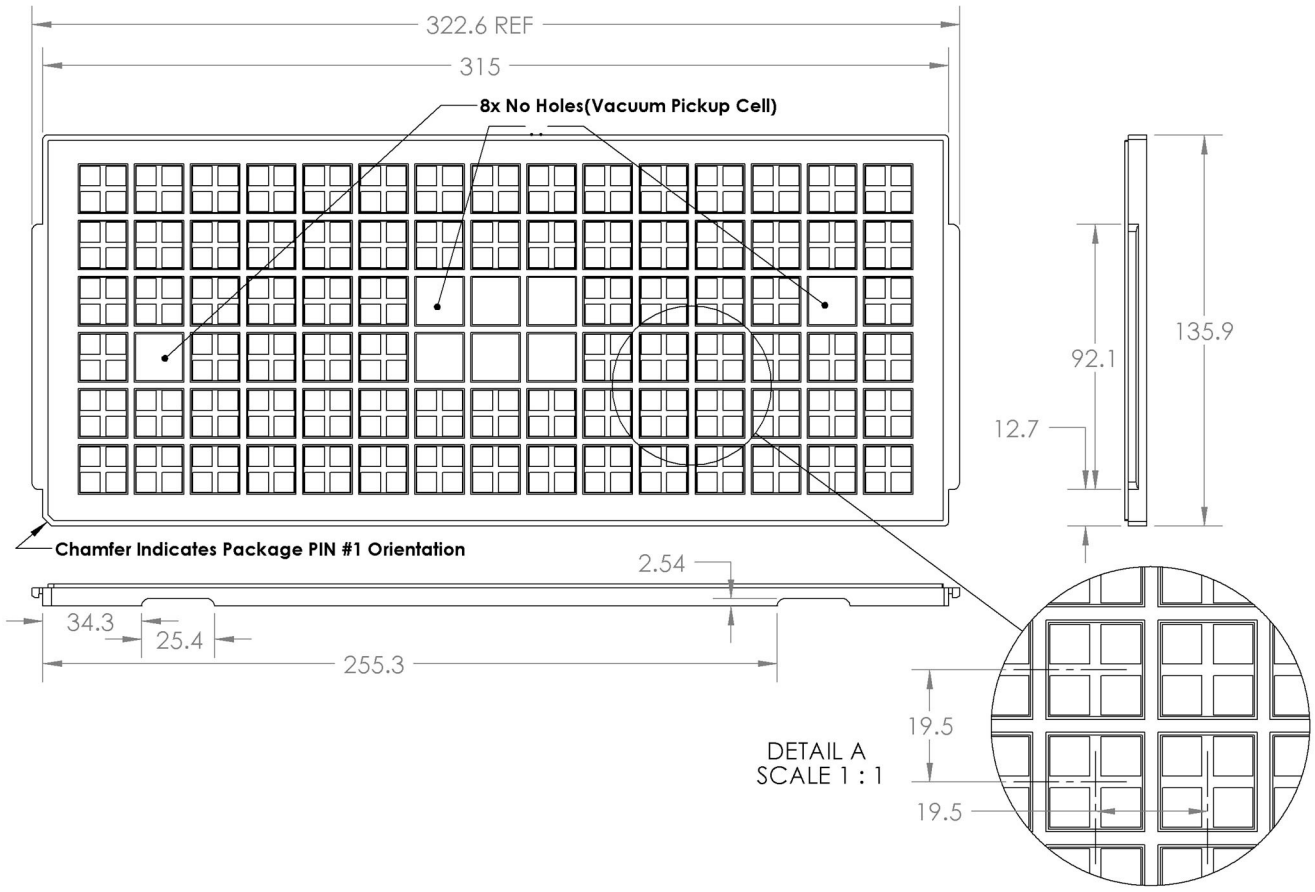

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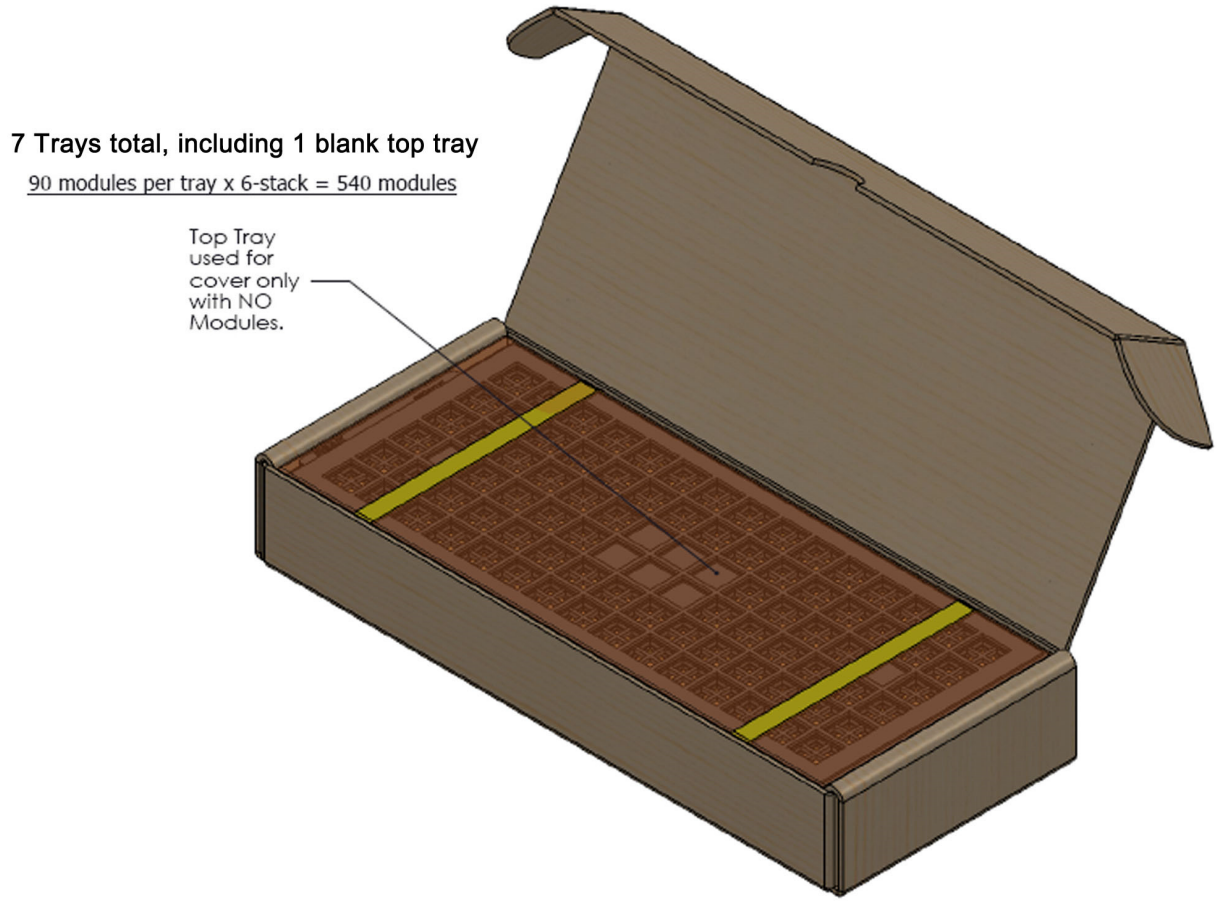

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RF Digital products are not authorized for use in safety-critical applications, including but not limited to life-support applications.

RF Digital assumes no liability for parts or their application beyond replacement or refunding the original purchase price.

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Information provided in this document is for reference only. The user must conduct testing and prototyping on their own for their own application. This document only provides an example of a possible use for the parts shown in this design and requires actual testing to confirm its accuracy or validity or proper application. There is NO suggestion that the devices shown in this document should be used for the implied application. There is no guarantee or warranty of suitability for any specific application. The information disclosed in this document is AS-IS. By using any information contained in this document you are assuming all risks and liability associated therewith. RF Digital reserves the right to make corrections, modifications, changes and/or improvements to specifications or details at any time without notice or obligation. RF Digital assumes no liability for the user's product and/or applications. RF Digital products are not authorized for use in safety-critical applications, including but not limited to life-support applications. RF Digital assumes no liability for parts or their application beyond replacement or refunding the original purchase price paid to RF Digital.

Limited Product Warranty

RF Digital warrants that RF Devices manufactured by RF Digital are free from defects in material and workmanship, for Ninety (90) Days from date of delivery. RF Devices covered by this warranty and returned to RF Digital within the Ninety Day Warranty Period will be eligible for replacement, repair, or credit, limited to the amount RF Digital was paid for the RF Device. To obtain a remedy under this Warranty, the following conditions must be met: (1) Customer must notify RF Digital in writing promptly on discovery of the deficiency with reasonable detail within the Warranty Period; (2) Customer must return the RF Devices to RF Digital promptly upon receipt of an RMA from RF Digital, at Customer's risk and expense; and (3) RF Digital confirms the claimed deficiency is present. If all of these conditions are met, RF Digital, at its sole option, will either replace or repair the RF Device or credit Customer's account for the amount the Customer paid to RF Digital for the RF Device.

Preliminary

Compliance approvals pending.

End of document.