Oasis IEEE802.15.4
RF MODULE DATASHEET

FEATURES

- +20dBm (100mW) Nominal Transmit Power
- Superior Sensitivity -107dBm typical
- Dual Antenna Ports for Indoor Applications
- Very small 25mm x20mm x 2.7mm form factor
- Long range-up to >1000 meters LoS
- MKW22D512V 50MHz 32 bit ARM® Cortex™ M4 MCU
- Freescale Thread, BeeStack™ Pro, SynkroRF or SMAC
- MMCX, u.fl or off-module RF connection
- 15 Selectable IEEE 802.15.4 RF channels
- Extensive low power modes
- All MCU pins accessible
- 64K SRAM, 512K FLASH
- AES 128 bit Encryption
- UART (x2), I2C (x2), SPI (x1), USB FS OTG (x1)
- 1.8v to 3.6v Operation (fully functional at 1.8v)
- -40C to +105C Operation
- RoHS Compliant
- FCC/IC Certified

APPLICATIONS

- Thread / ZigBee™ SE3.0
- Smart Energy
- IoT
- Automatic Meter Reading
- Medical (MBAN) 2.36GHz
- Residential Automation
- HVAC Control
- Lighting Control
- Asset Tracking



DESCRIPTION

The Oasis RF module is an ultra-low power extremely high performance IEEE 802.15.4 compliant, FCC/IC certified 2.4GHz RF Module with a 100mW PA/LNA for extended range operations. The micro form factor module includes a dual antenna design to support receiver diversity systems. The Oasis is based on the Freescale MKW22D512V fourth-generation ZigBee Pro/IP platform which incorporates a low power 2.4GHz IEEE 802.15.4 compliant radio frequency transceiver combined with a powerful Kinetis mixed signal ARM® Cortex™ M4 MCU, hardware acceleration for both the IEEE 802.15.4 MAC and AES security, and a full set of Microcontroller Unit (MCU) peripherals.

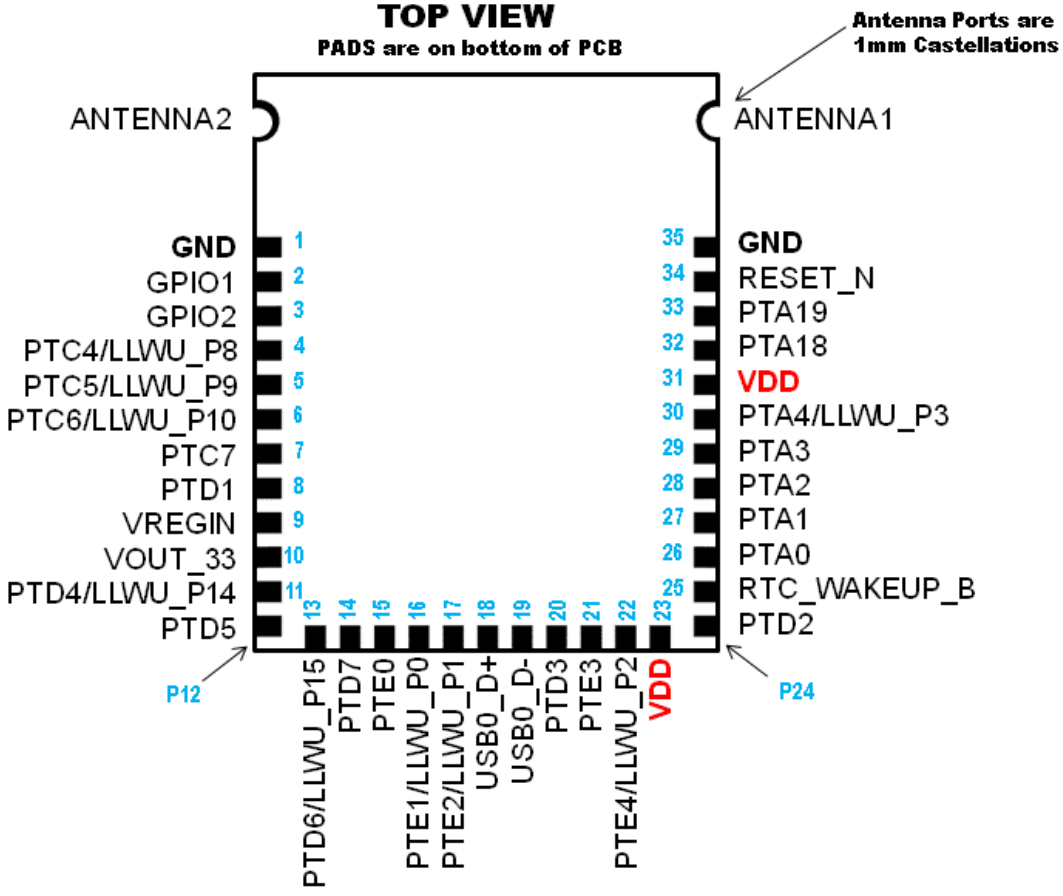
The module brings out all the functional pins of the MKW22D512V MCU for maximum usability and flexibility including:

- 2 UART's
- 7 ADC Inputs
- 1 SPI bus
- 2 I2C bus
- 1 USB
- PWM, Timers
- JTAG
- 8 KBI's

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TALON OASIS MODULE PINOUT

TOP VIEW



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TALON OASIS MODULE PINOUT 1/3

MODULE PIN #	MKW22D512 PIN #	PIN NAME	TYPICAL FEATURE	DESCRIPTION
P1	GND pins	GND	POWER	Connect to solid GND plane on motherboard
P2	2	GPIO1	RADIO	
P3	3	GPIO2	RADIO	
P4	4	PTC4/LLWU_P8	SPIO PCS0	
P5	5	PTC5/LLWU_P9	SPIO SCK	
P6	6	PTC6/LLWU_P10	SPIO SOUT	
P7	7	PTC7	SPIO SIN	
P8	8	PTD1	I2C SCK	
P9	24	VREGIN	USB POWER/ENABLE	Must be connected to 3.3v or 5.0v to enable USB data
P10	23	VOUT33	REGULATED POWER	Regulated internal DC-DC convertor 3.3v output. Includes 2.2uF bulk cap
P11	11	PTD4/LLWU_P14	UART0	
P12	12	PTD5	UART0	
P13	13	PTD6/LLWU_P15	UART0	
P14	14	PTD7	UART0	
P15	15	PTE0	TRACE, UART1, I2C	
P16	16	PTE1/LLWU_P0	TRACE	
P17	17	PTE2/LLWU_P1	TRACE	

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TALON OASIS MODULE PINOUT 2/3

MODULE PIN #	MKW22D512 PIN #	PIN NAME	TYPICAL FEATURE	DESCRIPTION
P18	21	USB0_D+	USB0	USB DATA +, includes 33 ohms series R
P19	22	USB0_D-	USB0	USB DATA -, includes 33 ohms series R
P20	10	PTD3	-	
P21	18	PTE3	TRACE	
P22	19	PTE4/LLWU_P2	TRACE	
P23	VDD pins	VDD	POWER	
P24	9	PTD2/LLWU_P13	I2C SCK	
P25	29	TAMPER0/ RTC_WAKEUP_B	TAMPER	
P26	33	PTA0	JTAG/TIMER	
P27	34	PTA1	JTAG/TIMER	
P28	35	PTA2	JTAG/TIMER	
P29	36	PTA3	JTAG/TIMER	
P30	37	PTA4/LLWU_P3	NMI	
P31	VDD pins	VDD	POWER	
P32	39	PTA18	DIGITAL INPUT/OUTPUT	
P33	40	PTA19	DIGITAL INPUT/OUTPUT	
P34	41	RESET_N	RESET MCU	

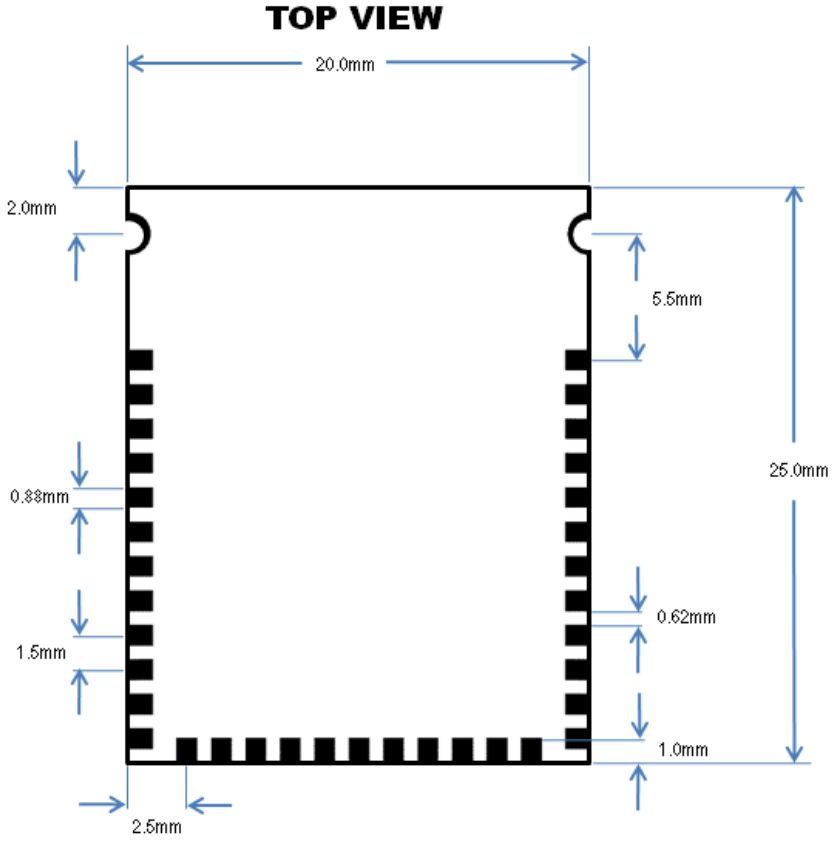
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TALON OASIS MODULE PINOUT 3/3

MODULE PIN #	MKW22D512 PIN #	PIN NAME	TYPE	DESCRIPTION
P35	GND pins	GND	POWER	Connect to solid GND plane on motherboard
ANT1	N/A	--	RF POWER AMP OUT 1	If unused must be terminated with 50 ohm resistor
ANT2	N/A	--	RF POWER AMP OUT 2	If unused must be terminated with 50 ohm resistor

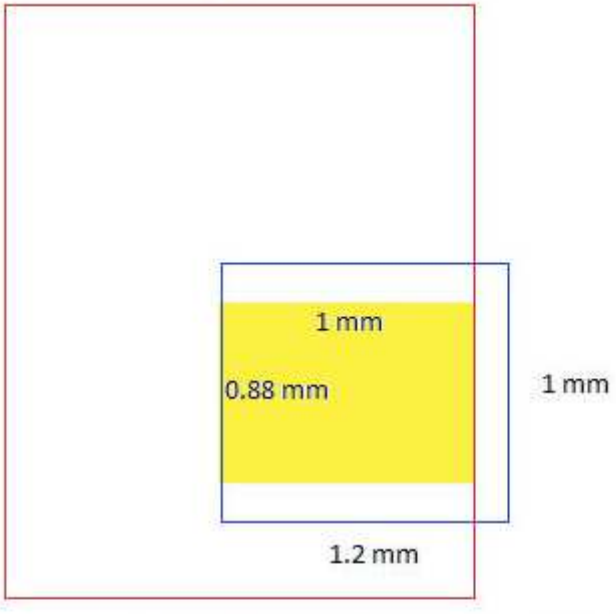
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TALON OASIS MODULE DIMENSIONS



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TALON OASIS MODULE LAND PATTERN



Blue outline is landing pattern (1 x 1.2 mm)

Yellow is module pad (0.88 x 1 mm)

Landing pattern extends 0.2 mm past the edge of of the module

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TALON OASIS ORDERING INFORMATION

MODULE	RF CONNECTORS
OASIS-24ZB-MMCX-1 OASIS-24ZB-MMCX-2	MMCX (1) MMCX (2)
OASIS-24ZB-UFL-1 OASIS-24ZB-UFL-2	u.fl (1) u.fl (2)
OASIS-24ZB-PIFA	EDGE CASTELLATION

TALON OASIS ASSEMBLY INFORMATION

The Oasis RF module may be treated as most other IC's are during solder reflow assembly. The following conditions, however, must be strictly adhered to:

1. Must NOT use water or any other liquid to clean as this will cause the liquid to be retained under the RF Shield and cause damage to the Module or surrounding circuits. MUST specify "No Clean, No Water wash, Lead Free, RoHS" for assembly.

2. Solder reflow peak body temperature must NOT exceed 260 °C.

3. Moisture Sensitivity Level (MSL) is 1 and no special handling or baking required provided the Module is stored at equal to or less than 90 degrees F and 80% Relative Humidity.

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FCC OPERATING NOTES

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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.

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.

FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons.

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IC OPERATING NOTES

a. This device complies with Industry Canada license-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.

b. This radio transmitter (IC: 10593A-24ZBPA100) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

c. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and person's body.

a. Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas causer interférences , et (2) ce dispositif doit accepter toute interférence , y compris les interférences qui peuvent entraîner un mauvais fonctionnement de l'appareil.

b . Cet émetteur radio (IC : 10593A - 24ZBPA100) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous avec le gain maximal admissible indiqué . Les types d'antennes ne figurant pas dans cette liste , ayant un gain supérieur au gain maximum indiqué pour ce type , sont strictement interdits pour une utilisation avec cet appareil .

c . Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre le radiateur et le corps de la personne .

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Restricted Use

Talon Communications, Inc. (TCI) does not assume any responsibility for the use of the described radio module ("the Module(s)"). TCI makes no representation with respect to the adequacy of the module in low-power wireless data communications applications or systems. Any Products using the Module must be designed so that a loss of communications due to radio interference or otherwise will not endanger either people or property, and will not cause the loss of valuable data. TCI assumes no liability for the performance of products which are designed or created using the Modules.

The Modules are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the Module could create a situation where personal injury or death may occur. If you use the Modules for such unintended and unauthorized applications, you do so at your own risk and you shall indemnify and hold TCI and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that TCI was negligent regarding the design or manufacture of the Product.

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