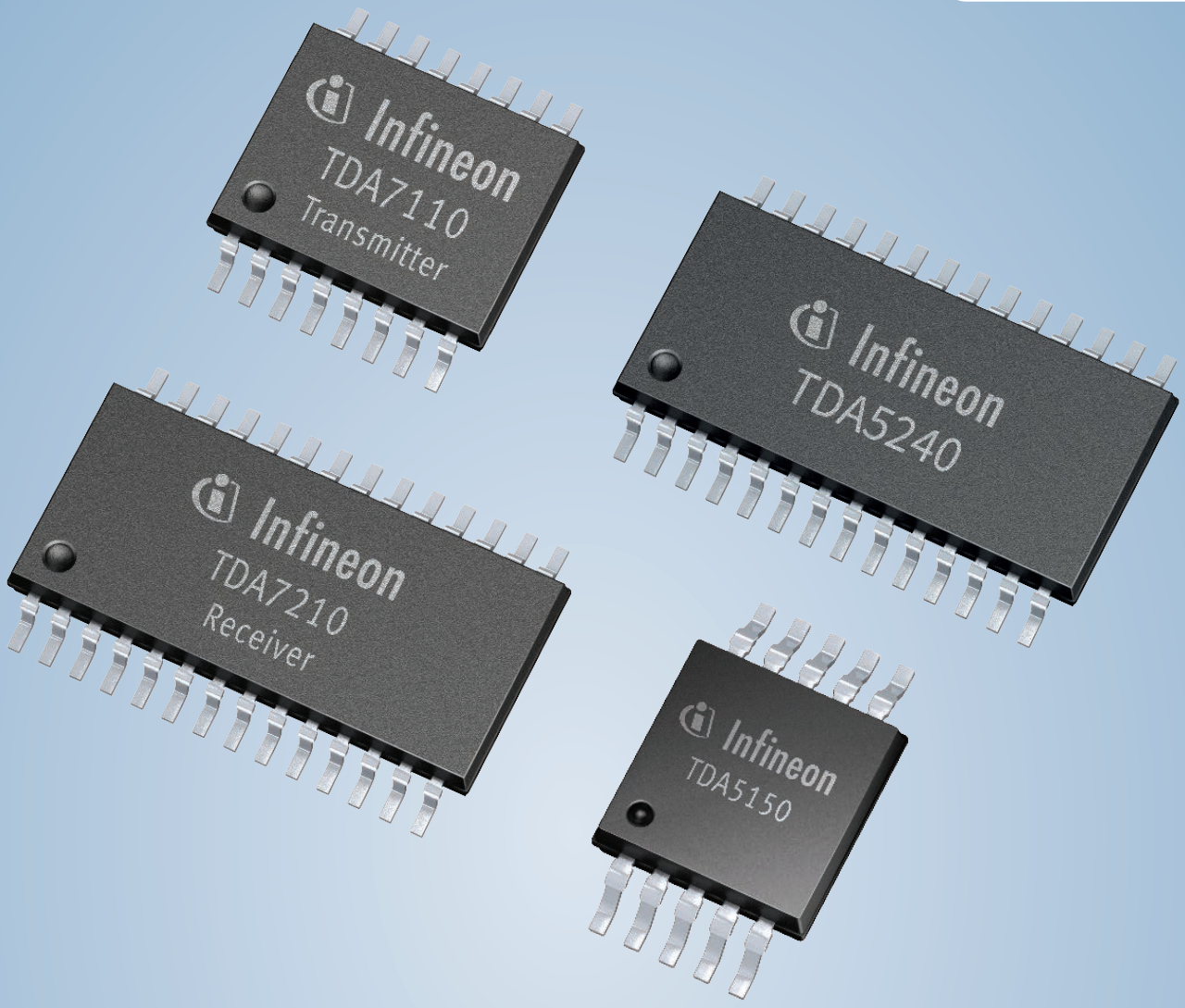
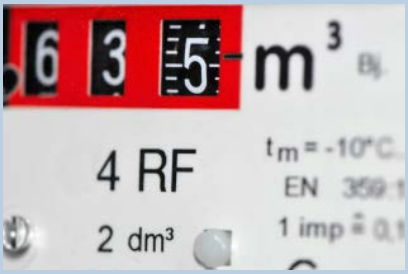


Make Your Application Wireless

Sub 1GHz RF Solutions



www.infineon.com/wirelesscontrol

Content

Make Your Application Wireless
Sub 1GHz RF Solutions

Wireless control is an indispensable part of everyday life. From garage door openers through intrusion and fire alarms to smart metering systems, wireless devices are a cost-efficient, robust and proven way to control the widest variety of applications.

Many of these applications are based on simple point-to-point connections with low data rate requirements (below 100kbit/s) or simple nodes that collect and transmit a limited volume of data to a central controller. For this application spectrum, sub-GHz radios offer a number of benefits over 2.4GHz wireless standards.

Optimum Energy Efficiency

- It's all down to physics: At lower frequencies, it takes less power to achieve the same range as higher frequencies.
- What's more, our sub-GHz transmitters utilize highly efficient class-C amplifiers, which are twice as efficient as the class-A amplifiers used in 2.4GHz technologies.

Longest Range

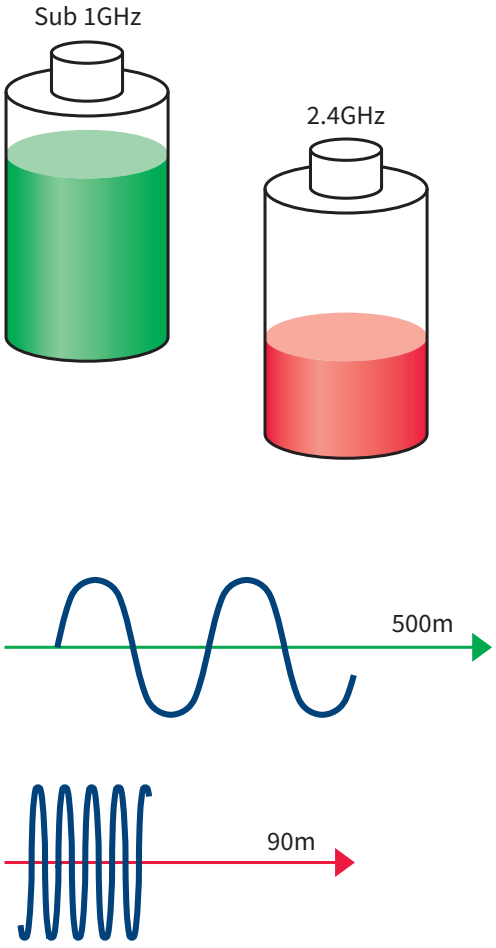
- Again, it's all down to physics: Due to environmental path loss, the communication range at 434MHz is around 5.5 times greater than at 2.4GHz when transmitting signals using the same output power.
- What's more, sub-GHz signals penetrate concrete, walls and humid environments much more effectively.

Less Interference

- The 2.4GHz spectrum is crowded and subject to significant interference from Wi-Fi devices, Bluetooth nodes, PC peripherals, video surveillance systems and microwave ovens.

Lowest Cost

- A proprietary protocol can reduce system cost significantly by streamlining implementation and minimizing the processor resources required. It also eliminates the costs of compliance testing and logo licensing.
- Sub-GHz solutions support simple, one-way applications by enabling low-cost transmitter and receiver products. In contrast, 2.4GHz standards always require a more costly two-way transceiver.



The benefits of sub-GHz frequencies mentioned above make sub-GHz solutions an extremely attractive proposition for end users looking for reliable, low-cost wireless connections with long battery lifetimes. Beside the cost pressure, quality and reliability are priorities for any wireless control application as well:

- After all, a remote control is the interface between a human user and a consumer device such as a television or set-top box. It directly influences the consumer's overall product experience and, most importantly, whether he or she likes or dislikes the product.
- In the case of wireless alarm systems and fire or smoke detectors, automotive RKE (Remote Keyless Entry) or smart metering systems, the wireless application must be designed to the highest levels of quality and reliability.

Infineon, as market leader in automotive RF, has an answer to this. With over 15 years of experience in sub-GHz radio and more than 750 million devices shipped, we have what it takes to meet today's sub-GHz wireless application requirements. Our wireless control products set the standard, delivering outstanding, automotive-proven quality with nearly zero dpm (defects per million). That is what we aim for in all of our products and what underpins our commitment to reliability across the specified temperature and supply voltage ranges. We back up this commitment with long-term product availability and worldwide technical support.

Target Applications

- Remote Keyless Entry (RKE)
- Tire Pressure Monitoring (TPMS)
- Smart metering
- Intrusion alarms
- Fire & smoke detectors
- Home automation & building control
- Lighting control
- Appliance control
- Gate & garage door openers
- Consumer remotes
- Set top boxes
- Access control
- Industrial control
- Replacement of wireline connections
- Any kind of wireless application that only needs a low data rate

Contact us or visit www.infineon.com/wirelesscontrol to find the right product for your application.

The Right Product Every Time

We offer a comprehensive and mutually complementary product portfolio of transmitter, receiver and transceiver products for the major sub-GHz frequency bands.

Our two major product families meet the functionality, performance and cost requirements of different markets and applications. The **standard** family targets less complex applications with the TDA5 and TDA7 series products. The **SmartLEWIS™** product family is aimed at more complex systems and higher performance requirements.

SmartLEWIS™

Smart Low **E**nergy **W**ireless **S**ystem

SmartLEWIS™ stands for Smart Low Energy Wireless Systems. The family is aimed at next-generation wireless control products that deliver the highest levels of integration and functionality to intelligently reduce system complexity and current consumption.

TDA5 Series

The **TDA5 series** comprises proven, automotive-qualified products. Family members of the **TDA5 series** are designed for harsh environments with temperatures up to +105°C and even +125°C.

TDA7 Series

The **TDA7 series** is tailored to consumer and industrial applications that have less stringent requirements (for example, regarding temperature range), yet still require outstanding quality. These consumer-grade products meet the same high automotive quality levels as the **TDA5 series**.

All of our products are designed to ensure that the applications meet ETSI and FCC regulations for sub-GHz RF. They can also be used in products that require certification to other standards such as Wireless M-Bus or KNX-RF or others.

Transmitter ICs for Wireless Control

Our series of wireless control transmitters comprises ASK/FSK transmitters with outstanding current consumption in power-down and transmit mode. All ICs offer a high level of integration and only require a small number of external components to create a fully functional transmitter.

TDK51xx/TDA71xx

Standard Transmitter Series

This standard transmitter series offers several frequency, output power and package variants. Dedicated consumer and industrial variants are also available with optimized temperature ranges and quality grades.

- TDK510x(F) – ASK/FSK transmitter family for low and medium power (+2dBm to +5dBm)
- TDK511x(F) – ASK/FSK transmitter family for high power (+10dBm)
- TDA71xx(F) – ASK/FSK transmitters for consumer & industrial applications

Type	Frequency[1)] [MHz]	P_{OUT} [dBm]	I_S transmit [mA]	I_S pwrdwn [nA]	Modulation	V_S [V]	Temperature [°C]	Package
Automotive quality grade and temperature range; special frequency variants								
TDK5100	432–437 864–874	5 2	7	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-16
TDK5100F	433–435	5	7.7	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-10
TDK5101	311–317	5	7	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-16
TDK5101F	311–317	5	7.8	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-10
TDA5102	905–925	2	7	0.3	ASK/FSK	2.1 … 4.0	-25 … +85	PG-TSSOP-16
TDA5103A	343–347	5	7	0.3	ASK only	2.1 … 4.0	-25 … +85	PG-TSSOP-10
TDK5110	432–437 864–874	10	13.8	0.25	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-16
TDK5110F	432–437	10	14.2	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-10
TDK5111	311–317	10	14	0.25	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-16
TDK5111F	314–317	10	14	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-10
TDK5116F	864–874	10	14	0.3	ASK/FSK	2.1 … 4.0	-40 … +125	PG-TSSOP-10
Consumer & Industrial grade and temperature range								
TDA7100	432–437	5	7.5	0.3	ASK/FSK	2.1 … 4.0	-20 … +70	PG-TSSOP-10
TDA7110	432–437 864–874	10	13.8	0.25	ASK/FSK	2.1 … 4.0	-40 … +85	PG-TSSOP-16
TDA7110F	432–437	10	14.2	0.3	ASK/FSK	2.1 … 4.0	-40 … +85	PG-TSSOP-10
TDA7116F	864–874	10	14	0.3	ASK/FSK	2.1 … 4.0	-40 … +85	PG-TSSOP-10

1) Over specified temperature range

TDA5150

SmartLEWIS™ TX – Multi-Channel Transmitter

The TDA5150 transmitter is a truly versatile device, covering all major ISM frequency bands and power levels. It combines outstanding reliability and high power with low current consumption and low system cost.

With its multiband and multi-channel capability, plus highest immunity against interference and jamming, TDA5150 is the ideal choice for home security and smart metering systems as well as all other applications that have to meet the highest quality benchmarks such as Japan's ARIB 67 standard.

Highest Functionality and Performance

- High resolution Sigma-Delta fractional-N PLL, 7Hz frequency steps eliminate the need for crystal fine tuning
- Multi-channel and multiband support for worldwide operation
- Programmable maximum transmitter power levels of 5, 8 and 10dBm
- On-chip tuning capacitors for the antenna matching circuit
- Programmable clock output and baud rate divider to clock the host microcontroller

Low System Cost

- Only six external components are required to build a working transmitter system
- Only one IC and one crystal for different frequency bands to increase purchasing volume and reduce storage cost

Reliability and Guality

- Multi-channel capabilities for interference robustness
- Highest automotive quality standards and long-term availability

Easy Design

- Highly sophisticated development tooling with easy-to-use configuration software
- Quick-start protocol examples for evaluation and development

Type	Frequency[1)] [MHz]	P_{OUT} [dBm]	I_S transmit [mA]	I_S pwrdwn [nA]	Modulation	V_S [V]	Temperature [°C]	Package
SmartLEWIS™ TX for automotive, consumer & industrial								
TDA5150	300–320 433–450 863–928	5, 8, 10	9 9 11	400	ASK/FSK/GFSK	1.9 … 3.6	-40 … +85	PG-TSSOP-10

1) Over specified temperature range

PMA51xx/PMA71xx

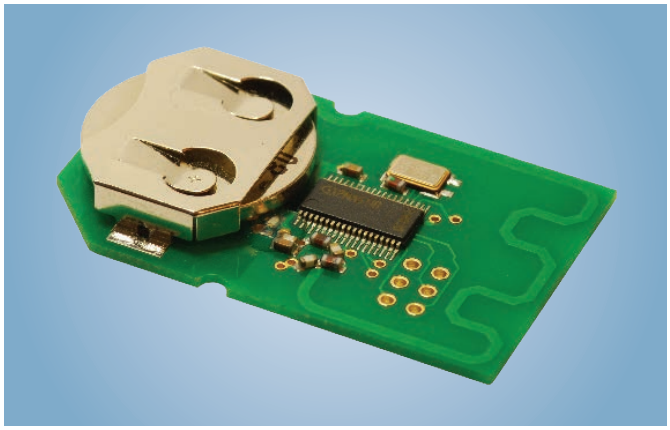
SmartLEWIS™ MCU – Transmitter with Embedded Microcontroller

The SmartLEWIS™ MCU family comprises an ASK/FSK transmitter for sub-1GHz ISM frequency bands plus an embedded 8051 microcontroller, on-chip Flash memory and other exciting peripherals. These highly optimized, single-chip ICs are ideal, for example, for remote control designs, requiring only eleven components to create a key fob.

An associated software library provides powerful functions such as AES encryption, thus enabling fast software development and reduced user code size. The PMA family also offers an optional integrated 125kHz LF receiver, which can be used for wireless wake-up, or an integrated 10-bit ADC to directly connect an analog sensor.

Highest Functionality and Performance

- Multiband transmitter plus embedded 8051 microcontroller with 6KB Flash for user code and 2x 128Byte Flash for EEPROM emulation
- Comprehensive software library in ROM including license-free encryption algorithms such as AES-128
- Programmable transmitter power levels of 5, 8 and 10dBm
- 125kHz LF ASK receiver for wireless wake-ups
- 3-channel, 10-bit ADC
- Integrated temperature and supply voltage sensors



Easy Design

- Quick-start development kit with USB interface
- Key fob reference design with example software (PMA fob)

PMA Family Selection Guide

Type	8051 µC + Flash	ASK/FSK Transmitter	ADC	LF Receiver	Automotive Qualified	Temperature Range [°C]
PMA5110	●	●	●	●	●	-40 … +125
PMA5105	●	●	–	–	●	-40 … +125
PMA7110	●	●	●	●	–	-40 … +85
PMA7107	●	●	–	●	–	-40 … +85
PMA7106	●	●	●	–	–	-40 … +85
PMA7105	●	●	–	–	–	-40 … +85

Type	Frequency[1] [MHz]	P_{OUT} [dBm]	I_S transmit [mA]	I_S pwrdwn [nA]	Modulation	V_S [V]	Temperature [°C]	Package
Automotive quality grade and temperature range								
PMA51xx	300–320 433–450 865–870 902–928	5, 8, 10	9.7 9.9 11.8 12.6	590	ASK/FSK	1.9 … 3.6	-40 … +125	PG-TSSOP-38
Consumer & Industrial grade and temperature range								
PMA71xx	300–320 433–450 865–870 902–928	5, 8, 10	9.7 9.9 11.8 12.6	590	ASK/FSK	1.9 … 3.6	-40 … +85	PG-TSSOP-38

1) Over specified temperature range

Receiver ICs for Wireless Control

Our series of wireless control receivers features ASK/FSK single-conversion superheterodyne receivers (SHR) with outstanding current consumption, best-in-class sensitivity and excellent stability over the specified temperature range and supply voltages. All of our ICs offer a high level of integration and just a few external components are required to build a fully functional receiver.

TDA52xx/TDA72xx

Standard Receiver Series

This standard receiver series offers several frequency, feature and package variants. Dedicated consumer and industrial variants are also available featuring optimized temperature ranges and quality grades.

- TDA520x – ASK receiver family
- TDA521x – ASK/FSK receiver family
- TDA522x – ASK/FSK receiver family with switchable peak detector
- TDA72xx – ASK/FSK dedicated receivers for consumer & industrial applications

Type	Frequency[1] [MHz]	Sensitivity[2] [dBm]	I_S receive [mA]	I_S pwrdwn [nA]	Modulation	V_S [V]	Temperature [°C]	Package
Automotive quality grade and temperature range; special frequency variants								
TDA5200	433–435 868–870	-110/–	4.6 4.8	50	ASK only	4.5 … 5.5	-40 … +85	PG-TSSOP-28
TDA5201	310–350	-113/–	4.6	50	ASK only	4.5 … 5.5	-40 … +85	PG-TSSOP-28
TDA5210	400–440 810–870	-110/-103	5.0 5.2	50	ASK/FSK	4.5 … 5.5	-40 … +105	PG-TSSOP-28
TDA5211	310–350	-113/-105	5.0	50	ASK/FSK	4.5 … 5.5	-40 … +105	PG-TSSOP-28
TDA5212	902–928	-112/-105	4.8	90	ASK/FSK	4.5 … 5.5	-40 … +85	PG-TSSOP-28
TDA5220	400–440 810–870	-110/-103	5.0 5.2	50	ASK/FSK	4.5 … 5.5	-40 … +105	PG-TSSOP-28
TDA5221	300–340	-113/-105	5.5	50	ASK/FSK	4.5 … 5.5	-40 … +105	PG-TSSOP-28
Consumer & industrial grade and temperature range								
TDA7200	400–440	-110/-103	5.0	50	ASK/FSK	4.5 … 5.5	-20 … +70	PG-TSSOP-28
TDA7210	400–440 810–870	-110/-103	5.0 5.2	50	ASK/FSK	4.5 … 5.5	-40 … +85	PG-TSSOP-28

1) Over specified temperature range
2) ASK/FSK (Manchester encoded data rate 4kbit/s, refer to the datasheet for more detailed conditions)

TDA523x/TDA5240

SmartLEWIS™ RX/RX+ – Autonomous Receiver Family

The SmartLEWIS™ receiver family heralds a new era of functionality. These highly integrated receiver ICs provide a host of features including multi-channel capability, multiple protocol handling and digital baseband processing with self-polling. An all-round package that ensures highest sensitivity, lowest current consumption and the best automotive quality.

Highest Functionality and Performance

- Autonomous receive: SmartLEWIS™ receivers provide fully recovered payload data to the microcontroller, which stays in sleep mode while receiving the data. The receiver only wakes up the microcontroller once a valid message is detected. In a crowded environment, this can reduce system current consumption by over 80 percent. It also significantly reduces microcontroller workload.
- Multi-protocol handling: SmartLEWIS™ receivers can handle completely different RF protocols autonomously; a single receiver can thus support several applications (for example, RKE + TPMS + remote start)
- High-resolution Sigma-Delta fractional-N PLL (SmartLEWIS™ RX+) to cover all frequencies with one device and one crystal

Low System Cost

- Integrated LNA and IF filter (external filter can also be used)
- Host microcontroller load and development effort significantly reduced

Reliability & Quality

- Excellent blocking performance and multi-channel capabilities
- Highest automotive quality standards and long-term availability

Easy Design

- Highly sophisticated development tooling with easy-to-use configuration software
- Quick-start protocol examples for evaluation and development

www.infineon.com/receiver

SmartLEWIS™ RX/RX+ Selection Guide

Type	High Sensitivity	Integrated IF filter	Multi-Channel	Autonomous receive
TDA5230/31	–	–	●	●
TDA5240	●	●	●	●
TDA5235	●	●	–	●
TDA5225	●	●	●	–

Type	Frequency[1] [MHz]	Sensitivity[2] [dBm]	I_S Receive [mA]	I_S pwrdwn [µA]	Modulation	V_S [V]	Temperature [°C]	Package
SmartLEWIS™ RX for automotive, consumer & industrial								
TDA5230	433–450 865–870	-108/-108	7.6	0.6	ASK/FSK	3.0 … 3.6 4.5 … 5.5	-40 … +105	PG-TSSOP-28
TDA5231	302–320	-108/-108	8.0	0.6	ASK/FSK		-40 … +105	PG-TSSOP-28
SmartLEWIS™ RX+ for automotive, consumer & industrial								
TDA5225	300–320 425–450 863–870 902–928	-116/-118	10.5	0.8	ASK/FSK	3.0 … 3.6 4.5 … 5.5	-40 … +105	PG-TSSOP-28
TDA5235		-116/-118	10.5	0.8	ASK/FSK		-40 … +105	PG-TSSOP-28
TDA5240		-116/-118	10.5	0.8	ASK/FSK		-40 … +105	PG-TSSOP-28

1) Over specified temperature range
2) ASK/FSK (Manchester encoded data rate 2kbit/s, refer to the datasheet for more detailed conditions)

Transceiver ICs for Wireless Control

Our series of wireless control transceivers comprises ASK/FSK single-channel transceivers with outstanding current consumption in power-down and active transmit mode. The next generation SmartLEWIS™ TRX is a multi-channel transceiver offering the highest functionality and performance levels.

TDA525x

Standard Transceiver Series

This standard transceiver series offers variants for major sub-GHz frequency bands as well as an consumer quality grade package variant.

- TDA525x – ASK/FSK single-channel transceiver family

Type	Frequency [MHz]	P_{OUT} [dBm]	I_S transmit[1] [mA]	Sensitivity[2] [dBm]	I_S receive [mA]	I_S pwrdwn [nA]	V_S [V]	Temperature [°C]	Package
Automotive quality grade									
TDA5250	868–870	9	4.9/11.9	-109/-109	8.6	5	2.1 … 5.5	-40 … +85	PG-TSSOP-38
TDA5251	312–325	9	8.7/14.1	-109/-109	8.8	5	2.1 … 5.5	-40 … +85	PG-TSSOP-38
TDA5252	910–920	9	4.9/12.5	-109/-109	8.6	5	2.1 … 5.5	-40 … +85	PG-TSSOP-38
TDA5255	433–435	9	7.2/13.3	-109/-109	8.6	5	2.1 … 5.5	-40 … +85	PG-TSSOP-38

1) Low-power / high-power mode
2) ASK/FSK (Manchester encoded data rate 4kbit/s, refer to the datasheet for more detailed conditions)

www.infineon.com/transceiver

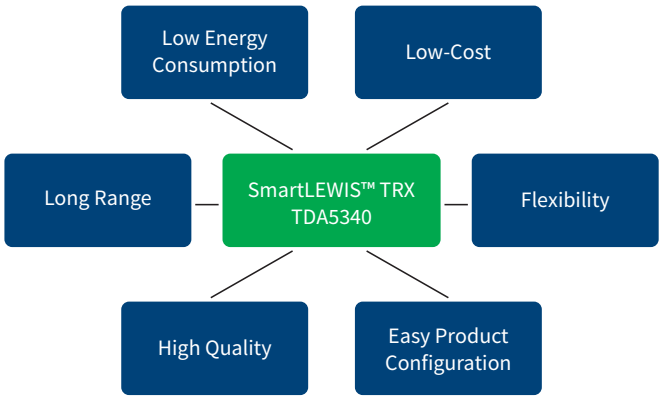
TDA5340

SmartLEWIS™ TRX – Multi-Channel Transceiver

The TDA5340 SmartLEWIS™ transceiver is designed for long range and low energy consumption. It can be flexibly adapted to individual requirements and ensures the highest levels of quality and reliability. It supports PCB design for uni- and bi-directional applications based on SmartLEWIS™ RX+ and TRX, and only requires a minimum of external components.

Highest Functionality and Performance

- All digital baseband features of SmartLEWIS™ RX+ (for example autonomous receive, polling and multi-protocol handling)
- High-resolution Sigma-Delta fractional-N PLL to cover all frequencies with one device and one crystal
- Highly efficient adjustable power amplifier with up to +14dBm RF output power
- Highest receive sensitivity and excellent blocking performance with lowest current consumption



Low System Cost

- Integrated LNA, IF filter and antenna switch (external filter and switch optional)
- Processor load on the host microcontroller and development effort significantly reduced

Reliability and Quality

- Excellent blocking performance plus multi-channel and antenna diversity capabilities ensure best-in-class link reliability
- Highest automotive quality standards and long-term availability

Easy Design

- Highly sophisticated development tooling with easy-to-use configuration software
- Quick-start protocol examples for evaluation

Type	Frequency [MHz]	P_{OUT} [dBm]	I_S transmit[1] [mA]	Sensitivity[2] [dBm]	I_S receive [mA]	I_S pwrdwn [µA]	V_S [V]	Temperature [°C]	Package
SmartLEWIS™ TRX for automotive, consumer & industrial; multi-channel									
TDA5340	300–320 415–495 863–960	Program-mable up to 14dBm	12 12.5 17	-116/-118	11.5	0.9	3.0 … 3.6 4.5 … 5.5	-40 … +110	PG-TSSOP-28

1) At 10dBm
2) ASK/FSK (Manchester encoded data rate 2kbit/s, refer to the datasheet for more detailed conditions)

Development Tooling

We offer a variety of transmitter, receiver and transceiver stand-alone boards as well as combo evaluation kits for different frequencies and output power levels. For easy identification, the board and kit names contain the name of the product, the frequency and, where applicable, the output power. The tools in the lists below are first sorted by frequency.

Standard Transmitter + Receiver Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
TDK5101-TDA5211_315_5	TX, RX	315	5	FSK (ASK)	SP000444584
TDK5101-TDA5221_315_5	TX, RX	315	5	FSK (ASK)	SP000278818
TDK5101F-TDA5221_315_5	TX, RX	315	5	FSK (ASK)	SP000078497
TDK5111-TDA5221_315_10	TX, RX	315	10	FSK (ASK)	SP000278820
TDK5111F-TDA5211_315_10	TX, RX	315	10	FSK (ASK)	SP000086723
TDK5100-TDA5220_434_5	TX, RX	434	5	FSK (ASK)	SP000278816
TDK5100F-TDA5220_434_5	TX, RX	434	5	FSK (ASK)	SP000078498
TDK5100F_434_5 BOARD	TX	434	5	FSK (ASK)	SP000078510
TDA7100-TDA7200_434 _5	TX, RX	434	5	FSK (ASK)	SP000307373
PMAFOB_TDA7210V_434_KIT	TX+MCU, RX+MCU	434	5	FSK (ASK)	SP000873416
TDK5110-TDA5220_434_10	TX, RX	434	10	FSK (ASK)	SP000278821
TDK5110F_434_10 BOARD	TX	434	10	FSK (ASK)	SP000278798
TDK5110F-TDA5210_434_10	TX, RX	434	10	FSK (ASK)	SP000086722
TDA7110-TDA7210_434_10	TX, RX	434	10	FSK (ASK)	SP001050318
TDA7110F-TDA7210V_434 _10	TX, RX	434	10	FSK (ASK)	SP000745284
TDA7110F_7210_MODULES	TX, RX	434	10	ASK	SP000977506
TDK5100-TDA5210_868_5	TX, RX	868	5	FSK (ASK)	SP000078505
TDK5110-TDA5220_868_10	TX, RX	868	10	FSK (ASK)	SP000278822
TDK5116F-TDA5220_868_10	TX, RX	868	10	FSK (ASK)	SP000278819
TDA7110-TDA7210_868 _10	TX, RX	868	10	FSK (ASK)	SP000546902
TDA7116F-TDA7210V_868 _10	TX, RX	868	10	FSK (ASK)	SP000745290
TDA5102-TDA5212_915_5	TX, RX	915	5	FSK (ASK)	SP000278814

Standard TX and RX boards are configured for FSK modulation by default. To modify the boards from FSK to ASK, refer to the app note entitled “How to convert standard tooling from FSK to ASK”.

SmartLEWIS™ TX Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
TDA5150_315_5 BOARD	TX	315	5	ASK/FSK	SP000356305
TDA5150_434_5 BOARD	TX	434	5	ASK/FSK	SP000356301
TDA5150_434_10 BOARD	TX	434	10	ASK/FSK	SP000356304
TDA5150_868_10 BOARD	TX	868	10	ASK/FSK	SP000356303
TDA5150_915_10 BOARD	TX	915	10	ASK/FSK	SP000356302
TDA5150 SIB BOARD	Interface	Universal	–	–	SP000357842

A full TDA5150 evaluation kit comprises the TDA5150 RF board with the required frequency plus the TDA5150 system interface board (TDA5150 SIB board), which must be ordered separately.

SmartLEWIS™ MCU Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
PMA starter kit					
PMAx110-315-5-USB-RF KIT	TX + MCU	315	5	ASK/FSK	SP000409138
PMAx110-434-5-USB-RF KIT	TX + MCU	434	5	ASK/FSK	SP000409140
PMAx110-868-10-USB-RF KIT	TX + MCU	868	10	ASK/FSK	SP000426622
PMA evaluation kit [1]					
PMA5110-315-5 BOARD	TX + MCU	315	5	ASK/FSK	SP000409122
PMA5110-434-5 BOARD	TX + MCU	434	5	ASK/FSK	SP000409126
PMA5110-868-10 BOARD	TX + MCU	868	10	ASK/FSK	SP000409132
SmartLEWIS™ SIB BOARD	Interface	Universal	–	–	SP000409156
PMAfob demonstrator					
PMAFOB-DEMO KIT[2]	TX + MCU, RX	434	5	ASK/FSK	SP000643642
PMAFOB_TDA7210V_434_KIT[3]	TX+MCU, RX+MCU	434	5	ASK/FSK	SP000873416

1) A full PMA evaluation kit comprises the PMA RF board with the required frequency plus the system interface board (SmartLEWIS™ SIB board), which must be ordered separately.
2) RKE and home automation demonstrator: PMA keyfob and TDA5230 evaluation board
3) Remote Control Demonstrator: PMA keyfob in combination with TDA7210V + MCU receiver board

SmartLEWIS™ RX Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
TDA5231_315_5_BOARD	RX	315	–	ASK/FSK	SP000278813
TDA5230_434_5_BOARD	RX	434	–	ASK/FSK	SP000278811
TDA5230-434-USB-UWLINK	RX	434	–	ASK/FSK	SP000559072
TDA5230_868_5_BOARD	RX	868	–	ASK/FSK	SP000278812

SmartLEWIS™ RX+ Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
TDA5240_315_5_BOARD	RX	315	–	ASK/FSK	SP000535296
TDA5235_315_5_BOARD	RX	315	–	ASK/FSK	SP000640510
TDA5225_315_5_BOARD	RX	315	–	ASK/FSK	SP000643648
TDA5240_434_5_BOARD	RX	434	–	ASK/FSK	SP000535300
TDA5235_434_5_BOARD	RX	434	–	ASK/FSK	SP000640514
TDA5225_434_5_BOARD	RX	434	–	ASK/FSK	SP000643654
TDA5240_868_5_BOARD	RX	868	–	ASK/FSK	SP000535304
TDA5235_868_5_BOARD	RX	868	–	ASK/FSK	SP000640518
TDA5225_868_5_BOARD	RX	868	–	ASK/FSK	SP000643658
TDA5240_915_5_BOARD	RX	915	–	ASK/FSK	SP000799568
TDA5235_915_5_BOARD	RX	915	–	ASK/FSK	SP000799564
TDA5225_915_5_BOARD	RX	915	–	ASK/FSK	SP000775162
SmartLEWIS™ SIB BOARD	Interface	Universal	–	–	SP000409156

A full TDA5240/35/25 evaluation kit comprises the RF board with the required frequency and the system interface board (SmartLEWIS™ SIB Board), which must be ordered separately.

Development Tooling

Standard Transceiver Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
TDA5251-TDA5251_315 Kit	TRX	315	5	ASK/FSK	SP000078507
TDA5255-TDA5255_434 Kit	TRX	434	5	ASK/FSK	SP000015023
TDA5250-TDA5250_868 Kit	TRX	868	5	ASK/FSK	SP000486986
TDA5252-TDA5252_915 Kit	TRX	915	5	ASK/FSK	SP000434768

SmartLEWIS™ TRX Boards/Kits

Board/Kit Type	RX/TX/MCU	Frequency [MHz]	Output Power [dBm]	Modulation	Order Code
TDA5340_315_BOARD	TRX	315	10	ASK/FSK	SP000926798
TDA5340_434_BOARD	TRX	434	10	ASK/FSK	SP000926802
TDA5340_470_BOARD	TRX	470	10	ASK/FSK	SP000997724
TDA5340_868_BOARD	TRX	868	13	ASK/FSK	SP000926808
TDA5340_915_BOARD	TRX	915	13	ASK/FSK	SP000926812

The evaluation board includes one TDA5340 RF board and one UWLINK interface board. You do not need to order a separate interface board. If you want to establish a wireless connection, you will have to order two evaluation boards.

Supporting your Success

We offer several application examples that can be used as references or starting points to ease and accelerate development. These include full-blown software examples as well as schematic and layout references, protocol examples and comprehensive application notes. All of these can be downloaded free of charge.

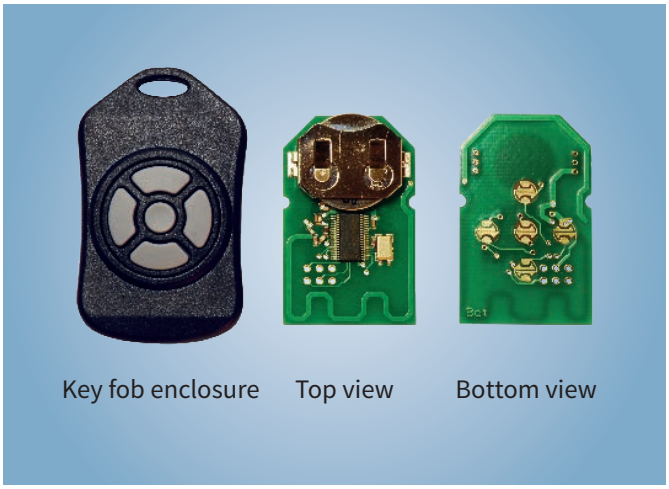
Single-Chip Remote Control Reference Design

PMA fob is a typical application design for a wireless remote control transmitter that utilizes a SmartLEWIS™ MCU. The 434MHz design meets ETSI and FCC regulations and only requires eleven external components.

PMA fob includes the hardware design available as Gerber files as well as an application software example with encryption (for example, AES-128 or XTEA), rolling code functionality, button stuck detection plus debounce and battery voltage measurement.

The same key fob example is also available as a two-chip solution based on a TDA7110F transmitter and a third-party microcontroller.

A matching receiver board based on TDA7210V and a third-party microcontroller with the corresponding software is also available.



Key fob enclosure Top view Bottom view

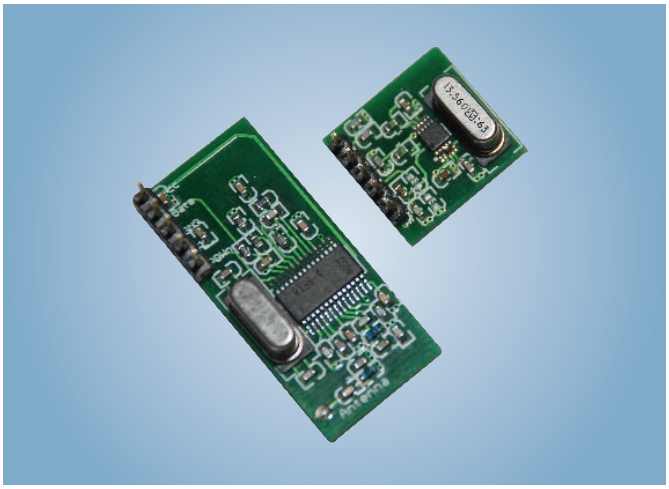
```
// data for RF_Config
struct RF_Config idata myRF_Config;
myRF_Config.Quiescent = 0;
myRF_Config.IntMask = 0;
myRF_Config.DutyControl = DUTY_OFF;
myRF_Config.XcapShort = DISABLE;
myRF_Config.Encoding = MANCHESTER;
myRF_Config.dataLength = 7;
```

RF Module Reference Design

Receiver and transmitter RF modules in a typical form factor size for low-cost applications:

- TDA7110F and TDA7210
- Low-cost external components
- 434MHz, ASK functionality

A components list, schematics and PCB layout information are available for all boards.

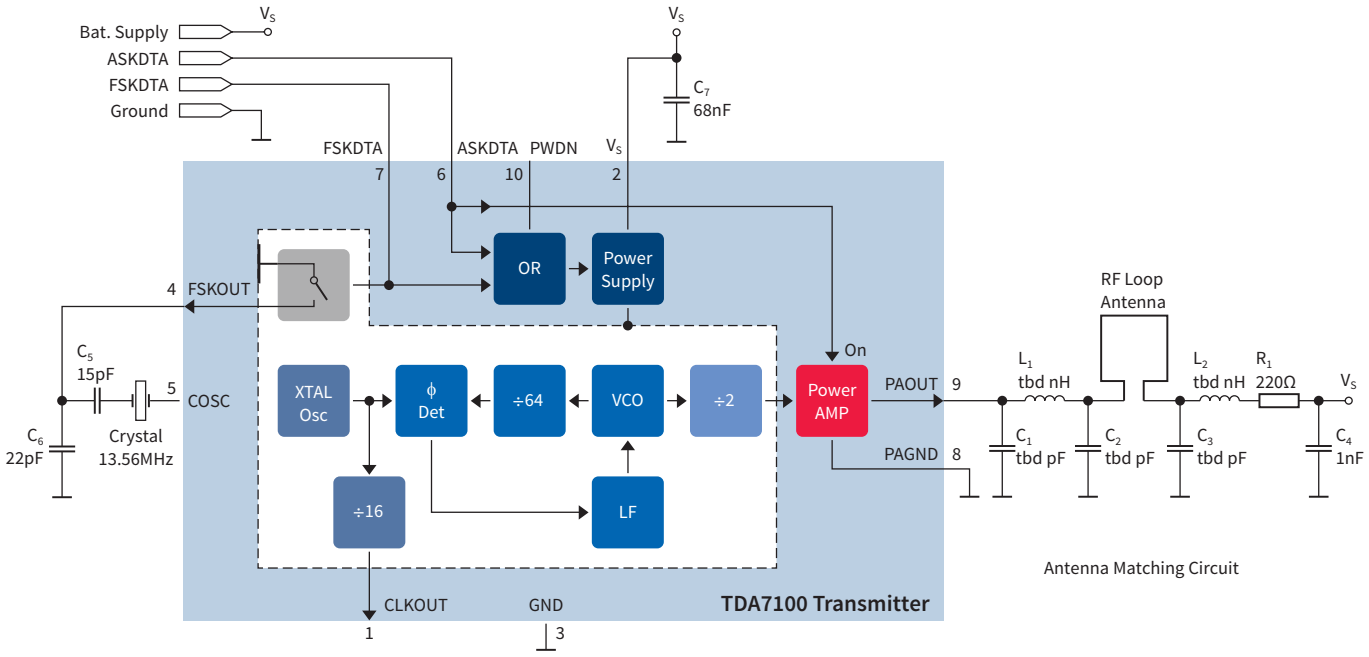


www.infineon.com/wlc_examples

Single-Layer PCB Reference Design

A single-sided PCB layout helps reduce system cost in applications that have less stringent RF performance requirements.

This layout example comprises Gerber files and a schematic for a 434MHz transmitter design based on TDA7100.



Protocol and Software Examples

We offer pre-defined protocol examples for SmartLEWIS™ transmitter, receiver and transceiver products to enable out-of-the-box development.

- Pre-selected device configuration for several protocol examples
- Wireless M-Bus configuration for TDA5340

The configuration files can be easily uploaded with the development tooling. Users can immediately start product evaluation or customize the files for their final application.

Additional Support

We also support your design and product evaluation efforts with the following:

- Comprehensive application notes
- Highly technical FAQs
- Crystal recommendation lists
- Bipolar wizard for standard receiver products: This Excel-based simulation tool provides value proposals for certain external components (for example, data filter capacitors and the capacitor for generating the slicing level) based on application parameters and conditions
- Easy access documentation: Quick links for all products help you find what you need fast. When you click on “documents” a pop-up window appears containing all available documents and tooling software for the product you need: www.infineon.com/[product_name] e.g. www.infineon.com/tda5240

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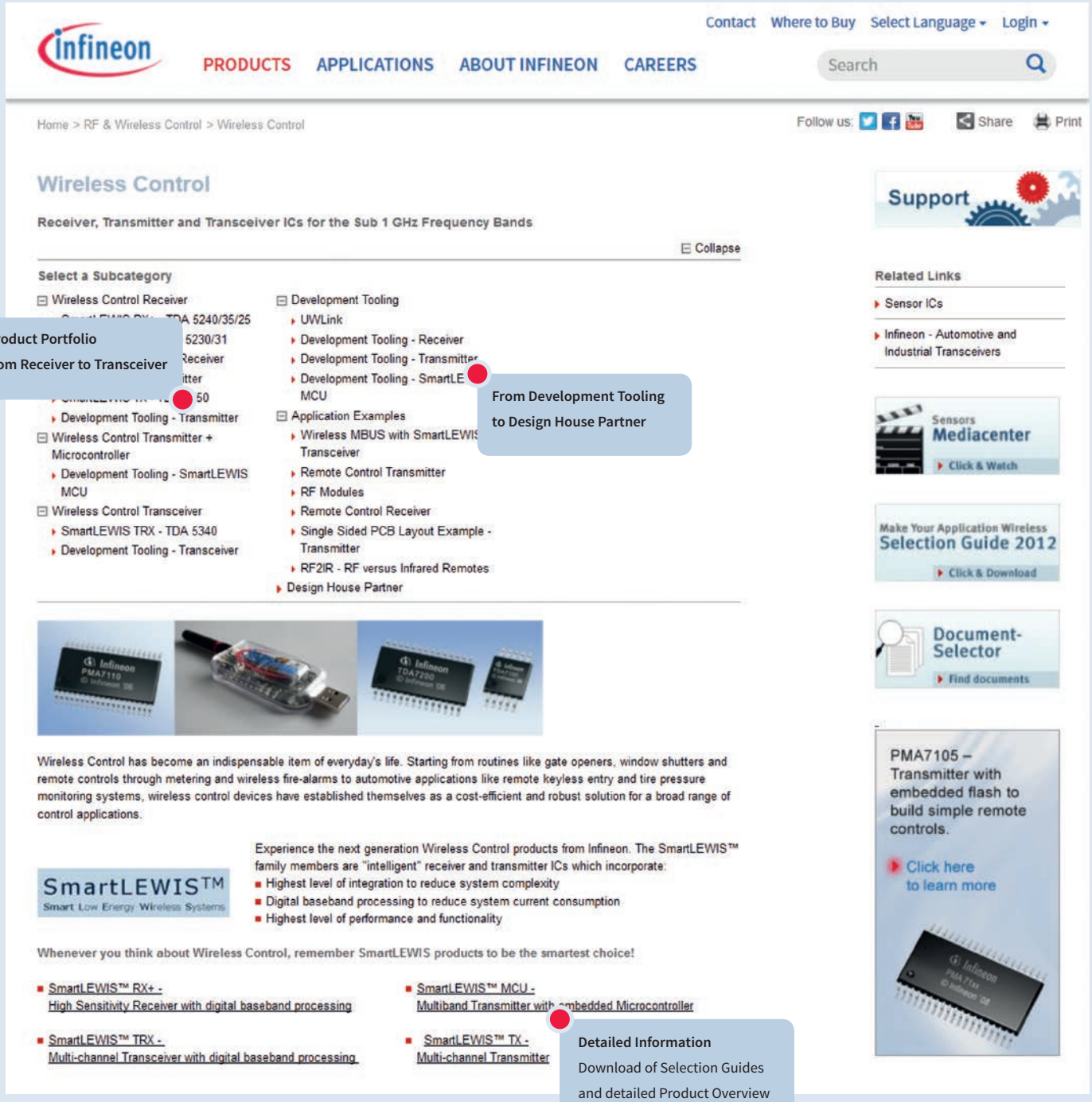

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Date: 10 / 2014

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