



# SMARTi DC

The GSM single chip radio:  
from 2G to 2.5G

[www.infineon.com](http://www.infineon.com)



Never stop thinking.

## ■ SMARTi DC: From the world leading high volume manufacturer of GSM radio components

INFINEON TECHNOLOGIES has been delivering radio components to the GSM terminal manufacturers worldwide since the very beginning of GSM. Well over 200 million RF chipsets have been delivered to the GSM community at benchmark cost and without any capacity restrictions. Infineon Technologies, with a constant flow of new innovative low-cost products like SMARTi DC, is meeting the challenges of the GSM revolution, from voice only to high-speed data, GPRS and EDGE. High-volume manufacturing experience and capability with stable performances and quality is one of the many advantages

Infineon Technologies brings to the GSM terminal manufacturer anywhere in the world. System know-how and comprehensive application support ensures the shortest time to market to Infineon Technologies customers. SMARTi DC packs system integration and technology innovation into a single chip enabling GSM terminals at benchmark cost.

## ■ SMARTi DC: Single chip solution for a worldwide high-speed data GSM/EDGE radio

SMARTi DC, is Infineon's fourth member of the widely successful SMARTi family of single chip radio transceivers. SMARTi DC is specifically designed to handle the challenges of the GSM market today and tomorrow. SMARTi DC is a triple band (GSM900/ GSM1800/ GSM1900) radio transceiver for worldwide roaming, as

well as a multi-slot fast switching transceiver for the high-speed data applications of GPRS and EDGE. With SMARTi DC, all functions required of the GSM radio of today and tomorrow are integrated into a single chip. Overall design effort is reduced dramatically and manufacturing cost reaches a new low. With SMARTi DC, all variants for a GSM product from low end to high end, from 2G to 2.5G, can be realized with the same radio design, answering the needs of time to market. SMARTi DC is sampling today.

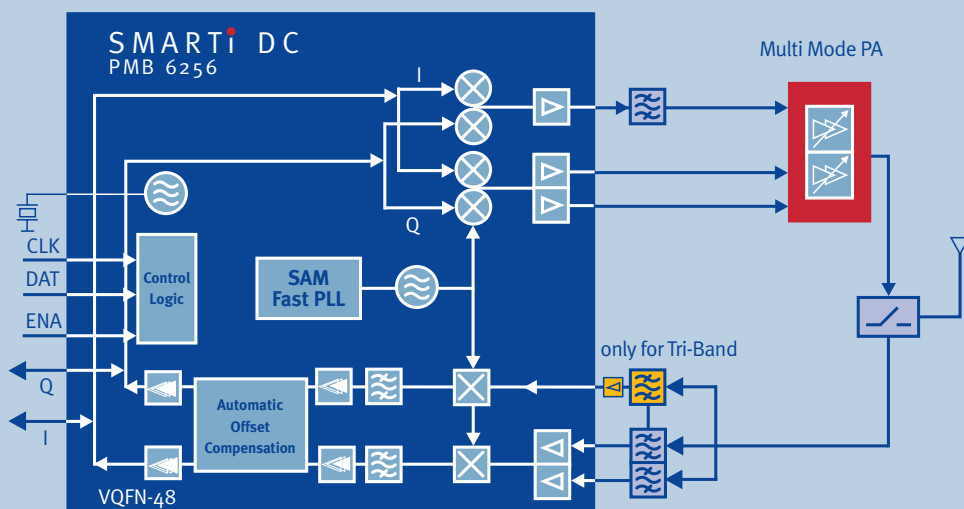
## ■ SMARTi DC: A member of the SMARTi family

SMARTi DC brings the level of integration of a GSM RF transceiver to new heights, while building on the proven architecture of its widely successful predecessors the SMARTi and SMARTi+. SMARTi DC re-uses proven blocks from SMARTi+ such as the intelligent SAM RF-PLL concept developed by Infineon Technologies and the 26 MHz VCXO. SMARTi DC shares the same interface with all SMARTi family members. Integration of direct modulator transmitter and direct conversion receiver are coming along together as the key innovations in SMARTi DC to further reduce external component count. The new concept further simplifies and speeds up system integration, by reducing the design effort and gives an overall cost improvement.

## ■ SMARTi DC: Building on the success of SMARTi+

SMARTi+ (PMB6253) is a fully integrated triple-band transceiver for GSM900/ GSM1800/ GSM1900 voice and data transmission. Transmitter, receivers, PLLs, VCOs, filters, and the 13MHz reference oscillator are integrated on chip. The transmitter architecture is an improved modulation loop, and the receiver an optimized single IF

### SMARTi DC Block Diagram



the RF front-end. A fast locking integrated RF-PLL (SAM) allows SMARTi+ to support Multislot Data Mode (HSCSD, GPRS class 12). SMARTi+ is entirely controllable through a 3-wire bus interface and offers a standard I/Q interface to the baseband chips such as the E-GOLD+ from Infineon Technologies.

DUE TO the frequency plan used by SMARTi+, the integration of complete IF synthesizers, the SAM RF PLL and the innovative IRM front-end, only three filters, one external RF VCO and one power VCO are needed for a dual-band, multi-slot design, reducing cost and power consumption of the radio. SMARTi+ is in mass production, manufactured in the high-volume running, B6HFC 25GHz BiCMOS technology and is housed in VQFN 48 (7 x 7 mm<sup>2</sup>) package.

## ■ SMARTi DC: Prepared for the future

SMARTi DC (PMB6256) is a fully integrated triple-band transceiver for GSM900/GSM1800/GSM1900 voice and data transmission. Transmitter, receivers, PLL, RF VCO, filters, and the 26MHz reference oscillator are integrated on chip. The transmitter architecture is an improved direct modulator, and the receiver an optimized direct conversion receiver with integrated LNA's for the RF front-end. A fast locking integrated RF-PLL (SAM) allows SMARTi DC to support Multislot Data Mode (HSCSD, GPRS class 12 and EDGE). SMARTi DC is entirely controllable through a 3-wire bus interface and offers a standard I/Q interface to baseband chips such as the E-GOLD+ from Infineon Technologies.

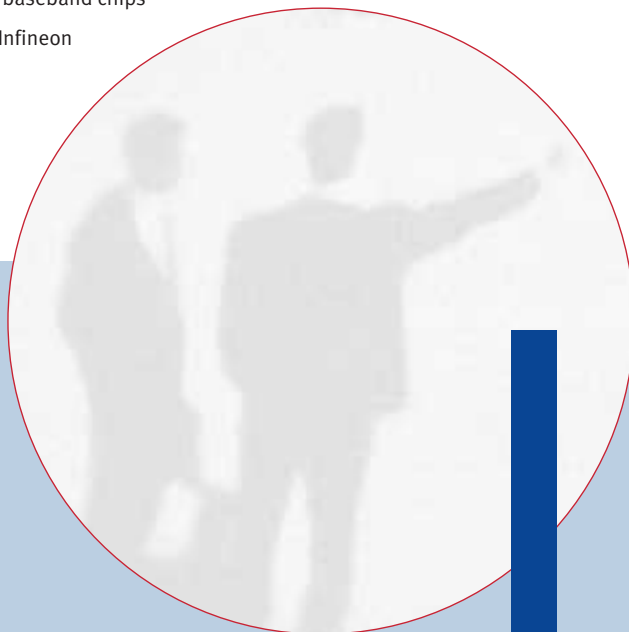
THE INTEGRATION of the SAM RF PLL and the RF VCO, the direct conversion receiver and direct modulation transmitter dramatically reduce the cost and power consumption of the GSM radio. Due to the frequency concept used by SMARTi DC, no other active components besides the power amplifier and SMARTi DC itself are needed for a dual-band, multi-slot GSM radio design. SMARTi DC is fabricated in the high-volume running, B6HFC 25GHz BiCMOS technology and is housed in VQFN 48 package.

## ■ SMARTi Family: What's next

Further generations of SMARTi cellular transceivers are currently in development and will maintain Infineon Technologies' leading position for cost-optimized, highly integrated SMARTi RF solutions. Infineon Technologies' leading class BiCMOS (B6HFC and B9C) processes, and state of the art packaging facilities will further increase performance and reduce system cost and size of a SMARTi radio.

THE UPCOMING 3G system requires further innovation steps. Infineon, as an experienced player in the mobile market will offer such solutions, to follow the needs of the mobile community, soon.

THE DEVELOPMENT of solutions that fit the migration to 3G are on the way. The SMARTi multi-mode will continue Infineon's cellular RF roadmap.



# INFINEON TECHNOLOGIES – FIND US AT AN OFFICE NEAR YOU

## A

Infineon Technologies Villach AG  
Vertrieb  
Operngasse 20B/3/31  
**A-1040 Wien**  
☎ (+43) 1-5 87-70 70 0  
Fax (+43) 1-5 87-70 70 20 0

## AUS

Siemens Ltd.  
885 Mountain Highway  
**Bayswater, Victoria 3153**  
☎ (+61) 3-97 21 21 11  
Fax (+61) 3-97 21 72 75

## BR

Infineon Technologies  
South America Ltda.  
Semiconductores  
Avenida Eduardo Roberto Daher 1135,  
Centro  
**06850-970 Itapeperia da Serra-SP**  
☎ (+55) 11-79 48-74 77  
Fax (+55) 11-79 48-74 88

## CDN

Infineon Technologies Corporation  
320 March Road, Suite 604  
**Kanata, Ontario K2K 2E2**  
☎ (+1) 613-5 91 63 86  
Fax (+1) 613-5 91 63 89

## CH

Infineon Technologies AG  
vertreten durch Siemens Schweiz AG  
Freilagerstrasse 40  
**CH-8047 Zürich**  
☎ (+41) 1-4 95 44 11  
Fax (+41) 1-4 95 54 63

## D

Infineon Technologies AG  
Völklinger Str. 2  
**D-40219 Düsseldorf**  
☎ (+49) 2 11-3 99 29 30  
Fax (+49) 2 11-3 99 14 81

Infineon Technologies AG  
Werner-von-Siemens-Platz 1  
**D-30880 Laatzen (Hannover)**  
☎ (+49) 511-8 77 22 22  
Fax (+49) 511-8 77 15 20

Infineon Technologies AG  
Von-der-Tann-Straße 30  
**D-90439 Nürnberg**  
☎ (+49) 911-6 54 76 99  
Fax (+49) 911-6 54 76 24

Infineon Technologies AG  
Weissacher Straße 11  
**D-70499 Stuttgart**  
☎ (+49) 711-137 33 14  
Fax (+49) 711-137 24 48

Infineon Technologies AG  
Halbleiter Distribution  
Richard-Strauss-Straße 76  
**D-81679 München**  
☎ (+49) 89-92 21 40 86  
Fax (+49) 89-92 21 20 71

## DK

Infineon Technologies Nordic AS  
Borupvang 3  
**DK-2750 Ballerup**  
☎ (+45) 44 77-47 48  
Fax (+45) 44 77-40 48

## E

Siemens S.A.  
Dpto. Componentes  
Ronda de Europa, 5  
**E-28760 Tres Cantos-Madrid**  
☎ (+34) 91-5 14 71 51  
Fax (+34) 91-5 14 70 13

## F

Infineon Technologies France,  
39/47, Bd. Ornano  
**F-93527 Saint-Denis CEDEX 2**  
☎ (+33) 1-49 22 31 00  
Fax (+33) 1-49 22 28 01

## FIN

Infineon Technologies Nordic OY  
P.O. Box 60  
**FIN-02601 Espoo (Helsinki)**  
☎ (+3 58) 10-5 11 51 51  
Fax (+3 58) 10-5 11 24 95

## GB

Infineon Technologies  
Siemens House  
Oldbury  
**GB-Bracknell, Berkshire**  
RG12 8FZ  
☎ (+44) 13 44-39 66 18  
Fax (+44) 13 44-39 66 32

## H

Simacom Kft.  
Lajos u. 103  
**H-1036 Budapest**  
☎ (+36) 1-4 57 16 90  
Fax (+36) 1-4 57 16 92

## HK

Infineon Technologies  
Hong Kong Ltd.  
Suite 302, Level 3,  
Festival Walk,  
80 Tat Chee Avenue,  
Yam Yat Tsuen,  
Kowloon Tong  
**Hong Kong**  
☎ (+8 52) 28 32 05 00  
Fax (+8 52) 28 27 97 62

## I

Infineon Technologies Italia  
Via Vipiteno 4  
**I-20127 Milano**  
☎ (+39) 02-66 76 -1  
Fax (+39) 02-66 76 43 95

## IND

Siemens Ltd.  
Components Division  
No. 84 Keonics Electronic City  
Hosur Road  
**Bangalore 561 229**  
☎ (+91) 80-8 52 11 22  
Fax (+91) 80-8 52 11 80

Siemens Ltd.  
CMP Div, 5th Floor  
4A Ring Road, IP Estate  
**New Delhi 110 002**  
☎ (+91) 11-3 31 99 12  
Fax (+91) 11-3 31 96 04

## IND

Siemens Ltd.  
CMP Div, 4th Floor  
130, Pandurang Budhkar Marg,  
Worli  
**Mumbai 400 018**  
☎ (+91) 22-4 96 21 99  
Fax (+91) 22-4 96 22 01

## IRL

Siemens Ltd.  
Electronic Components Division  
8, Raglan Road  
**IRL-Dublin 4**  
☎ (+3 53) 1-2 16 23 42  
Fax (+3 53) 1-2 16 23 49

## IL

Nisko Ltd.  
2A, Habarzel St.  
P.O. Box 58151  
**61580 Tel Aviv – Israel**  
☎ (+9 72) 3-7 65 73 00  
Fax (+9 72) 3-7 65 73 33

## J

Infineon Technologies Japan K.K.  
Takanawa Park Tower 9F  
3-20-14, Higashi-Gotanda,  
Shinagawa-ku,  
**141-0022, Tokyo**  
☎ (+81) 3-5 44 69 67 37  
Fax (+81) 3-5 44 69 67 38

## MAL

Infineon Technologies AG  
Sdn Bhd  
Bayan Lepas Free Industrial Zone 1  
**11900 Penang**  
☎ (+60) 4-6 44 99 75  
Fax (+60) 4-6 41 48 72

## N

Siemens Components  
Scandinavia  
Østre Aker vei 24  
Postboks 10, Veitvet  
**N-0518 Oslo**  
☎ (+47) 22-63 30 00  
Fax (+47) 22-68 49 13  
Email: scs@components.siemens.se

## NL

Infineon Technologies Holding B.V.  
Sales Division Benelux  
Westblaak 32  
**NL-3012 KM Rotterdam**  
☎ (+31) 10-2 17 68 00  
Fax (+31) 10-2 17 68 19  
Email: benelux\_info@infineon.com

## NZ

Siemens Auckland  
300 Great South Road  
Greenland  
**Auckland**  
☎ (+64) 9-5 20 30 33  
Fax (+64) 9-5 20 15 56

## P

Siemens S.A.  
an Componentes Electronicos  
R. Irmaos Siemens, 1  
Alfragide  
**P-2720-093 Amadora**  
☎ (+351) 1-4 17 85 90  
Fax (+351) 1-4 17 80 83

## PK

Siemens Pakistan Engineering  
Co. Ltd.  
PO Box 1129, Islamabad 44000  
23 West Jinnah Ave  
**Islamabad**  
☎ (+92) 51-21 22 00  
Fax (+92) 51-21 16 10

## PL

Siemens SP. z.o.o.  
ul. Zupnicza 11  
**PL-03-821 Warszawa**  
☎ (+48) 22-8 70 91 50  
Fax (+48) 22-8 70 91 59

## RC

Infineon Technologies  
Asia Pacific Pte. Ltd.  
Taiwan Branch  
10F, No. 136 Nan King East Road  
**Section 23, Taipei**  
☎ (+8 86) 2-27 73 66 06  
Fax (+8 86) 2-27 71 20 76

## ROK

Siemens Ltd.  
Asia Tower, 10th Floor  
726 Yeoksam-dong, Kang-nam Ku  
CPO Box 3001  
**Seoul 135-080**  
☎ (+82) 2-5 27 77 00  
Fax (+82) 2-5 27 77 79

## RUS

INTECH electronics  
ul. Smolnaya, 24/1203  
**RUS-125 445 Moskva**  
☎ (+7) 0 95-4 51 97 37  
Fax (+7) 0 95-4 51 86 08  
Email: ml-intec@aha.ru

## S

Infineon Technologies Nordic AB  
Box 46  
**S-164 93 Kista**  
☎ (+46) 8-7 03 59 00  
Fax (+46) 8-7 03 59 01

## SGP

Infineon Technologies Asia  
Pacific, Pte. Ltd.  
168 Kallang Way  
**Singapore 349 253**  
☎ (+65) 8 40 06 10  
Fax (+65) 7 42 62 39

## USA

Infineon Technologies Corporation  
1730 North First Street  
**San Jose, CA 95112**  
☎ (+1) 4 08-5 01 60 00  
Fax (+1) 4 08-5 01 24 24

## USA

Siemens Components, Inc.  
Optoelectronics Division  
19000 Homestead Road  
**Cupertino, CA 95014**  
☎ (+1) 4 08-2 57 79 10  
Fax (+1) 4 08-7 25 34 39

## VRC

Infineon Technologies  
Hong Kong Ltd.  
Beijing Office  
Room 2106, Building A  
Vantone New World Plaza  
No. 2 Fu Cheng Men Wai Da Jie  
**100037 Beijing**  
☎ (+86) 10-68 57 90-06, -07  
Fax (+86) 10-68 57 90 08

Infineon Technologies  
Hong Kong Ltd.  
Chengdu Office  
Room 14J1, Jinyang Mansion  
58 Tudu Street  
**Chengdu, Sichuan Province 610 016**  
☎ (+86) 28-6 61 54 46 / 79 51  
Fax (+86) 28-6 61 01 59

Infineon Technologies  
Hong Kong Ltd.  
Shanghai Office  
Room 1101, Lucky Target Square  
No. 500 Chengdu Road North  
**Shanghai 200003**  
☎ (+86) 21-63 61 26 18 / 19  
Fax (+86) 21-63 61 11 67

Infineon Technologies  
Hong Kong Ltd.  
Shenzhen Office  
Room 1502, Block A  
Tian An International Building  
Renim South Road  
**Shenzhen 518 005**  
☎ (+86) 7 55-2 28 91 04  
Fax (+86) 7 55-2 28 02 17

## ZA

Siemens Ltd. Components Division  
P.O. Box 3438  
**Halfway House 1685**  
Gauteng  
South Africa  
☎ (+27) 11-6 52-26 89  
Fax (+27) 11-6 52-25 73  
Email: solutions@siemens.co.za