

# Infineon Specialty DRAMs

## Mobile-RAM



[www.infineon.com/memory/Mobile-RAM](http://www.infineon.com/memory/Mobile-RAM)



Never stop thinking.

# Mobile-RAM – Extended Battery Lifetime for Handhelds

AS ONE OF THE WORLD'S TOP THREE memory companies, Infineon offers a wide portfolio of leading-edge Mobile-RAM devices (low-power SDRAMs) targeted specifically at:

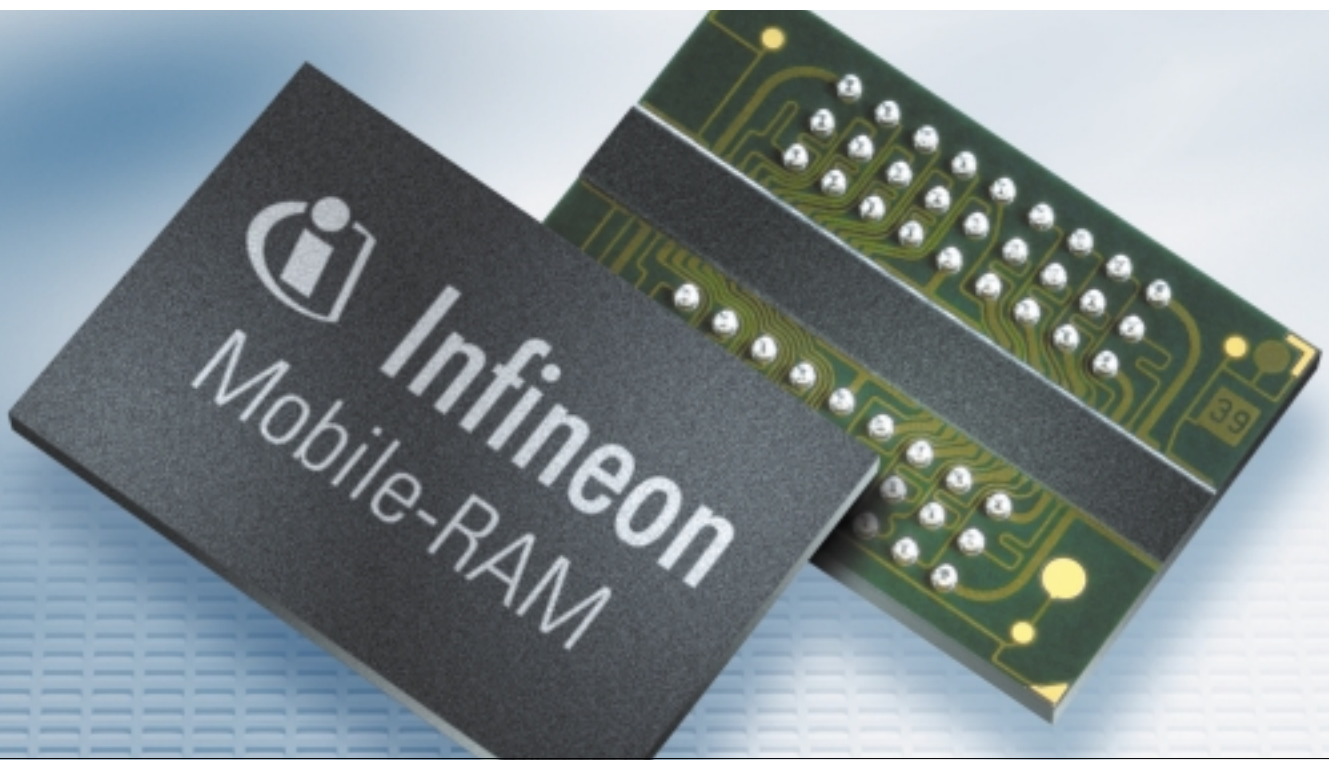
- PDAs
- Cellphones (smart and feature phones)
- Digital cameras
- MP3 players

INFINEON'S MOBILE-RAM product line combines

- Ultra low-power consumption for battery-powered systems with
- Extra compact chip-scale packages for space-constrained applications

INFINEON'S MOBILE-RAM cuts power consumption by up to 80 % (depending on operating conditions and system design) – thanks to its latest memory technology, low operating voltage (1.8 V) and its unique, integrated power management features.

MOBILE-RAM DEVICES come in a Fine-pitch Ball Grid Array (FBGA) package. These packages leverage Infineon's proprietary wire bonding Board-On-Chip (BOC) technology for smallest form factors. The latest product generation further improves form factor by reducing package heights from 1.2 to 1 mm.

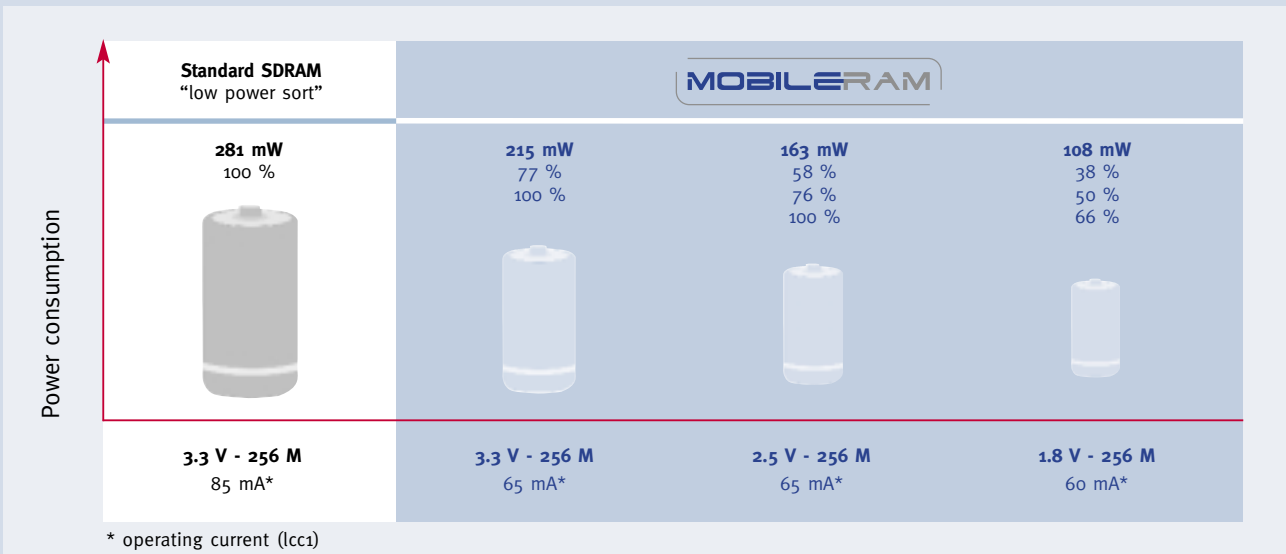


## Impressive Power Consumption Savings

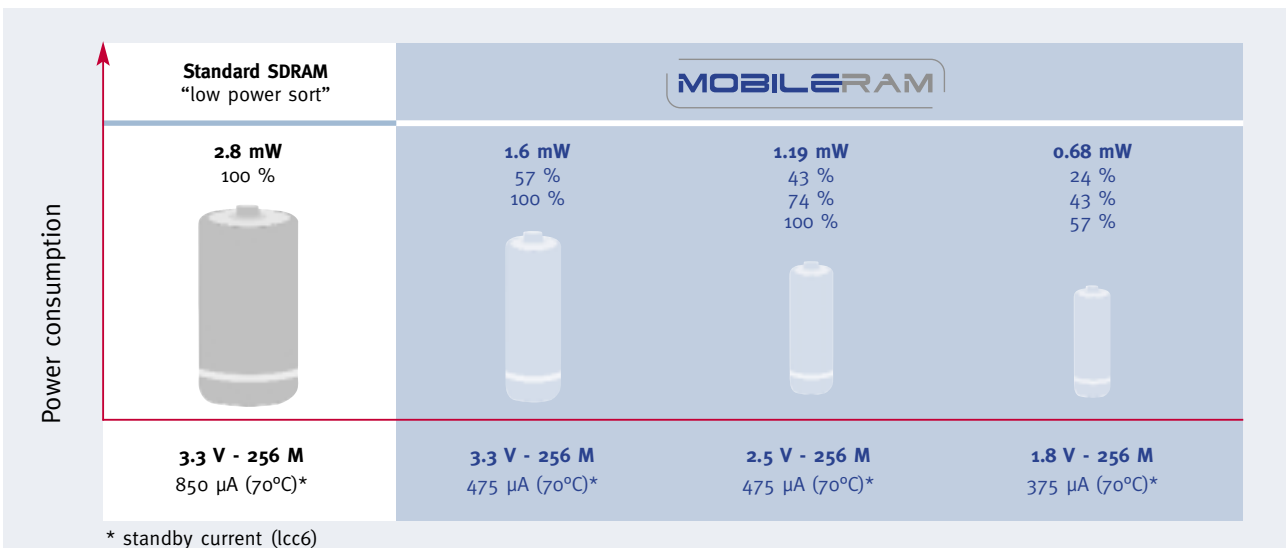
INFINEON'S MOBILE-RAM devices achieve these dramatic power consumption savings by measuring the temperature with an integrated sensor and automatically adjusting the refresh interval accordingly.

FOR USERS, this means that their devices can either run twice as long on a single battery charge or can offer completely new features that would have been previously unthinkable. The fact that nearly half of all PDAs produced today contain Mobile-RAMs from Infineon confirms the company's pioneering role in this segment.

## Mobile-RAM for Lowest Power Consumption also in Operating Mode



## Mobile-RAM for Unlimited Memory Supply in Standby Mode



## Ahead of the Trend



Source: IFX

MANUFACTURERS ARE CHALLENGED to lower core and I/O voltage in order to further reduce power consumption. Compared with the 2.5 V technology previously in use, Infineon's next-generation 1.8 V technology meets these demands by cutting power consumption by approximately 40 %.

THE MARKET IS ALSO CALLING for a reduction in harmful substances, the elimination of lead in chips and easier recycling. Infineon is one of the first manufacturers to offer Mobile-RAM chips in green packages.

IN ANTICIPATION OF RISING demand for cost-optimized multi-chip solutions, (combining flash and Mobile-RAM) Infineon will also soon be introducing a pre-tested Known Good Die (KGD) / wafer solution.

AND TO REDUCE POWER consumption even further, Infineon plans to switch its Mobile-RAM devices from SDR to DDR speeds. Due to be launched in the near future. For more details, please contact your local sales representative.

## Industry-wide Standard



INFINEON WORKED CLOSELY with its industry partners to standardize the low-power features and 54-ball FBGA package for Mobile-RAM through JEDEC (Joint Electron Device Engineering Council), the semiconductor engineering standardization body of EIA (Electronic Industry Alliance). Information on controller and ASIC vendors that support the new Mobile-RAM feature set standard is available on request.

FOR THE LATEST INFORMATION and datasheet updates on Mobile-RAM, visit our website at [www.infineon.com/memory/Mobile-RAM](http://www.infineon.com/memory/Mobile-RAM)

## Product Portfolio

Density	Part number	Temp. range	Power supply core	Power supply I/O	# of banks	OCTS	TCSR	PASR	DPD	DS	GREEN product	Package
128 Mb 8 M x 16	HYB39L128160AT-7.5	0 - 70°C	3.3 V	3.3 V	4	-	-	-	-	-	-	TSOP-54
	HYB39L128160AC-7.5	0 - 70°C	3.3 V	3.3 V	4	-	-	-	-	-	-	FBGA-54
	HYB25L128160AC-7.5	0 - 70°C	2.5 V	2.5 V / 1.8 V	4	-	X	X	X	-	-	FBGA-54
	HYE25L128160AC-7.5	-25 - 85°C	2.5 V	2.5 V / 1.8 V	4	-	X	X	X	-	-	FBGA-54
	<b>NEW!</b> HYB18L128160BF-7.5	0 - 70°C	1.8 V	1.8 V	4	X	-	X	X	X	X	FBGA-54
	<b>NEW!</b> HYE18L128160BF-7.5	-25 - 85°C	1.8 V	1.8 V	4	X	-	X	X	X	X	FBGA-54
	<b>NEW!</b> HYB18L128160BC-7.5	0 - 70°C	1.8 V	1.8 V	4	X	-	X	X	X	-	FBGA-54
	<b>NEW!</b> HYE18L128160BC-7.5	-25 - 85°C	1.8 V	1.8 V	4	X	-	X	X	X	-	FBGA-54
256 Mb 16 M x 16	HYB39L256160AT-7.5	0 - 70°C	3.3 V	3.3 V	4	-	-	-	-	-	-	TSOP-54
	HYB39L256160AC-7.5	0 - 70°C	3.3 V	3.3 V	4	-	-	-	-	-	-	FBGA-54
	HYB25L256160AC-7.5	0 - 70°C	2.5 V	2.5 V / 1.8 V	4	X	X	X	X	-	-	FBGA-54
	HYE25L256160AC-7.5	-25 - 85°C	2.5 V	2.5 V / 1.8 V	4	X	X	X	X	-	-	FBGA-54
	HYB25L256160AF-7.5	0 - 70°C	3.3 V or 2.5 V	3.3 V or 2.5 V / 1.8 V	4	X	X	X	X	-	X	FBGA-54
	HYE25L256160AF-7.5	-25 - 85°C	3.3 V or 2.5 V	3.3 V or 2.5 V / 1.8 V	4	X	X	X	X	-	X	FBGA-54
	<b>NEW!</b> HYB18L256160BF-7.5	0 - 70°C	1.8 V	1.8 V	4	X	-	X	X	X	X	FBGA-54
	<b>NEW!</b> HYE18L256160BF-7.5	-25 - 85°C	1.8 V	1.8 V	4	X	-	X	X	X	X	FBGA-54
	<b>NEW!</b> HYB18L256160BC-7.5	0 - 70°C	1.8 V	1.8 V	4	X	-	X	X	X	-	FBGA-54
<b>NEW!</b> HYE18L256160BC-7.5	-25 - 85°C	1.8 V	1.8 V	4	X	-	X	X	X	-	FBGA-54	
512 Mb, Dual 16 M x 16	HYB25L512160AC-7.5	0 - 70°C	3.3 V or 2.5 V	3.3 V or 2.5 V / 1.8 V	4	X	-	X	X	-	-	FBGA-54

**Speed:** 133 MHz **CAS Latency:** 3-3-3

### OCTS (On-Chip Temperature Sensor):

- The built-in temperature sensor adapts the refresh rate to the actual junction temperature of the chip without draining any CPU power. (Note: with standard DRAMs, the refresh rate is set to work at the max. temperature.)

### TCSR (Temperature-Compensated Self-Refresh):

- Same as OCTS but externally triggered
- CPU power required

### PASR (Partial Array Self-Refresh):

- Allows user to select volume of memory needed to further reduce power consumption
- Adjustable from all 4 banks to 1/16 array

### DPD (Deep Power-Down):

- Maximum power consumption reduction by cutting off power supply to Mobile-RAM
- Data is not retained

### DS (Selectable Drive Strength):

- Can be adjusted to reflect bus load, e.g. half strength for point-to-point and full strength for module applications

# INFINEON TECHNOLOGIES SALES OFFICES WORLDWIDE\*

## Australia (AUS)

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

## Austria (A)

Infineon Technologies Villach AG  
Sales Office  
Austria AG  
Operngasse 20b/31  
**1040 Wien**  
☎ (+43) 1-5 87-70 70 0  
Fax (+43) 1-5 87-70 70 20

## Belgium/ Netherlands (B) (NL) (L)

Infineon Technologies Holding B.V.  
Sales Division  
Westblaak 32  
**3012 KM Rotterdam**  
☎ (+31) 10-2 17 68 00  
Fax (+31) 10-2 17 68 19

## Brazil (BR)

Infineon Technologies  
South America Ltda.  
Av. Mutinga, 3800 - prédio 3  
**05110-901 São Paulo-SP**  
☎ (+55) 11-39 08-25 64  
Fax (+55) 11-39 08-27 28

## Canada (CDN)

Infineon Technologies Corporation  
340 March Road, Suite 301  
**Kanada, Ontario K2K 2E2**  
☎ (+1) 613-5 91-38 35  
Fax (+1) 613-5 91-89 54

## China (CN)

Infineon Technologies  
International Trade (Shanghai) Co., Ltd.  
Beijing Representative Office  
12th Floor, Quantum Plaza  
No.27 Zhichun Road  
Haidian District,  
**Beijing 100083,  
People's Republic of China**  
☎ (+86) 10-82 35 61 18  
Fax (+86) 10-82 35 54 74

Infineon Technologies  
Hong Kong Ltd.  
Hong Kong Office  
302 Level 3 Festival Walk  
80 Tat Chee Avenue  
Kowloon Tong  
**Hong Kong**  
☎ (+852) 28-32 05 00  
Fax (+852) 28-27 97 62

Infineon Technologies  
International Trade (Shanghai) Co., Ltd.  
No. 8, Lane 647, Songtao Road  
Zhangjiang Hi-Tech Park  
**Pudong, Shanghai, China**  
☎ (+86) 21-38 95 37 08  
Fax (+86) 21-50 80 62 04

## Germany (D)

Infineon Technologies AG  
Siemensstraße 31-33  
**71254 Ditzingen/Stuttgart**  
☎ (+49) 71 56-1 79 19-10  
Fax (+49) 71 56-1 79 19-90

## Germany (D)

Infineon Technologies AG  
Völklinger Straße 4  
**40219 Düsseldorf**  
☎ (+49) 2 11-20 95 49 0  
Fax (+49) 2 11-20 95 49 60

Infineon Technologies AG  
Naegelsbachstraße 26  
**91052 Erlangen**  
☎ (+49) 91 31-97 00 1-0  
Fax (+49) 91 31-97 00-99

Infineon Technologies AG  
Paderborner Straße 1  
**30539 Hannover**  
☎ (+49) 5 11-87 65 62 0  
Fax (+49) 5 11-87 65 62 90

Infineon Technologies AG  
Rosenheimer Straße 116  
**81669 München**  
☎ (+49) 89-23 40  
Fax (+49) 89-23 42 46 94

Infineon Technologies AG  
Memory Products Sales  
Gustav-Heinemann-Ring 212  
**81739 München**  
☎ (+49) 89-23 42 38 01  
Fax (+49) 89-23 42 04 90

Infineon Technologies AG  
Südwestpark 65  
**90449 Nürnberg**  
☎ (+49) 9 11-2 52 93 0  
Fax (+49) 9 11-2 52 93 93

## Denmark (DK)

Infineon Technologies Nordic A/S  
Herlev Hovedgade 201A  
**DK 2730 Herlev**  
☎ (+45) 44-50 77 00  
Fax (+45) 44-50 77 01

## Finland (FIN)

Infineon Technologies Nordic OY  
Visitor's Address Linnoutustie 4A  
P.O. Box 276  
**FIN-02601 Espoo**  
☎ (+3 58) 10-680 84 00  
Fax (+3 58) 10-680 84 01

## France (F)

Infineon Technologies France SAS  
39 - 47, Bd. Ornano  
**93527 Saint-Denis CEDEX 2**  
☎ (+33) 1-48 09 72 00  
Fax (+33) 1-48 09 72 90

## India (IND)

Infineon Technologies  
India Pvt. Ltd.  
10th Floor, Discoverer Building  
International Technology Park  
Whitefield Road  
**Bangalore 560 066, India**  
☎ (+91) 80-841 00-17/18  
Fax (+91) 80-841 00 12

## Ireland (IRL)

Infineon Technologies Ireland Ltd.  
69 Fitzwilliam Lane  
**Dublin 2**  
☎ (+353) 1-79 99 500  
Fax (+353) 1-79 99 501

## Israel (IL)

Nisko Ltd.  
2A, Habarzel Street  
**Tel Aviv 69710**  
☎ (+972) 3-7 65 73 00  
Fax (+972) 3-7 65 73 33

## Italy (I)

Infineon Technologies Italia S.r.l.  
Via Vipiteno, 4  
**20128 Milano**  
☎ (+39) 02-252 04-1  
Fax (+39) 02-252 04-93 95

## Japan (J)

Infineon Technologies Japan K.K.  
Takanawa Park Tower 8F/9F/12F/17F  
3-20-14, Higashi-Gotanda,  
Shinagawa-ku,  
**Tokyo 141-0022**  
☎ (+81) 3-54 49 64 11  
Fax (+81) 3-54 49 64 01

## Korea (ROK)

Infineon Technologies Korea Co., Ltd.  
Room No. 2 & 3, 9th floor  
Daelim Acrotel Building  
467-6 Dokock-Dong, Kangnam-Gu  
**Seoul, Korea 135-971**  
☎ (+82) 2-346 00-900  
Fax (+82) 2-346 00-901/902

## Malaysia (MAL)

Infineon Technologies (M) SDN BHD  
Krystal Point II  
1-4-11/12, Lebuhi Bukit Kecil 6  
11900 Bayan Lepas  
**Penang, Malaysia**  
☎ (+60) 4-644 77 66  
Fax (+60) 4-641 48 72

## New Zealand (NZ)

Siemens Components  
300 Great South Road  
**Greenland, Auckland**  
☎ (+64) 9-520 30 33  
Fax (+64) 9-520 15 56

## Poland (PL)

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

## Portugal (P)

Siemens S.A.  
OG Componentes Electronicos  
Rua Irmaos Siemens, 1  
Alfragide  
**2720-093 Amadora**  
☎ (+3 51) 21-4 17 85 90  
Fax (+3 51) 21-4 17 80 83

## Russia (RUS)

INTECH electronics  
ul. Smolnaja 24a/1203  
**125 445 Moscow**  
☎ (+70) 95-4 51 97 37  
Fax (+70) 95-4 51 86 08

## Singapore (SGP)

Infineon Technologies Asia  
Pacific Pte. Ltd.  
25 New Industrial Road  
KHL Building  
**Singapore 536 211**  
☎ (+65) 68 40 07 32  
Fax (+65) 68 40 00 77

## South Africa (ZA)

Siemens Components  
P.O. Box 3438  
Halfway House 1685  
**Gauteng**  
☎ (+27) 11-6 52-20 00  
Fax (+27) 11-6 52-25 73

## Spain (E)

Siemens S.A.  
División Componentes  
Ronda de Europa, 5  
**28760 Tres Cantos-Madrid**  
☎ (+34) 91-5 14 71 54  
Fax (+34) 91-5 14 70 13

## Sweden (S)

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

## Switzerland (CH)

Infineon Technologies  
Switzerland AG  
Badenerstraße 623  
P.O. Box 1570  
**8048 Zürich**  
☎ (+41) 1-4 97 80 40  
Fax (+41) 1-4 97 80 50

## Taiwan (RC)

Infineon Technologies  
Taiwan Ltd.  
12F-1, No. 3-2 Yuan Qu Street  
Nan Kang Software Park  
**Twain 115, R.O.C.**  
☎ (+8 86) 2-26 55 75 00  
Fax (+8 86) 2-26 55 75 01-8

## Turkey (TR)

Siemens Sanayi ve Ticaret A.S.  
Yakacak Yolu No: 111  
**34861 Kartal, Istanbul**  
☎ (+90) 216-459 28 51  
Fax (+90) 216-419 31 90

## United Kingdom (GB)

Infineon Technologies UK Ltd.  
Infineon House  
Fleet Mill  
Minley Road  
**Fleet, Hampshire GU51 2RD**  
☎ (+44) 12-52-77 22 00  
Fax (+44) 12-52-77 22 01

## U.S.A. (USA)

Infineon Technologies  
North America Corp.  
3700 West Parmer Lane, Suite 102  
**Austin, TX 78727**  
☎ (+1) 512-341 71 27  
Fax (+1) 512-341 99 26

## U.S.A. (USA)

Infineon Technologies  
North America Corp.  
8203 Willow Place South, Suite 660  
**Houston, TX 77070**  
☎ (+1) 281-774 05 55  
Fax (+1) 281-774 05 61

Infineon Technologies  
North America Corp.  
2529 Commerce Drive  
**Kokomo, IN 46902**  
☎ (+1) 765-456 19 28  
Fax (+1) 765-456 38 36

Infineon Technologies  
North America Corp.  
21800 Haggerty Road, Suite 112  
**Northville, MI 48167**  
☎ (+1) 248-374 08 90  
Fax (+1) 248-374 25 01

Infineon Technologies  
North America Corp.  
3000 CentreGreen Way  
**Raleigh, NC 27513**  
☎ (+1) 919-677 27 00  
Fax (+1) 919-678 19 34

Infineon Technologies  
North America Corp.  
6170 Cornerstone Ct East, Suite 240  
**San Diego, CA 92121**  
☎ (+1) 858-526 22 01  
Fax (+1) 858-526 22 02

Infineon Technologies Corporation  
1730 North First Street  
**San José, CA 95112**  
☎ (+1) 408-501 60 00  
Fax (+1) 408-501 24 24

Infineon Technologies  
North America Corp.  
1901 N. Roselle Rd., Suite 1020  
**Schaumburg, IL 60195**  
☎ (+1) 847-884 70 09  
Fax (+1) 847-884 75 99

\* and representative offices