R8C/LAxA Group
Current Consumption

Page

Icc VS f(XIN)

(High-speed clock mode)
Topr =25 degrees C
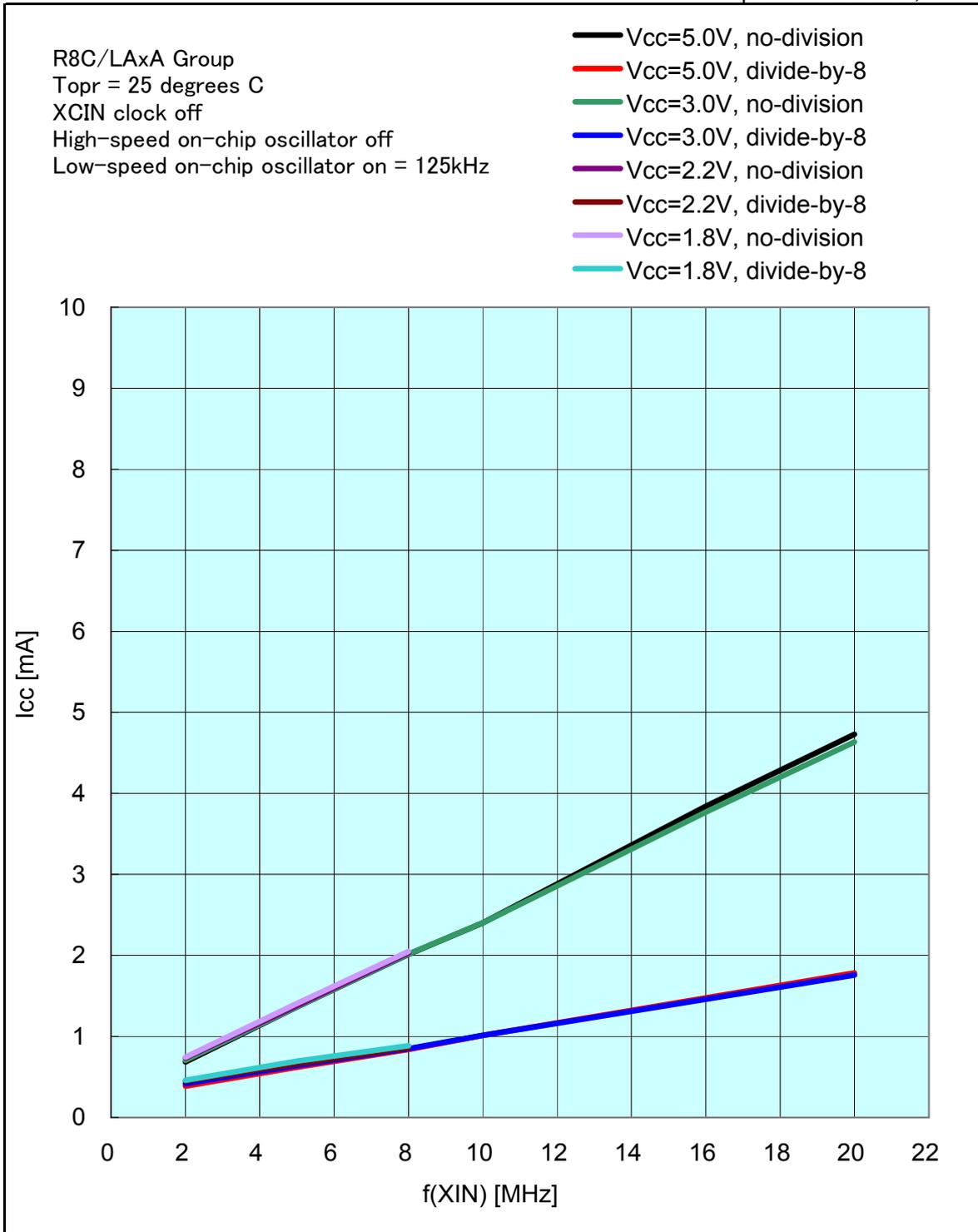
R8C/LAxA Group
Topr = 25 degrees C
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

Legend:
- Vcc=5.0V, no-division
- Vcc=5.0V, divide-by-8
- Vcc=3.0V, no-division
- Vcc=3.0V, divide-by-8
- Vcc=2.2V, no-division
- Vcc=2.2V, divide-by-8
- Vcc=1.8V, no-division
- Vcc=1.8V, divide-by-8

Icc [mA] vs f(XIN) [MHz]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS f(XIN)

(High-speed clock mode)
Topr = 85 degrees C

R8C/LAxA Group
Topr = 85 degrees C
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

Legend:
- Vcc=5.0V, no-division
- Vcc=5.0V, divide-by-8
- Vcc=3.0V, no-division
- Vcc=3.0V, divide-by-8
- Vcc=2.2V, no-division
- Vcc=2.2V, divide-by-8
- Vcc=1.8V, no-division
- Vcc=1.8V, divide-by-8

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Icc VS f(XIN)

(High-speed clock mode)
Topr = -40 degrees C

R8C/LAxA Group
Topr = −40 degrees C
XCIN clock off
High−speed on−chip oscillator off
Low−speed on−chip oscillator on = 125kHz

Legend:
— Vcc=5.0V, no-division
— Vcc=5.0V, divide-by-8
— Vcc=3.0V, no-division
— Vcc=3.0V, divide-by-8
— Vcc=2.2V, no-division
— Vcc=2.2V, divide-by-8
— Vcc=1.8V, no-division
— Vcc=1.8V, divide-by-8

Icc [mA] vs f(XIN) [MHz]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(High-speed on-chip oscillator mode on fOCO)
Vcc = 5.0V

R8C/LAxA Group
Vcc = 5.0V
XIN clock off
XCIN clock off
High-speed on-chip oscillator on fOCO on
Low-speed on-chip oscillator on = 125kHz

— fOCO=20MHz, no-division
— fOCO=20MHz, divide-by-8
— fOCO=10MHz, no-division
— fOCO=10MHz, divide-by-8
— fOCO=5MHz, no-division
— fOCO=5MHz, divide-by-8

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(High-speed on-chip oscillator mode on fOCO)
Vcc = 3.0V

R8C/LAxA Group
Vcc = 3.0V
XIN clock off
XCIN clock off
High-speed on-chip oscillator on fOCO on
Low-speed on-chip oscillator on = 125kHz

Legend:
- fOCO=20MHz, no-division
- fOCO=20MHz, divide-by-8
- fOCO=10MHz, no-division
- fOCO=10MHz, divide-by-8
- fOCO=5MHz, no-division
- fOCO=5MHz, divide-by-8

Icc [mA] vs Topr [degrees C]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(High-speed on-chip oscillator mode on fOCO)
Vcc = 2.2V

R8C/LAxA Group
Vcc = 2.2V
XIN clock off
XCIN clock off
High-speed on-chip oscillator on fOCO on
Low-speed on-chip oscillator on = 125kHz
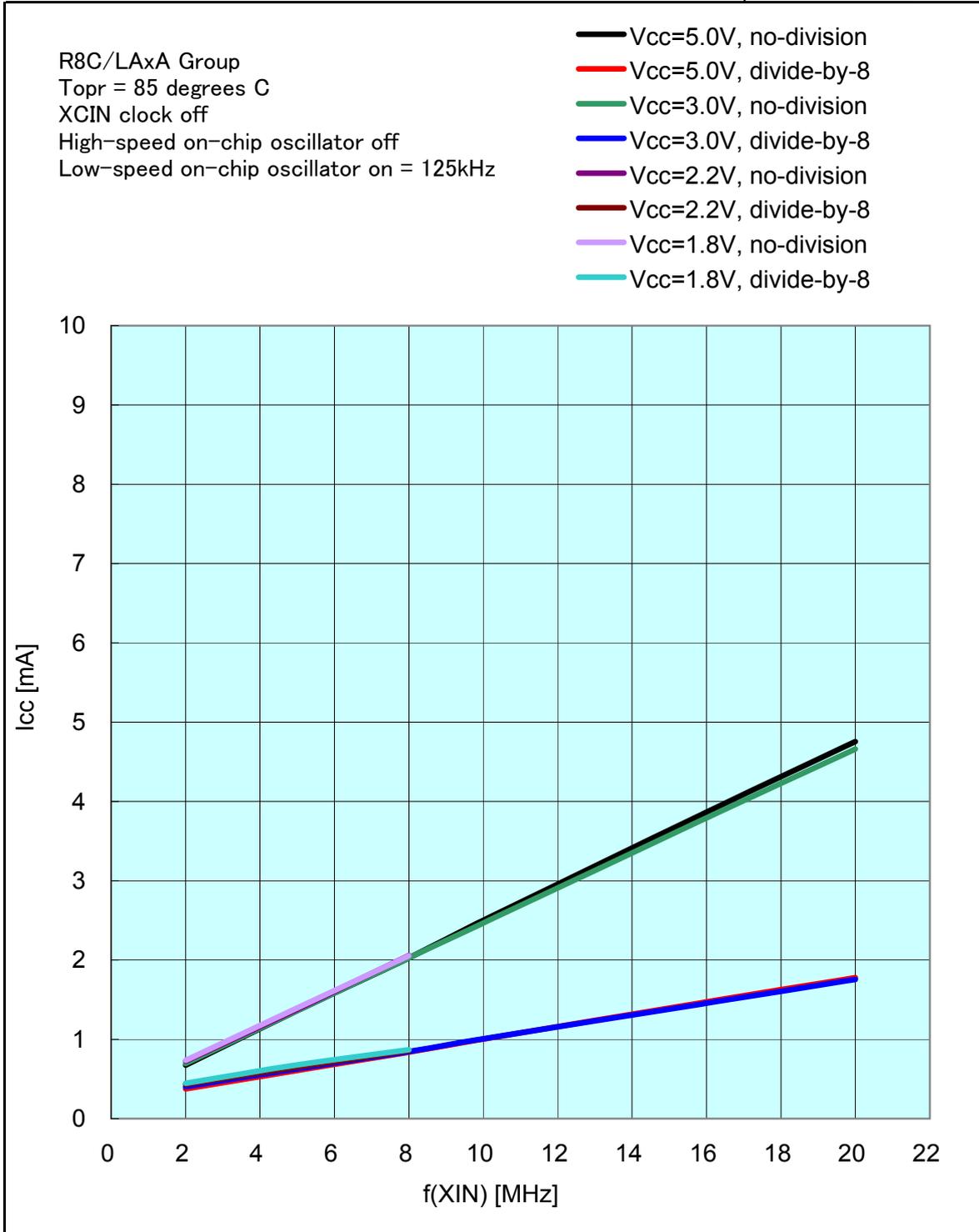
— fOCO=5MHz, no-division

— fOCO=5MHz, divide-by-8

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Low-speed on-chip oscillator mode)

R8C/LAxA Group
divide-by-8
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz
FMR27 = 1

— Vcc = 5.0V   — Vcc = 3.0V

— Vcc = 2.2V   — Vcc = 1.8V
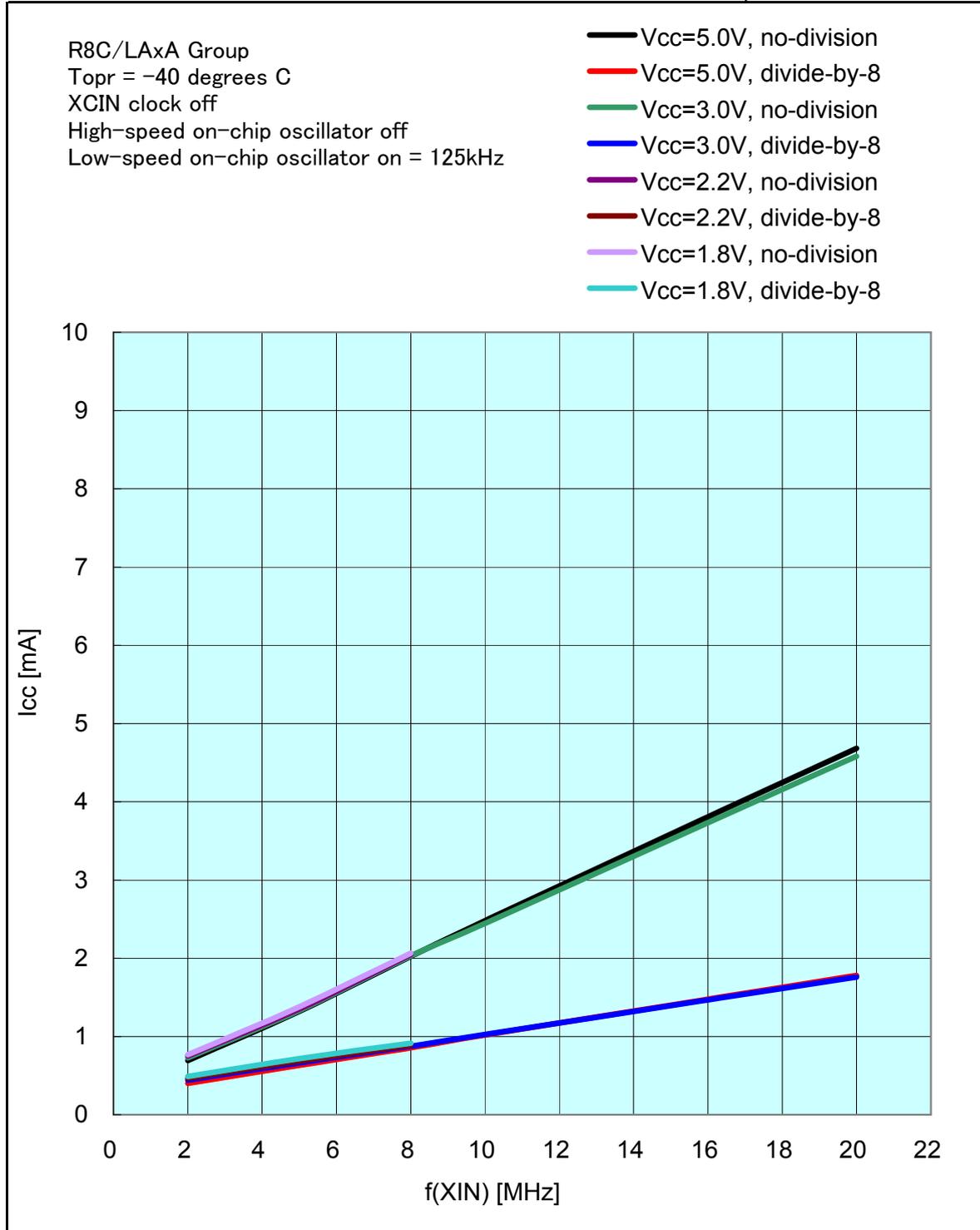

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Stop mode)

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
CM10 = 1
Peripheral clock off
VCA27 = VCA26 = VCA25 = 0

—— Vcc = 5.0V   —— Vcc = 3.0V
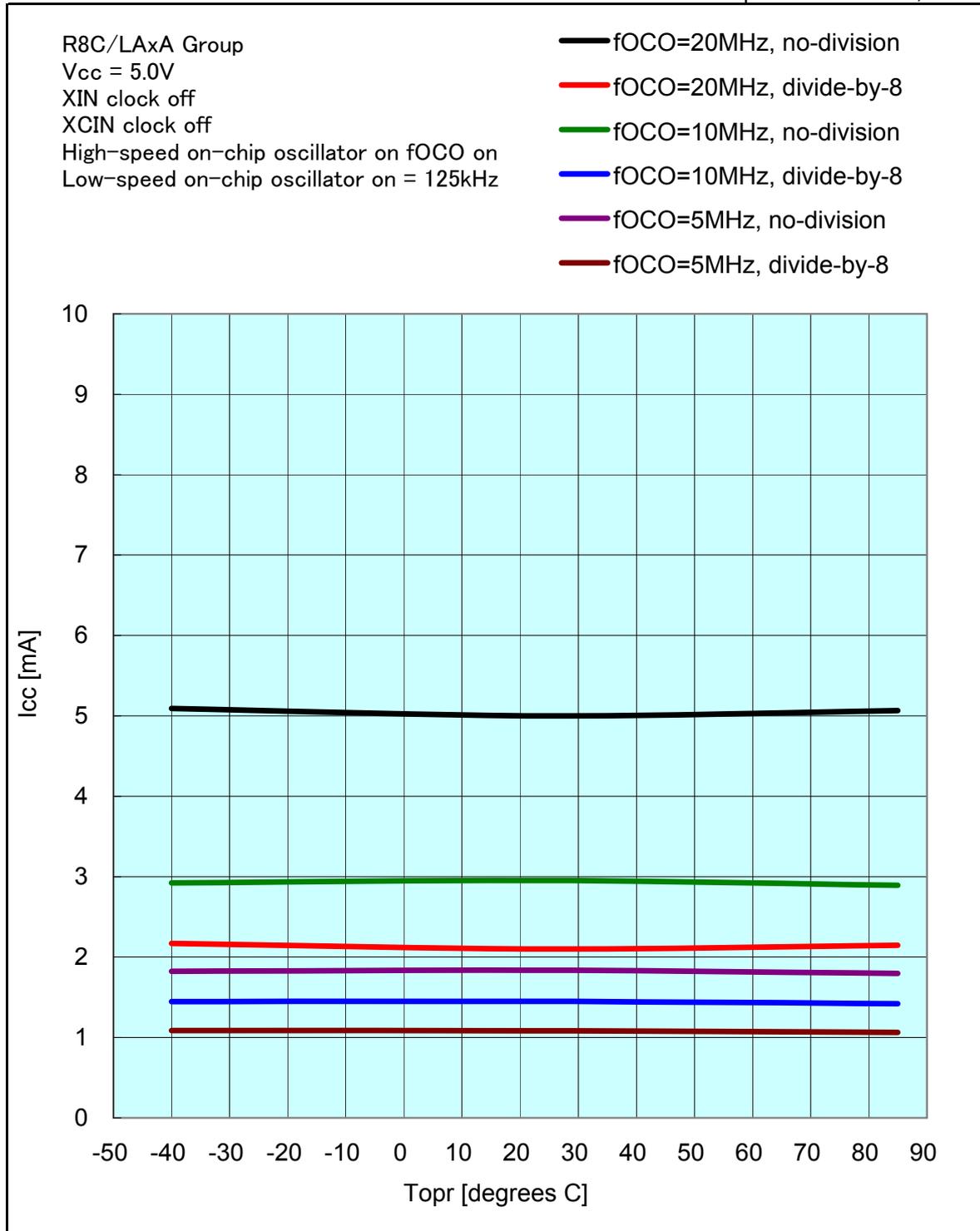
—— Vcc = 2.2V   —— Vcc = 1.8V

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Power off mode0)

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off

Vcc = 5.0V   Vcc = 3.0V
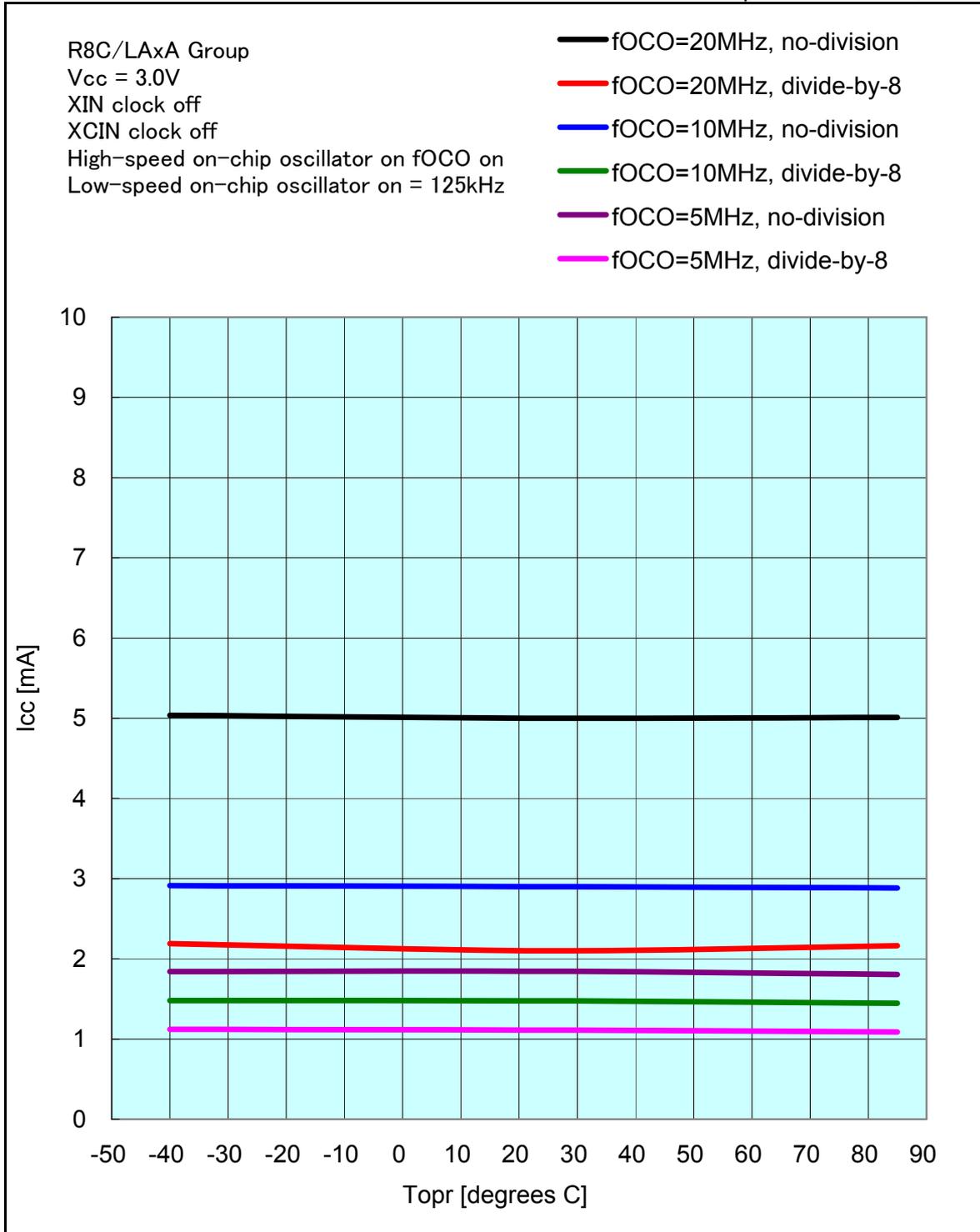Vcc = 2.2V   Vcc = 1.8V

Icc [nA]

Topr [degrees C]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Power off mode2)

R8C/LAxA Group
XIN clock off
XCIN clock on
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
RTC operation

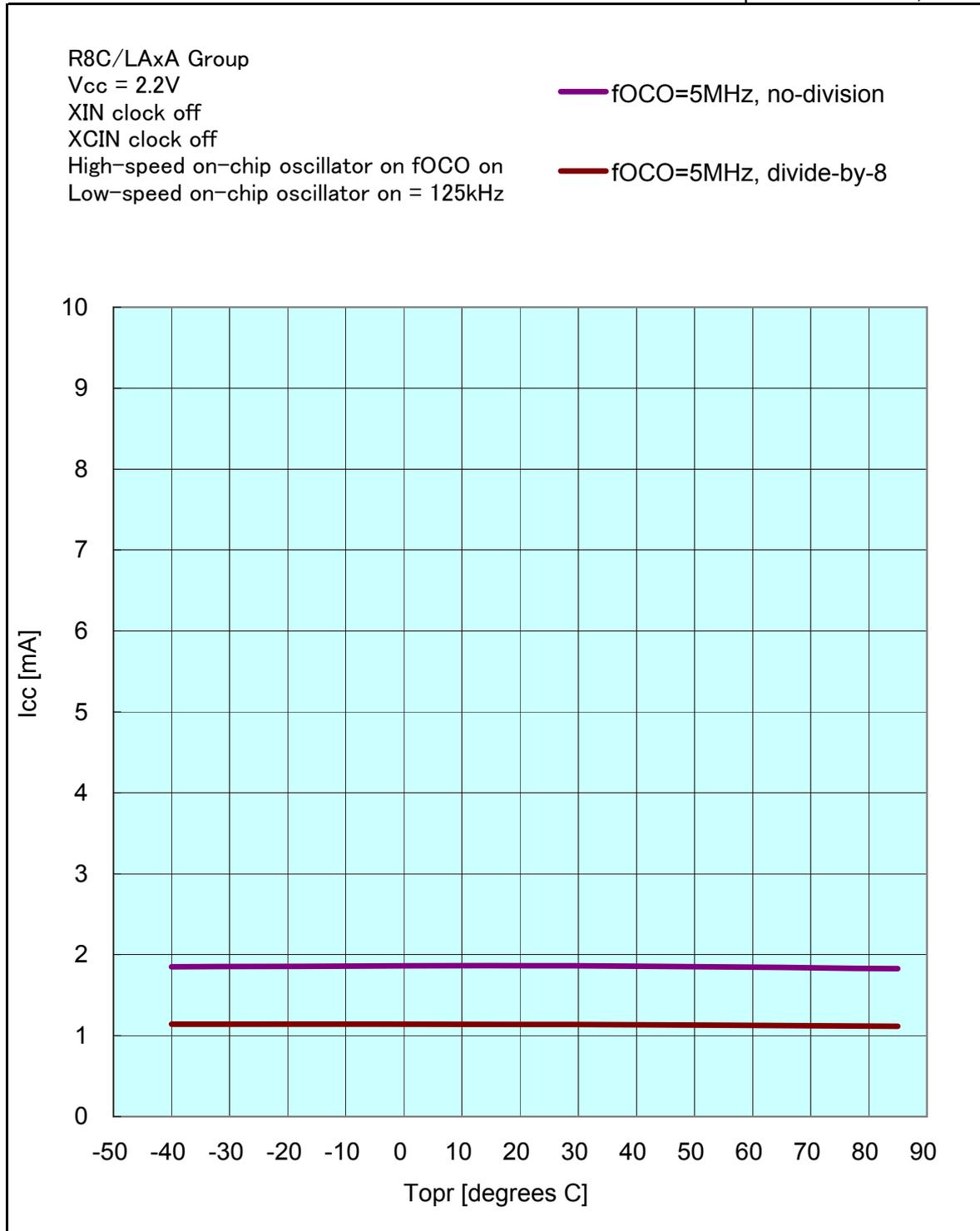Vcc = 5.0V   Vcc = 3.0V

Vcc = 2.2V   Vcc = 1.8V

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Low-speed on-chip oscillator wait mode)
Peripheral clock operation

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on =125kHz
Peripheral clock operation
While a WAIT instruction is excuted
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

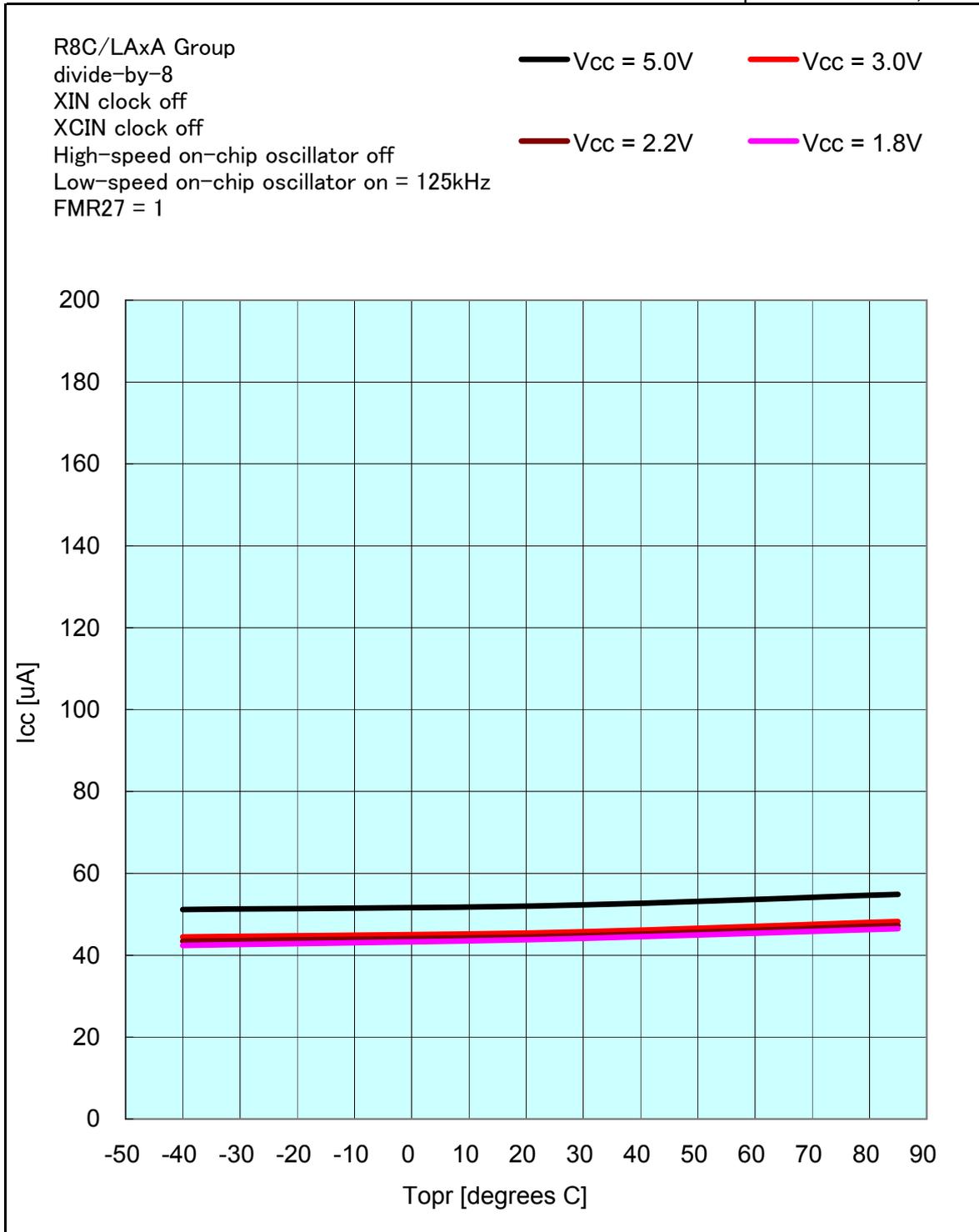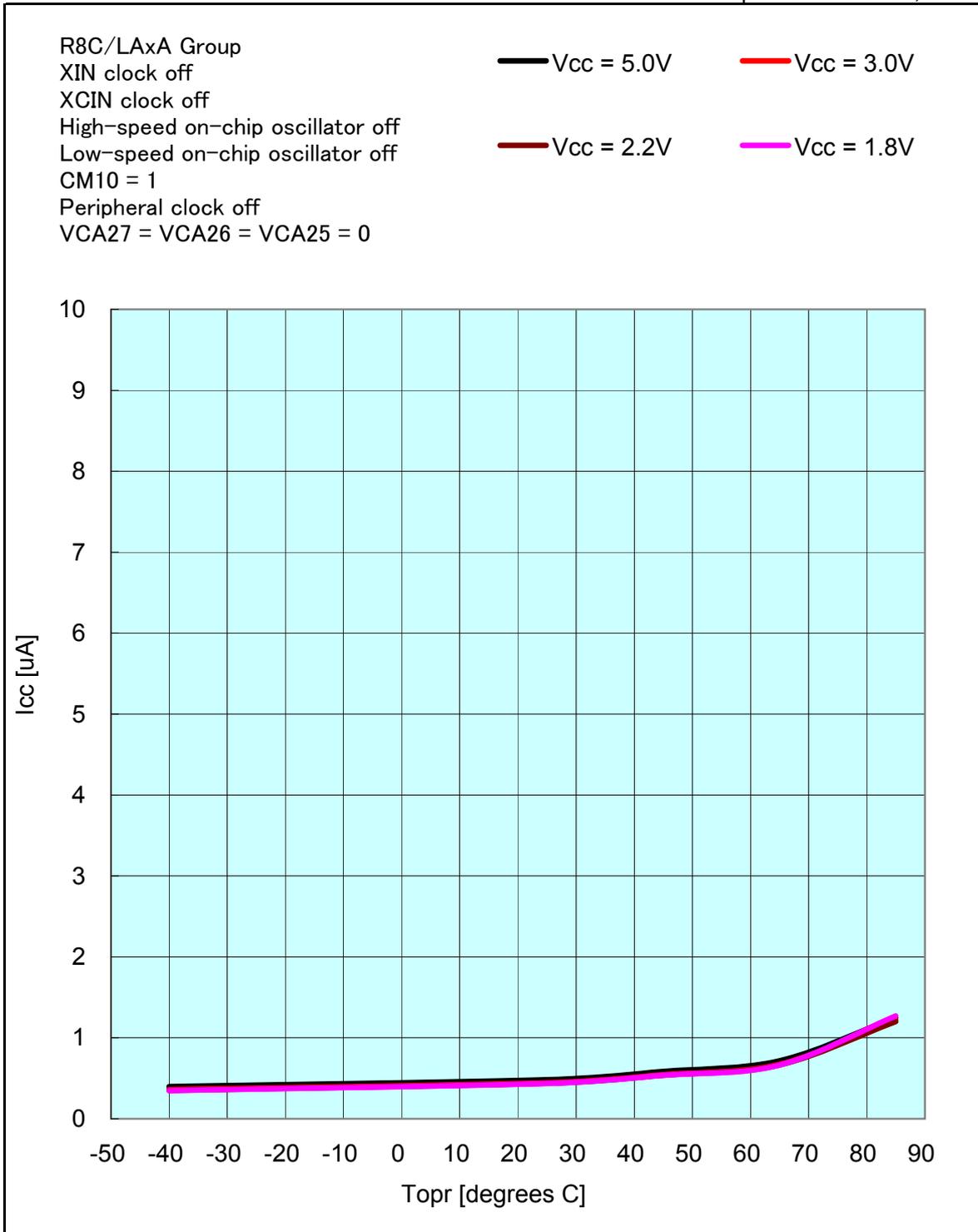| —— Vcc = 5.0V | —— Vcc = 3.0V |
| —— Vcc = 2.2V | —— Vcc = 1.8V |

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Low-speed on-chip oscillator wait mode)
Peripheral clock off

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on =125kHz
Peripheral clock off
While a WAIT instruction is excuted
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

──── Vcc = 5.0V ──── Vcc = 3.0V
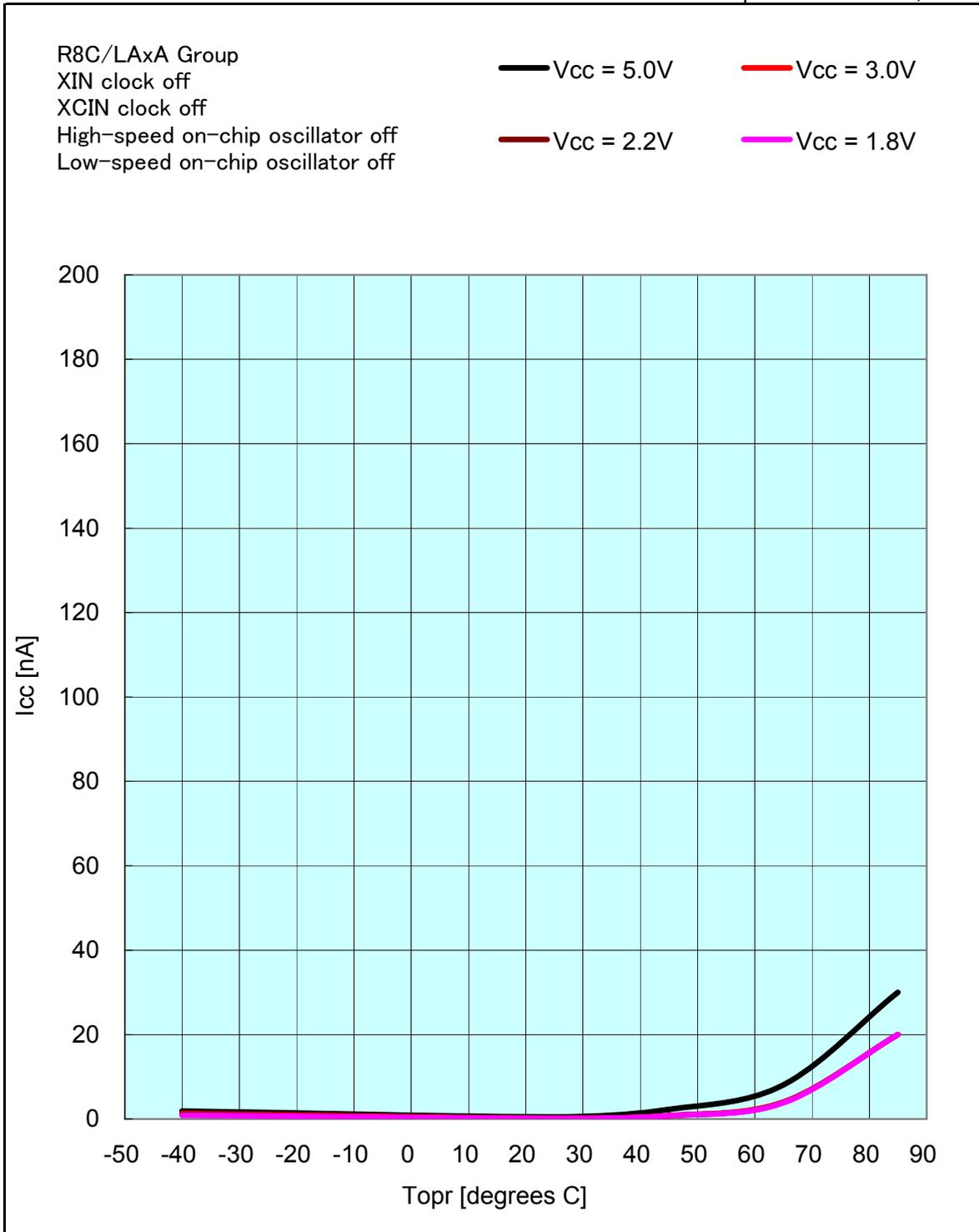
──── Vcc = 2.2V ──── Vcc = 1.8V

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Low-speed clock mode)
Program operation on RAM

R8C/LAxA Group
XIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
Program operation on RAM
Flash memory off, FMSTP = 1

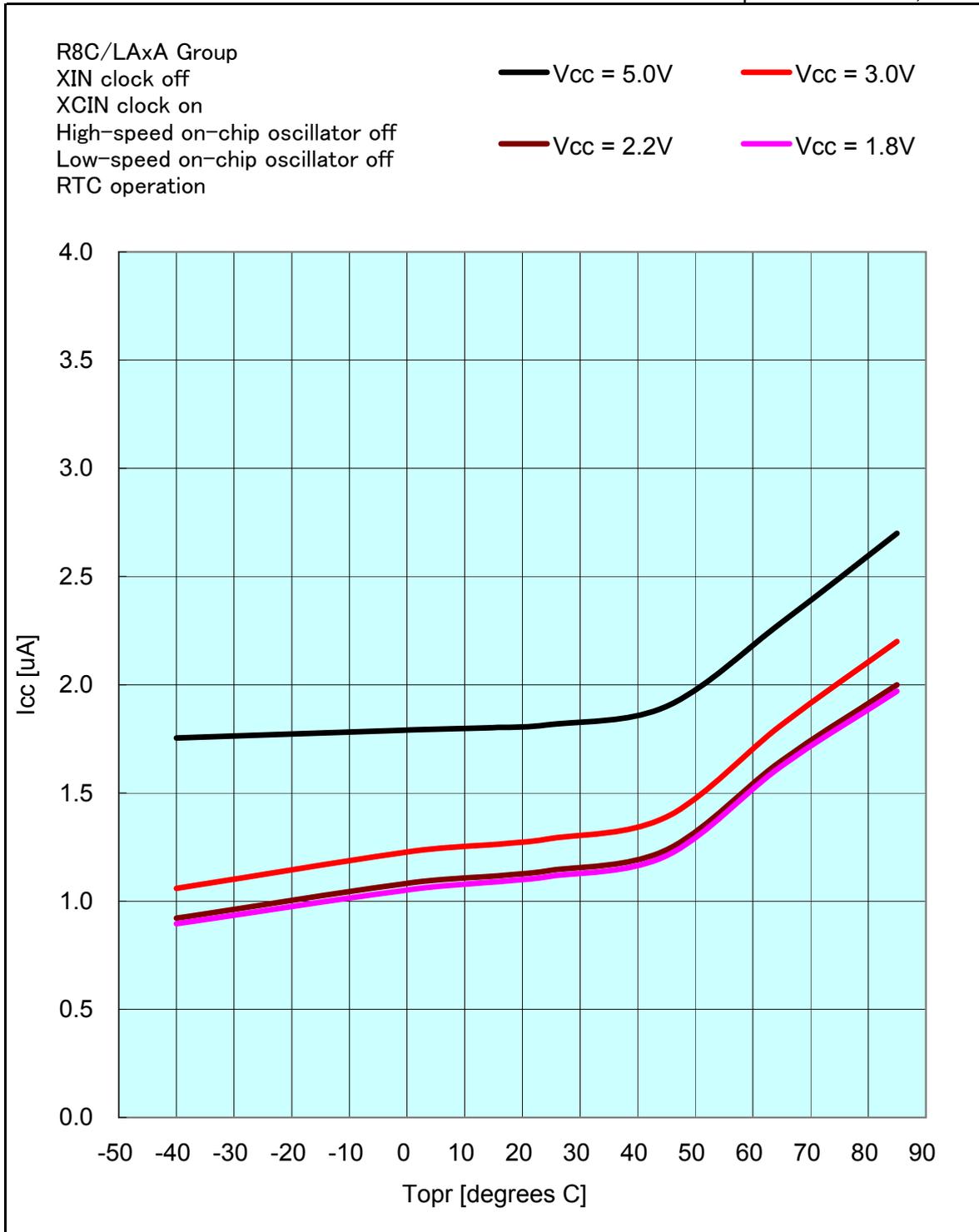— Vcc = 5.0V   — Vcc = 3.0V

— Vcc = 2.2V   — Vcc = 1.8V

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Low-speed clock wait mode)

R8C/LAxA Group
XIN clock off, Peripheral clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
While a WAIT instruction is excuted
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

— Vcc = 5.0V   — Vcc = 3.0V
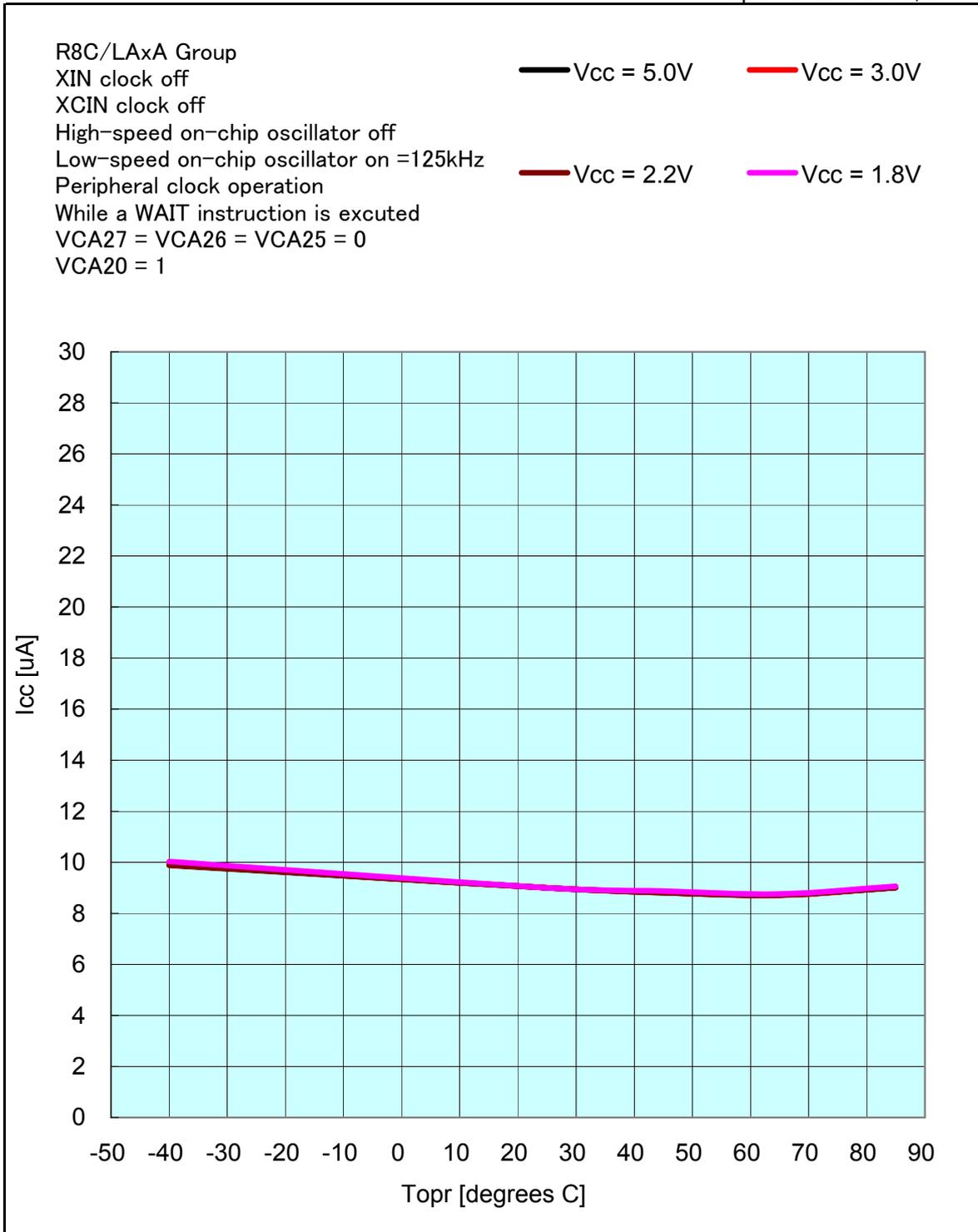
— Vcc = 2.2V   — Vcc = 1.8V

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS Topr

(Low-speed clock wait mode)
LCD=ON(division resistors)

R8C/LAxA Group
XIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
While a WAIT instruction is excuted
LCD on, use division resistors
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

— Vcc = 5.0V — Vcc = 3.0V

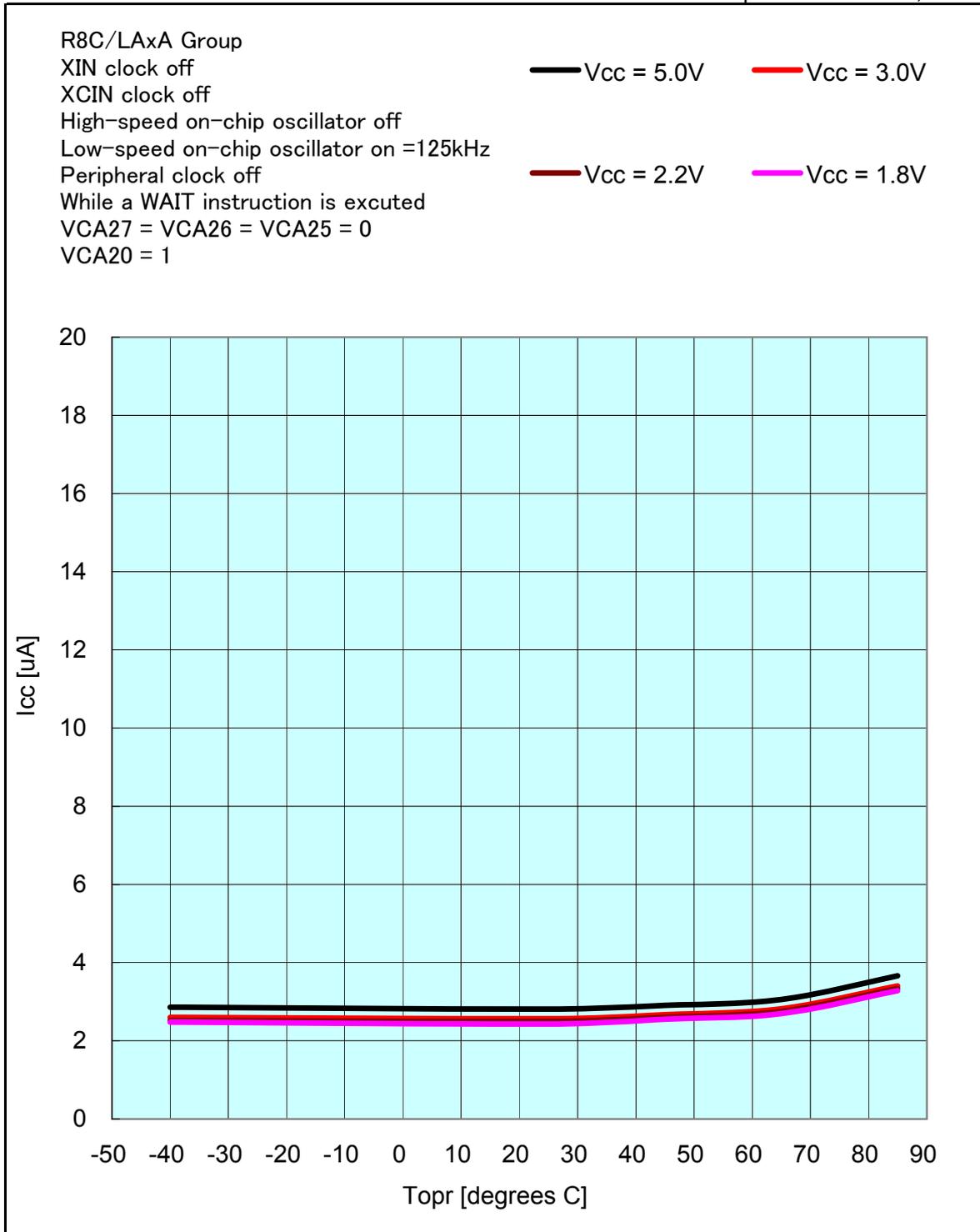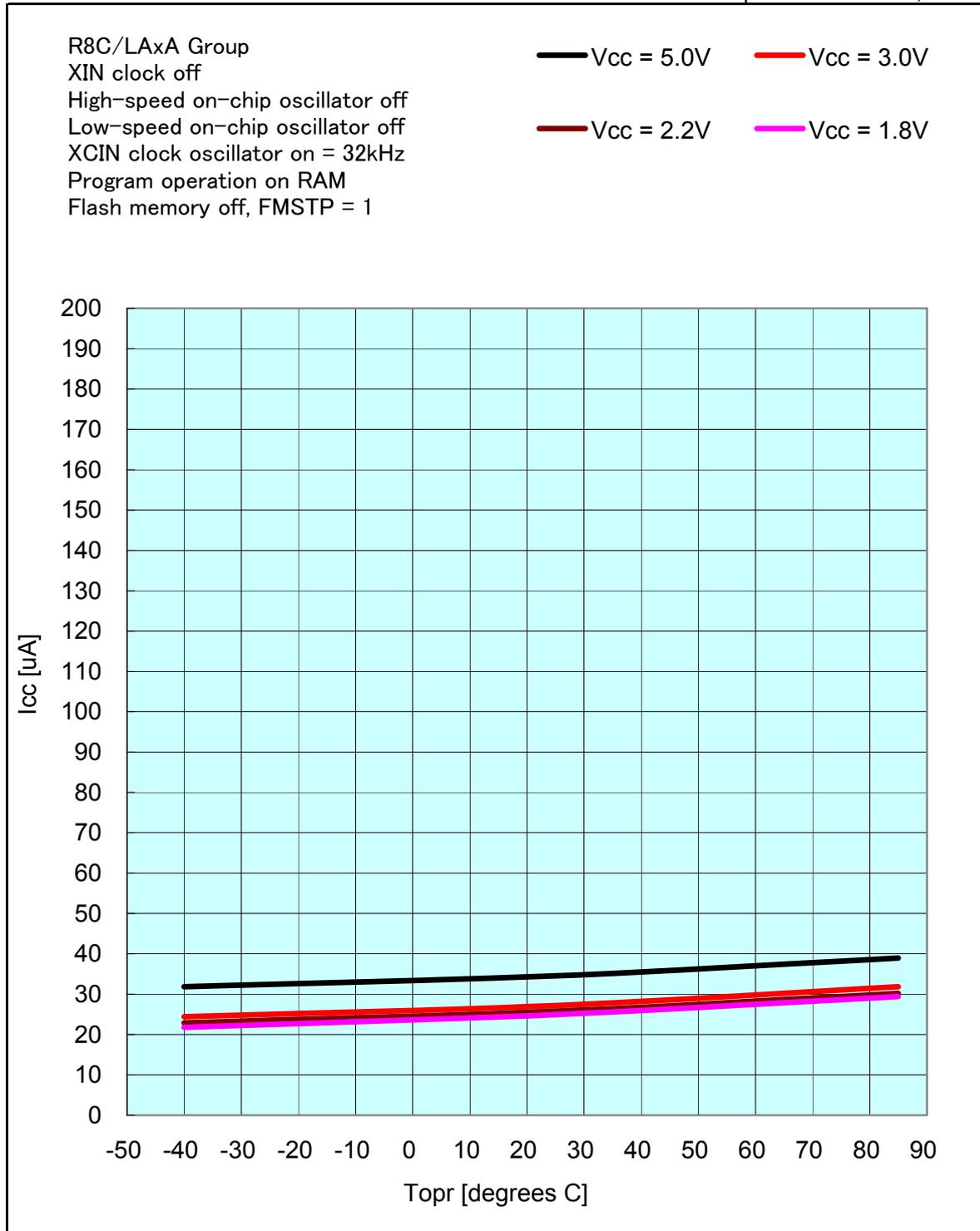— Vcc = 2.2V — Vcc = 1.8V

Icc [uA] vs Topr [degrees C]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(Low-speed clock mode)

R8C/LAxA Group
XIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
FMR27 = 1

— Vcc = 5.0V   — Vcc = 3.0V

— Vcc = 2.2V   — Vcc = 1.8V
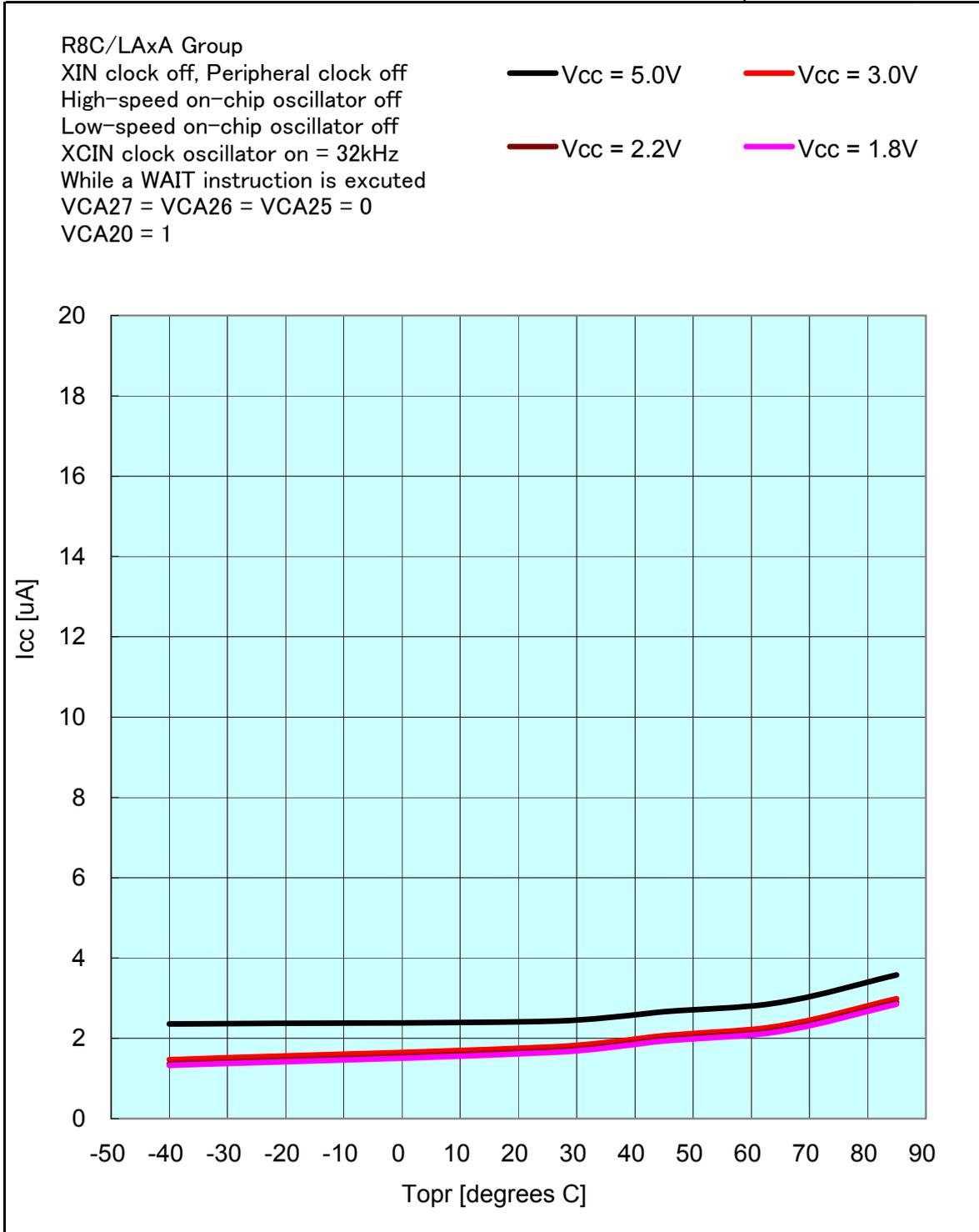

Icc [uA] vs Topr [degrees C]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(High-speed clock mode:no-division)
Vcc = 5.0V

R8C/LAxA Group
Vcc = 5.0V
XIN clock no-division
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

—— XIN=20MHz   —— XIN=16MHz
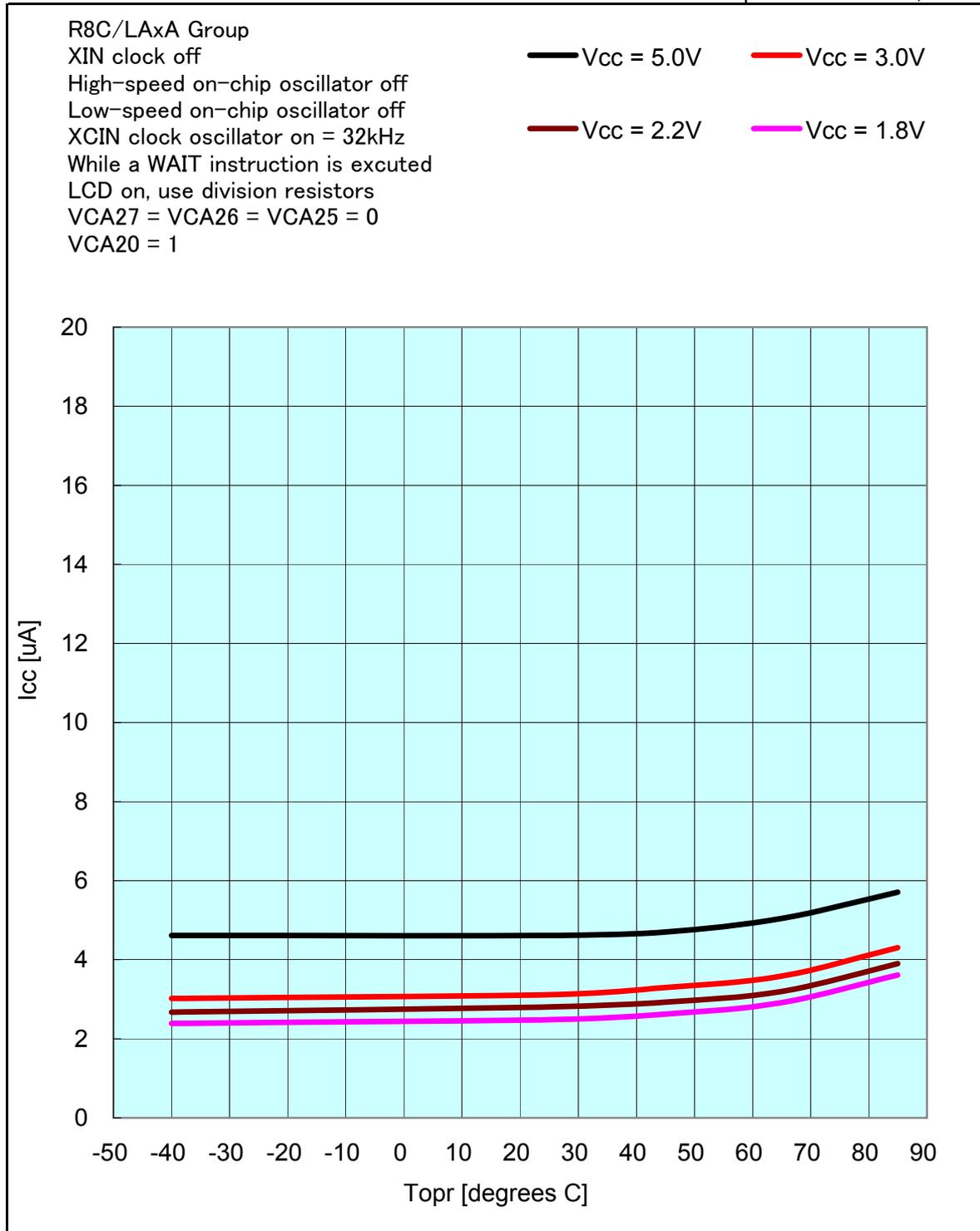
—— XIN=10MHz   —— XIN=8MHz

—— XIN=5MHz

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Topr

(High-speed clock mode:divide-by-8)
Vcc = 5.0V

R8C/LAxA Group
Vcc = 5.0V
XIN clock divide-by-8
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

——— XIN=20MHz   ——— XIN=16MHz
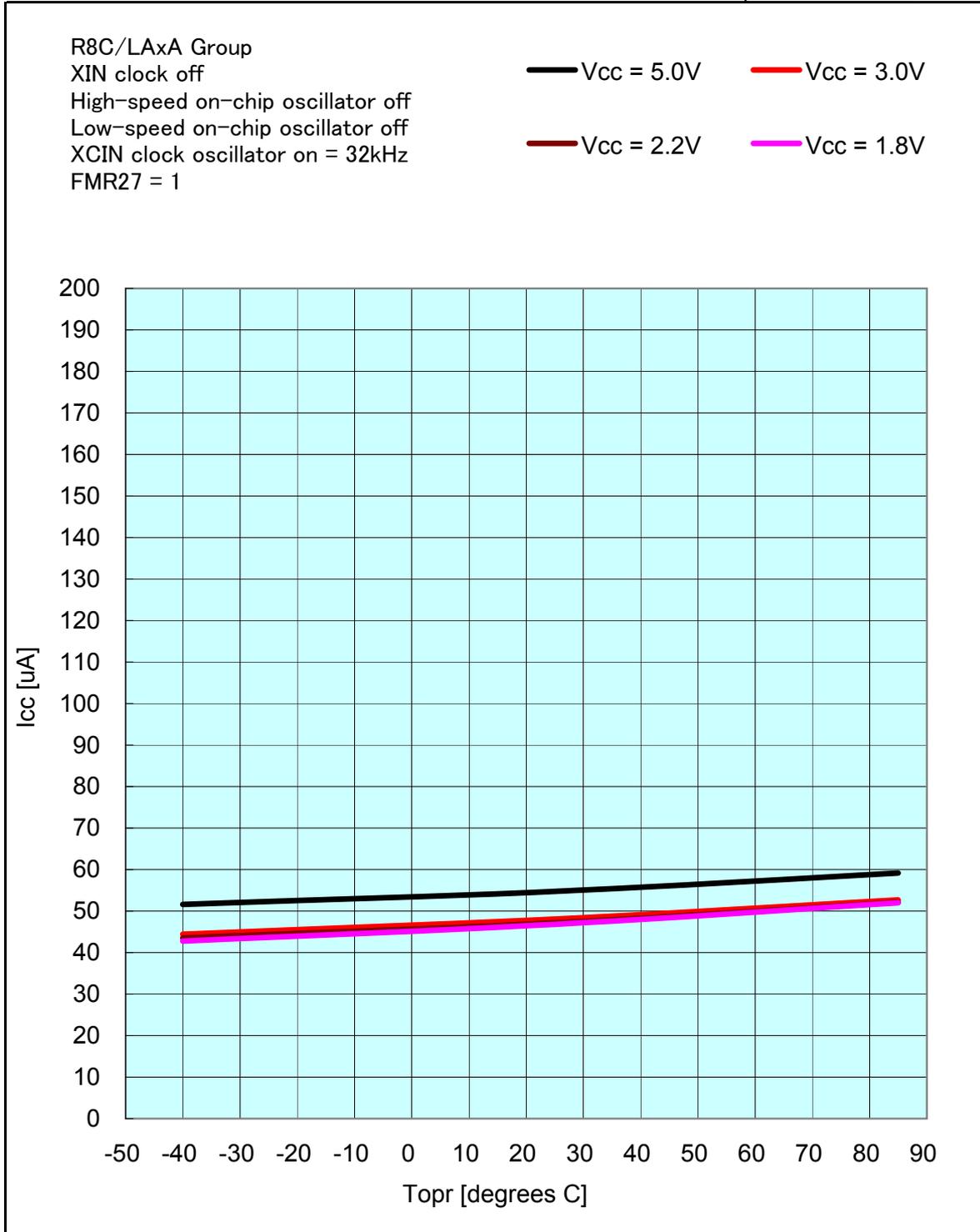
——— XIN=10MHz   ——— XIN=8MHz

——— XIN=5MHz

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Icc VS Topr

(High-speed clock mode:no-division)
Vcc = 3.0V

Prepared on Nov. 30, 2010

R8C/LAxA Group
Vcc = 3.0V
XIN clock no-division
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

——— XIN=20MHz   ——— XIN=16MHz
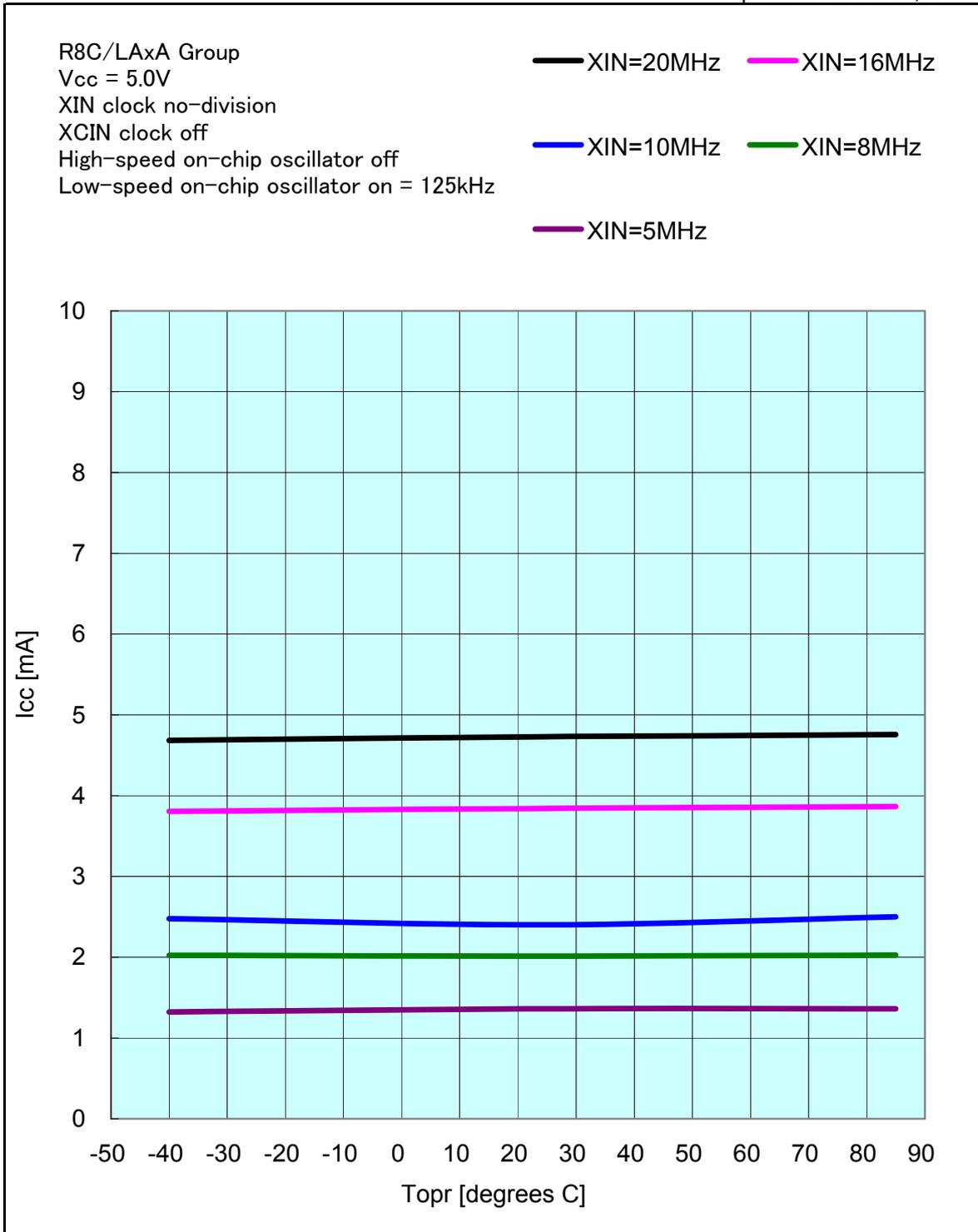
——— XIN=10MHz   ——— XIN=8MHz

——— XIN=5MHz

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Icc vs Topr

(High-speed clock mode:divide-by-8)
Vcc = 3.0V

R8C/LAxA Group
Vcc = 3.0V
XIN clock divide-by-8
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

— XIN=20MHz   — XIN=16MHz
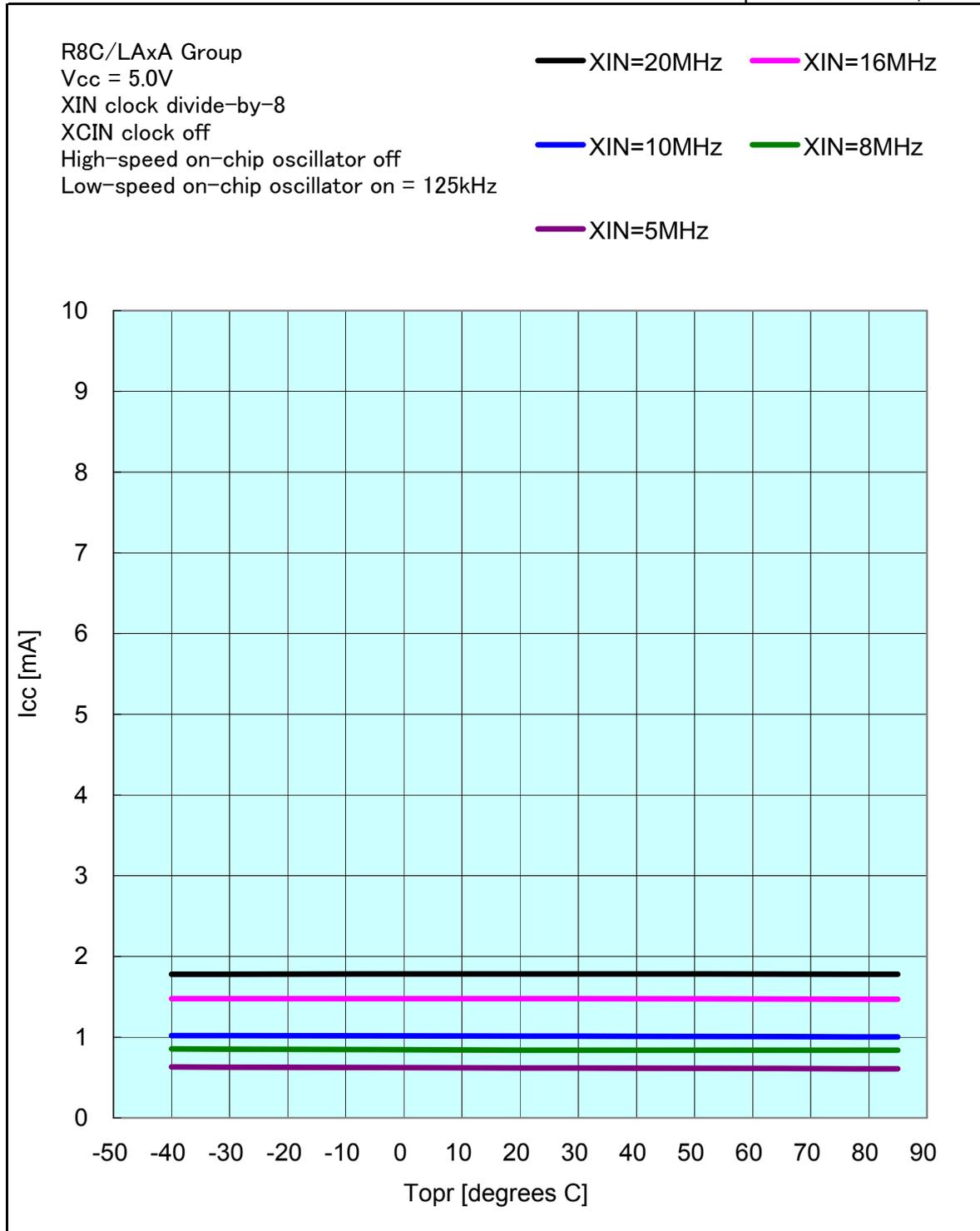
— XIN=10MHz   — XIN=8MHz

— XIN=5MHz

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Icc VS Topr

(High-speed clock mode)
Vcc = 2.2V

R8C/LAxA Group
Vcc = 2.2V
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

——— XIN=8MHz, no division
——— XIN=8MHz, divide by 8
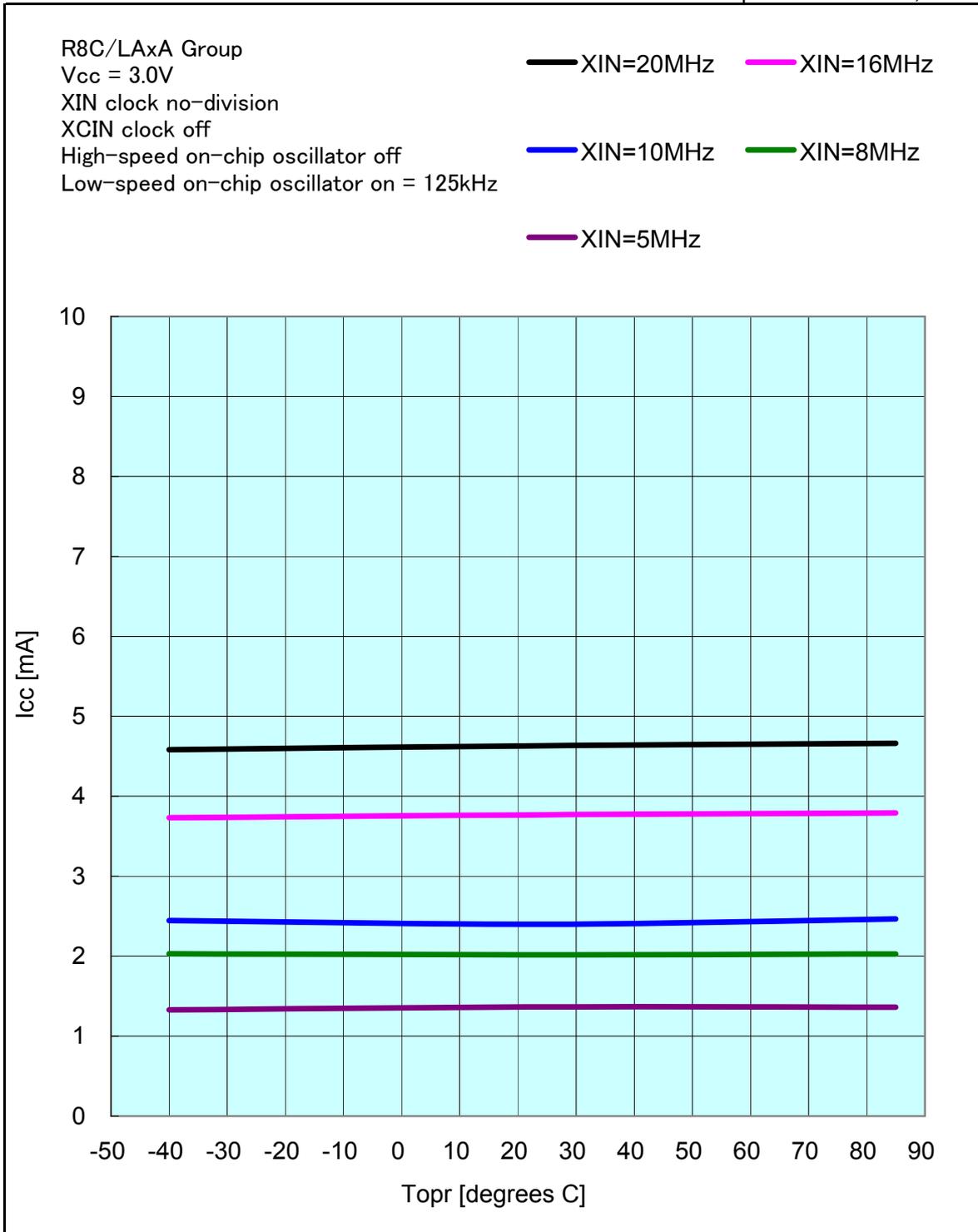——— XIN=5MHz, no division
——— XIN=5MHz, divide by 8

The mentioned value is only for your reference.The value is for the arbitrary samples
and does not guarantee the product's characteristics

Icc vs Topr

(High-speed clock mode)
Vcc = 1.8V

R8C/LAxA Group
Vcc = 1.8V
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

——— XIN=8MHz, no division
——— XIN=8MHz, divide by 8
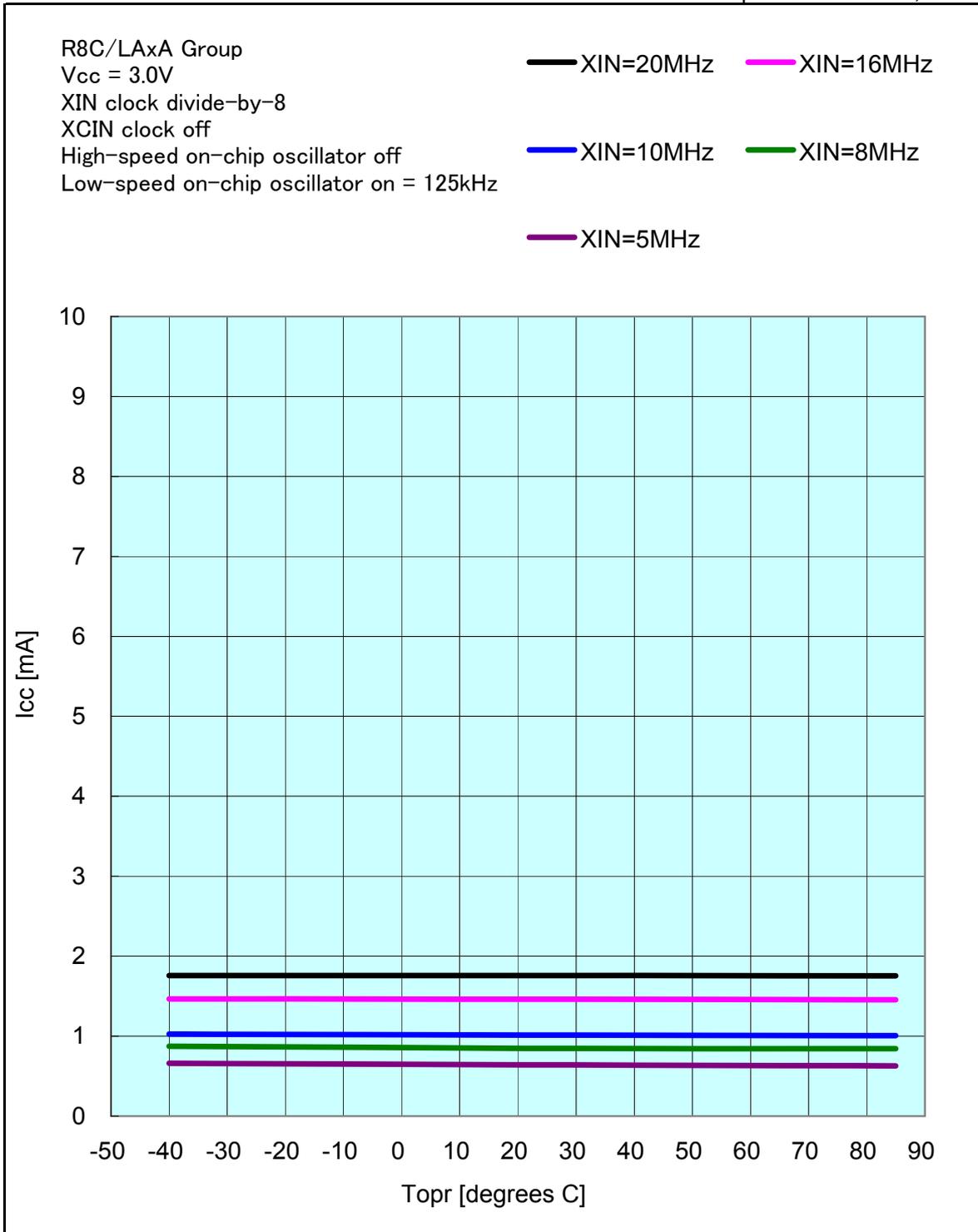——— XIN=5MHz, no division
——— XIN=5MHz, divide by 8

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS Vcc

(High-speed on-chip oscillator mode)
fOCO = 20MHz

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator on fOCO = 20MHz
Low-speed on-chip oscillator on = 125kHz

— no-division -40 degrees C
— no-division 25 degrees C
— no-division 85 degrees C
— divide-by-8 -40 degrees C
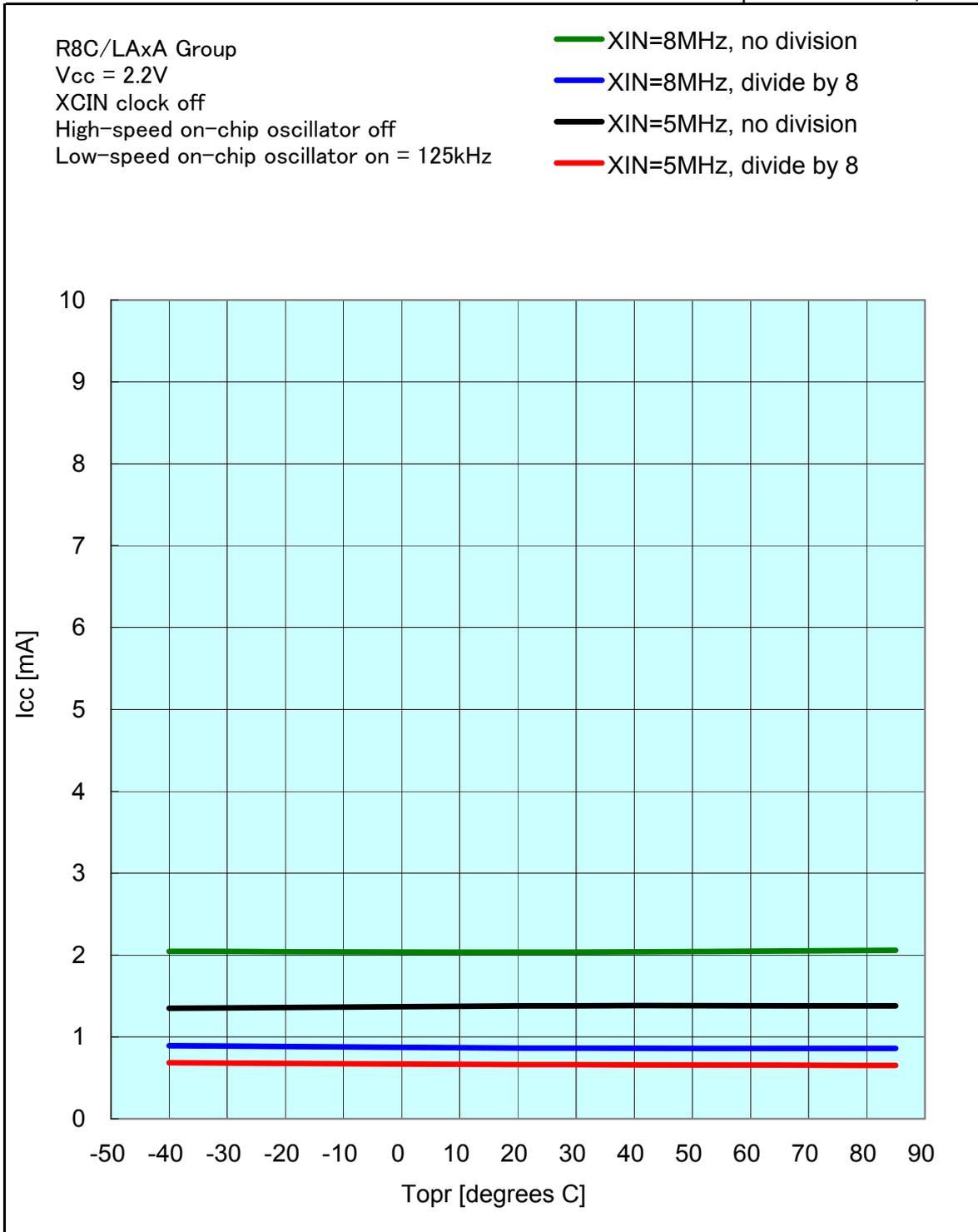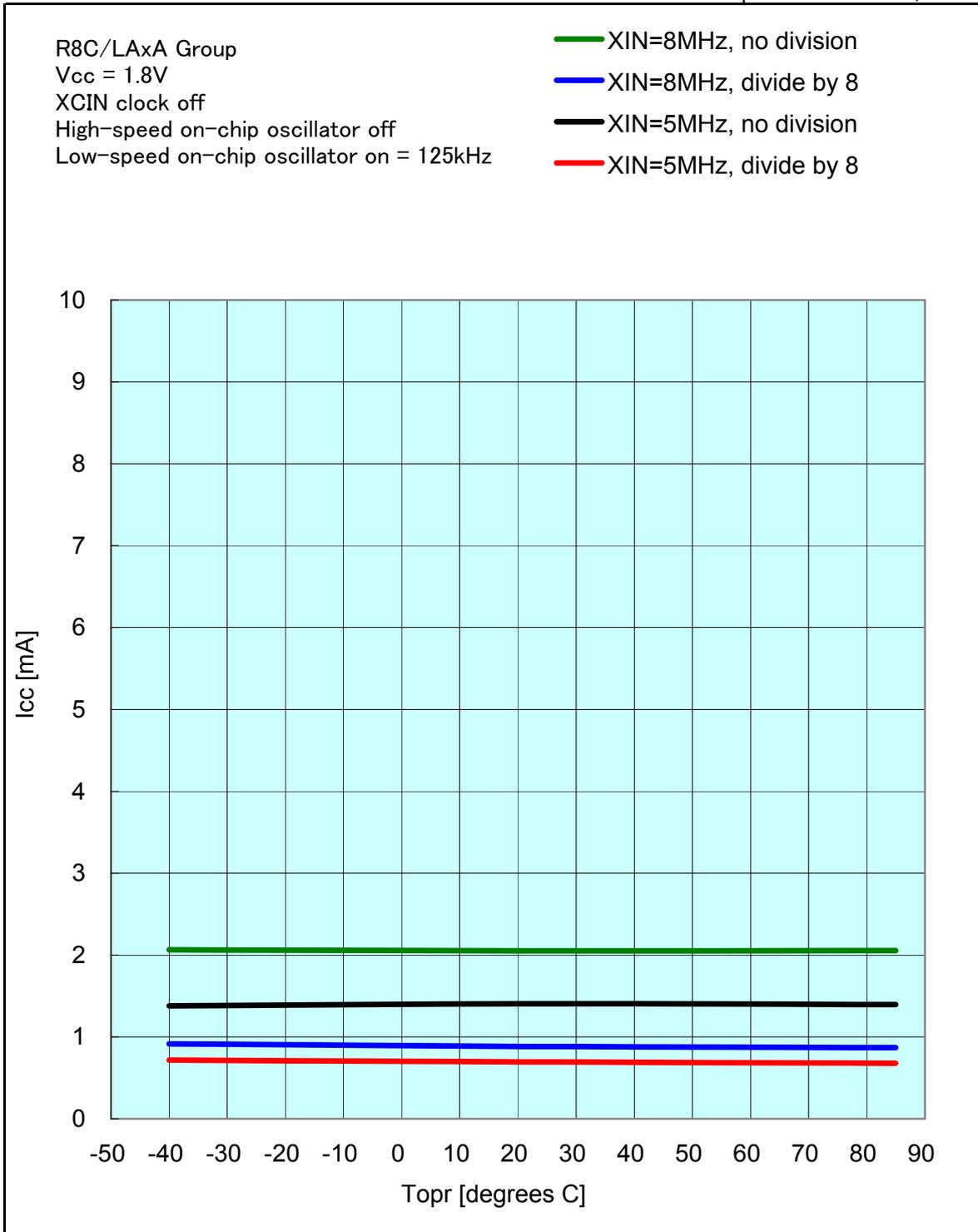— divide-by-8 25 degrees C
— divide-by-8 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(High-speed on-chip oscillator mode)
fOCO = 10MHz

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator on fOCO = 10MHz
Low-speed on-chip oscillator on = 125kHz

— no-division -40 degrees C
— no-division 25 degrees C
— no-division 85 degrees C
— divide-by-8 -40 degrees C
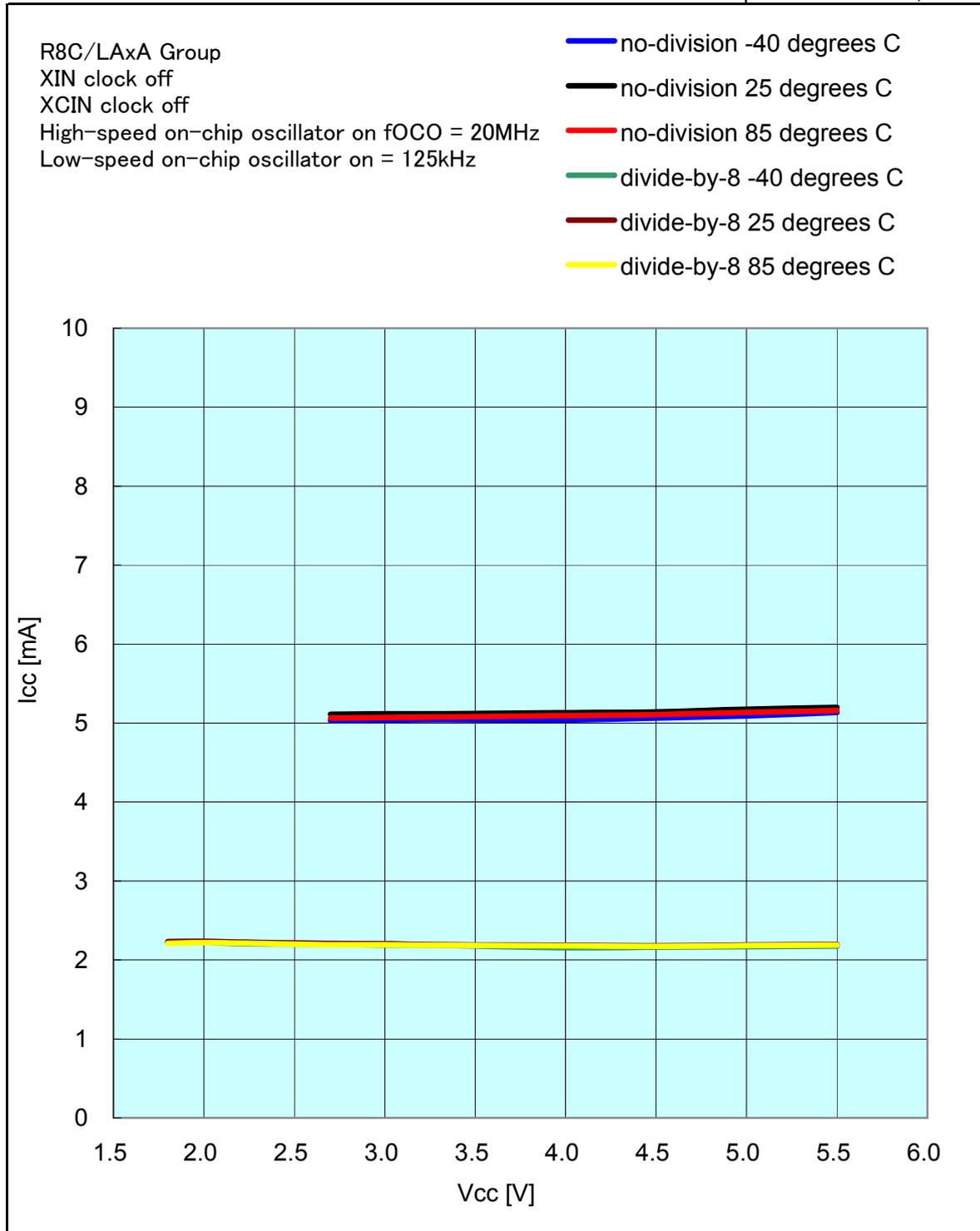— divide-by-8 25 degrees C
— divide-by-8 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS Vcc

(High-speed on-chip oscillator mode)
fOCO = 5MHz

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator on fOCO = 5MHz
Low-speed on-chip oscillator on = 125kHz

— no-division -40 degrees C
— no-division 25 degrees C
— no-division 85 degrees C
— divide-by-8 -40 degrees C
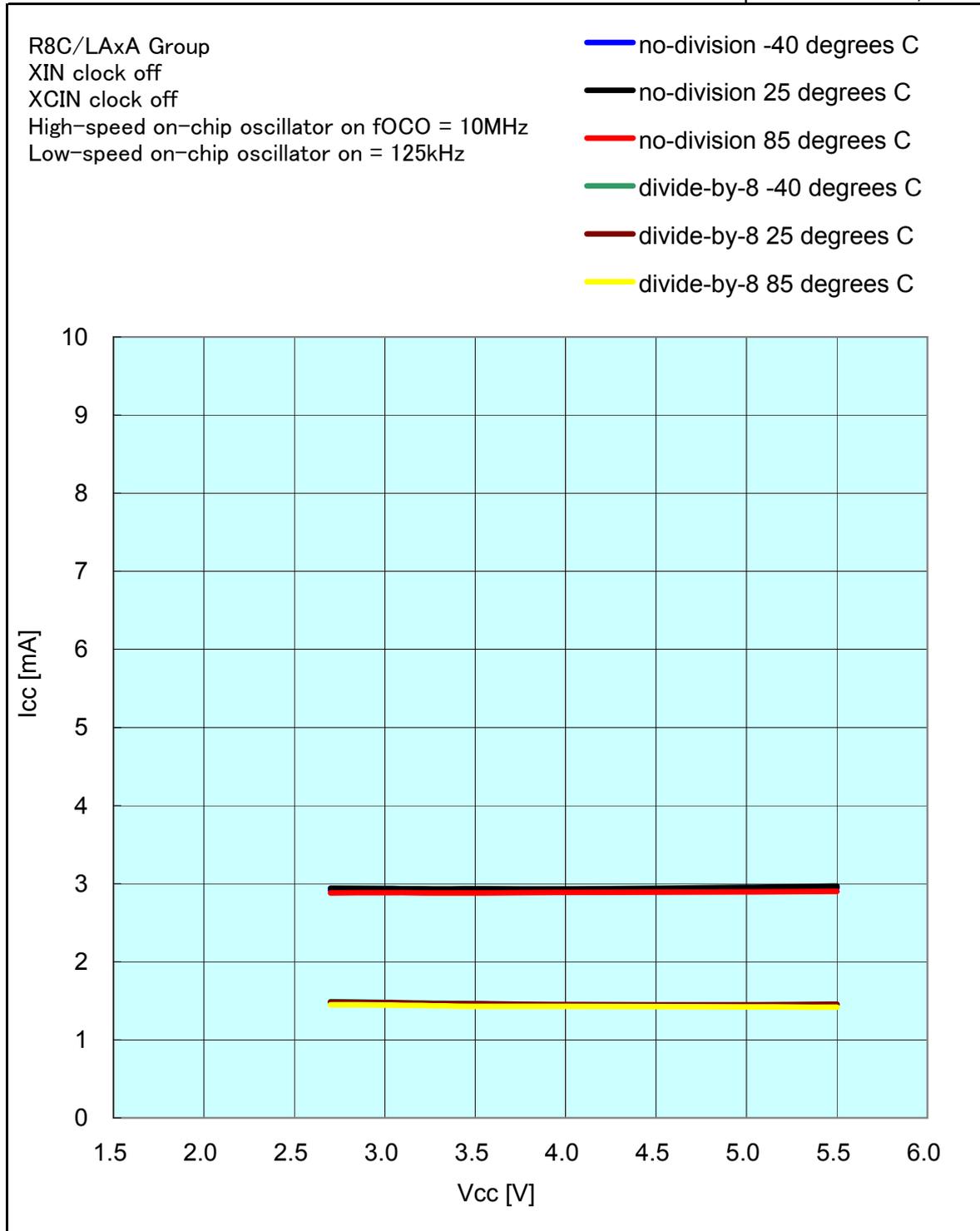— divide-by-8 25 degrees C
— divide-by-8 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(Low-speed on-chip oscillator mode)

R8C/LAxA Group
divide-by-8
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz
FMR27 = 1

-40 degrees C ——25 degrees C

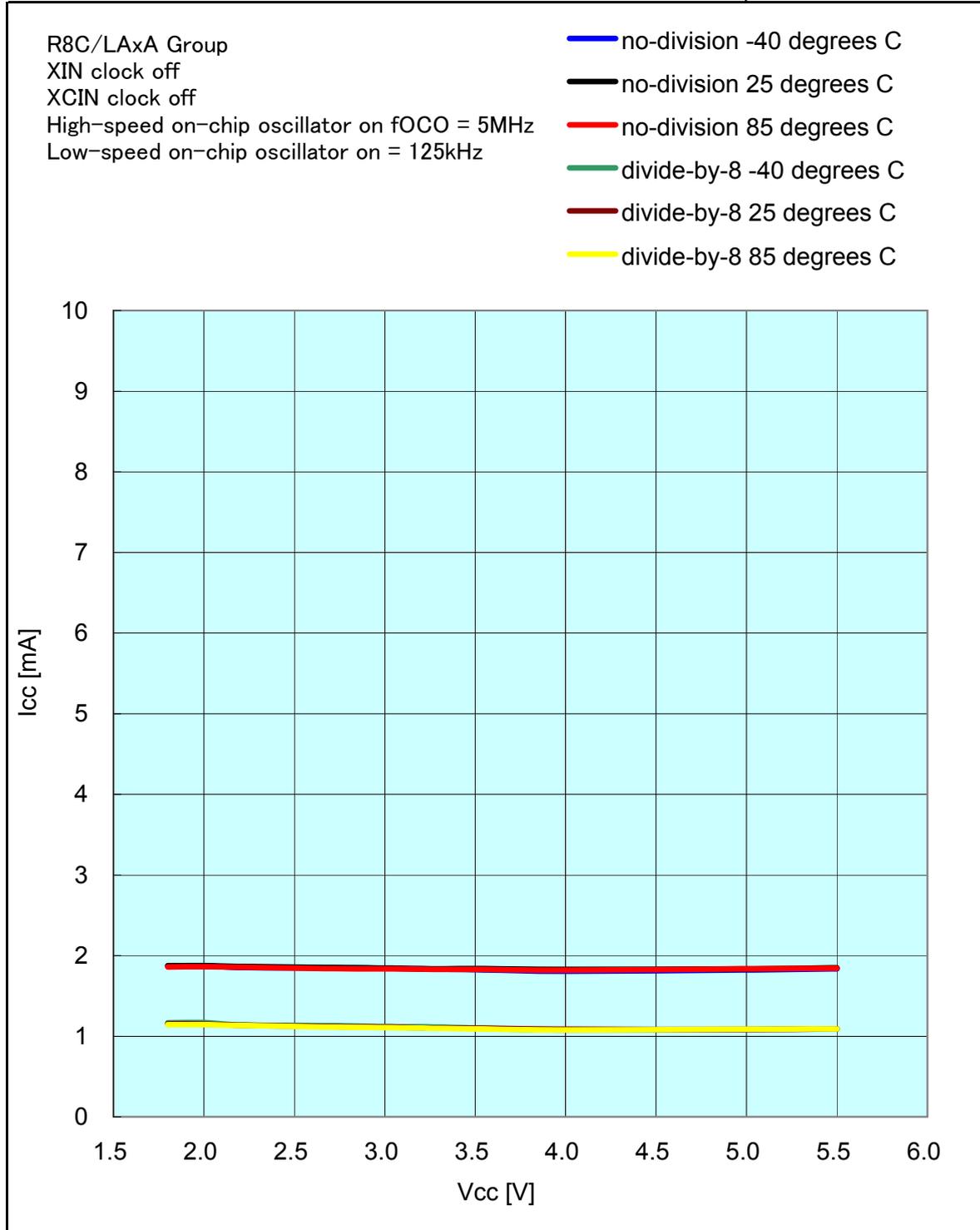——85 degrees C

Icc [uA] vs Vcc [V]

The mentioned value is only for your reference. The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS Vcc

(Stop mode)

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
CM10 = 1
Peripheral clock off
VCA27 = VCA26 = VCA25 = 0

Legend: -40 degrees C, 25 degrees C, 85 degrees C
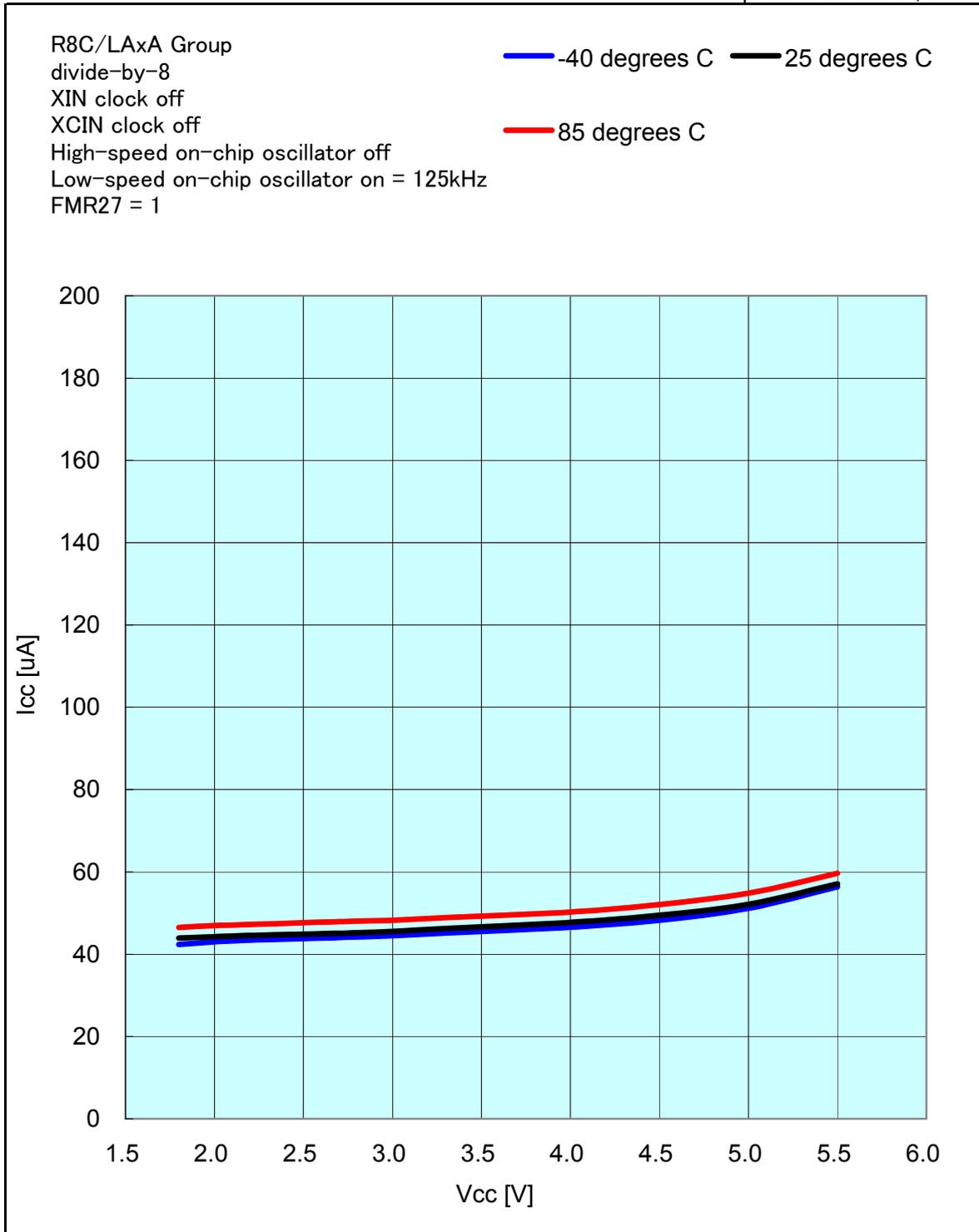
Y-axis: Icc [uA]
X-axis: Vcc [V]

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(Power off mode0)

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
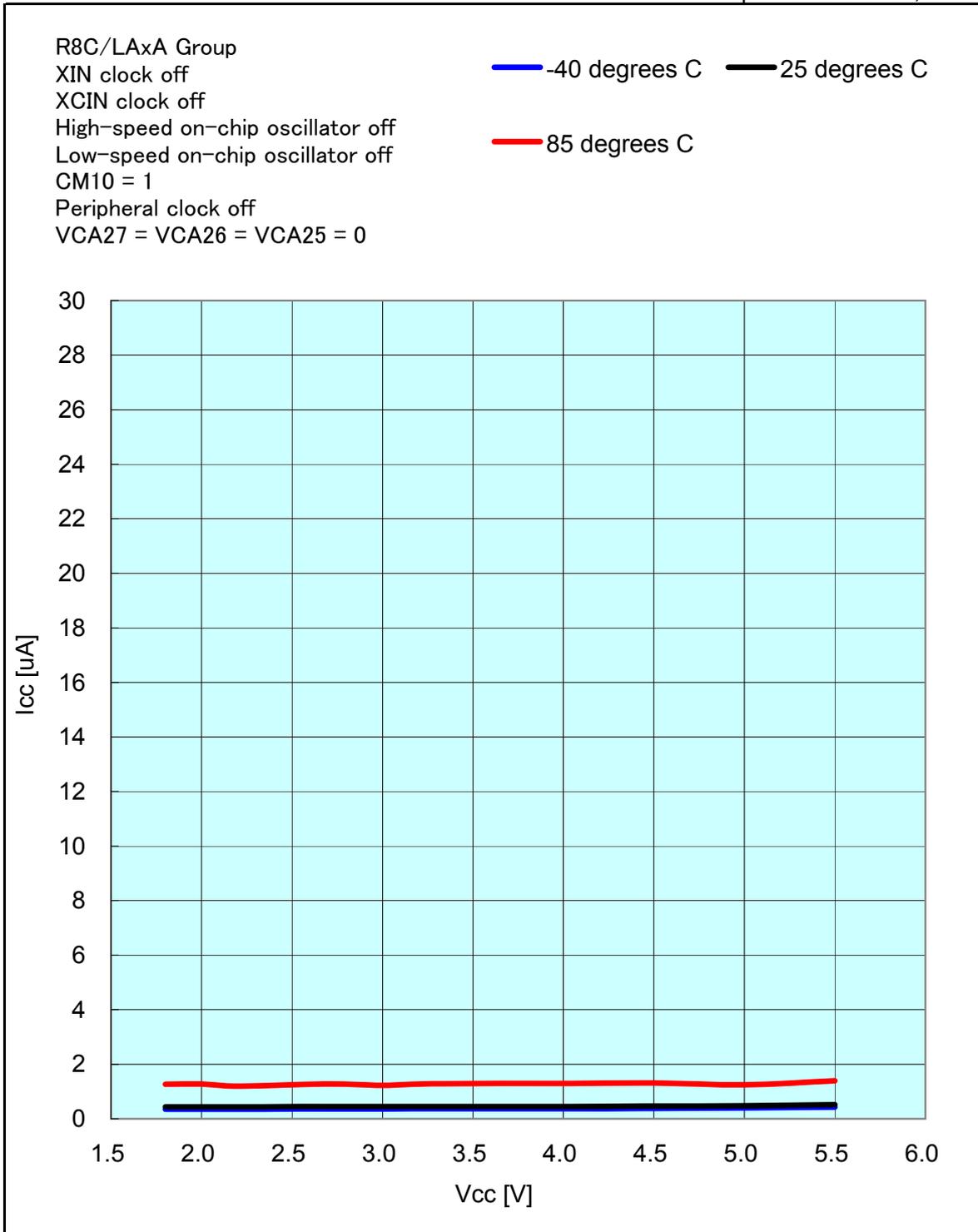
— -40 degrees C — 25 degrees C

— 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(Power off mode2)

R8C/LAxA Group
XIN clock off
XCIN clock on
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
RTC operation

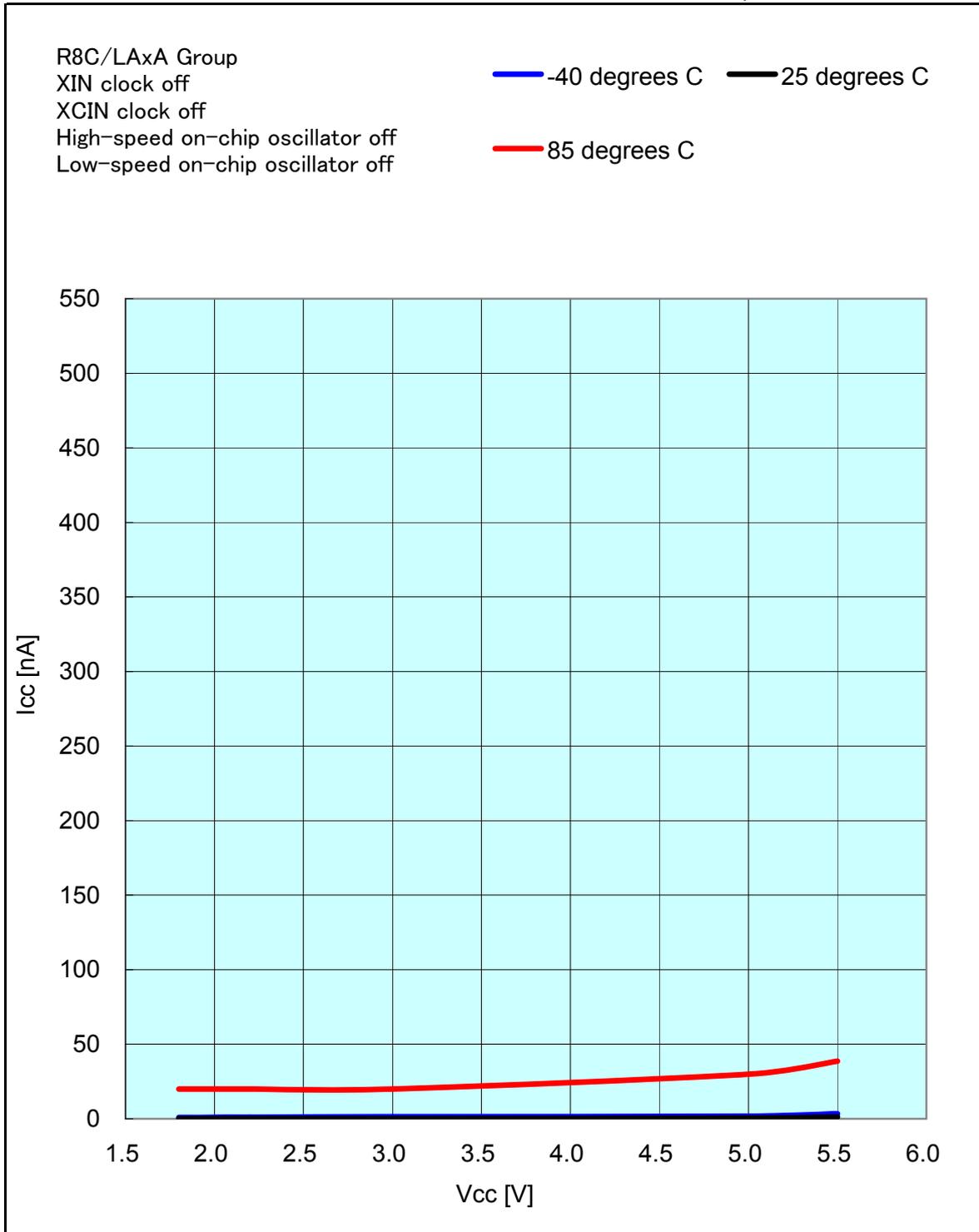─── -40 degrees C   ─── 25 degrees C

─── 85 degrees C

The mentioned value is only for your reference. The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS Vcc

(Low-speed on-chip oscillator wait mode)
Peripheral clock operation

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz
Peripheral clock operation
While a WAIT instruction is executed
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

—— -40 degrees C —— 25 degrees C

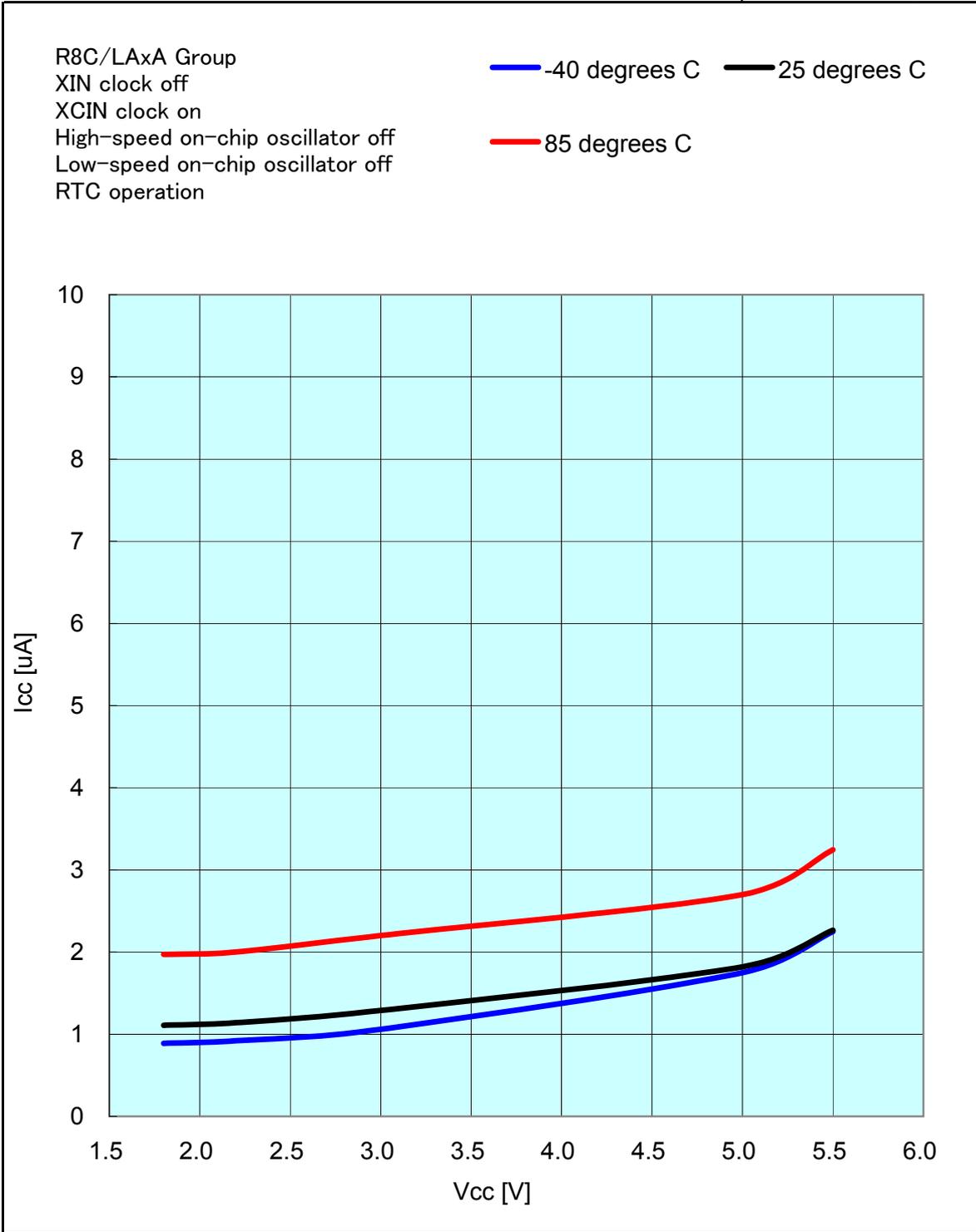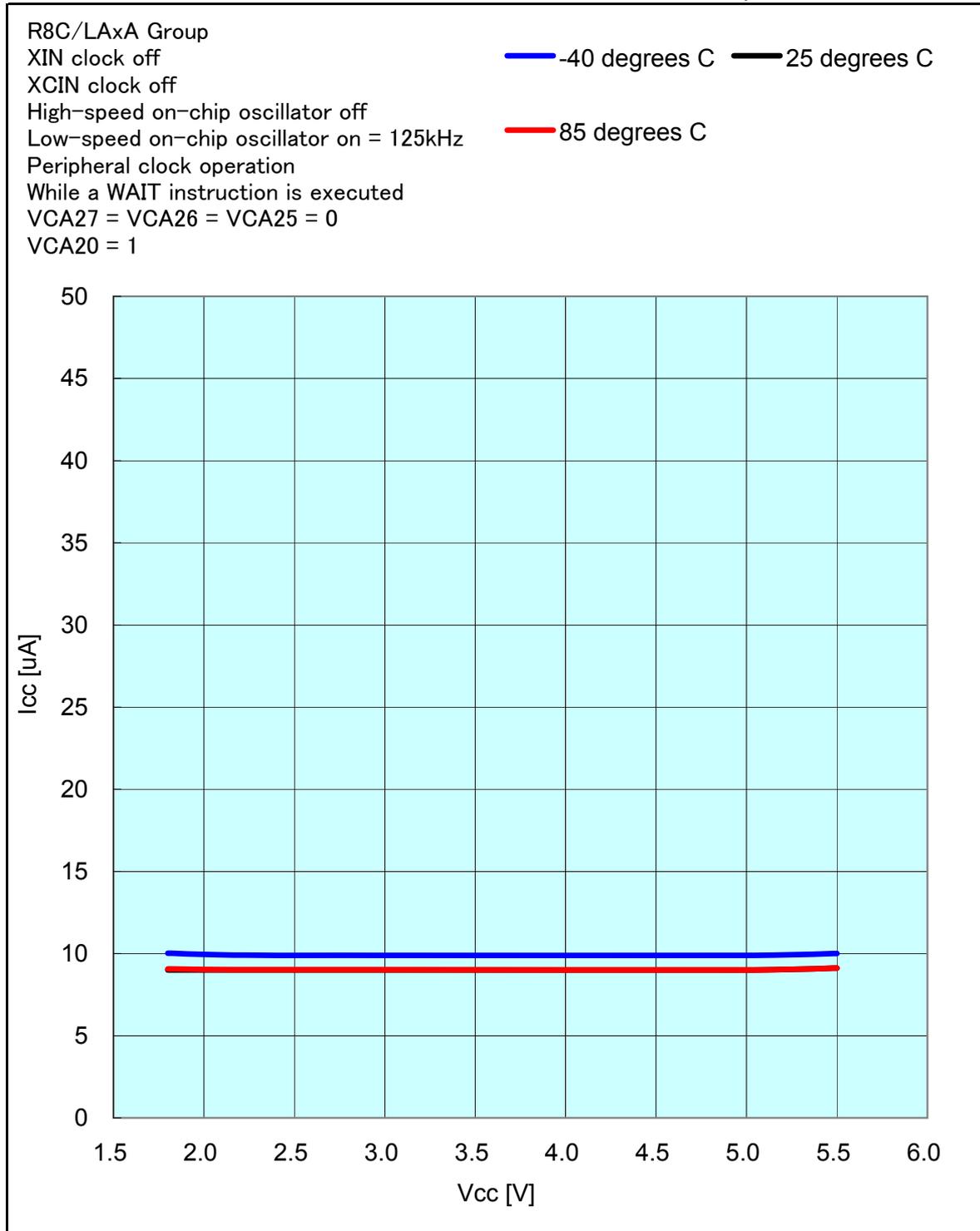—— 85 degrees C

Icc [uA]

Vcc [V]

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Icc VS Vcc

(Low-speed on-chip oscillator wait mode)
Peripheral clock off

R8C/LAxA Group
XIN clock off
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz
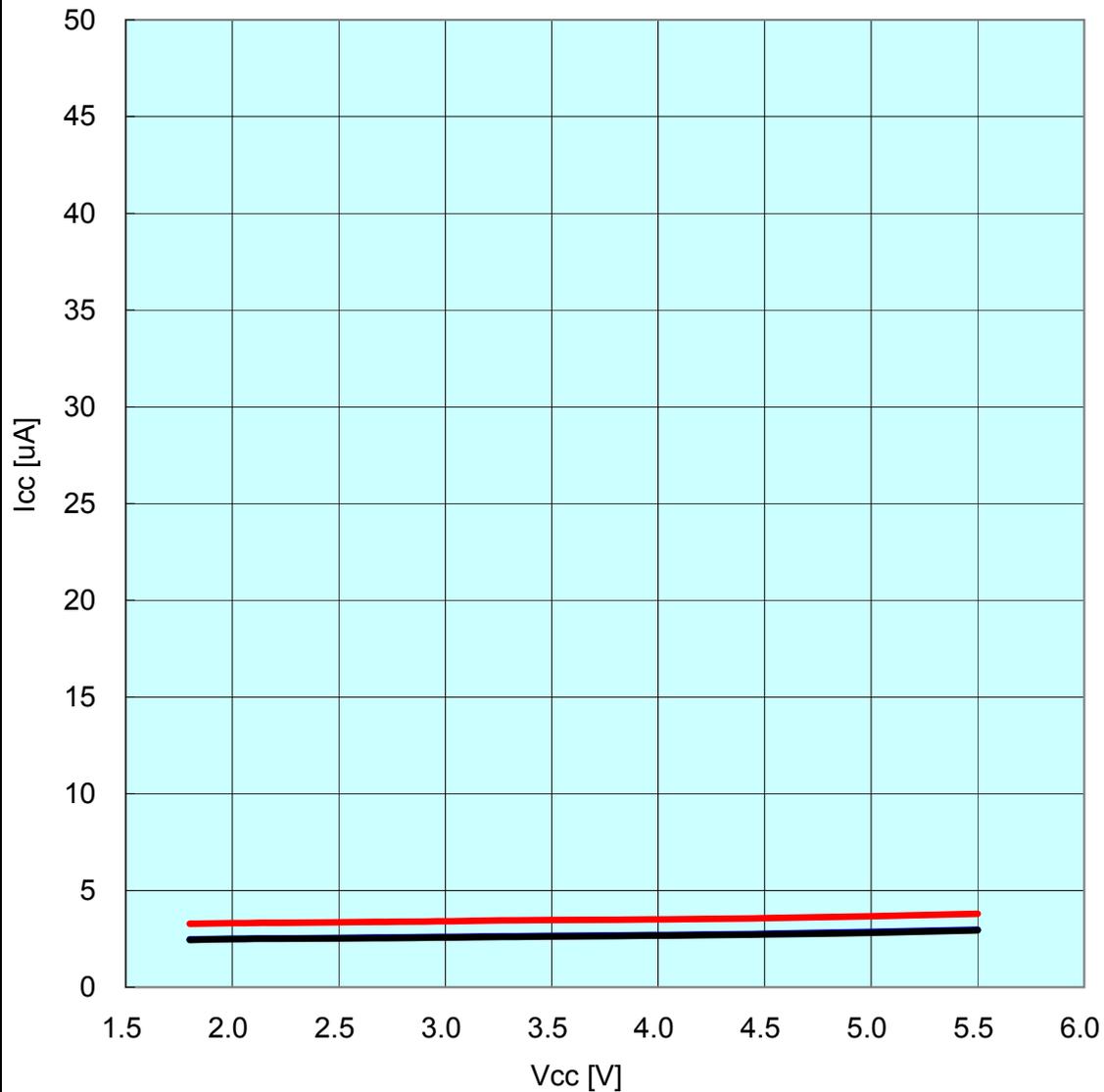Peripheral clock off
While a WAIT instruction is executed
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

Legend:
— -40 degrees C — 25 degrees C
— 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(Low-speed clock wait mode)

R8C/LAxA Group
XIN clock off, Peripheral clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
While a WAIT instruction is excuted
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(Low-speed clock wait mode)
LCD=ON(division resistors)

R8C/LAxA Group
XIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
While a WAIT instruction is excuted
LCD on, use division resistors
VCA27 = VCA26 = VCA25 = 0
VCA20 = 1

Legend:
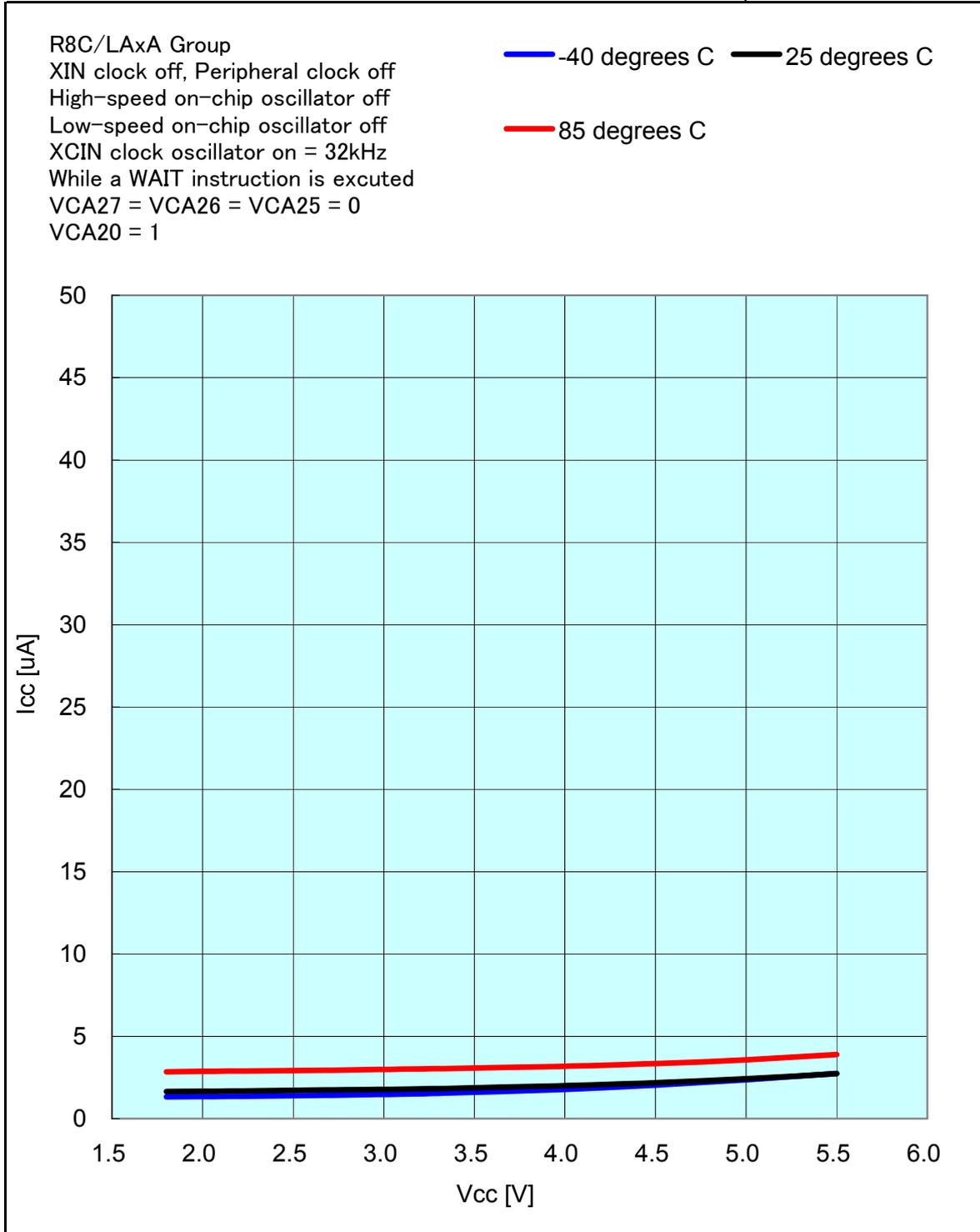- -40 degrees C
- 25 degrees C
- 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(Low-speed clock mode)
Program operation on RAM

R8C/LAxA Group
XIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
Program operation on RAM
Flash memory off, FMSTP =1

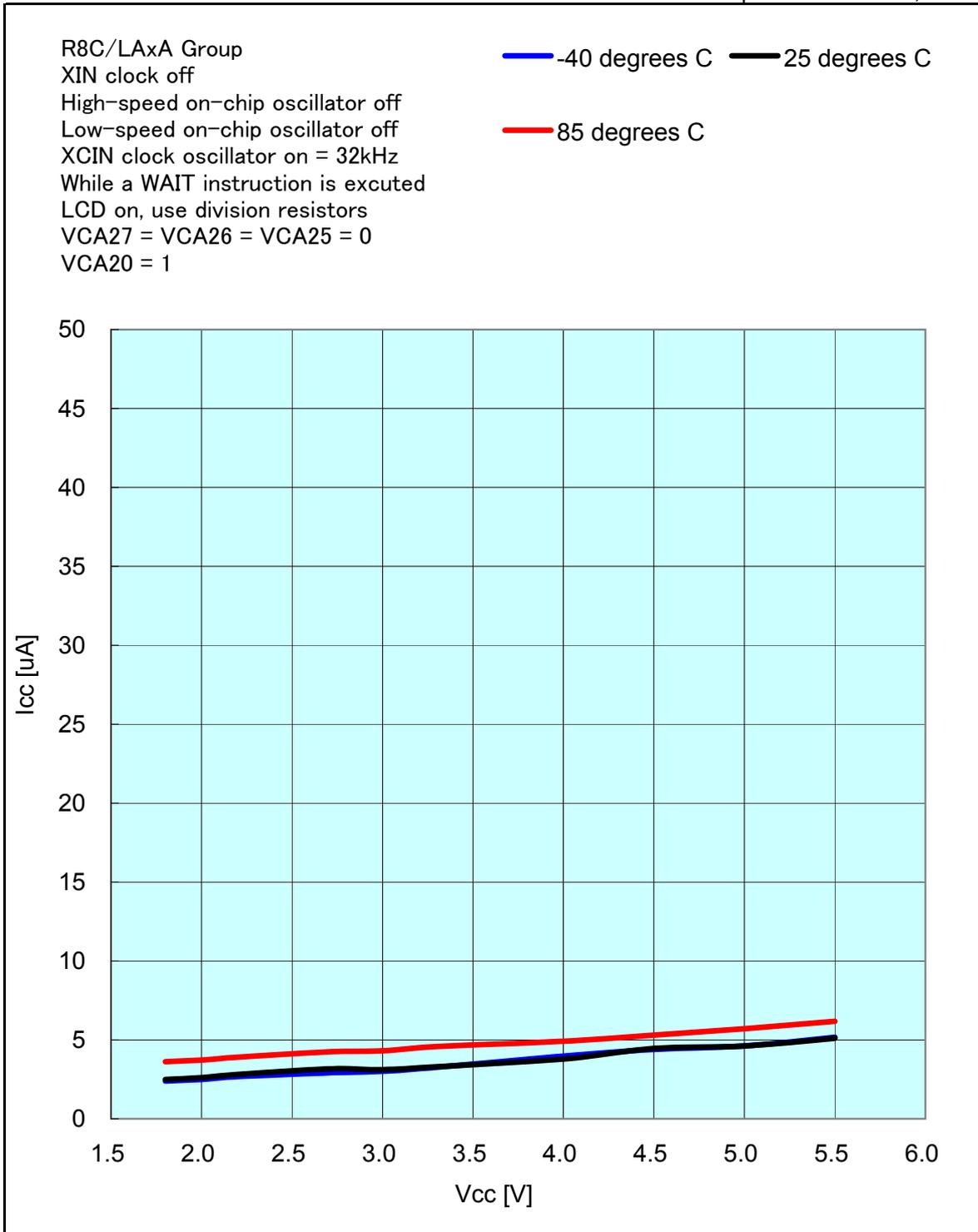—— -40 degrees C —— 25 degrees C

—— 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc VS Vcc

(Low-speed clock mode)

R8C/LAxA Group
XIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator off
XCIN clock oscillator on = 32kHz
FMR27 = 1

—— -40 degrees C   —— 25 degrees C
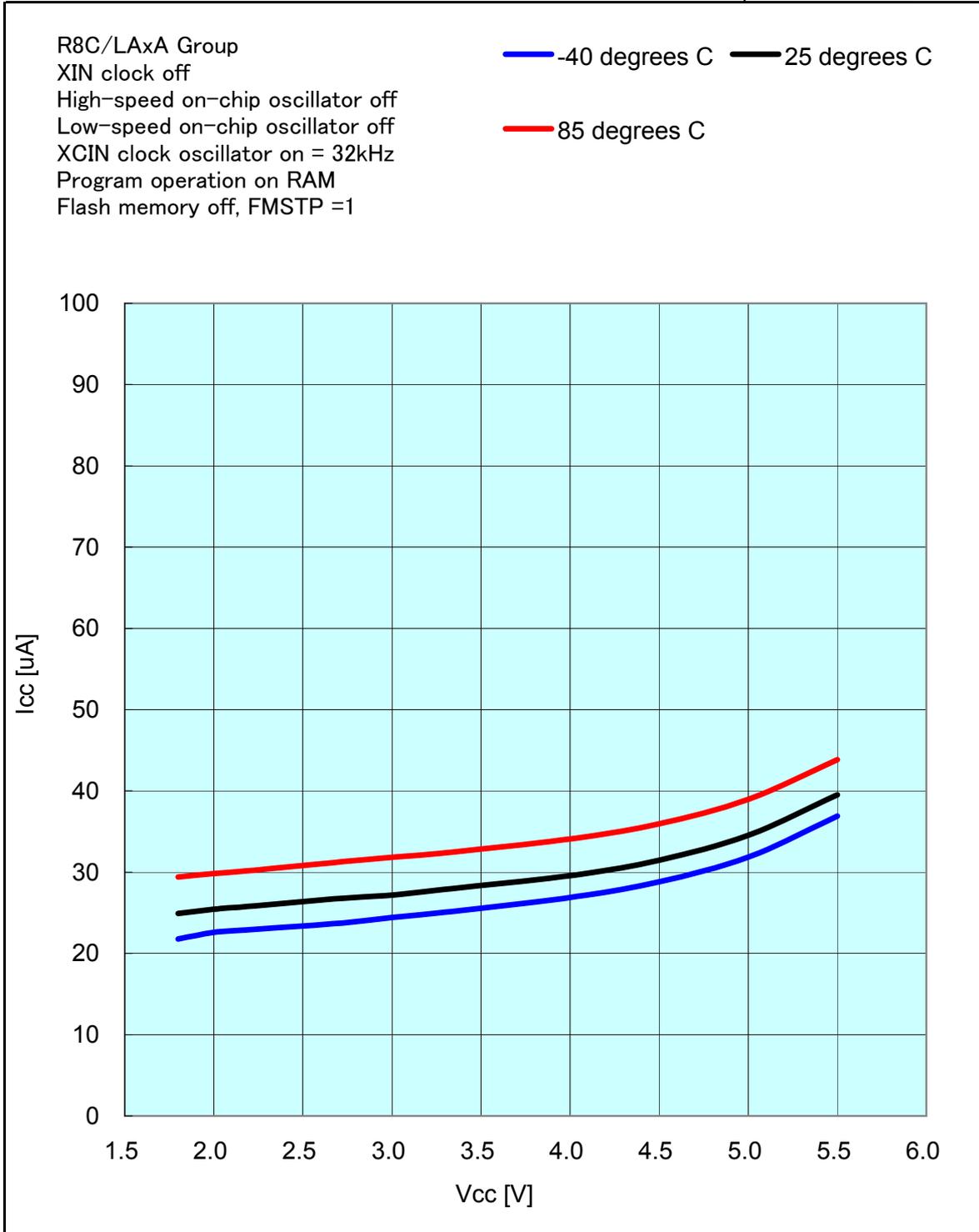
—— 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(High-speed clock mode)
XIN = 20MHz

R8C/LAxA Group
XIN = 20MHz
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

— no-division -40 degrees C
— no-division 25 degrees C
— no-division 85 degrees C
— divide-by-8 -40 degrees C
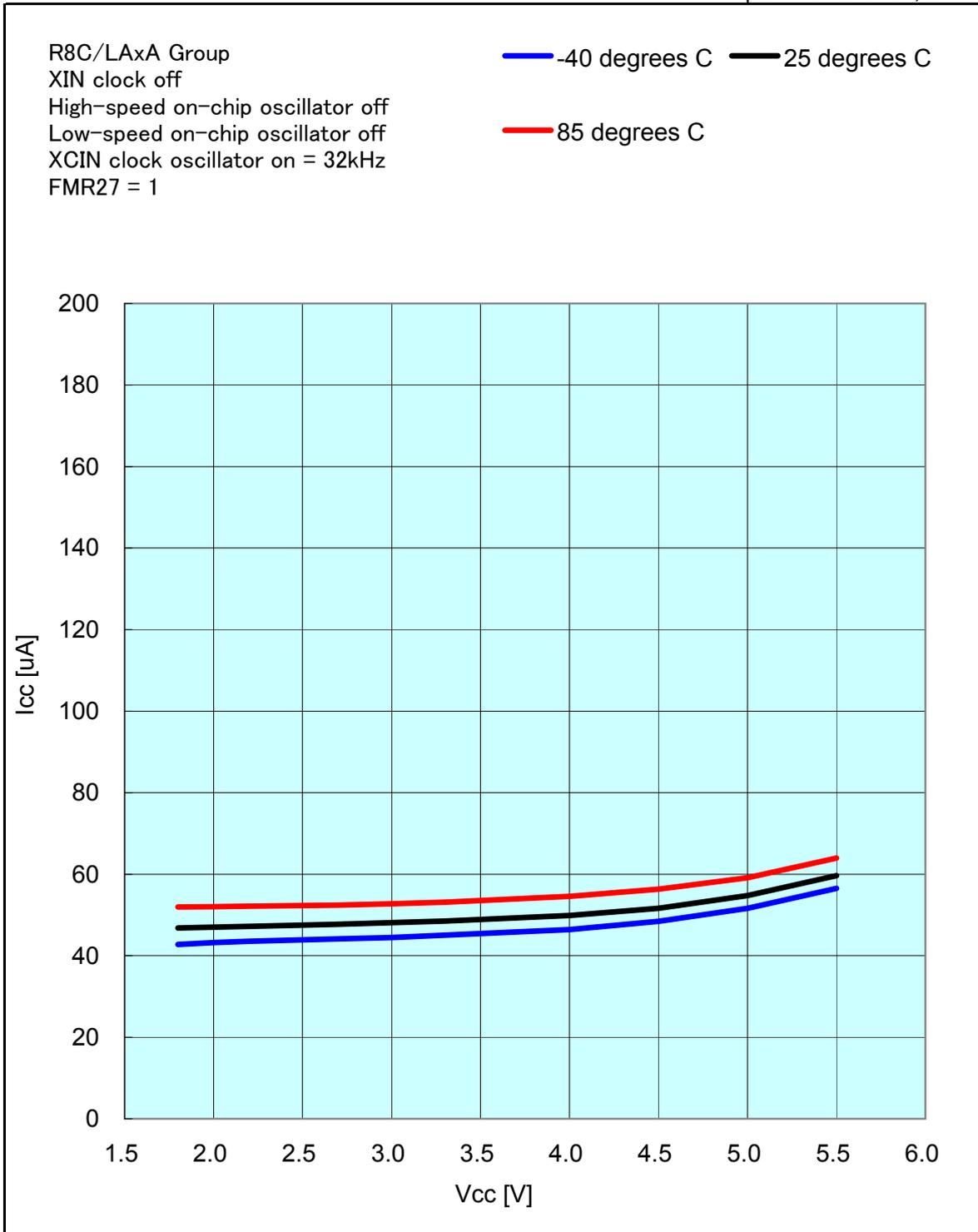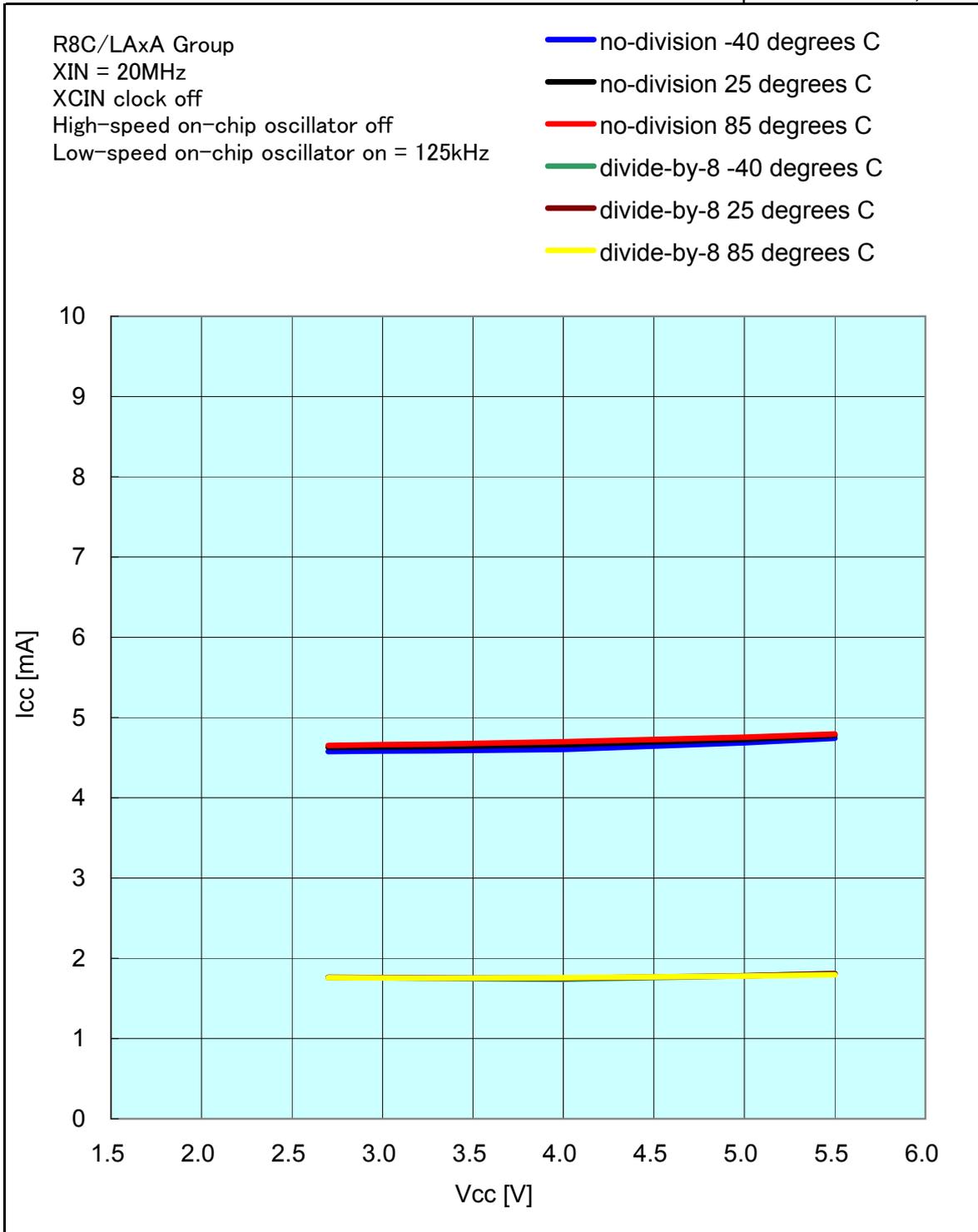— divide-by-8 25 degrees C
— divide-by-8 85 degrees C

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Icc vs **Vcc**

(High-speed clock mode)
XIN = 16MHz

R8C/LAxA Group
XIN = 16MHz
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

—— no-division -40 degrees C

—— no-division 25 degrees C

—— no-division 85 degrees C

—— divide-by-8 -40 degrees C

—— divide-by-8 25 degrees C
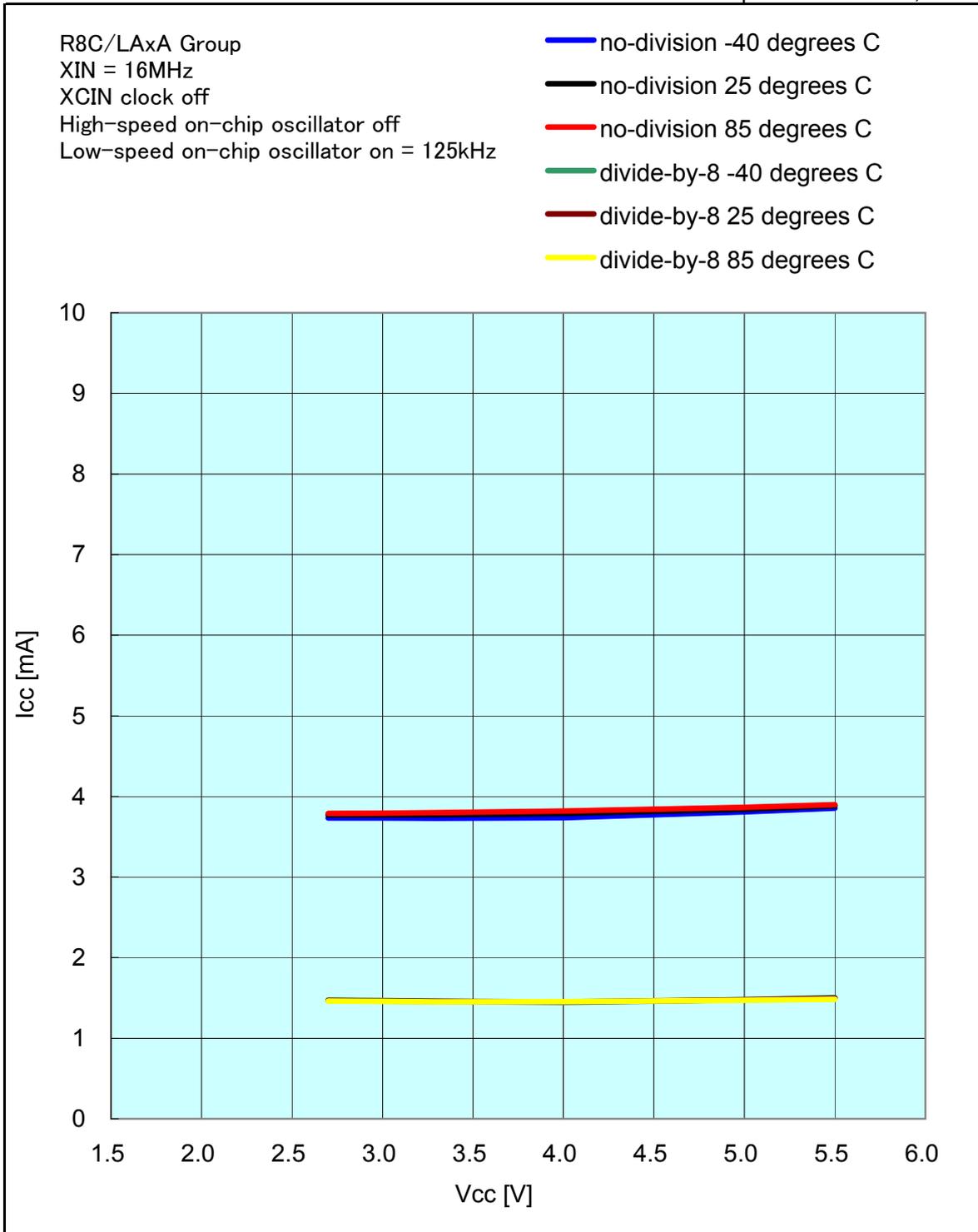
—— divide-by-8 85 degrees C

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Icc vs Vcc

(High-speed clock mode)
XIN = 10MHz

R8C/LAxA Group
XIN = 10MHz
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

- —— no-division -40 degrees C
- —— no-division 25 degrees C
- —— no-division 85 degrees C
- —— divide-by-8 -40 degrees C
- —— divide-by-8 25 degrees C
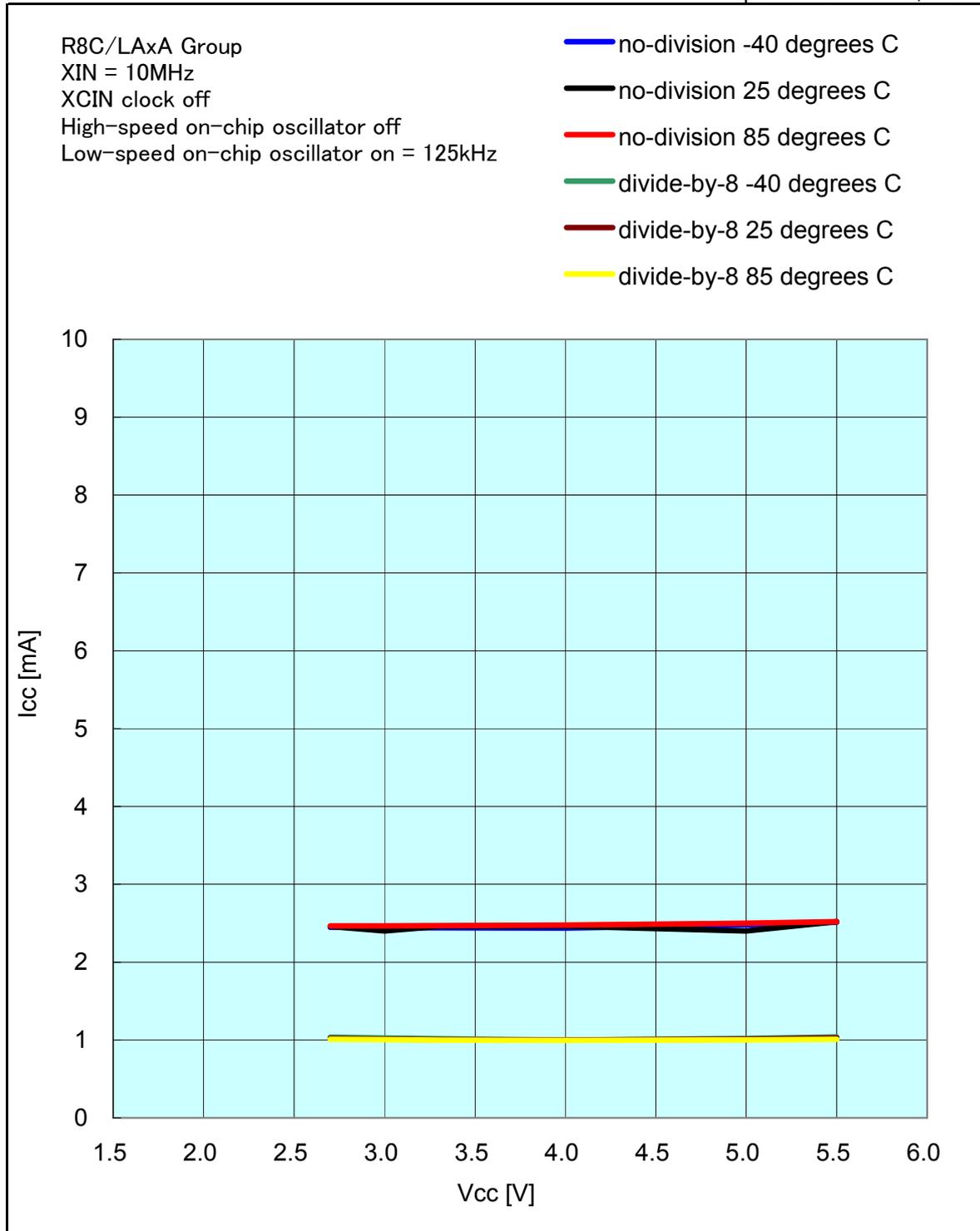- —— divide-by-8 85 degrees C

The mentioned value is only for your reference.The value is for the arbitrary samples and does not guarantee the product's characteristics

Icc vs Vcc

(High-speed clock mode)
XIN = 8MHz

R8C/LAxA Group
XIN = 8MHz
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

Legend:
- no-division -40 degrees C
- no-division 25 degrees C
- no-division 85 degrees C
- divide-by-8 -40 degrees C
- divide-by-8 25 degrees C
- divide-by-8 85 degrees C

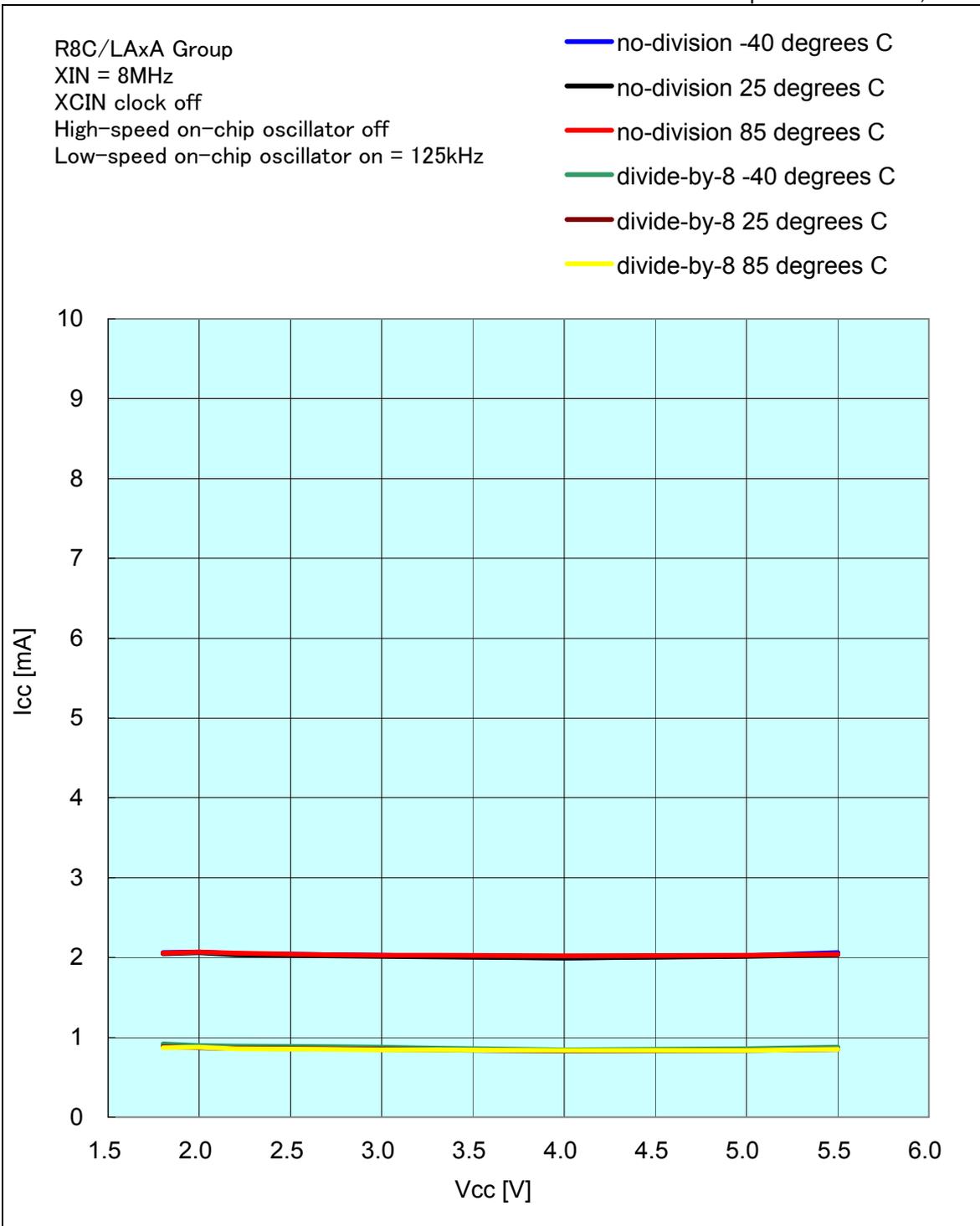Y-axis: Icc [mA], range 0 to 10
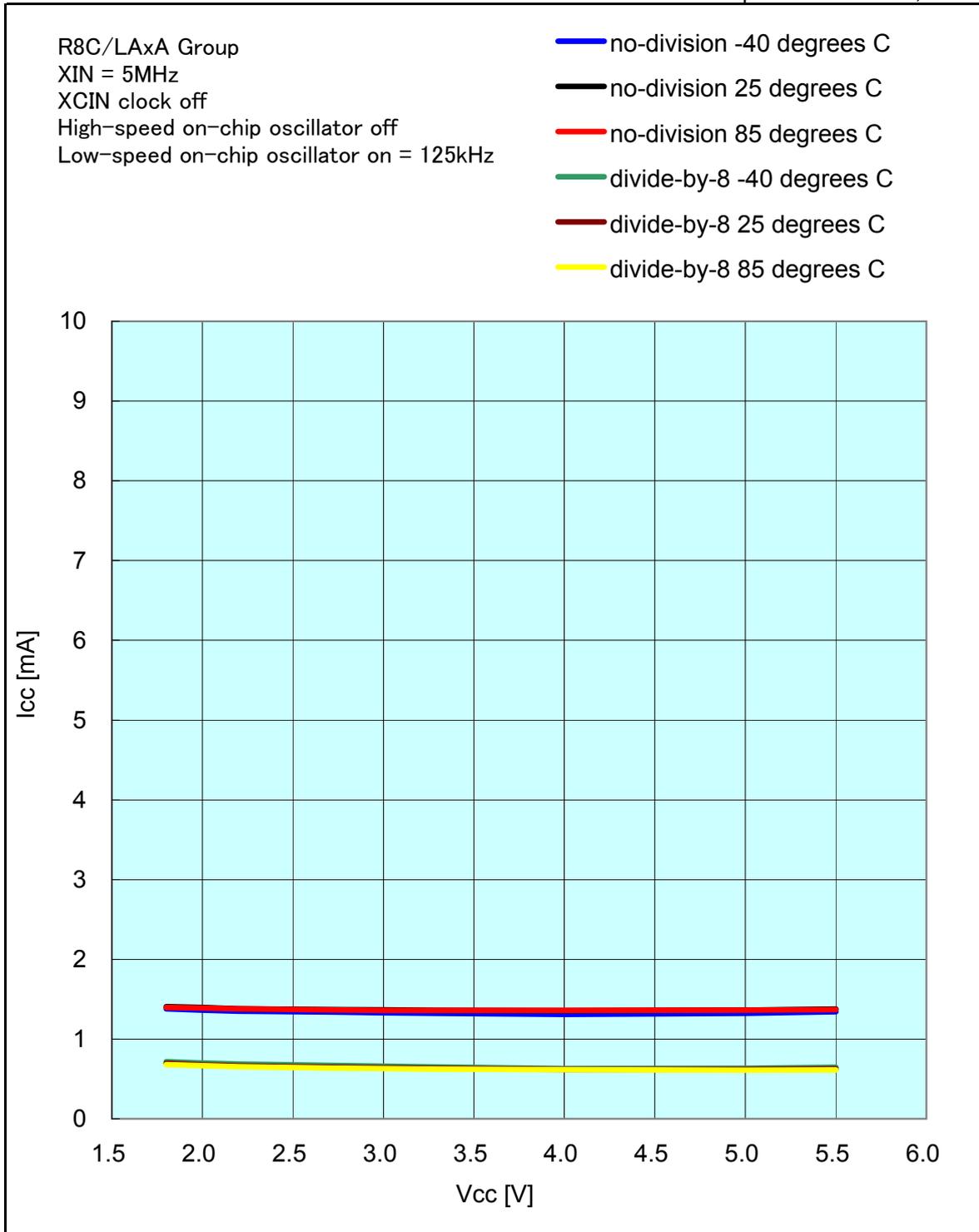X-axis: Vcc [V], range 1.5 to 6.0

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Icc vs Vcc

(High-speed clock mode)
XIN = 5MHz

R8C/LAxA Group
XIN = 5MHz
XCIN clock off
High-speed on-chip oscillator off
Low-speed on-chip oscillator on = 125kHz

— no-division -40 degrees C
— no-division 25 degrees C
— no-division 85 degrees C
— divide-by-8 -40 degrees C
— divide-by-8 25 degrees C
— divide-by-8 85 degrees C

Icc [mA] vs Vcc [V]

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