Standard Characteristics Example

Standard characteristics described below are just examples of the 7546/7547 Group's characteristics and are not guaranteed.
For rated values, refer to "7546 Group Data sheet" and "7547 Group Data sheet".

(1) Power Supply Current Standard Characteristics Example (Vcc-Icc)

Double-speed mode (A/D conversion not executed)
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

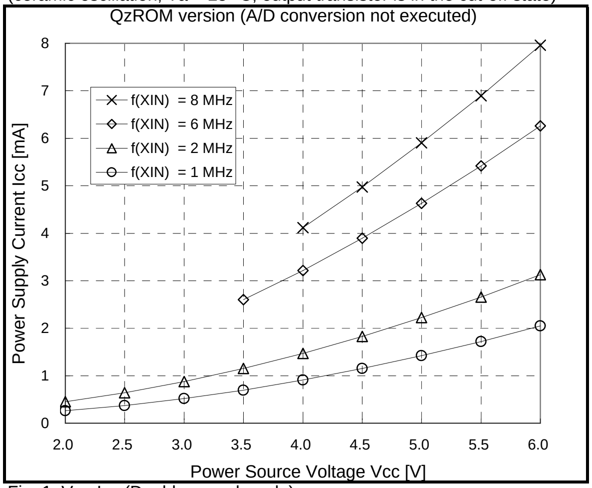

Fig. 1. Vcc-Icc (Double-speed mode)

High-speed mode (A/D conversion not executed)
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

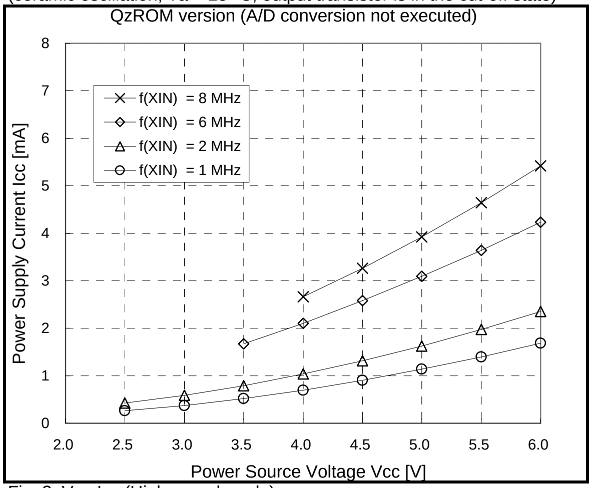

Fig. 2. Vcc-Icc (High-speed mode)

Middle-speed mode (A/D conversion not executed)
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

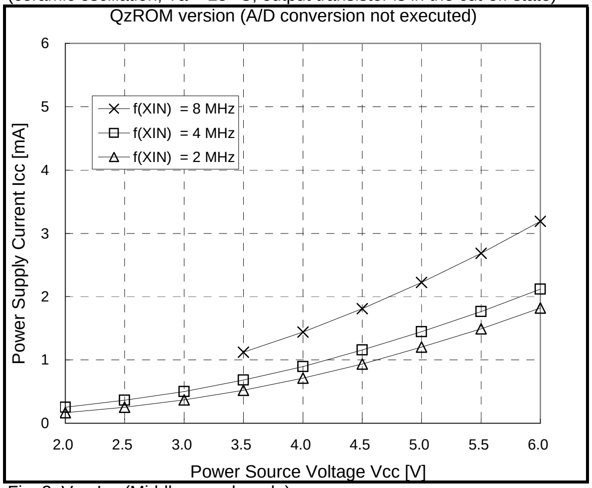

Fig. 3. Vcc-Icc (Middle-speed mode)

At WIT instruction executed
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

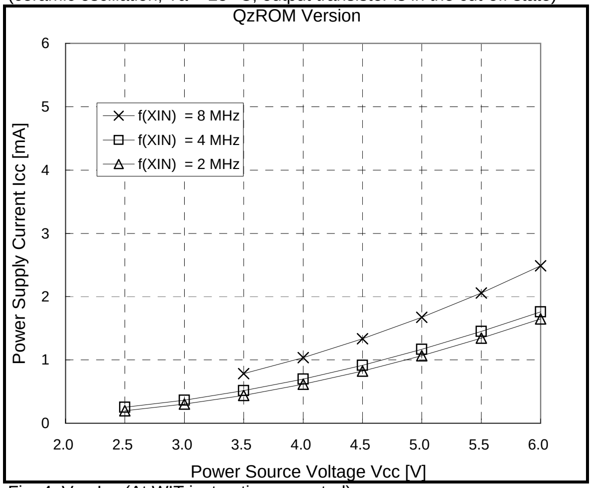

Fig. 4. Vcc-Icc (At WIT instruction executed)

At STP instruction executed
(Ta = 25 °C, output transistor is in the cut-off state)

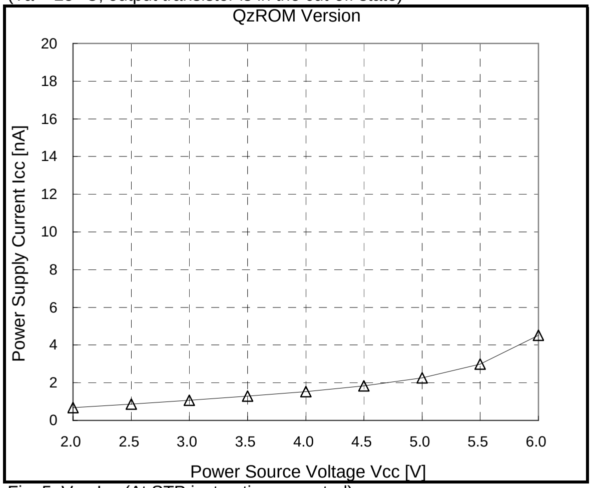

Fig. 5. Vcc-Icc (At STP instruction executed)

At 8 MHz double-speed mode, increment at A/D conversion executed
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

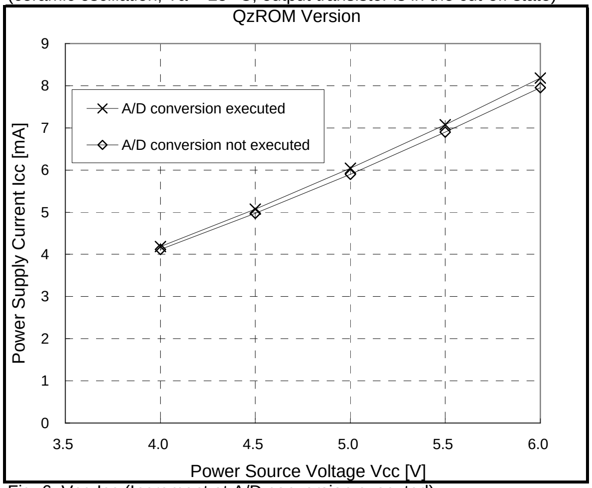

Fig. 6. Vcc-Icc (Increment at A/D conversion executed)

At 8 MHz high-speed mode, increment at A/D conversion executed
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

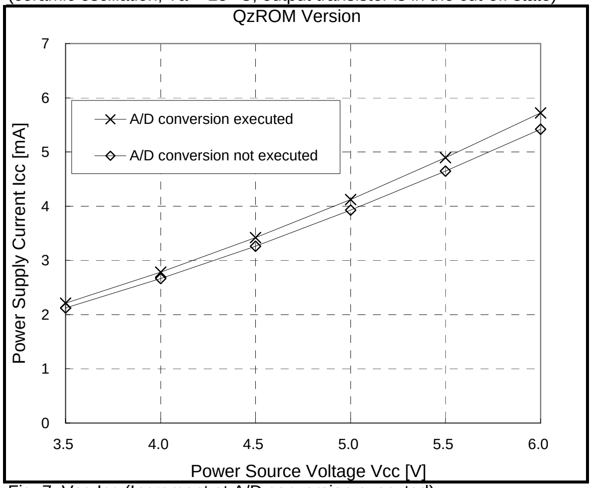

Fig. 7. Vcc-Icc (Increment at A/D conversion executed)

At 8 MHz middle-speed mode, increment at A/D conversion executed
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

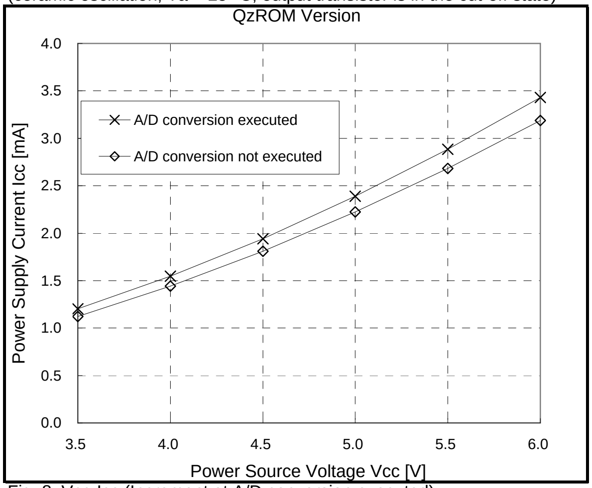

Fig. 8. Vcc-Icc (Increment at A/D conversion executed)

When system is operating in on-chip oscillator double-speed mode
(external oscillation stop, output transistor is in the cut-off state)

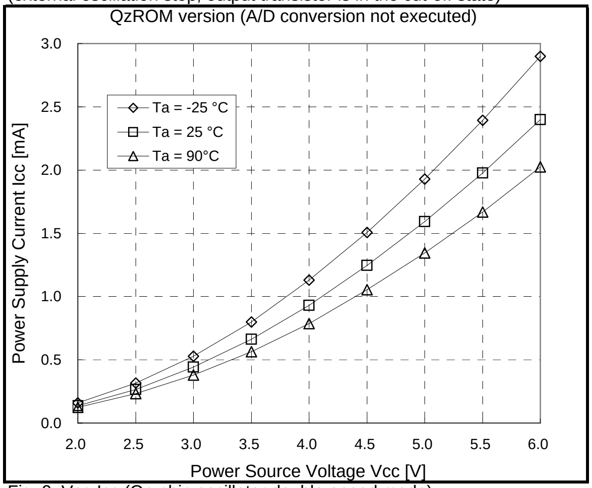

Fig. 9. Vcc-Icc (On-chip oscillator double-speed mode)

When system is operating in on-chip oscillator high-speed mode
(external oscillation stop, output transistor is in the cut-off state)

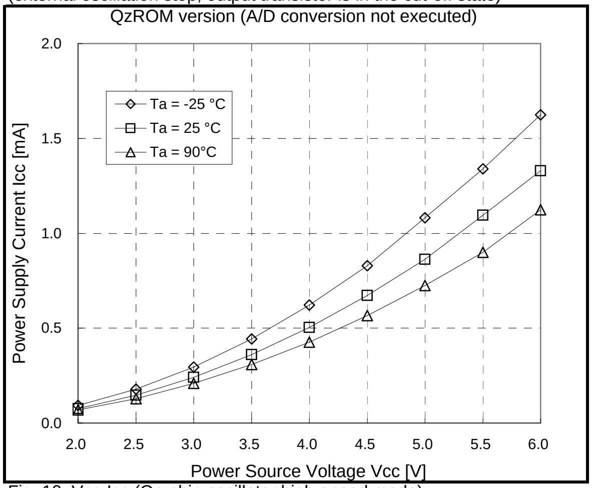

Fig. 10. Vcc-Icc (On-chip oscillator high-speed mode)

When system is operating in on-chip oscillator middle-speed mode
(external oscillation stop, output transistor is in the cut-off state)

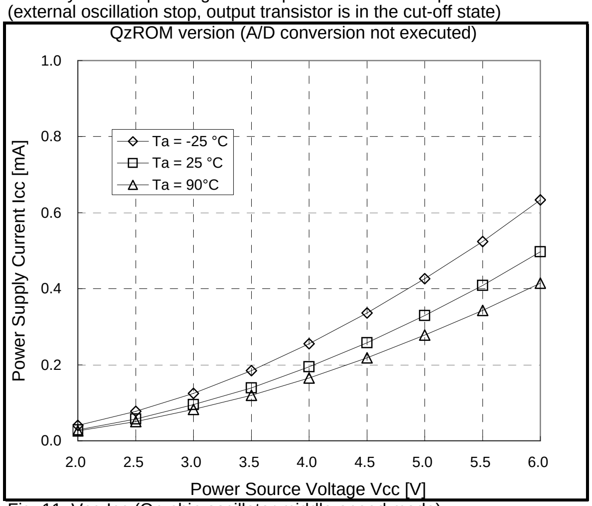

Fig. 11. Vcc-Icc (On-chip oscillator middle-speed mode)

When system is operating in on-chip oscillator low-speed mode
(external oscillation stop, output transistor is in the cut-off state)

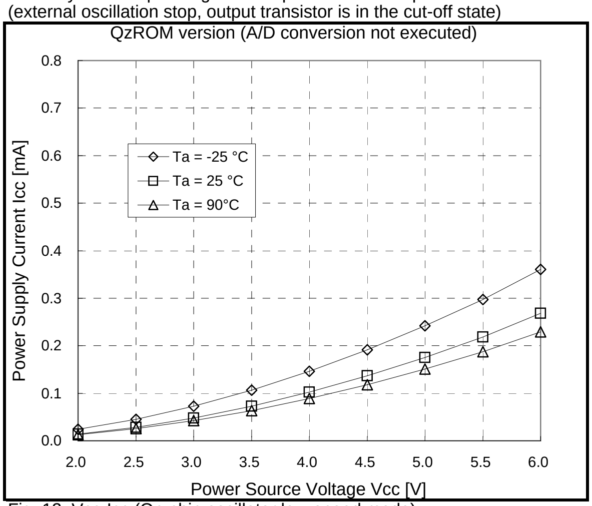

Fig. 12. Vcc-Icc (On-chip oscillator low-speed mode)

On-chip oscillator operating mode, at WIT instruction executed
(external oscillation stop, output transistor is in the cut-off state)

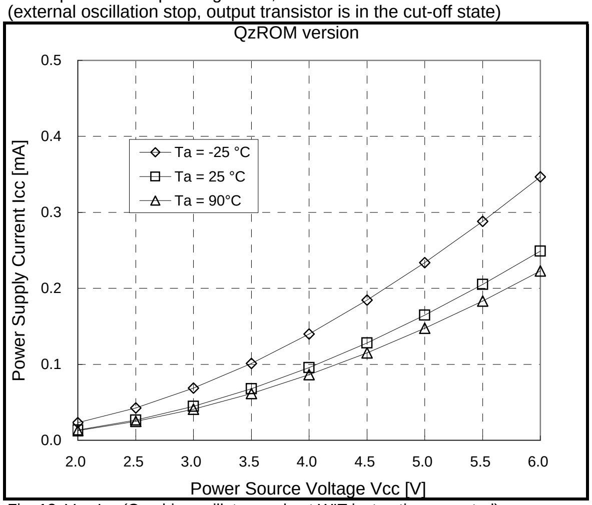

Fig. 13. Vcc-Icc (On-chip oscillator mode at WIT instruction executed)

(2) Power Supply Current Standard Characteristics Example (f(XIN) -Icc)

When system is operating in double-speed mode
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

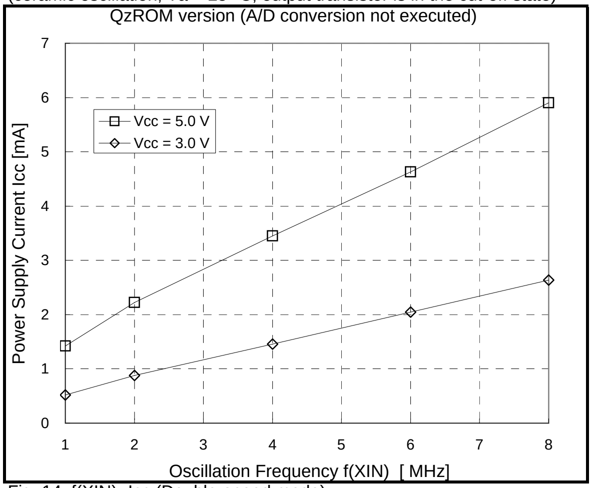

Fig. 14. f(XIN) -Icc (Double-speed mode)

When system is operating in high-speed mode
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

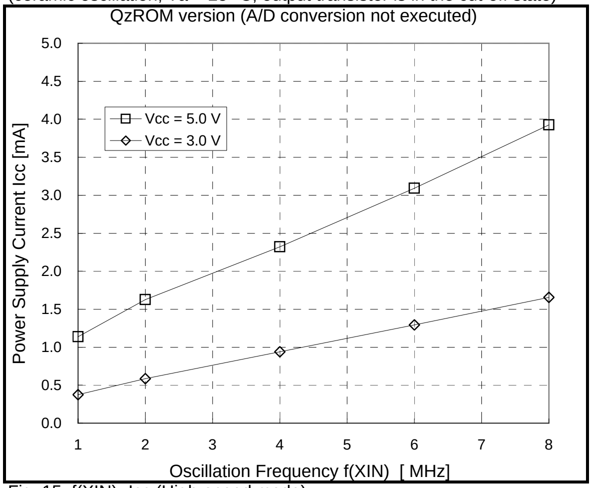

Fig. 15. f(XIN) -Icc (High-speed mode)

When system is operating in middle-speed mode
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

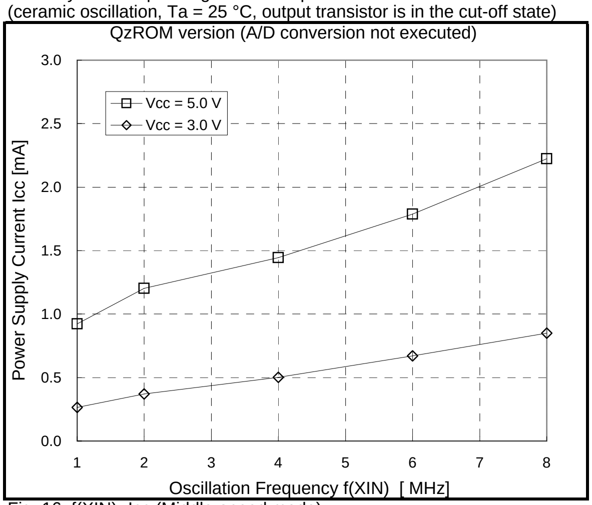

Fig. 16. f(XIN) -Icc (Middle-speed mode)

At WIT instruction executed
(ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)

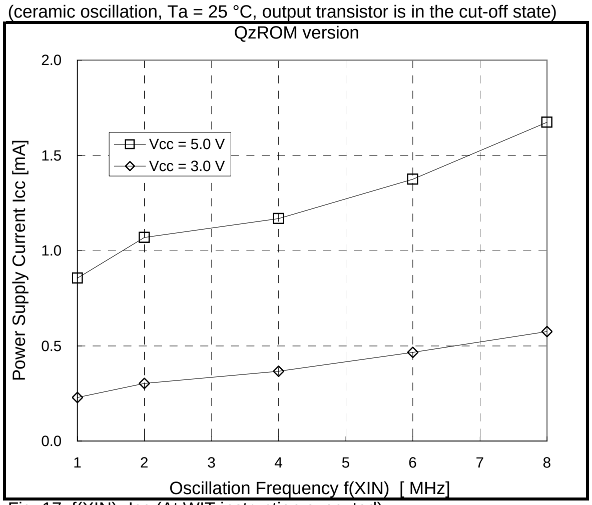

Fig. 17. f(XIN) -Icc (At WIT instruction executed)

(3) Power Supply Current Standard Characteristics Example (Ta-Icc)

When system is operating in on-chip oscillator double-speed mode
(external oscillation stop, output transistor is in the cut-off state)

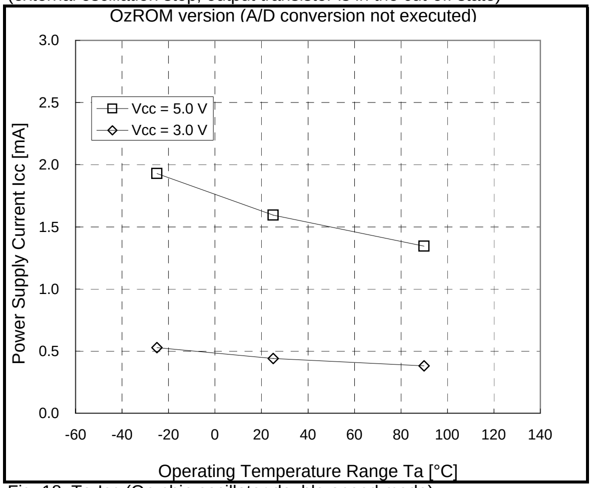

Fig. 18. Ta-Icc (On-chip oscillator double-speed mode)

When system is operating in on-chip oscillator high-speed mode
(external oscillation stop, output transistor is in the cut-off state)

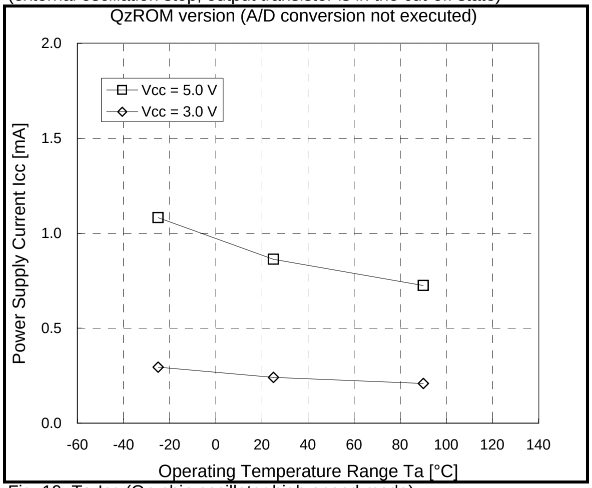

Fig. 19. Ta-Icc (On-chip oscillator high-speed mode)

When system is operating in on-chip oscillator middle-speed mode
(external oscillation stop, output transistor is in the cut-off state)

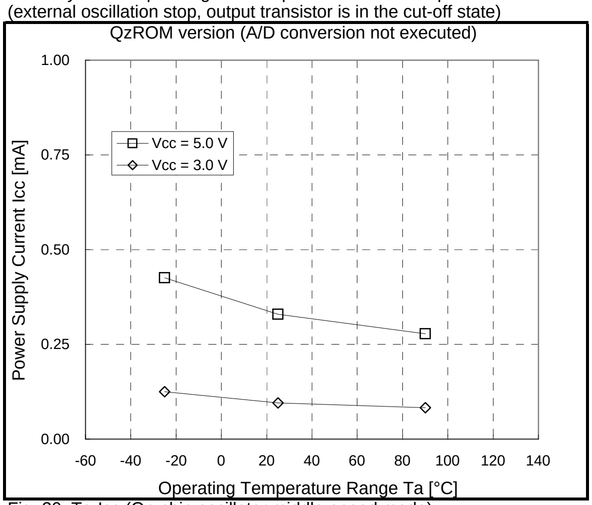

Fig. 20. Ta-Icc (On-chip oscillator middle-speed mode)

When system is operating in on-chip oscillator low-speed mode
(external oscillation stop, output transistor is in the cut-off state)

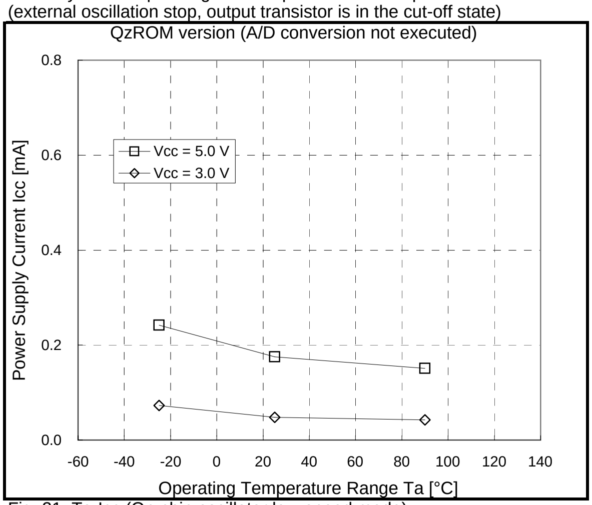

Fig. 21. Ta-Icc (On-chip oscillator low-speed mode)

On-chip oscillator operating mode at WIT instruction executed
(external oscillation stop, output transistor is in the cut-off state)

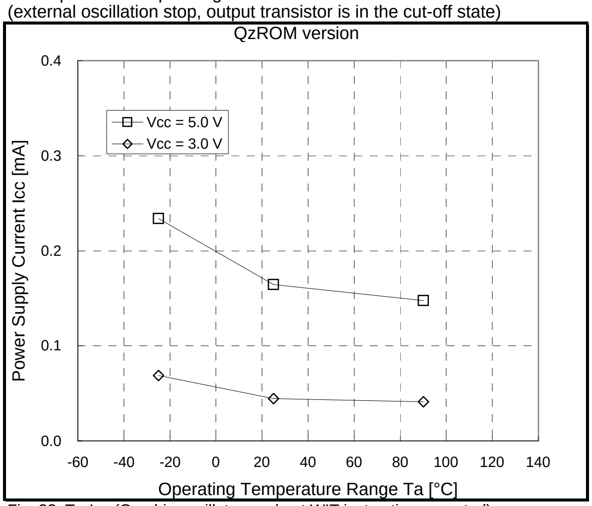

Fig. 22. Ta-Icc (On-chip oscillator mode at WIT instruction executed)

(4) Port Standard characteristics Example (VOH-IOH)

VOH-IOH
(Vcc = 5.0 V, Ports P0, P1, P2, P3)

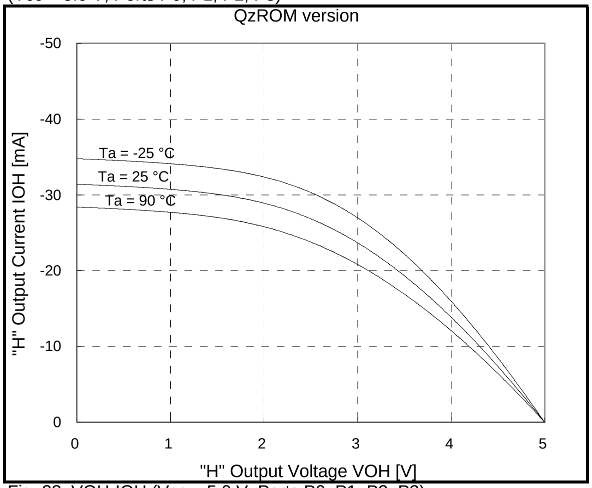

Fig. 23. VOH-IOH (Vcc = 5.0 V, Ports P0, P1, P2, P3)

VOH-IOH
(Vcc = 3.0 V, Ports P0, P1, P2, P3)

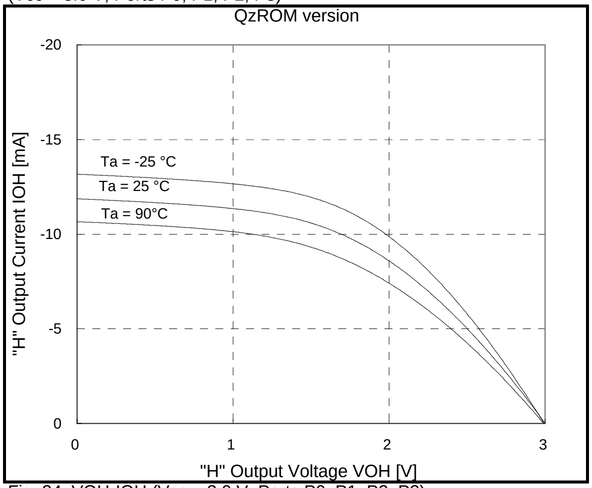

Fig. 24. VOH-IOH (Vcc = 3.0 V, Ports P0, P1, P2, P3)

(5) Port Standard Characteristics Example (VOL-IOL)

VOL-IOL
(Vcc = 5.0 V, Ports P0, P3 "Drivability = High")

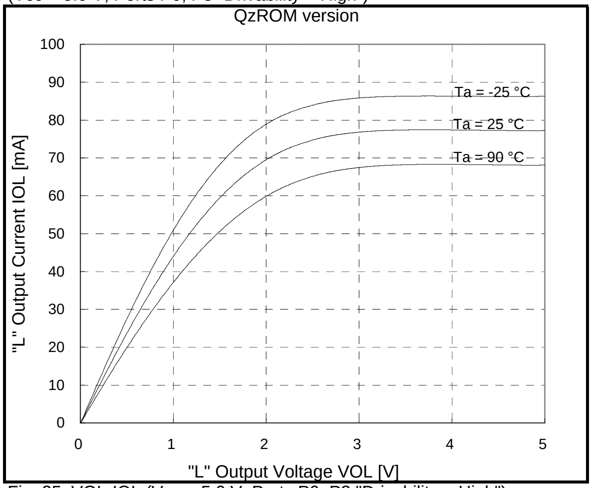

Fig. 25. VOL-IOL (Vcc = 5.0 V, Ports P0, P3 "Drivability = High")

VOL-IOL
(Vcc = 3.0 V, Ports P0, P3 "Drivability = High")

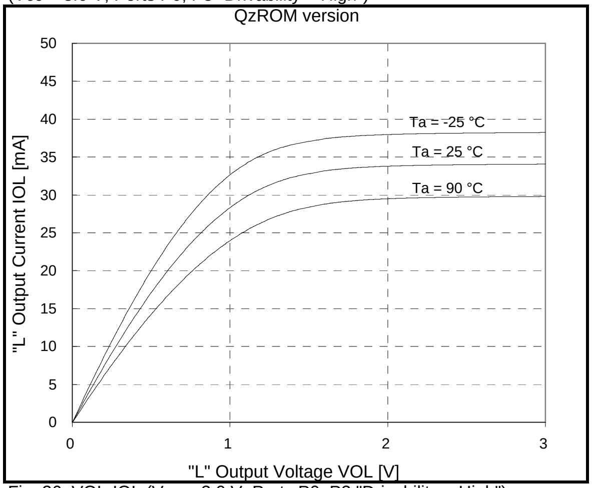

Fig. 26. VOL-IOL (Vcc = 3.0 V, Ports P0, P3 "Drivability = High")

VOL-IOL
(Vcc = 5.0 V, Ports P0, P3 "Drivability = Low", and Ports P1, P2)

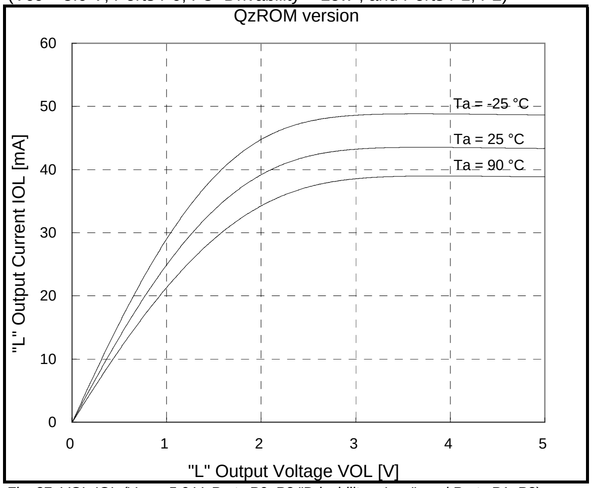

Fig. 27. VOL-IOL (Vcc = 5.0 V, Ports P0, P3 "Drivability = Low", and Ports P1, P2)

VOL-IOL
(Vcc = 3.0 V, Ports P0, P3 "Drivability = Low", and Ports P1, P2)

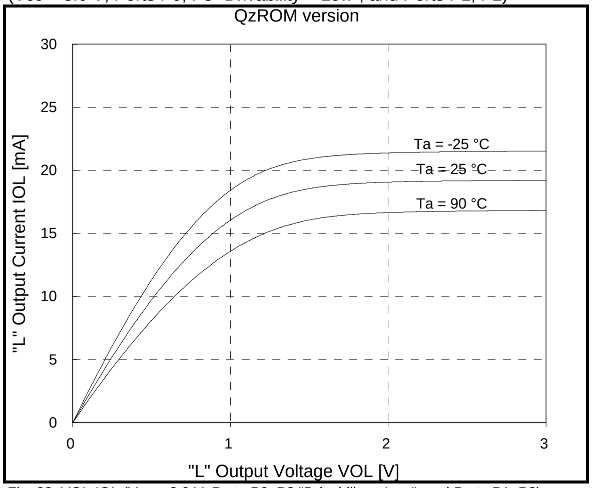

Fig. 28. VOL-IOL (Vcc = 3.0 V, Ports P0, P3 "Drivability = Low", and Ports P1, P2)

(6) Port Standard Characteristics Example (Vcc-IIL)

Vcc-IIL
(Ports P0, P3 when connecting pull-up transistor)

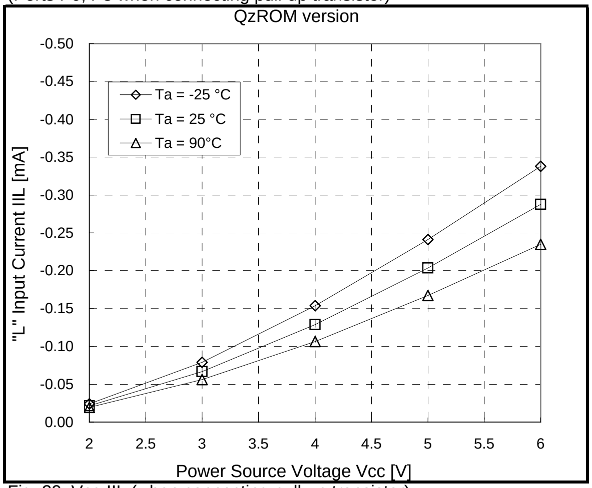

Fig. 29. Vcc-IIL (when connecting pull-up transistor)

(7) Port Standard Characteristics Example (Vcc-VIHL)

Vcc-VIHL
(I/O Ports (CMOS) , Ta = 25 °C, Ports P0, P1, P2, P3)

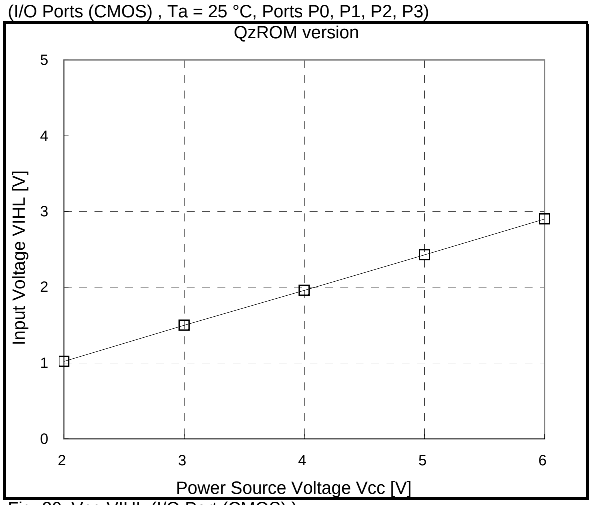

Fig. 30. Vcc-VIHL (I/O Port (CMOS))

Vcc-VIHL
(I/O Port (when selecting TTL input level) , Ta = 25 °C, Port P10, P22, P13, P36, P37)

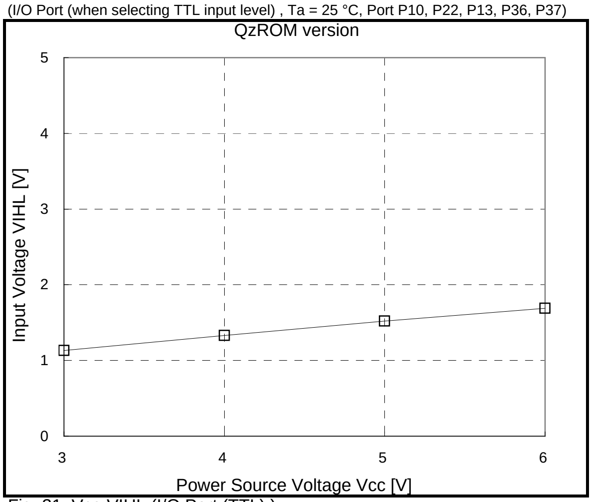

Fig. 31. Vcc-VIHL (I/O Port (TTL))

Vcc-VIHL
(RESET pin, Ta = 25 °C)

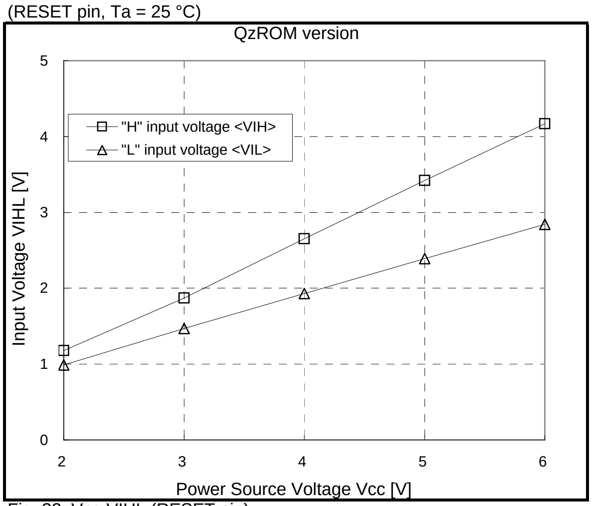

Fig. 32. Vcc-VIHL (RESET pin)

Vcc-VIHL
(CNVss pin, Ta = 25 °C)

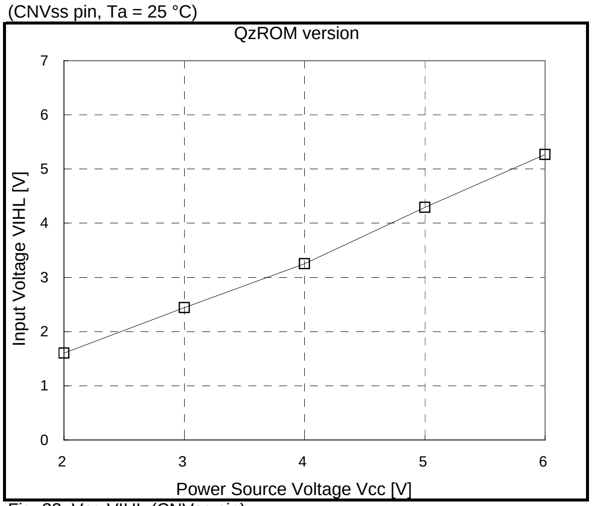

Fig. 33. Vcc-VIHL (CNVss pin)

Vcc-HYS
(RESET pin, Ta = 25 °C)

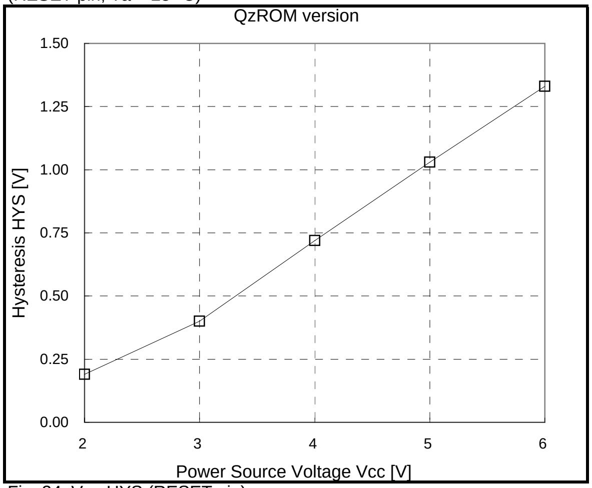

Fig. 34. Vcc-HYS (RESET pin)

Vcc-HYS
(SIO function pin (RXD1, SCLK1, RXD2,SCLK2) , Ta = 25 °C)

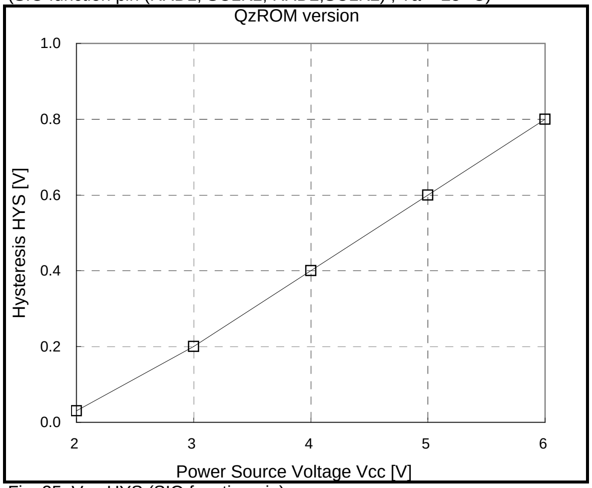

Fig. 35. Vcc-HYS (SIO function pin)

Vcc-HYS
(INT•Capture function pin (INT0, INT1, CNTR0, P00-P07, CAP0, CAP1) , Ta = 25 °C)

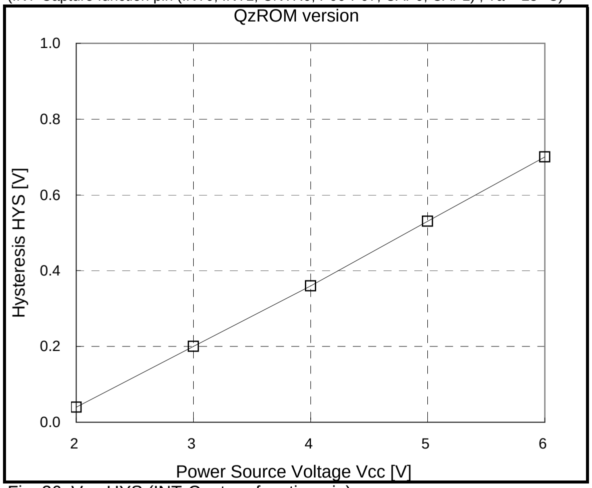

Fig. 36. Vcc-HYS (INT•Capture function pin)

(8) Port Standard Characteristics Example (VIN-II (AD))

VIN-II (AD)
(A/D converter operation, f(Xin) = 8 MHz, Double-speed mode, Vcc = 5.0 V, Ta = 25 °C)

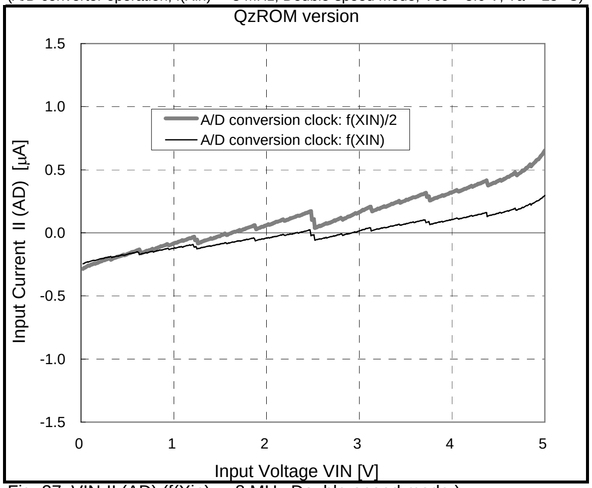

Fig. 37. VIN-II (AD) (f(Xin) = 8 MHz Double-speed mode)

VIN-II (AD)
(A/D converter operation, f(Xin) = 6 MHz, Double-speed mode, Vcc = 5.0 V, Ta = 25 °C)

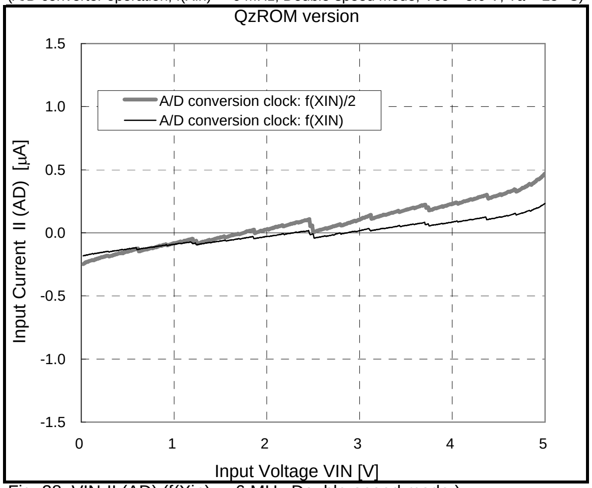

Fig. 38. VIN-II (AD) (f(Xin) = 6 MHz Double-speed mode)

VIN-II (AD)
(A/D converter operationg, f(Xin) = 4 MHz, Double-speed mode , Vcc = 5.0 V, Ta = 25 °C)

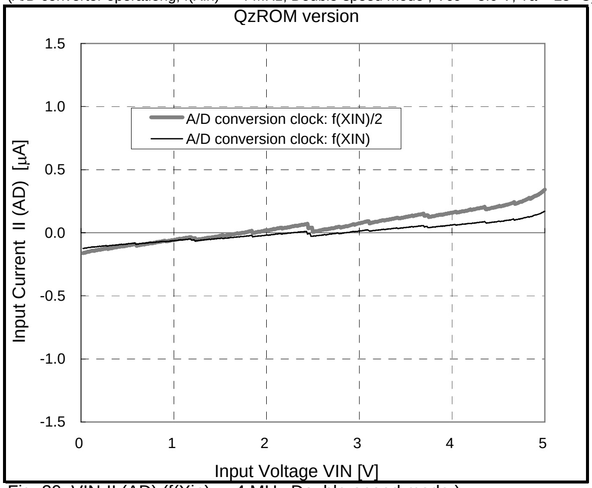

Fig. 39. VIN-II (AD) (f(Xin) = 4 MHz Double-speed mode)

(9) On-chip Oscillator Frequency Characteristics Example

On-chip oscillator frequency characteristics (revised in rev.2.00)
(Vcc-Rosc)

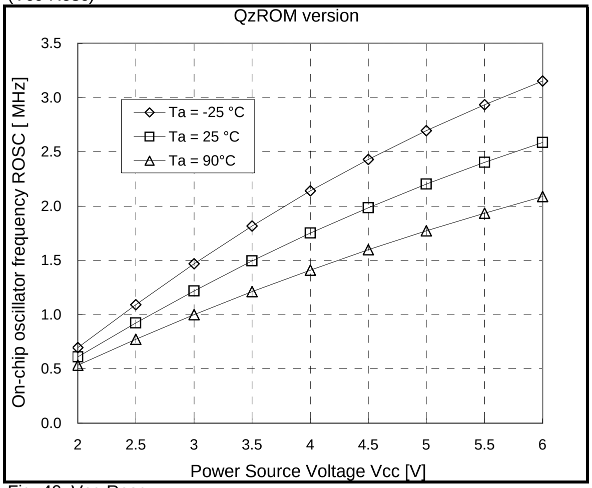

Fig. 40. Vcc-Rosc

On-chip oscillator frequency characteristics (revised in rev.2.00)
(Ta-Rosc)

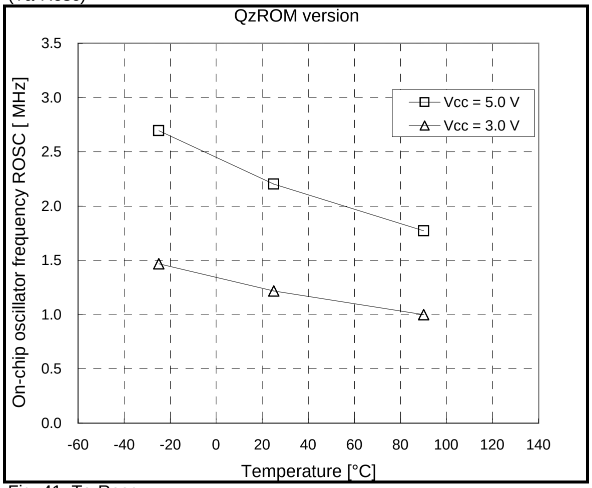

Fig. 41. Ta-Rosc

(10) RC Oscillation Frequency Characteristics Example

RC Oscillation frequency characteristics
(R-f(XIN))

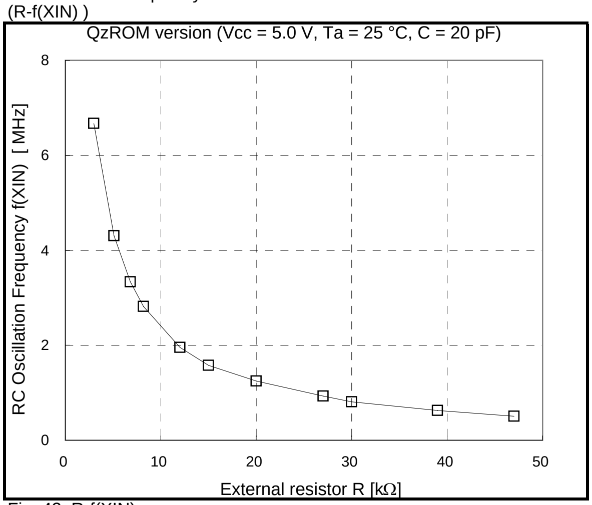

Fig. 42. R-f(XIN)

RC Oscillation frequency characteristics
(C-f(XIN) characteristics)

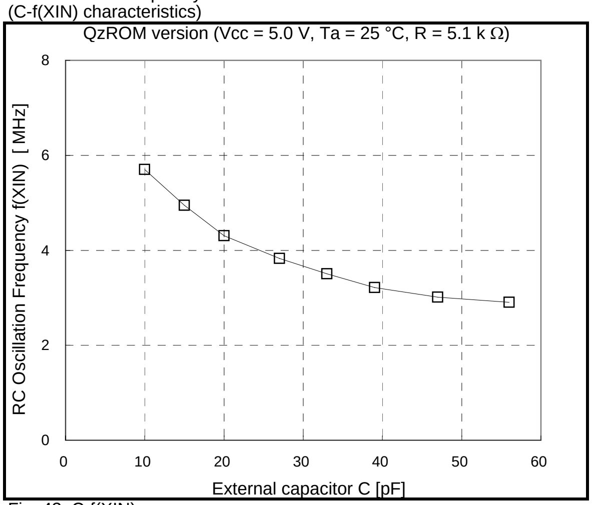

Fig. 43. C-f(XIN)

RC Oscillation Frequency characteristics
(Vcc-f(XIN))

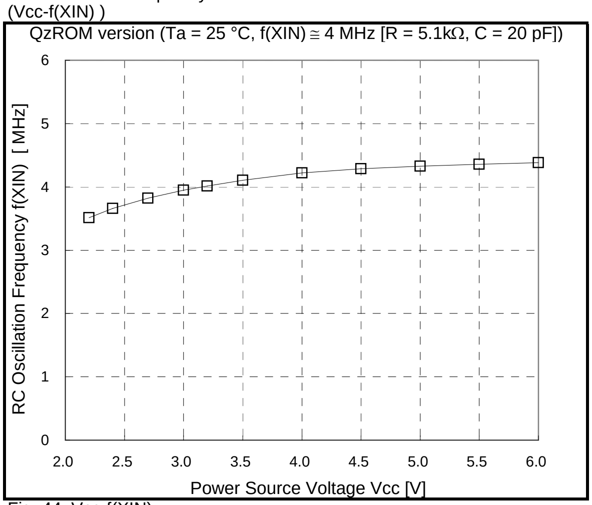

Fig. 44. Vcc-f(XIN)

RC Oscillation Frequency characteristics
(Ta-f(XIN))

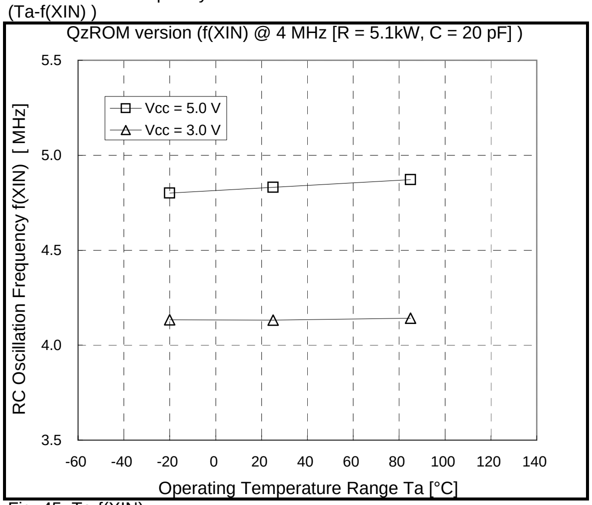

Fig. 45. Ta-f(XIN)

(11) A/D Conversion Accuracy Characteristics

A/D conversion accuracy standard characteristics example-1

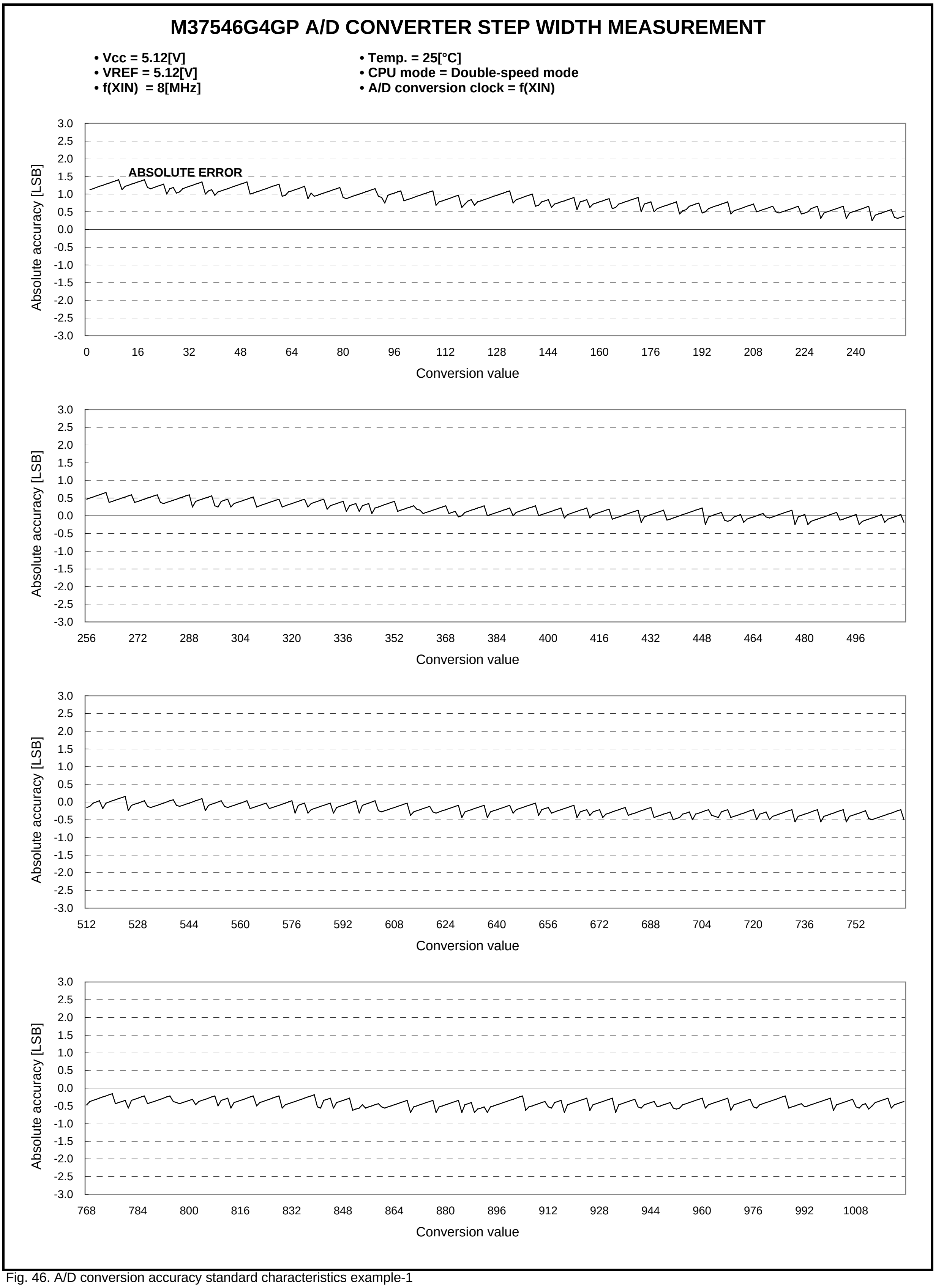

Fig. 46. A/D conversion accuracy standard characteristics example-1

A/D conversion accuracy standard characteristics example-2

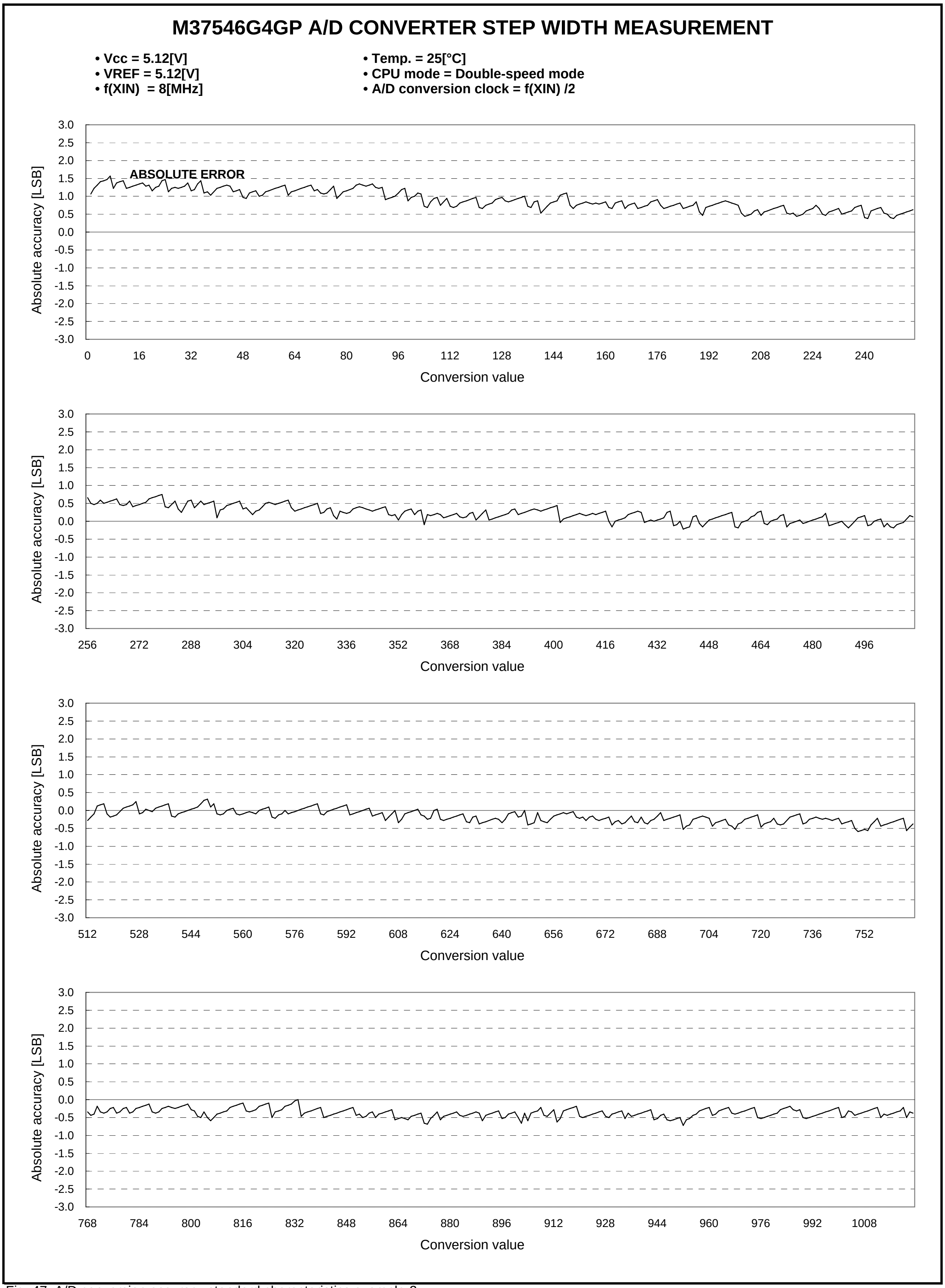

Fig. 47. A/D conversion accuracy standard characteristics example-2

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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April 1st, 2010
Renesas Electronics Corporation

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