

Standard Characteristics Example

Standard characteristics described below are just examples of the 3850A Group(QzROM version)'s characteristics and are not guaranteed. For rated values, refer to "3850 Group (Spec.A QzROM version) Datasheet".

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

When system is operating in high-speed mode (ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)
QzROM version (A/D conversion not executed)

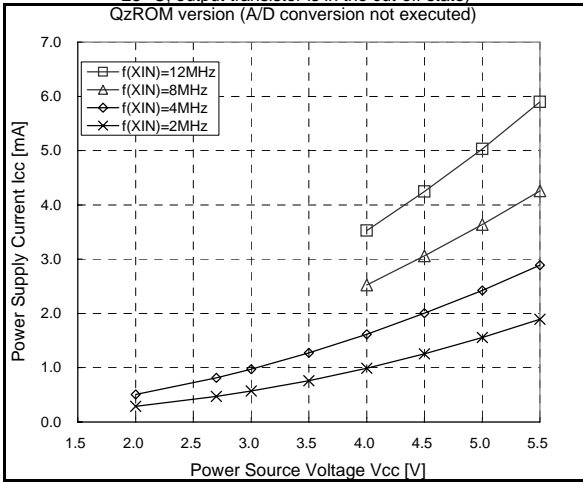


Fig.1. Vcc-Icc (QzROM version, high-speed mode)

When system is operating in middle-speed mode (ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)
QzROM version (A/D conversion not executed)

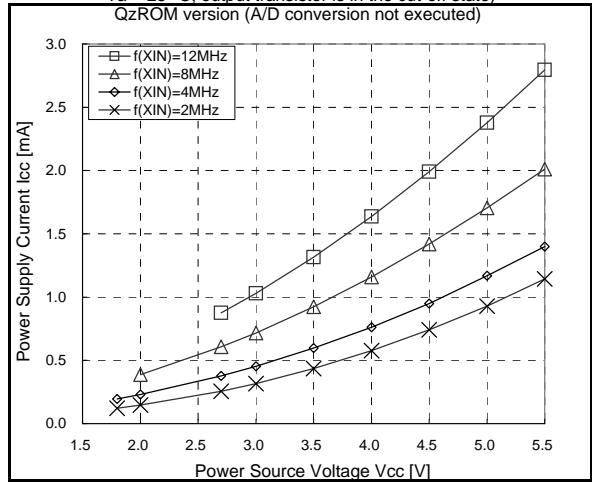


Fig.2. Vcc-Icc (QzROM version, middle-speed mode)

When system is operating in low-speed mode (crystal oscillation, output transistor is in the cut-off state)
QzROM version (A/D conversion not executed)

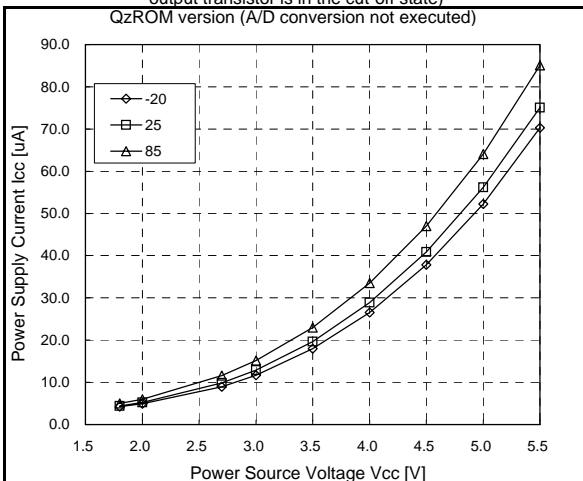


Fig3. Vcc-Icc (QzROM version, low-speed mode)

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

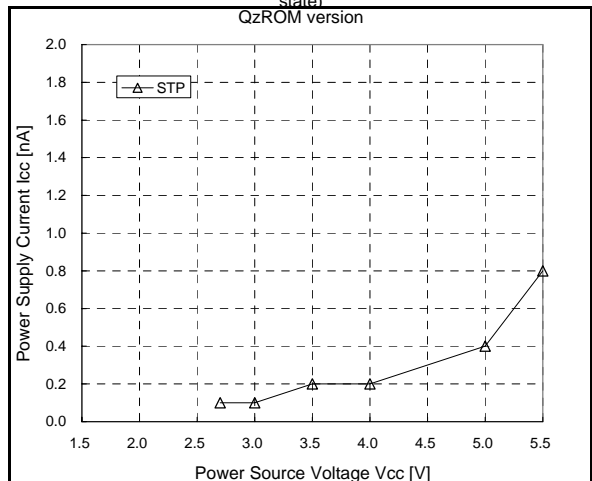


Fig. 4. Vcc-Icc (QzROM version, at STP instruction executed)

At 12 MHz high-speed mode, increment at A/D conversion executed (ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)
QzROM version

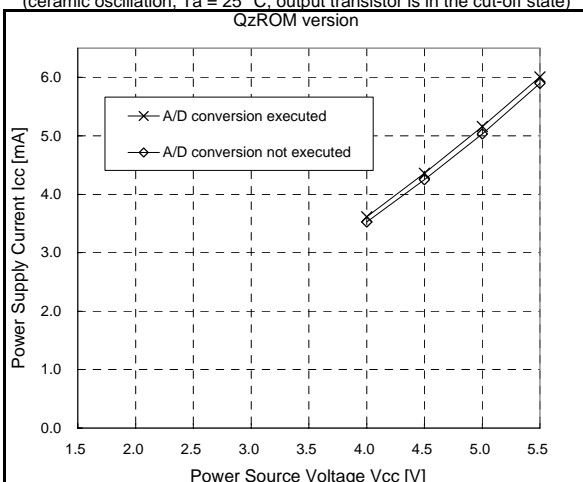


Fig.5. Vcc-Icc (QzROM version, increment at A/D conversion executed)

At WIT instruction executed (ceramic oscillation, Ta = 25 °C, f(XIN)=12MHz, output transistor is in the cut-off state)
QzROM version

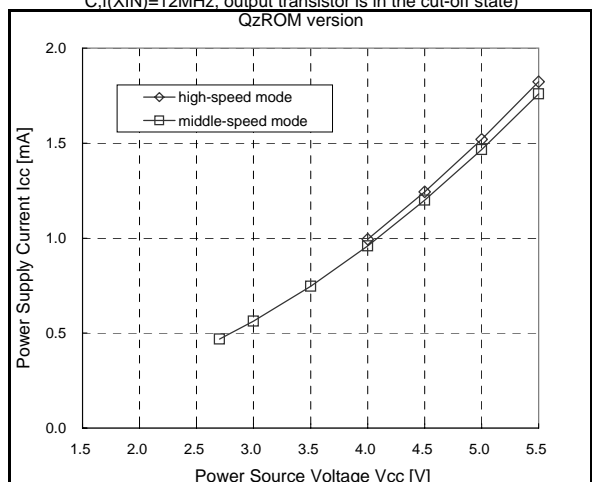


Fig.6. Vcc-Icc (QzROM version, at WIT instruction executed)

At WIT instruction executed in low-speed WIT mode (crystal oscillation, Ta = 25 °C, f(XCIN)=32.768KHz, output transistor is in the cut-off state)

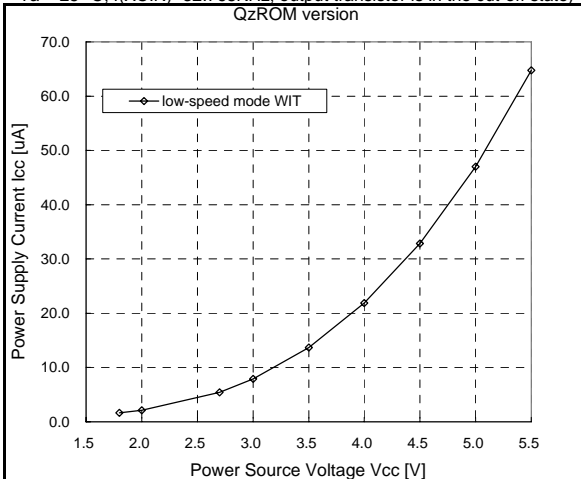


Fig.7. Vcc-Icc (QzROM version, at WIT instruction executed in low-speed WIT mode)

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

When system is operating in high-speed mode (ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)
QzROM version (A/D conversion not executed)

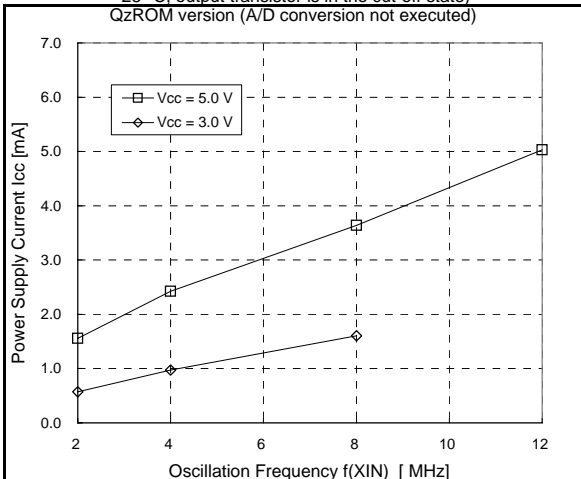


Fig.8. f(XIN) -Icc (QzROM version, high-speed mode)

When system is operating in middle-speed mode (ceramic oscillation, Ta = 25 °C, output transistor is in the cut-off state)
QzROM version (A/D conversion not executed)

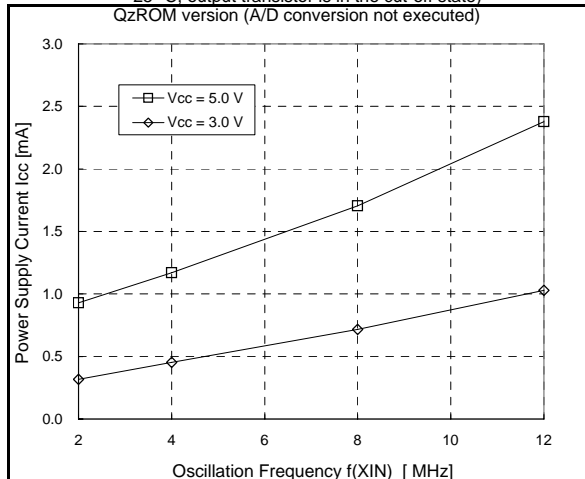


Fig. 9. f(XIN) -Icc (QzROM version, middle-speed mode)

At WIT instruction executed in middle-speed mode (ceramic oscillation, Ta = 90 °C, output transistor is in the cut-off state)
QzROM version

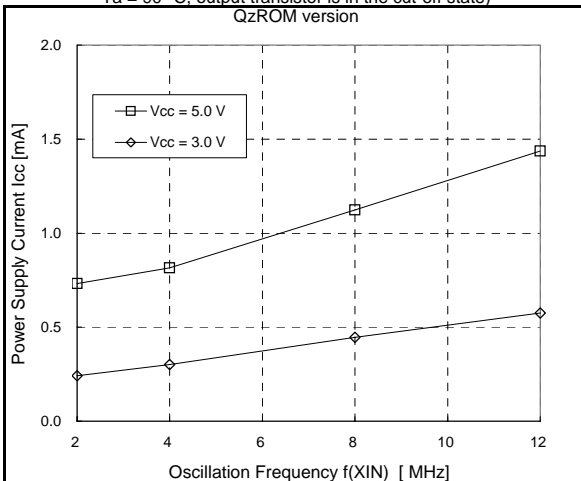


Fig. 10. f(XIN) -Icc (QzROM version at WIT instruction executed in middle-speed mode)

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

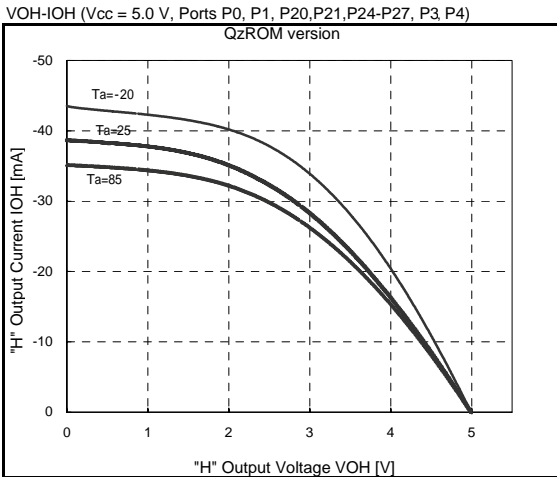


Fig. 11 QzROM version, VOH-IOH
(Vcc = 5.0 V, Ports P0, P1, P20, P21, P24-P27, P3, P4)

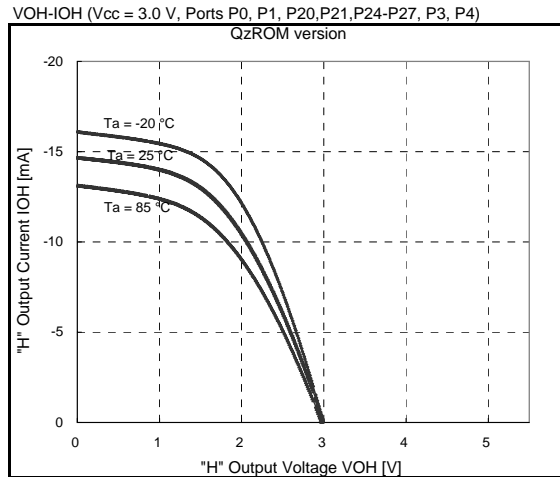


Fig. 12 QzROM version, VOH-IOH
(Vcc = 3.0 V, Ports P0, P1, P20, P21, P24-P27, P3, P4)

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

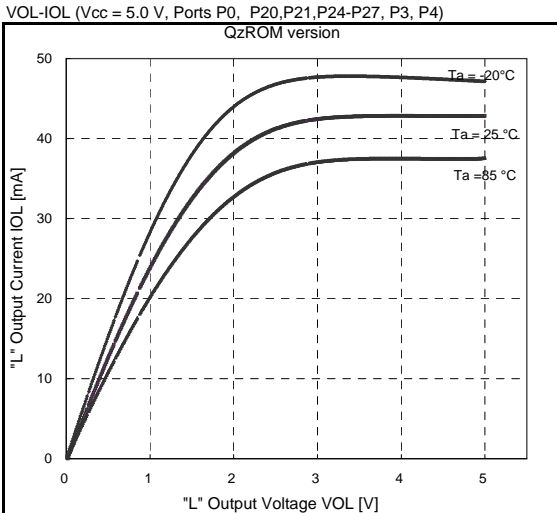


Fig. 13 QzROM version, VOL-IOL
(Vcc = 5.0 V, Ports P0, P20, P21, P24-P27, P3, P4)

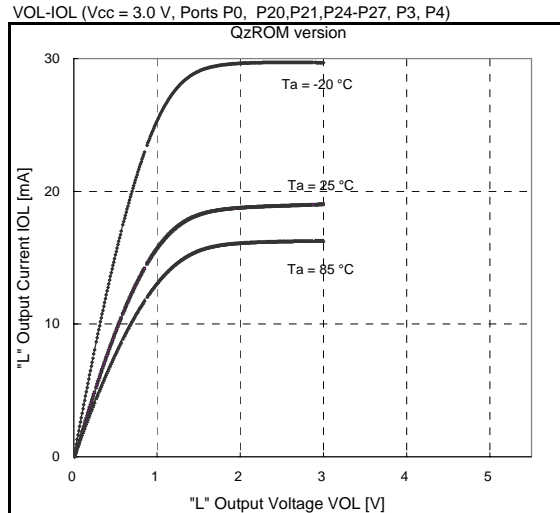


Fig. 14 QzROM version, VOL-IOL
(Vcc = 3.0 V, Ports P0, P20, P21, P24-P27, P3, P4)

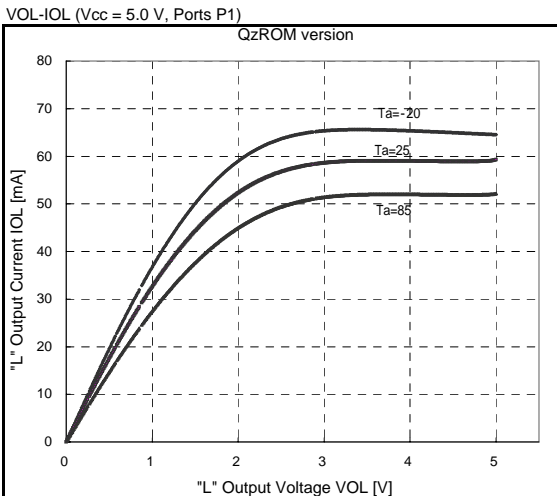


Fig. 15 QzROM version, VOL-IOL (Vcc = 5.0 V, Port P1)

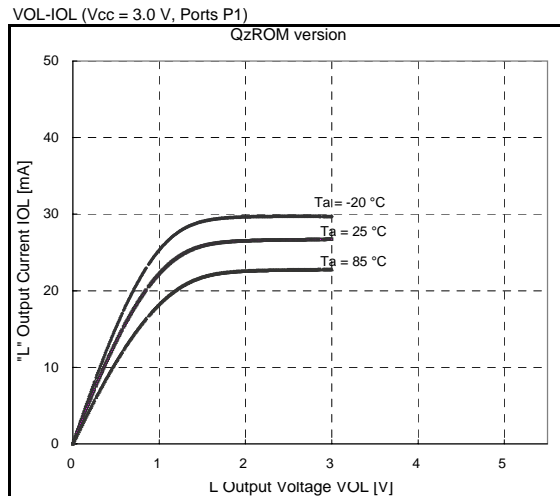


Fig. 16 QzROM version, VOL-IOL (Vcc = 3.0 V, Port P1)

VOL-IOL (Vcc = 5.0 V, Ports P22,P23)

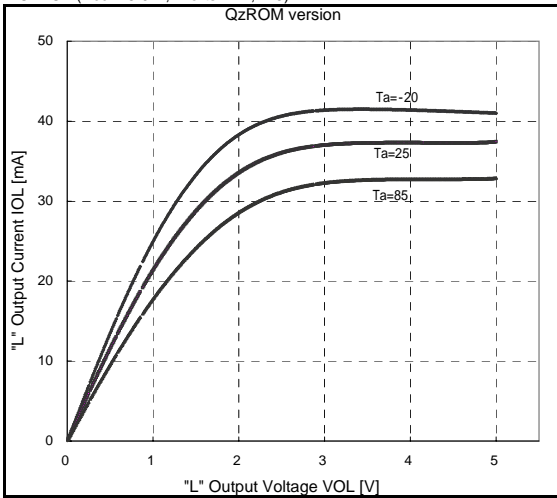


Fig. 17. QzROM version, VOL-IOL (Vcc = 5.0 V, Ports P22,P23)

VOL-IOL (Vcc = 3.0 V, Ports P22,P23)

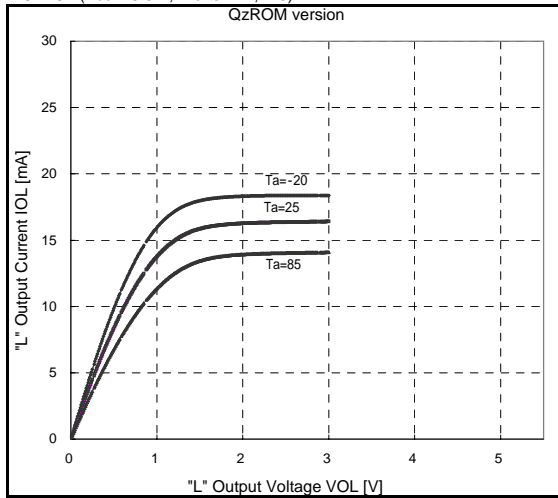


Fig. 18. QzROM version, VOL-IOL (Vcc = 3.0 V, Ports P22,P23)

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

Vcc-IIL (When connecting pull-up transistor, Ports P0, P1, P20, P21, P24-P27, P3, P4)

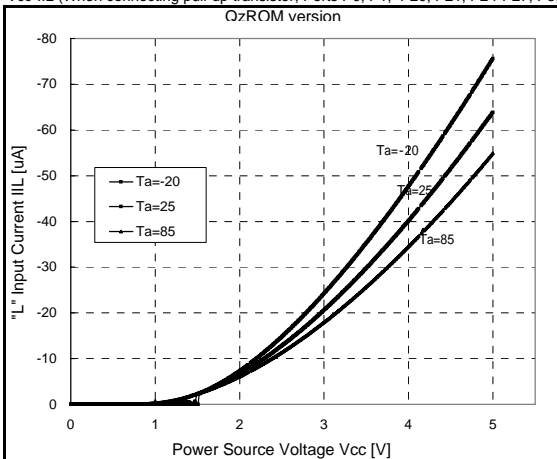


Fig. 19. QzROM version, Vcc-IIL (when connecting pull-up transistor, Ports P0, P1, P20, P21, P24-P27, P3, P4)

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

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

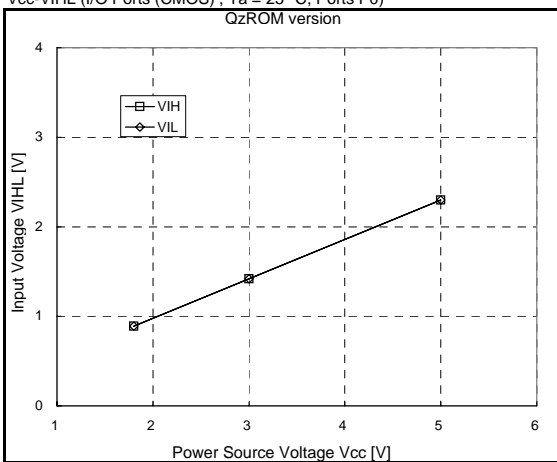


Fig. 20. QzROM version, Vcc-VIHL (I/O Ports (CMOS), Ta = 25 °C, Ports P0)

Vcc-VIHL (RESET pin, Ta = 25 °C)

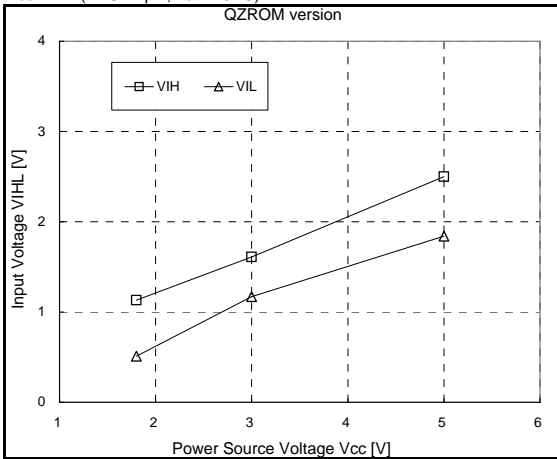


Fig. 21. QzROM version, Vcc-VIHL (RESET pin)

Vcc-VIHL (XIN pin, Ta = 25 °C)

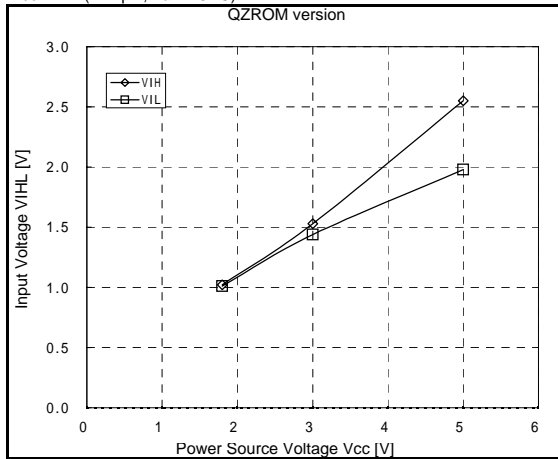


Fig.22. QzROM version, Vcc-VIHL (XIN pin)

Vcc-VIHL (INT0-INT2 pin, Ta = 25 °C)

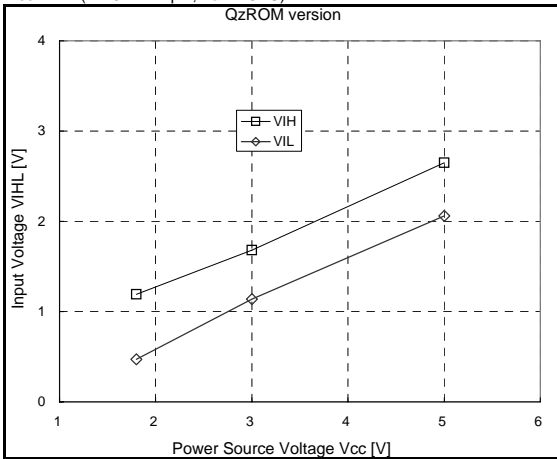


Fig. 23. QzROM version, Vcc-VIHL (INT0-INT2 pin)

Vcc-HYS (INT0-INT2 pin, Ta = 25 °C)

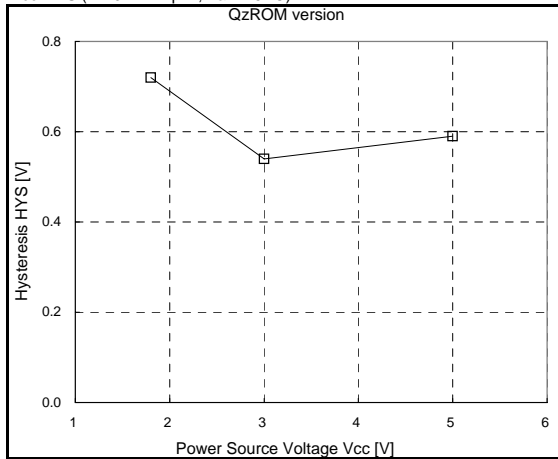


Fig.24. QzROM version, Vcc-HYS (INT0-INT2 pin)

Vcc-HYS (RESET pin, Ta = 25 °C)

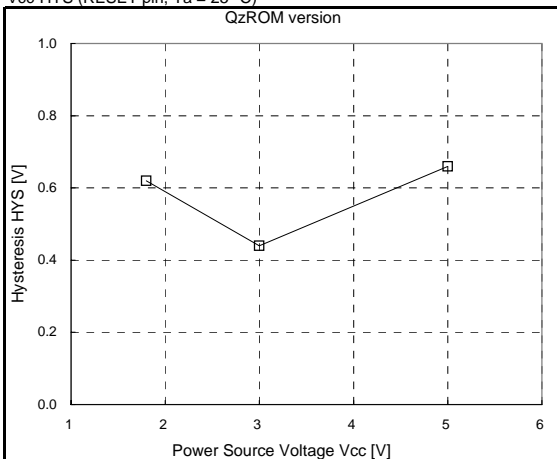


Fig. 25. QzROM version, Vcc-HYS (RESET pin)

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

VIN-II (AD) (A/D converter operation, $f(Xin) = 12$ MHz, high-speed mode
 $V_{CC} = 5.0$ V, $T_a = 25$ °C)
QzROM version

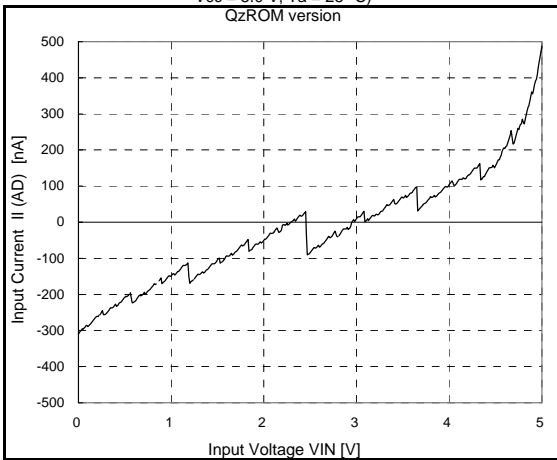


Fig. 26. QzROM version, VIN-II (AD) ($f(Xin) = 12$ MHz high-speed mode)

VIN-II (AD) (A/D converter operation, $f(Xin) = 8$ MHz, high-speed mode
 $V_{CC} = 5.0$ V, $T_a = 25$ °C)
QzROM version

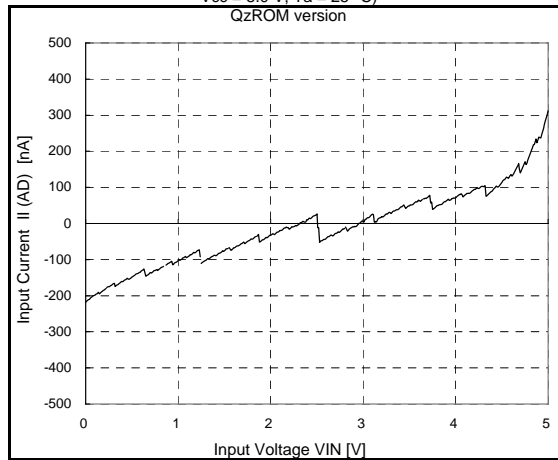


Fig. 27. QzROM version, VIN-II (AD) ($f(Xin) = 8$ MHz high-speed mode)

VIN-II (AD) (A/D converter operation, $f(Xin) = 4$ MHz, high-speed mode, $V_{CC} = 5.0$ V, $T_a = 25$ °C)
QzROM version

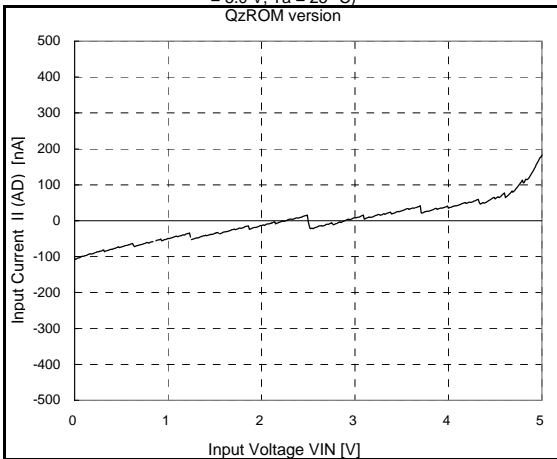


Fig.28. QzROM version, VIN-II (AD) ($f(Xin) = 4$ MHz high-speed mode)

(8) A/D Conversion Accuracy Characteristics
A/D conversion accuracy standard characteristics example

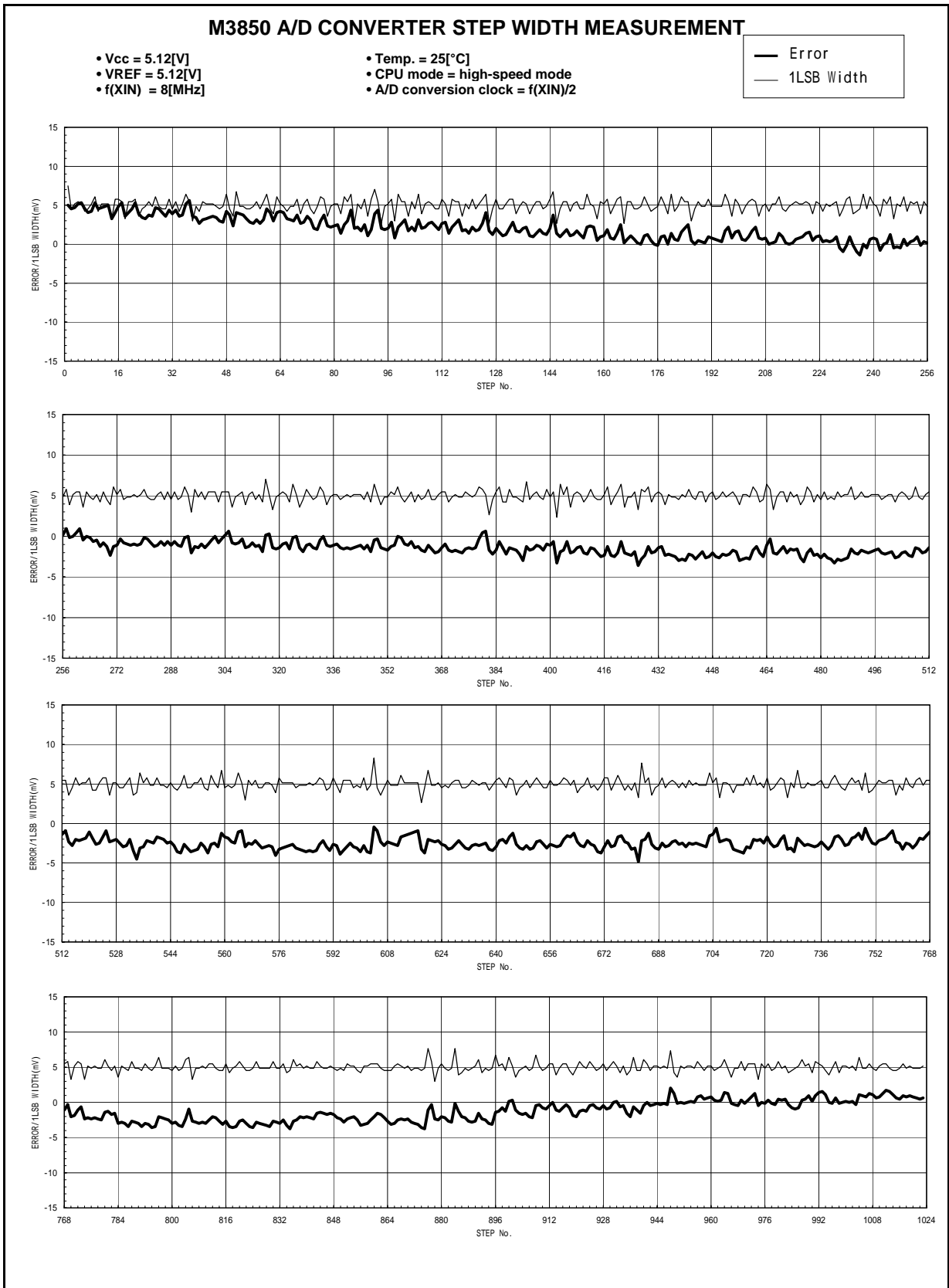


Fig. 29. A/D conversion accuracy standard characteristics

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April 1st, 2010
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