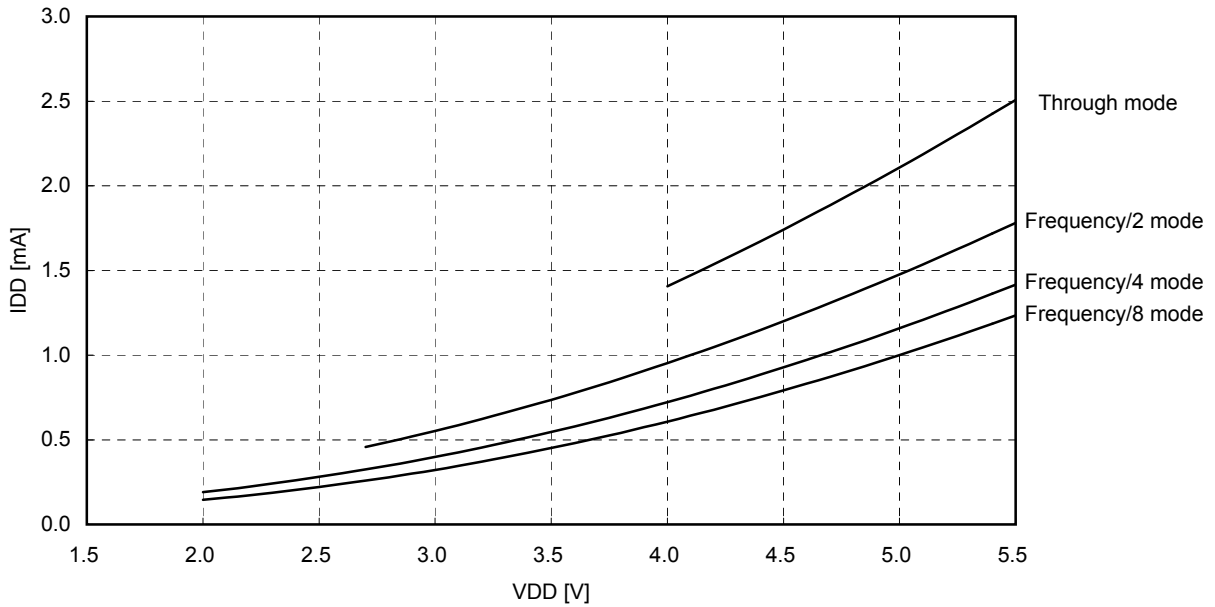


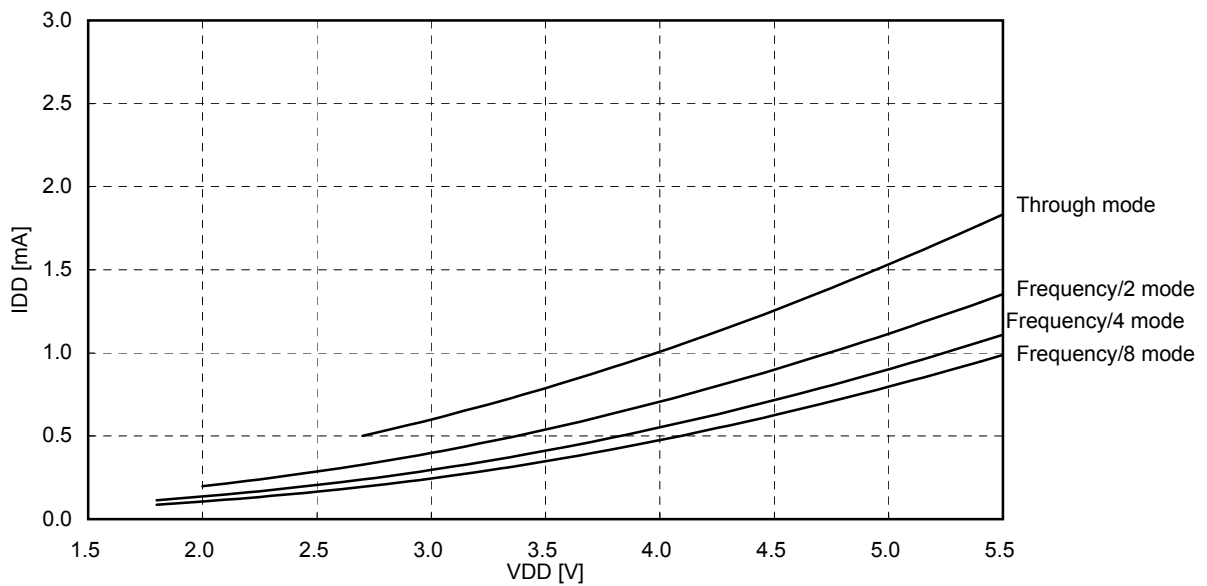
**1-1. VDD-IDD characteristics**

conditions:  $f(Xin)=6MHz$ (ceramic resonator),  $Ta=25^{\circ}C$



**1-2. VDD-IDD characteristics**

conditions:  $f(Xin)=4MHz$ (ceramic resonator),  $Ta=25^{\circ}C$

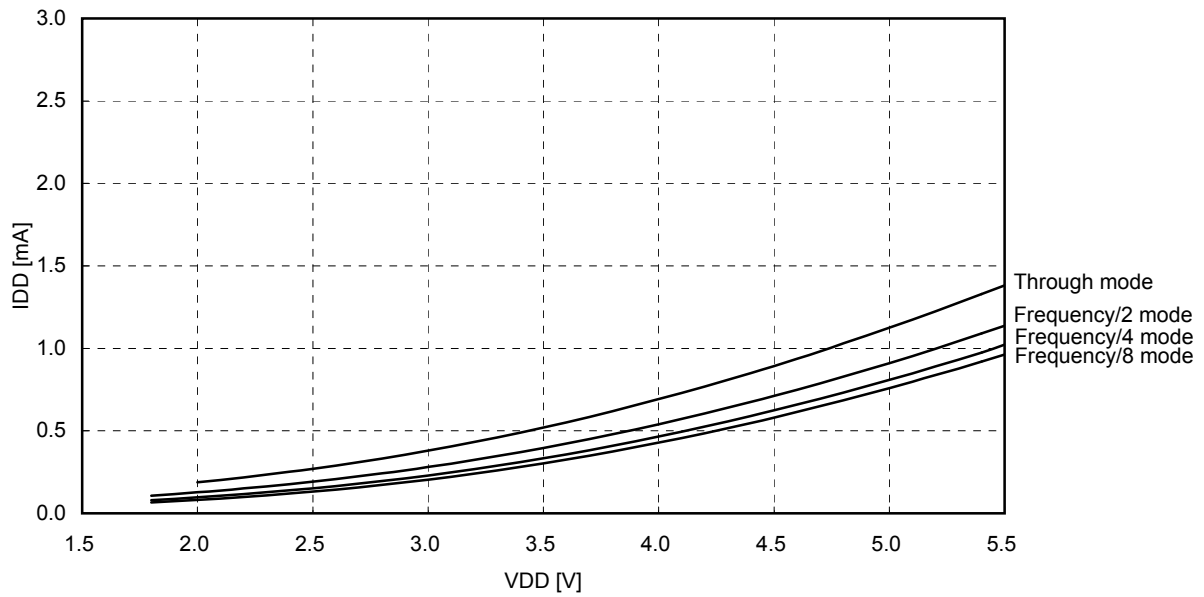


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508GH4FP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

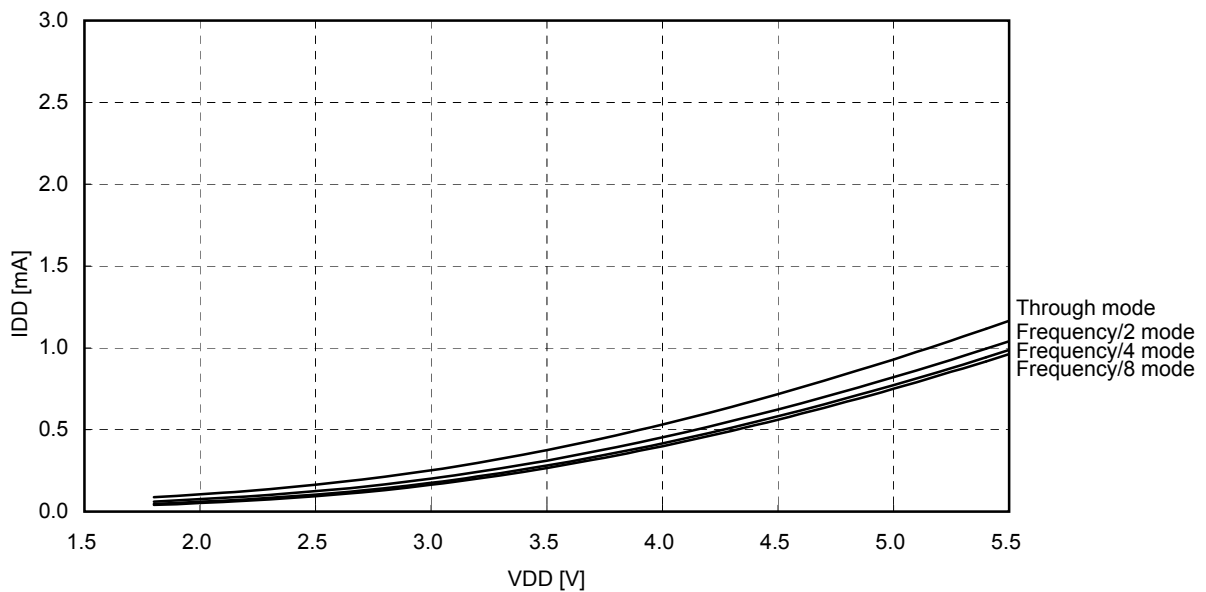
**1-3. VDD-IDD characteristics**

conditions:  $f(Xin)=2MHz$ (ceramic resonator),  $Ta=25^{\circ}C$



**1-4. VDD-IDD characteristics**

conditions:  $f(Xin)=1MHz$ (ceramic resonator),  $Ta=25^{\circ}C$

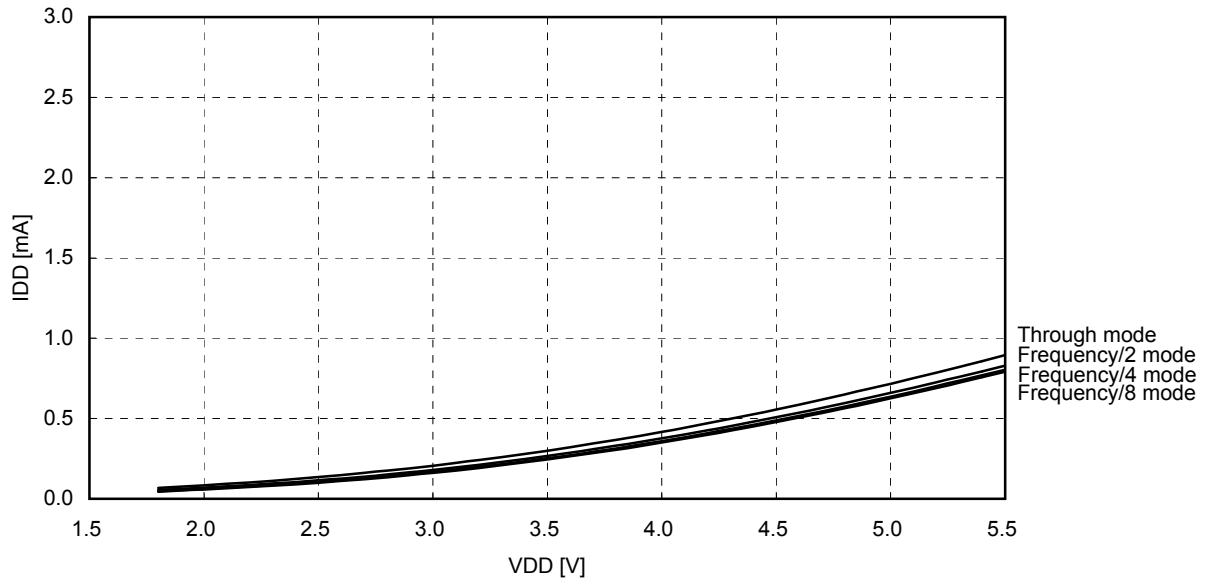


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508GH4FP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

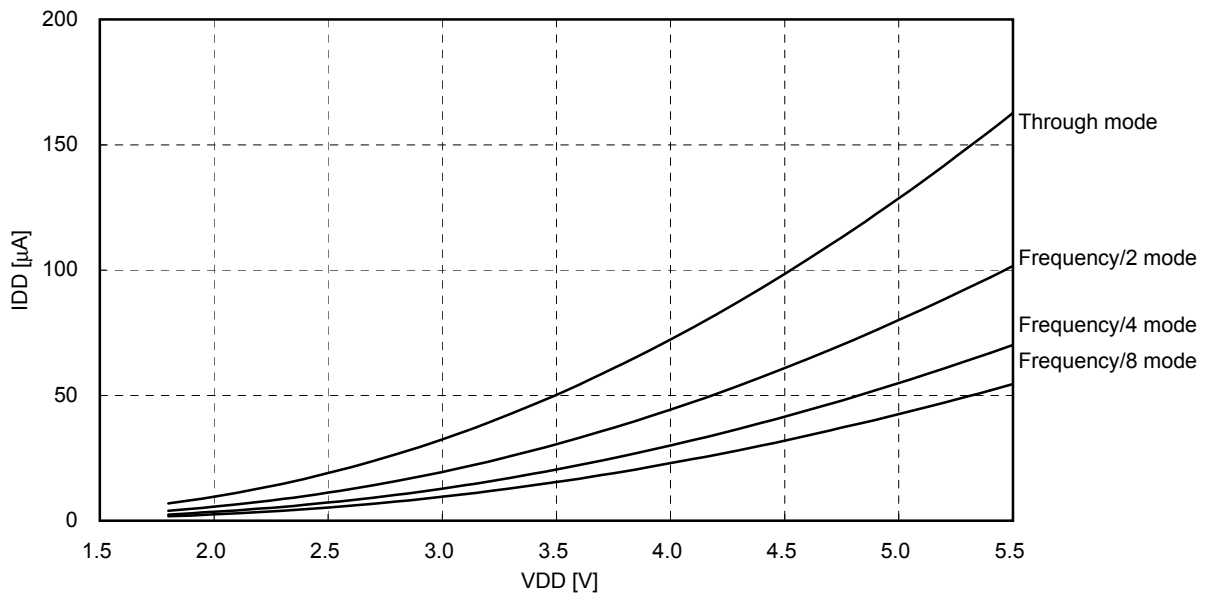
**1-5. VDD-IDD characteristics**

conditions:  $f(Xin)=500kHz$ (ceramic resonator),  $Ta=25^{\circ}C$



**1-6. VDD-IDD characteristics**

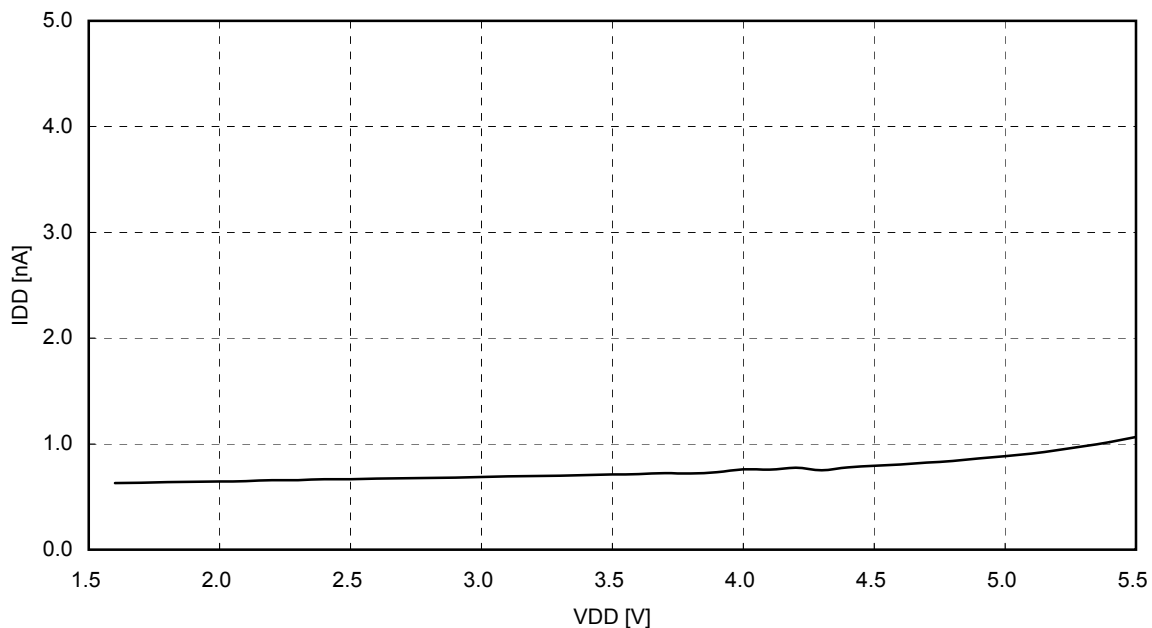
conditions: on-chip oscillator,  $f(Xin)=stop$ ,  $Ta=25^{\circ}C$



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508GH4FP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

1-7. VDD-IDD(RAM back-up) characteristics  
conditions: Ta=25°C

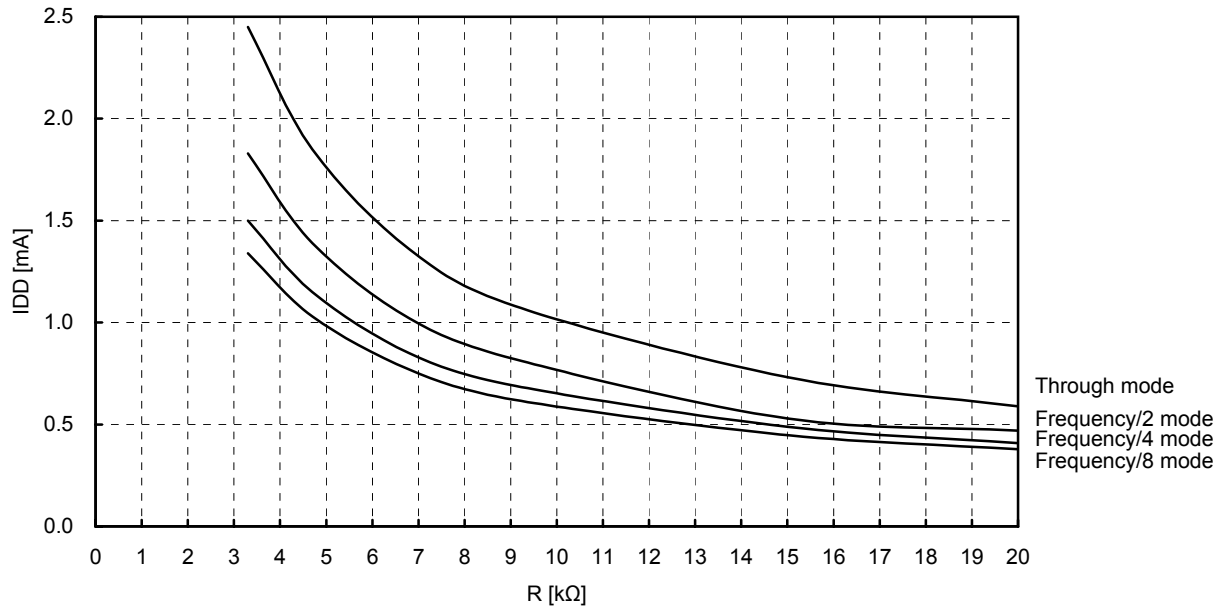


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508GH4FP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

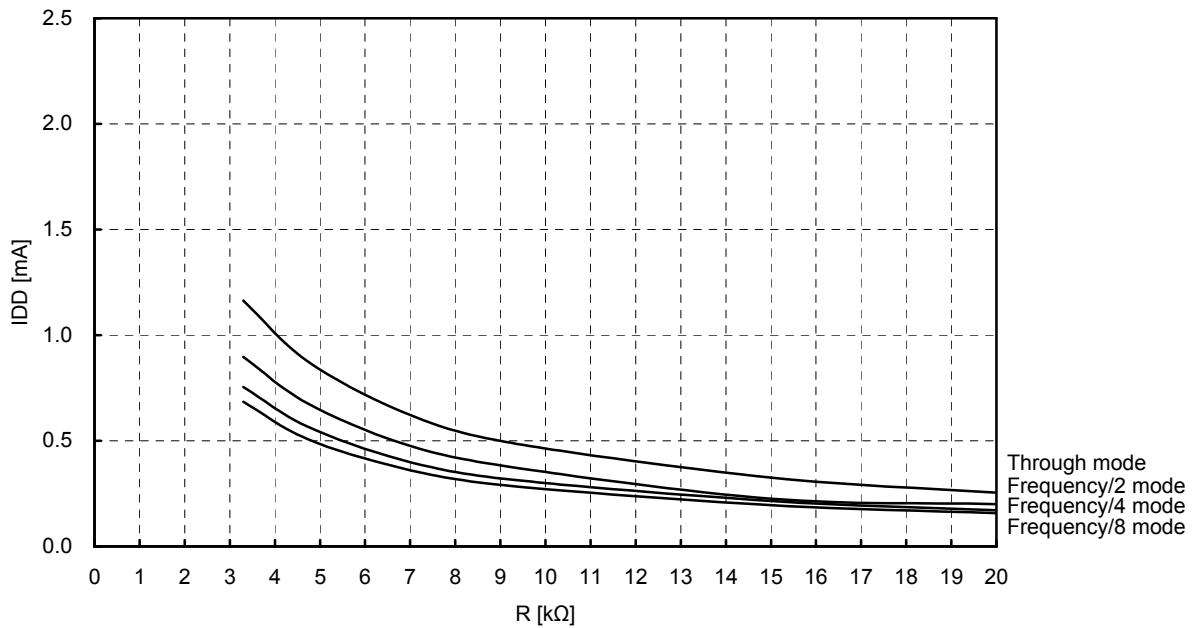
**1-8. R-IDD characteristics**

conditions: VDD=5V, C=33pF, Ta=25°C, RC oscillation



**1-9. R-IDD characteristics**

conditions: VDD=3V, C=33pF, Ta=25°C, RC oscillation

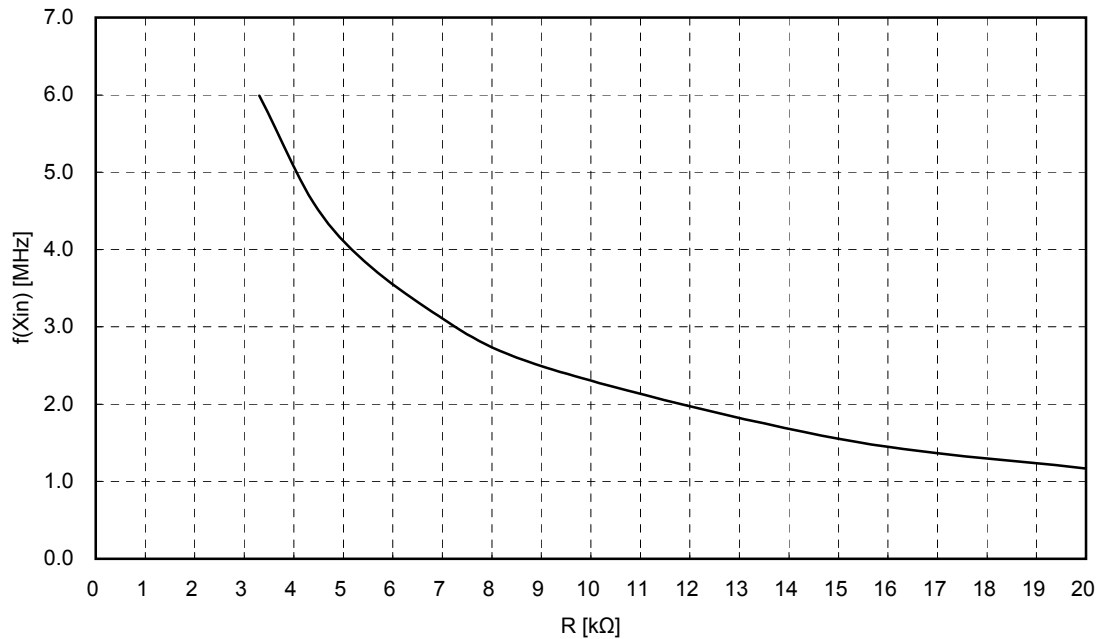


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508GH4FP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

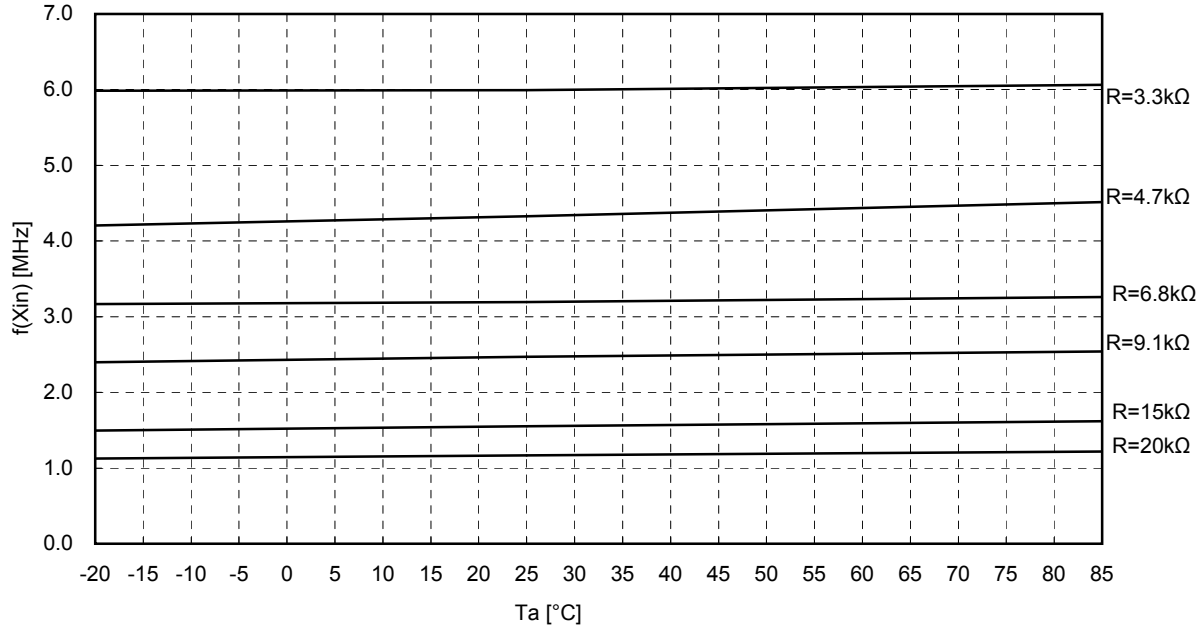
**2-1. RC oscillation frequency characteristics: R-f(Xin)**

conditions: VDD=5V, C=33pF, Ta=25°C



**2-2. RC oscillation frequency characteristics: Ta-f(Xin)**

conditions: VDD=5V, C=33pF

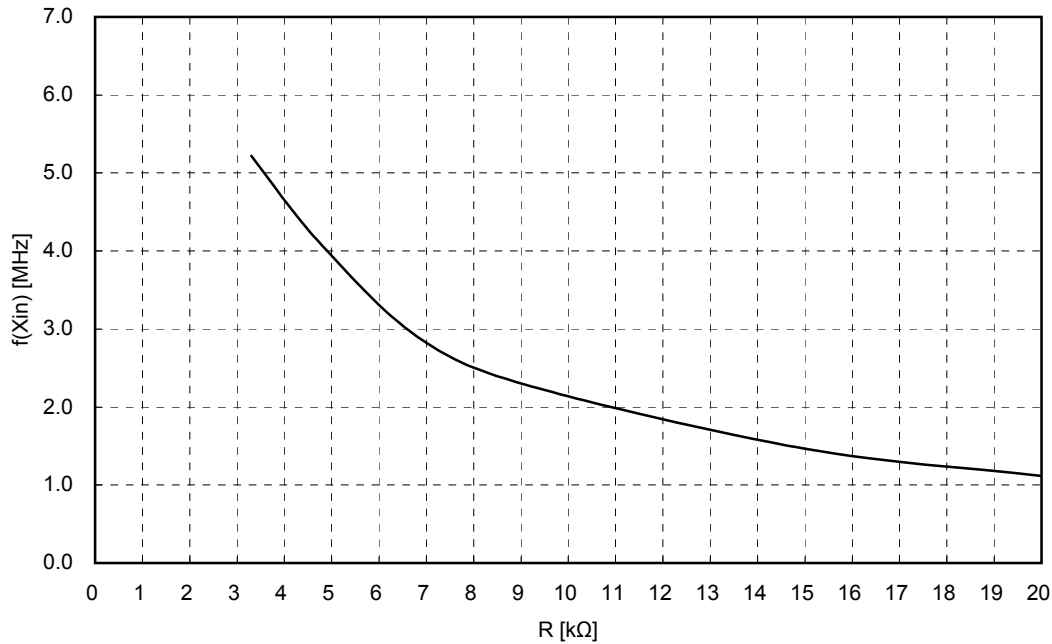


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

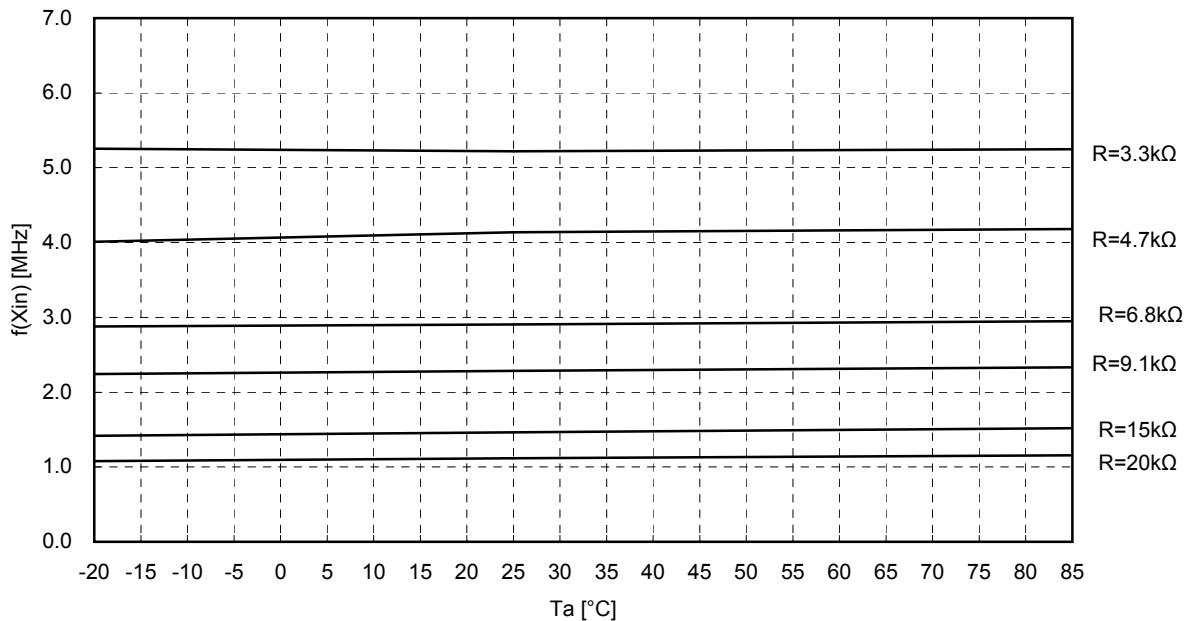
**2-3. RC oscillation frequency characteristics: R-f(Xin)**

conditions: VDD=3V, C=33pF, Ta=25°C



**2-4. RC oscillation frequency characteristics: Ta-f(Xin)**

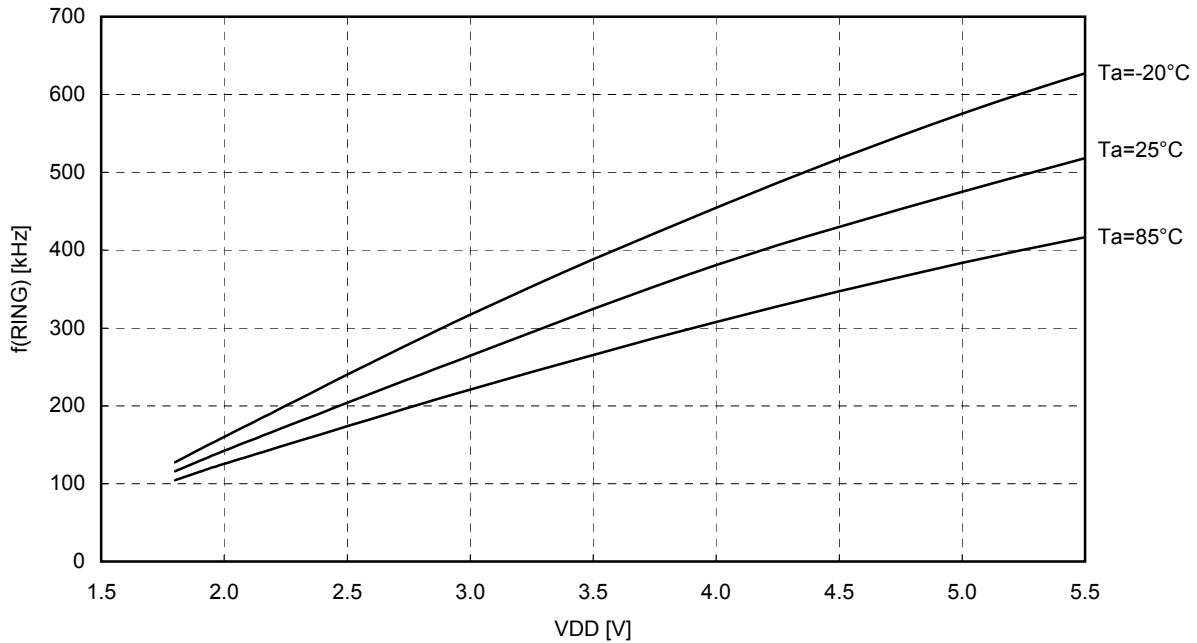
conditions: VDD=3V, C=33pF



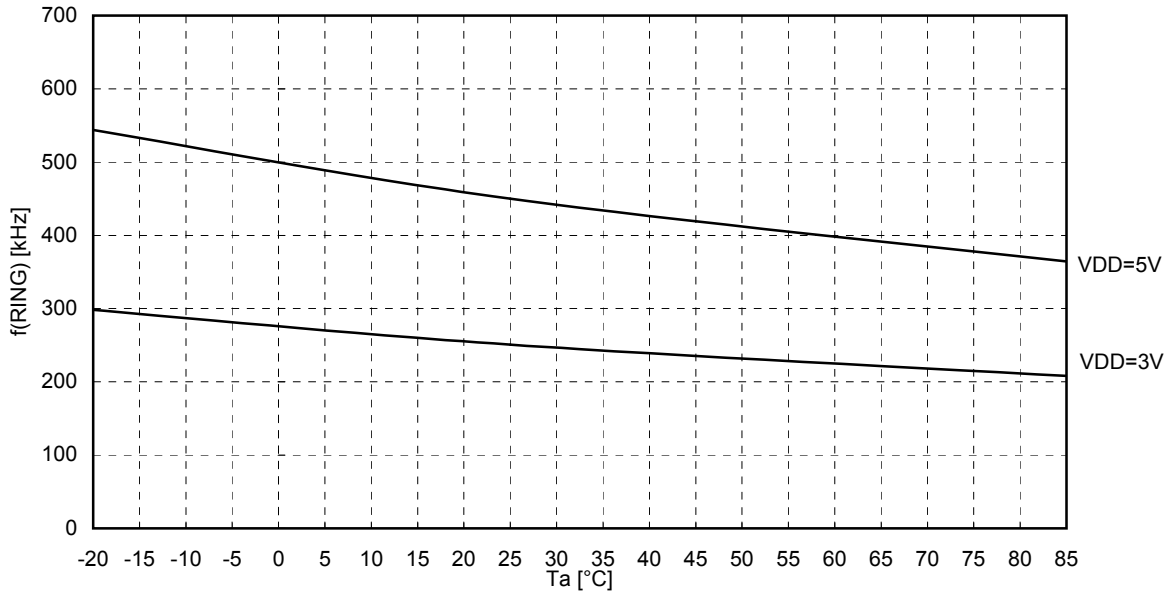
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

- |             |                 |             |                 |
|-------------|-----------------|-------------|-----------------|
| M34509G4FP  | M34509G4-XXXFP  |             |                 |
| M34509G4HFP | M34509G4H-XXXFP |             |                 |
| M34508G4FP  | M34508G4-XXXFP  | M34508G4GP  | M34508G4-XXXGP  |
| M34508G4HFP | M34508G4H-XXXFP | M34508G4HGP | M34508G4H-XXXGP |

3-1. On-chip oscillator frequency characteristics : VDD-f(RING)



3-2. On-chip oscillator frequency characteristics : Ta-f(RING)

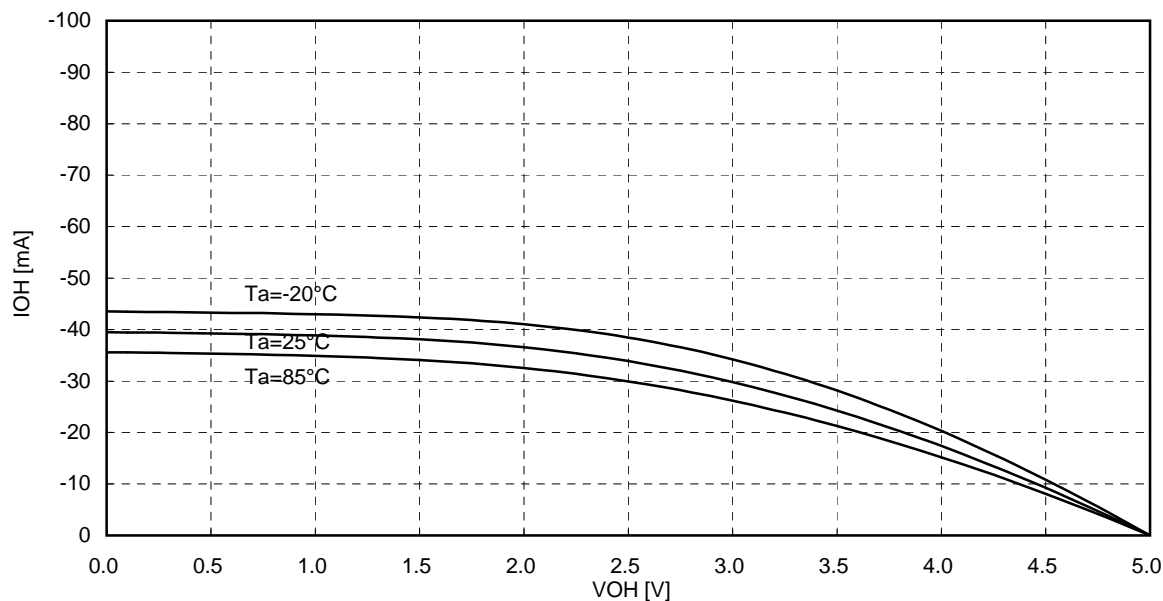


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP



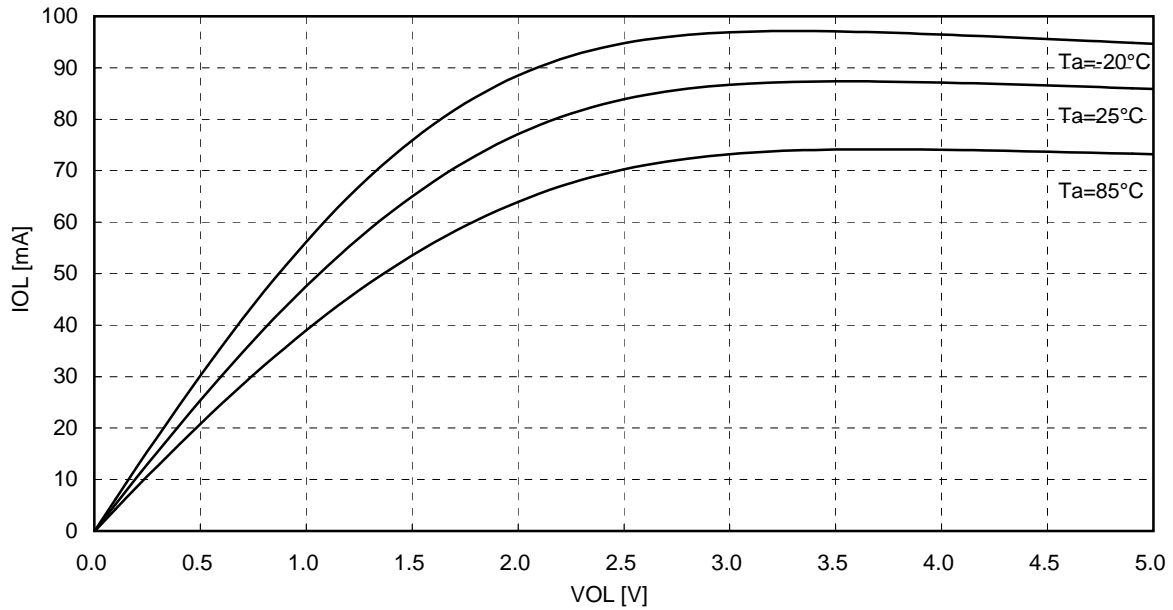
4-1. "H" output current (VOH-IOH) characteristics P0,P1,P2,P3,D0-D5,CNTR0,CNTR1,SOUT,SCK pins  
(P3, D4, D5 only for 4509 Group) conditions: VDD=5V



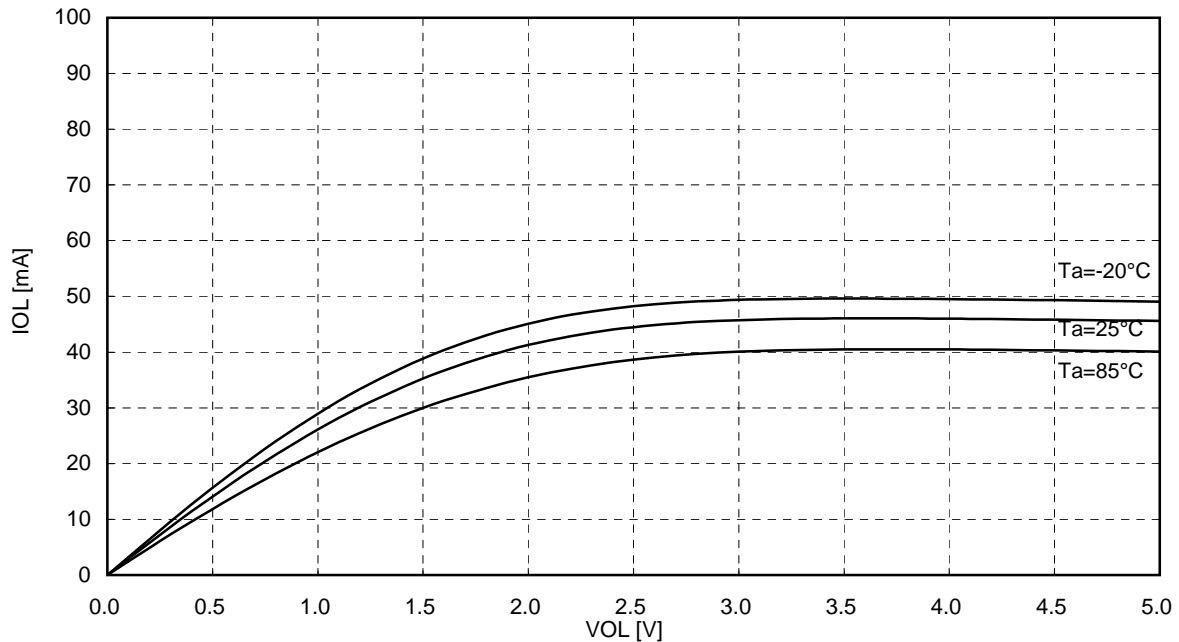
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

4-2. "L" output current (VOL-IOL) characteristics P0,P1,CNTR0,CNTR1,SOUT,SCK pins  
conditions: VDD=5V



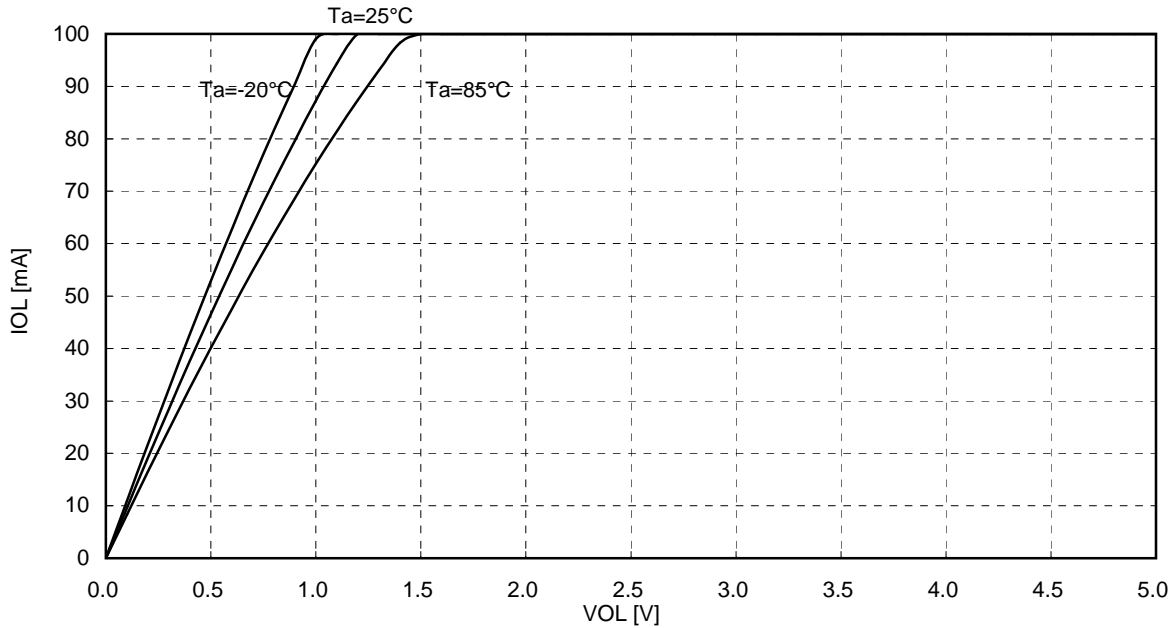
4-3. "L" output current (VOL-IOL) characteristics P2,P3,RESET pins  
(P3 only for 4509 Group) conditions: VDD=5V



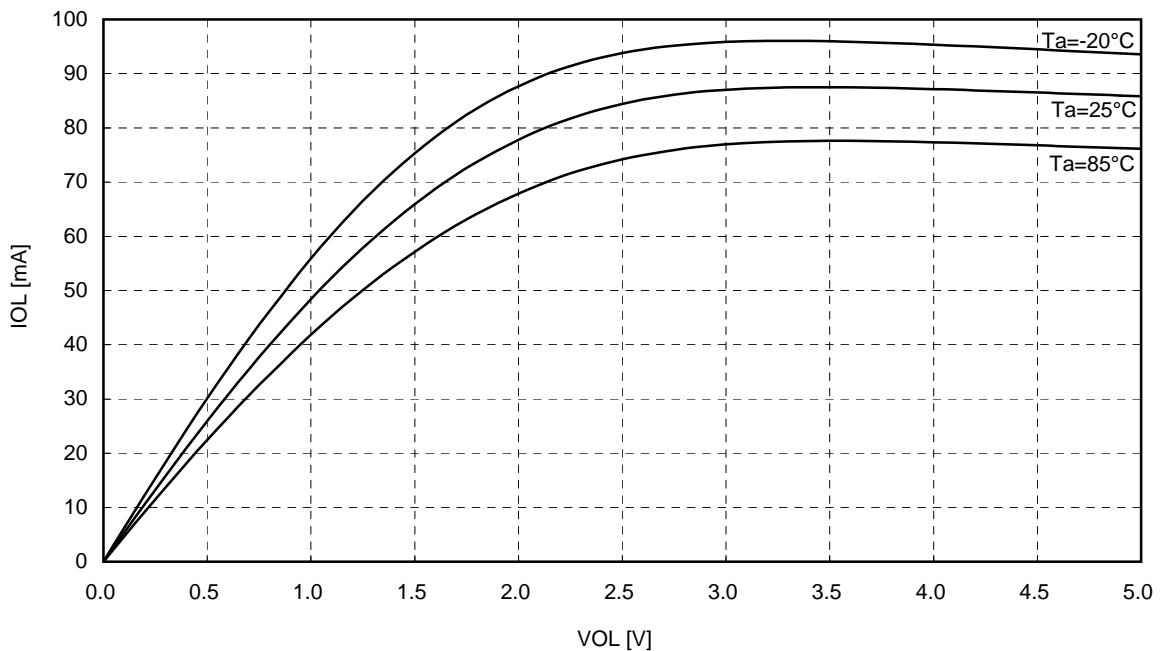
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

4-4. "L" output current (VOL-IOL) characteristics D0,D1,D4,D5 pins  
(D4, D5 only for 4509 Group) conditions: VDD=5V



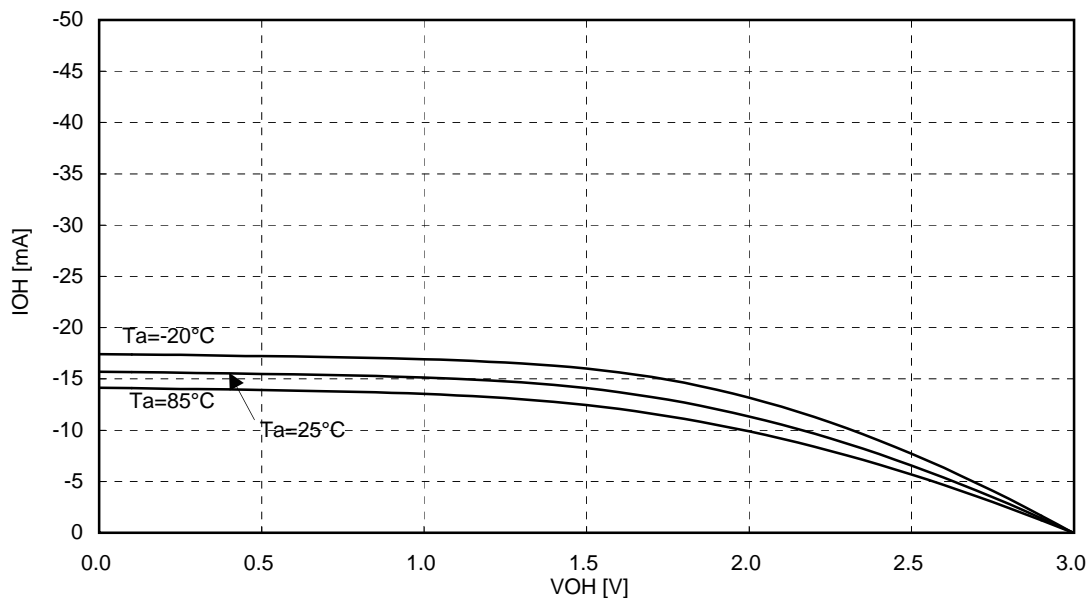
4-5. "L" output current (VOL-IOL) characteristics D2,D3 pins conditions: VDD=5V



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

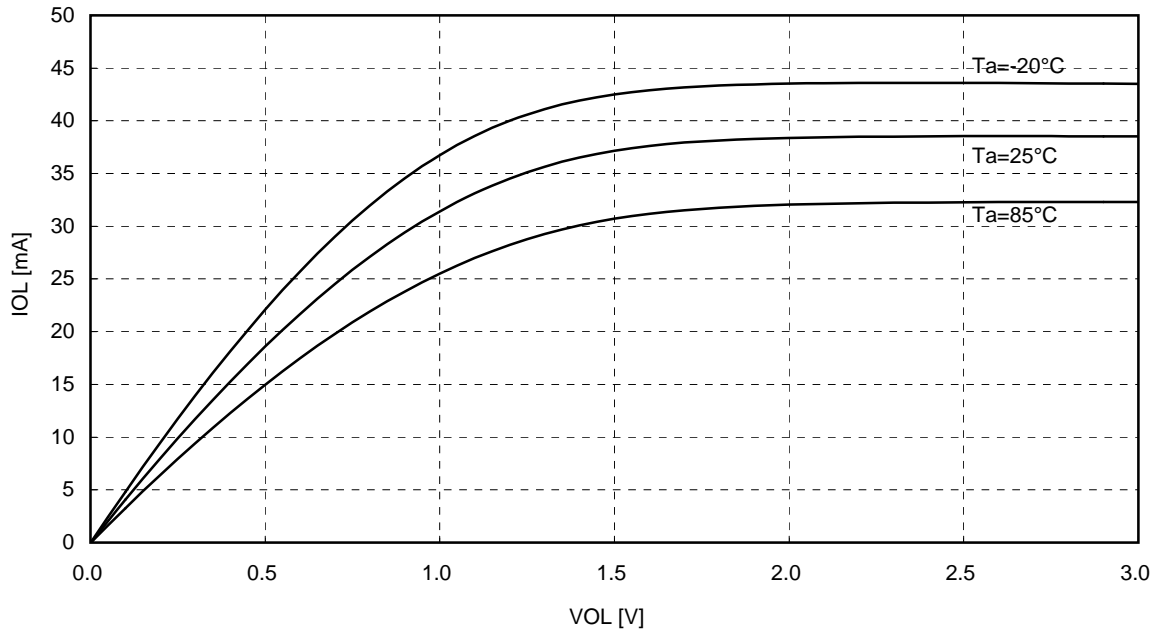
4-6. "H" output current (VOH-IOH) characteristics P0,P1,P2,P3,D0-D5,CNTR0,CNTR1,SOUT,SCK pins  
(P3, D4, D5 only for 4509 Group) conditions: VDD=3V



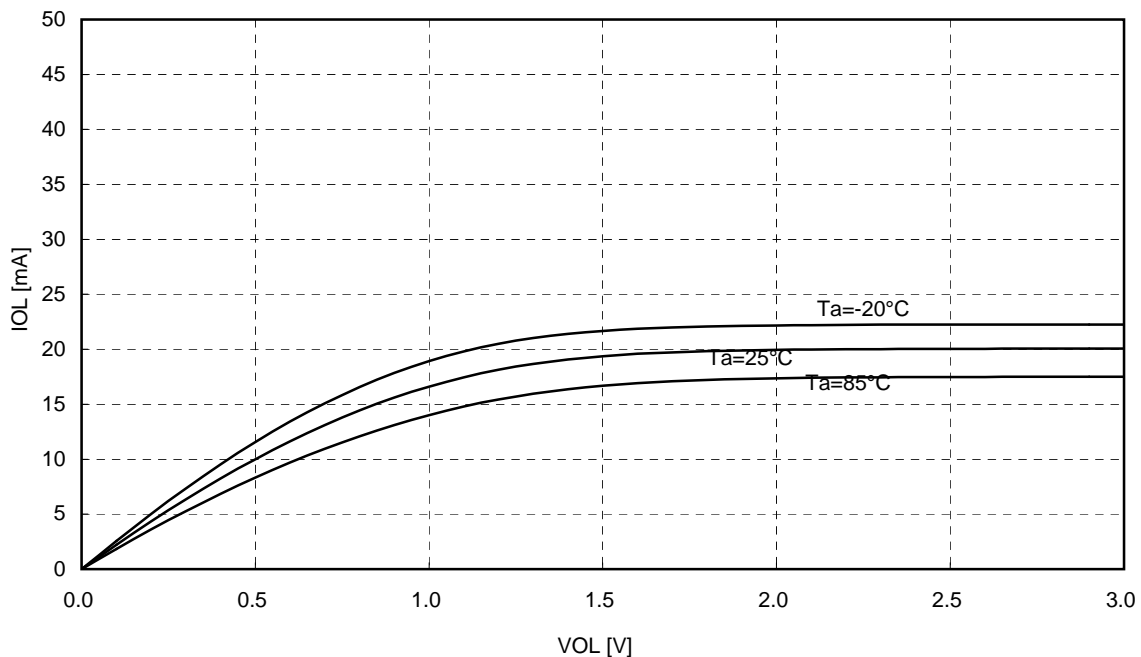
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

4-7. "L" output current (VOL-IOL) characteristics P0,P1,CNTR0,CNTR1,SOUT,SCK pins  
conditions: VDD=3V



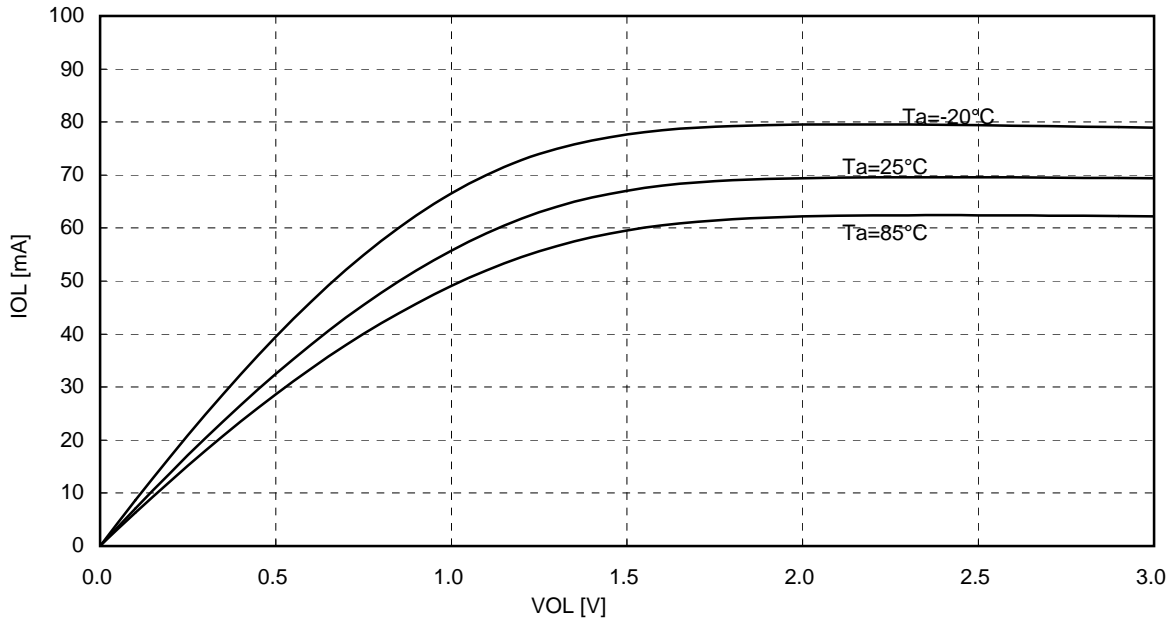
4-8. "L" output current (VOL-IOL) characteristics P2,P3,RESET pins  
(P3 only for 4509 Group) conditions: VDD=3V



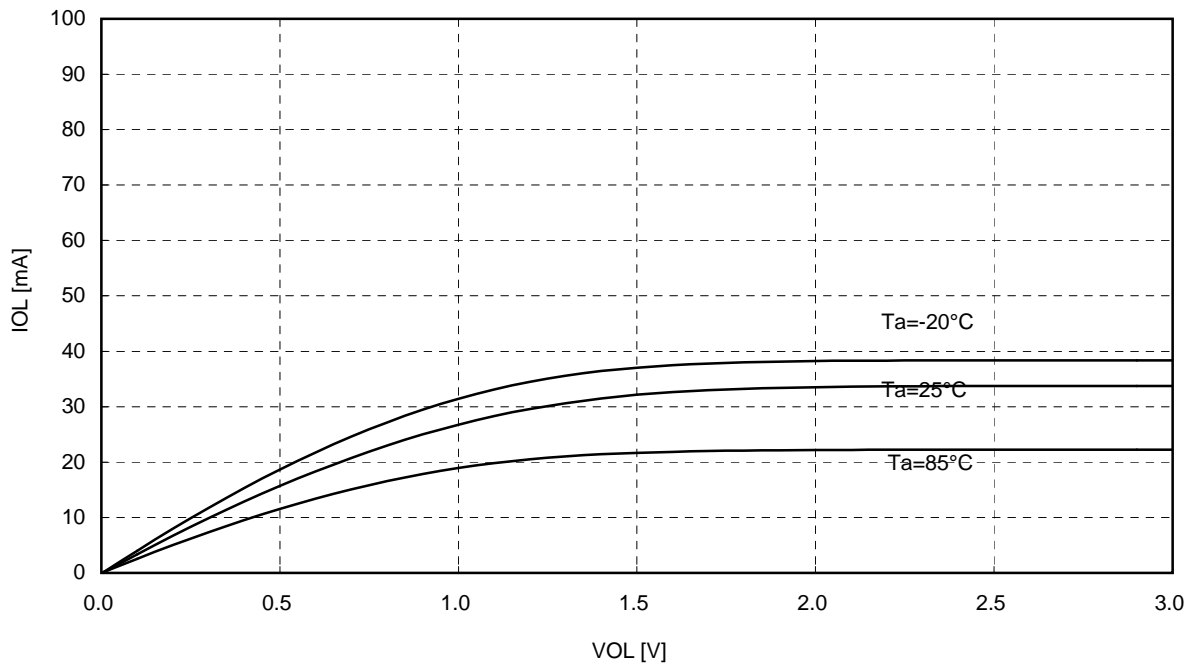
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

4-9. "L" output current (VOL-IOL) characteristics D0,D1,D4,D5 pins  
(D4, D5 only for 4509 Group) conditions: VDD=3V



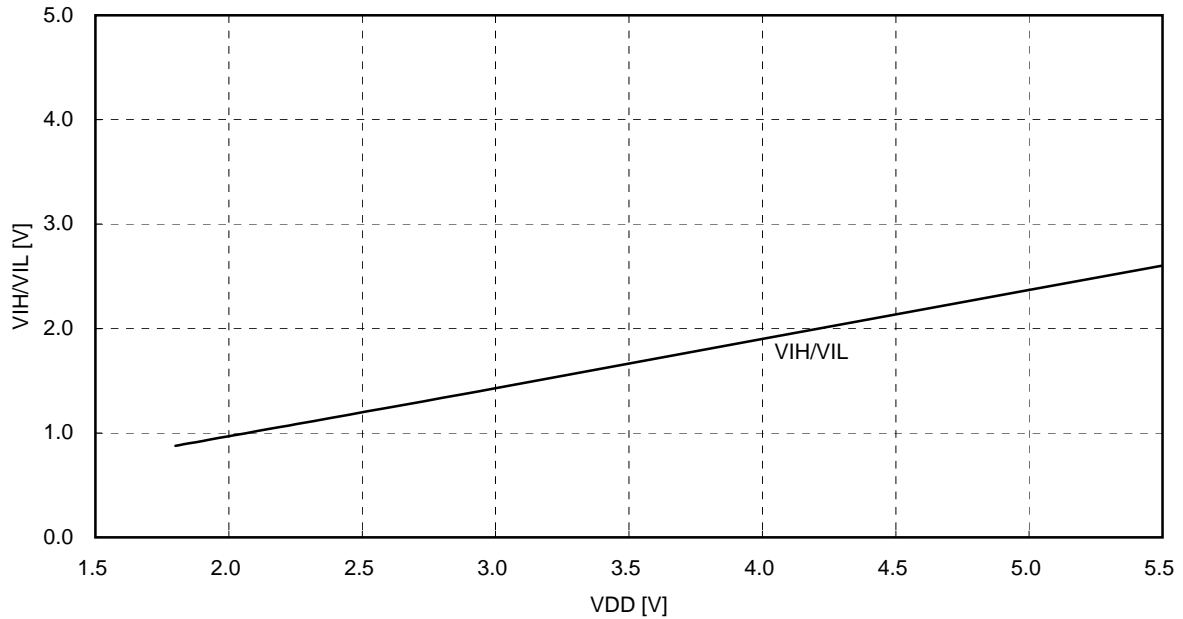
4-10. "L" output current (VOL-IOL) characteristics D2,D3 pins  
conditions: VDD=3V



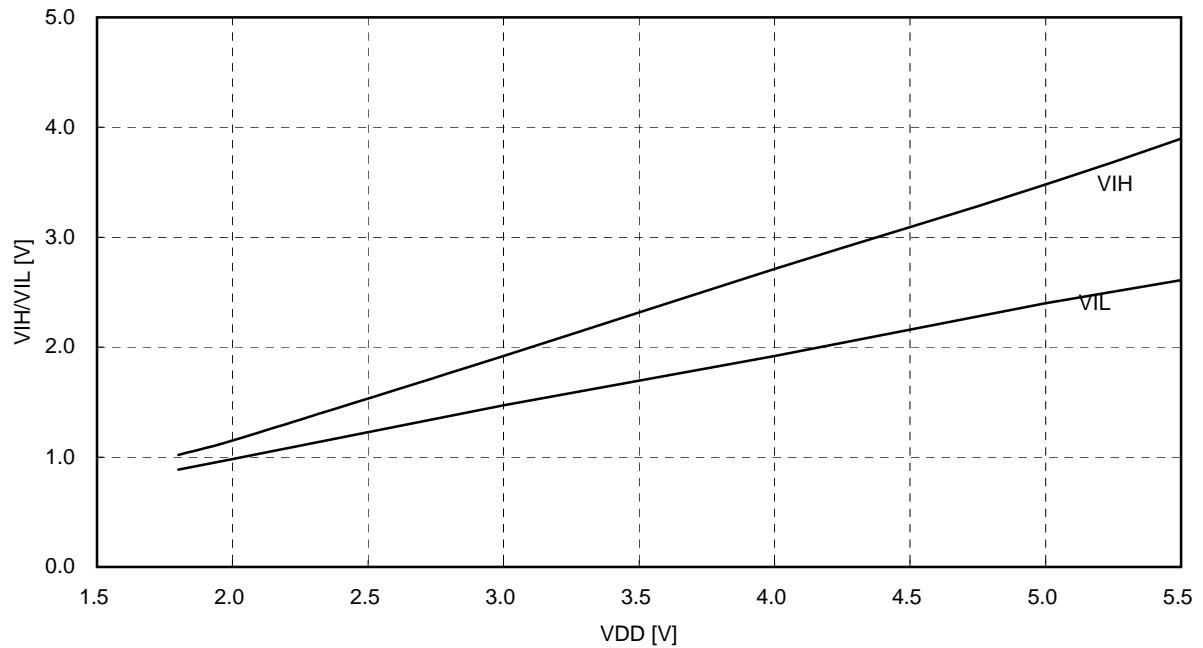
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

**5-1. Input threshold value (VIH/VIL) characteristics P0,P1,P2,P3,D0-D5 pins**  
(P3, D4, D5 only for 4509 Group) conditions: Ta=25°C



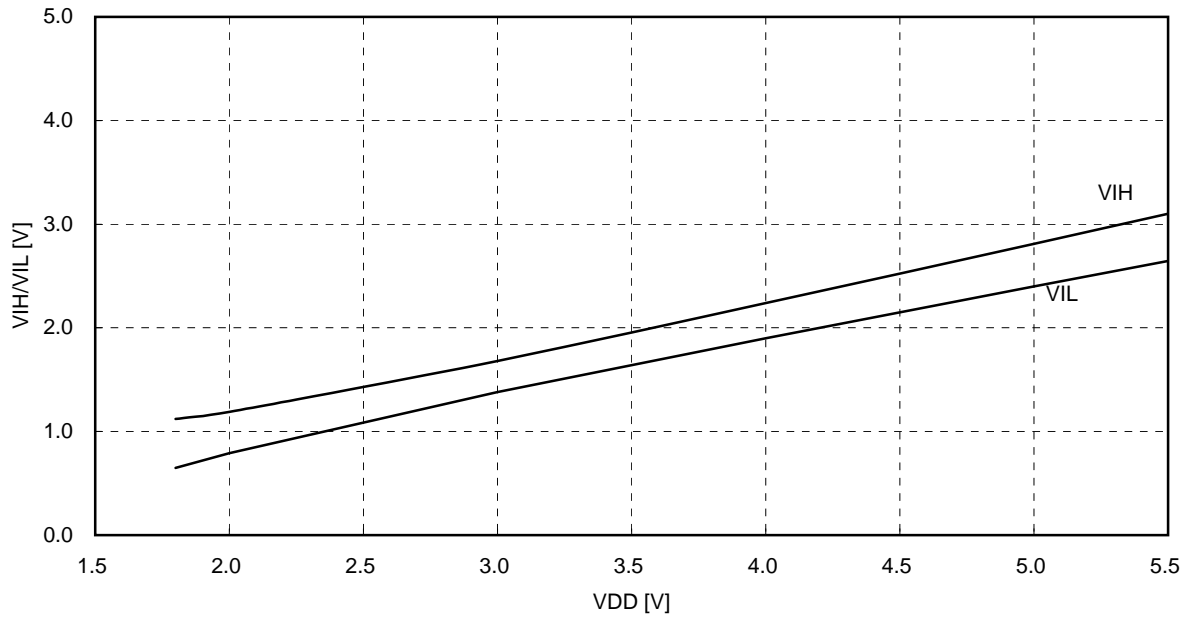
**5-2. Input threshold value (VIH/VIL) characteristics RESET pin**  
conditions: Ta=25°C



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

5-3. Input threshold value (VIH/VIL) characteristics INT,CNTR0,CNTR1,SIN,SCK pin  
conditions: Ta=25°C

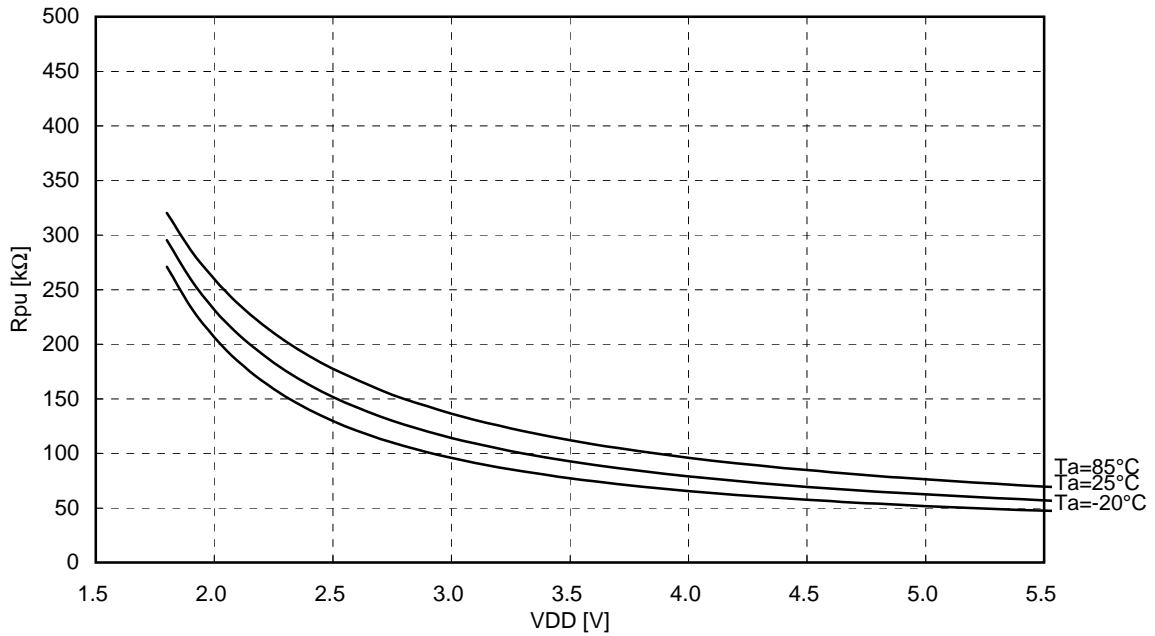


Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP



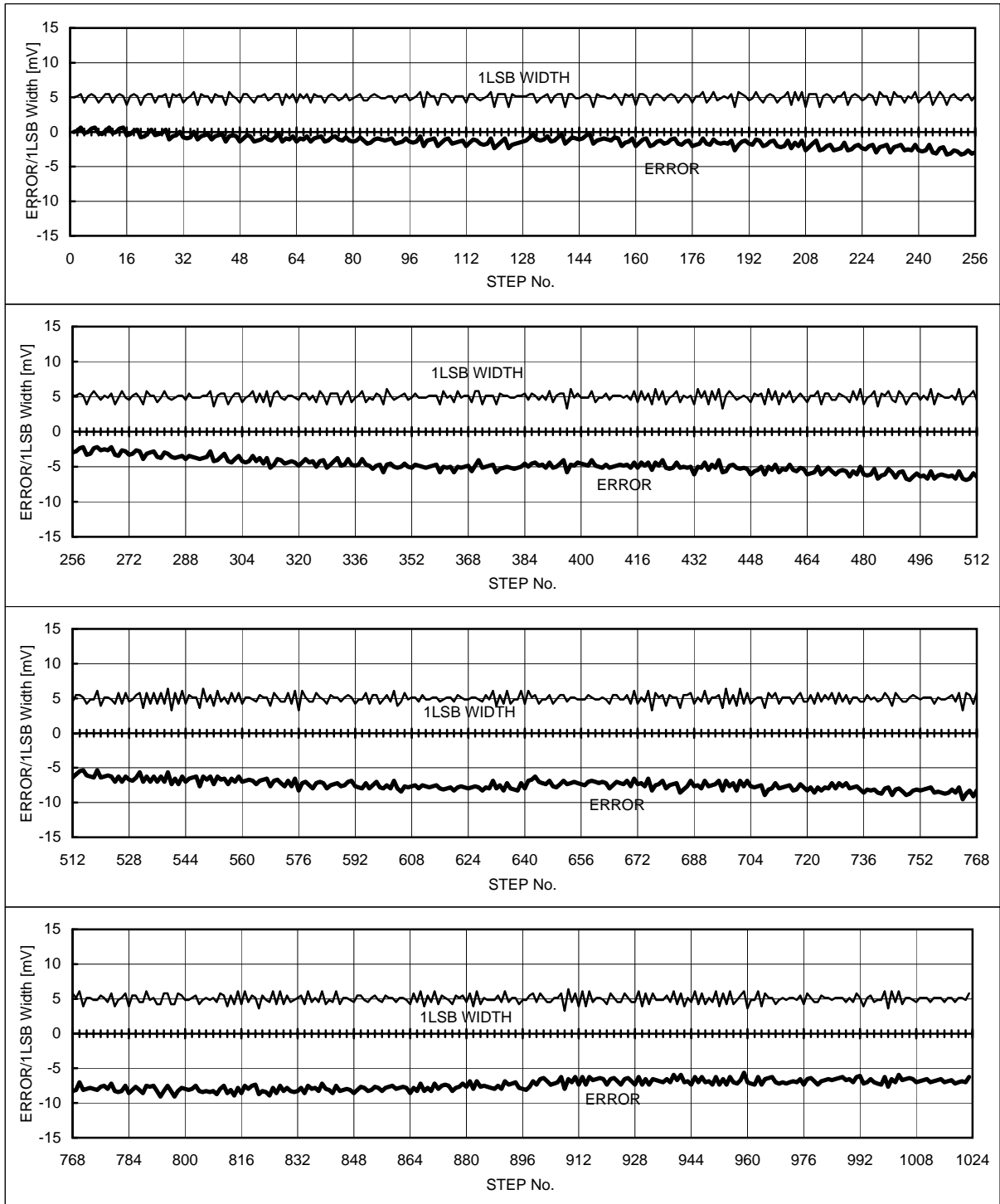
6. Pull-up resistor (VDD-RPU) characteristics P0, P1,D2,D3,RESET pins



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

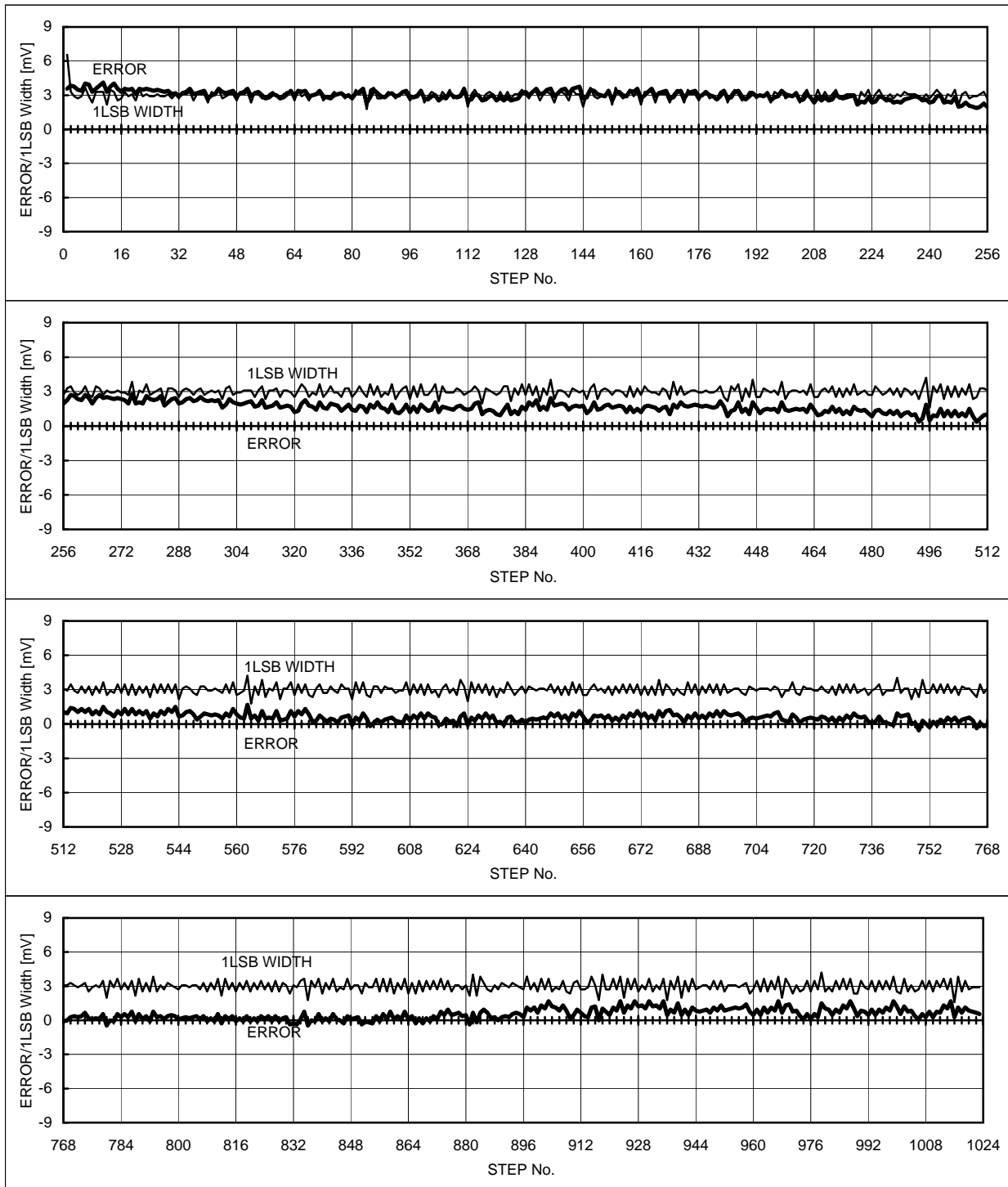
7-1. conditions: VDD=5.12V, f(Xin)=6MHz, Ta=25°C, Through mode



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

- |             |                 |             |                 |
|-------------|-----------------|-------------|-----------------|
| M34509G4FP  | M34509G4-XXXFP  |             |                 |
| M34509G4HFP | M34509G4H-XXXFP |             |                 |
| M34508G4FP  | M34508G4-XXXFP  | M34508G4GP  | M34508G4-XXXGP  |
| M34508G4HFP | M34508G4H-XXXFP | M34508G4HGP | M34508G4H-XXXGP |

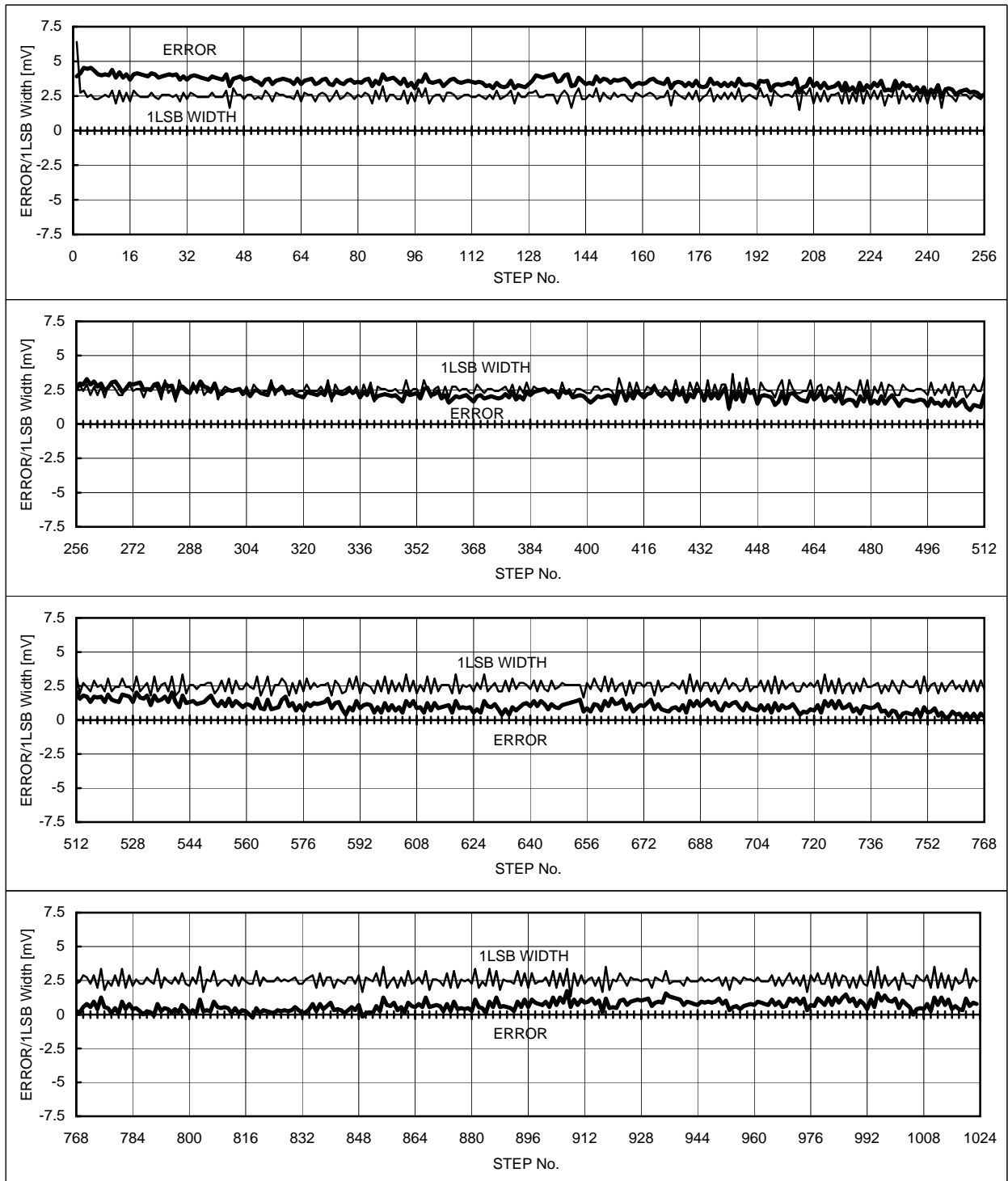
7-2. conditions: VDD=3.072V, f(Xin)=2.2MHz, Ta=25°C, Through mode



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

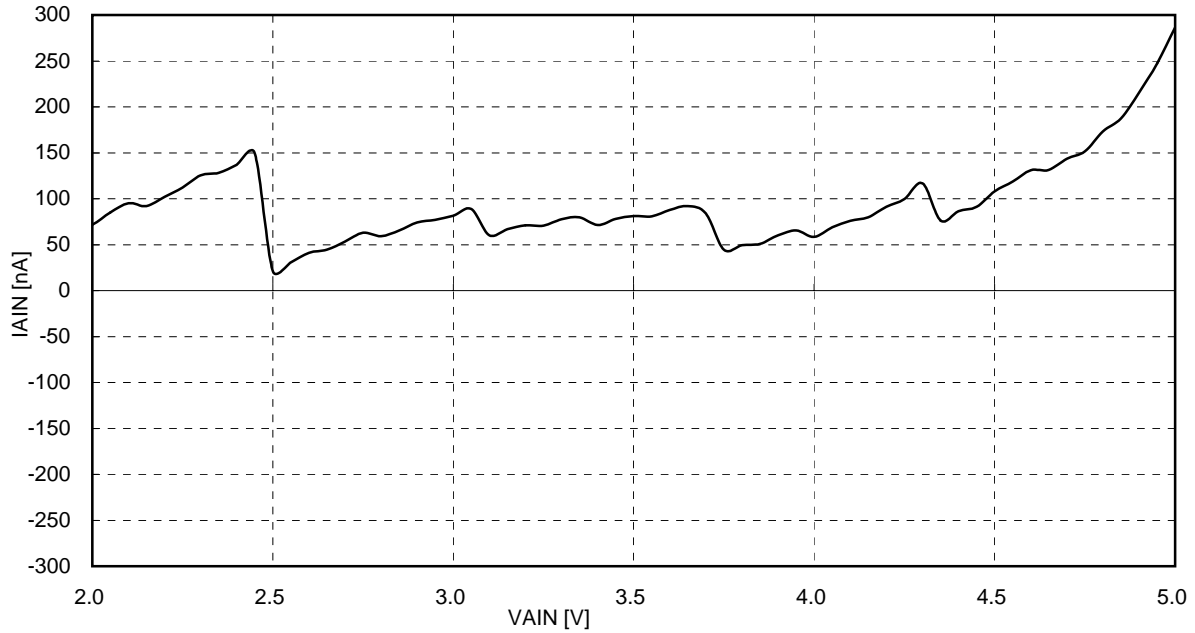
7-3. conditions: VDD=2.56V, f(Xin)=1.1MHz, Ta=25°C, Through mode



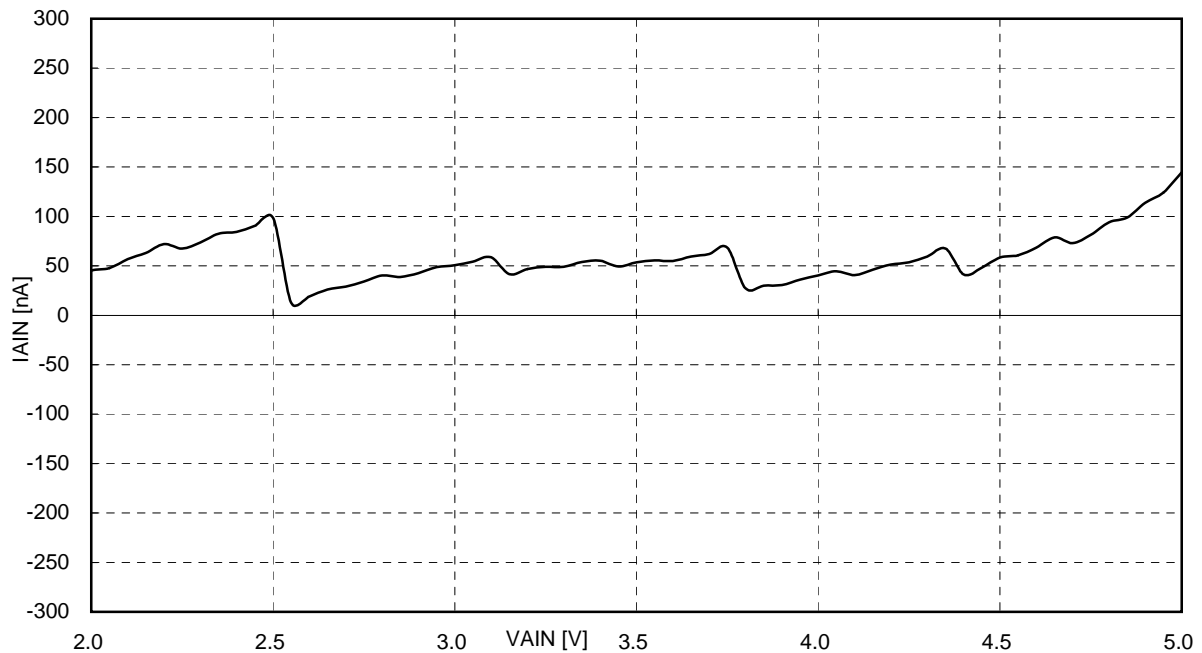
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

- |             |                 |             |                 |
|-------------|-----------------|-------------|-----------------|
| M34509G4FP  | M34509G4-XXXFP  |             |                 |
| M34509G4HFP | M34509G4H-XXXFP |             |                 |
| M34508G4FP  | M34508G4-XXXFP  | M34508G4GP  | M34508G4-XXXGP  |
| M34508G4HFP | M34508G4H-XXXFP | M34508G4HGP | M34508G4H-XXXGP |

**8-1. AD converter input current (VAIN-IAIN) characteristics**  
conditions: Ta=25°C, f(Xin)=6MHz, VDD=5V, Through mode



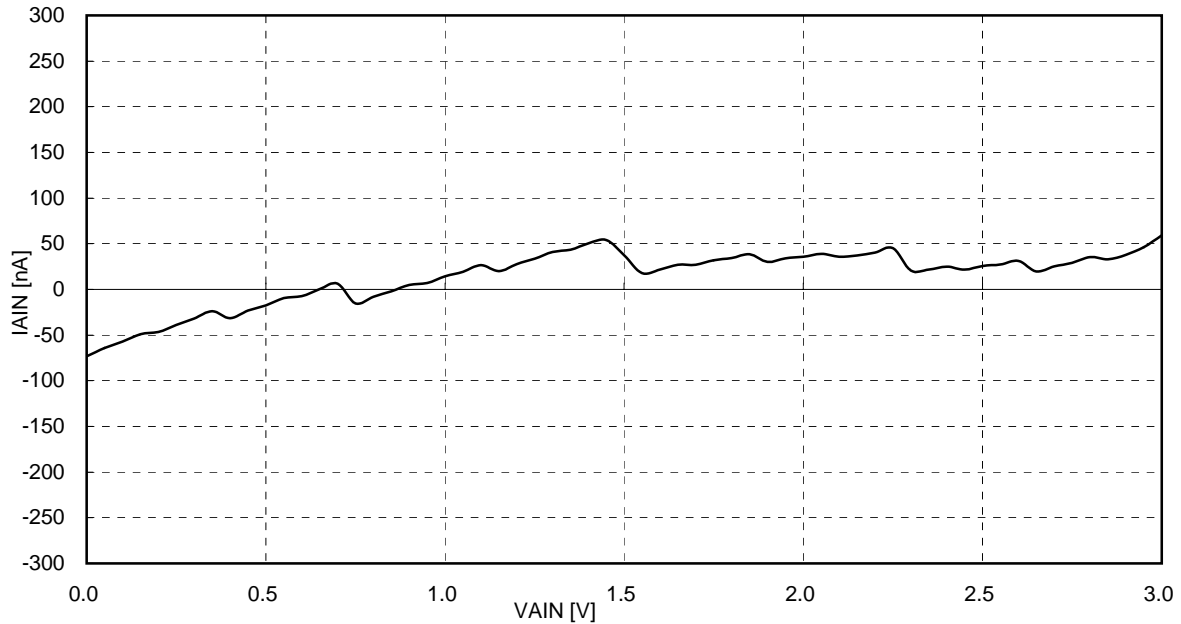
**8-2. AD converter input current (VAIN-IAIN) characteristics**  
conditions: Ta=25°C, f(Xin)=4MHz, VDD=5V, Through mode



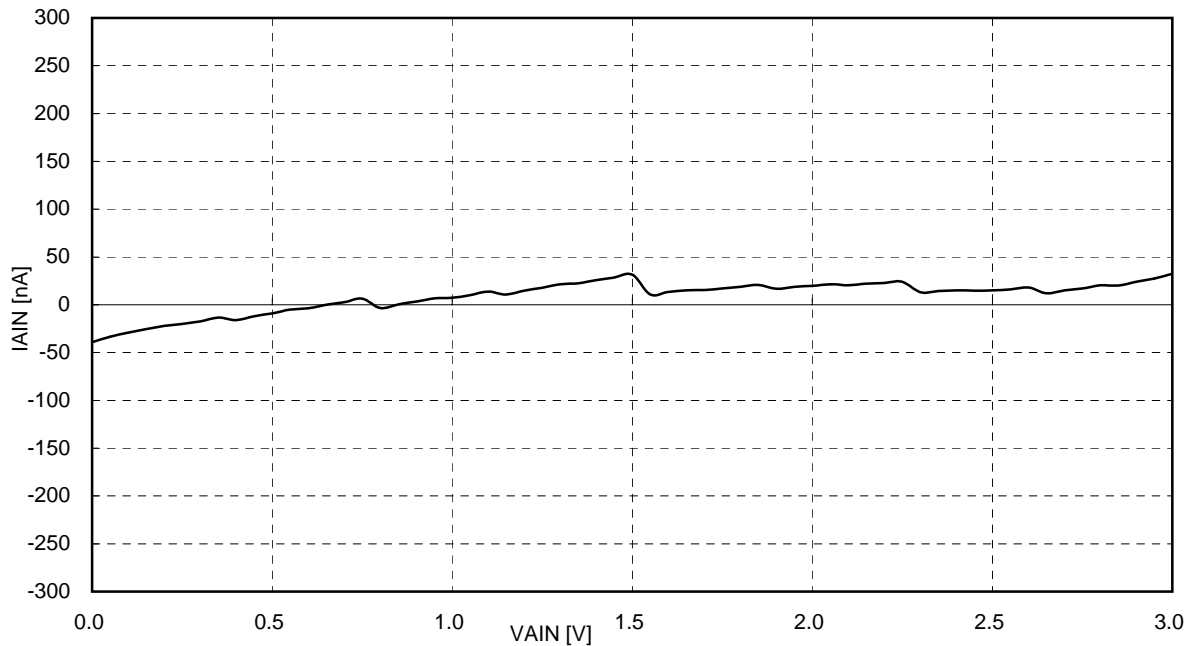
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

**8-3. AD converter input current (VAIN-IAIN) characteristics**  
conditions: Ta=25°C, f(Xin)=4MHz, VDD=3V, Through mode



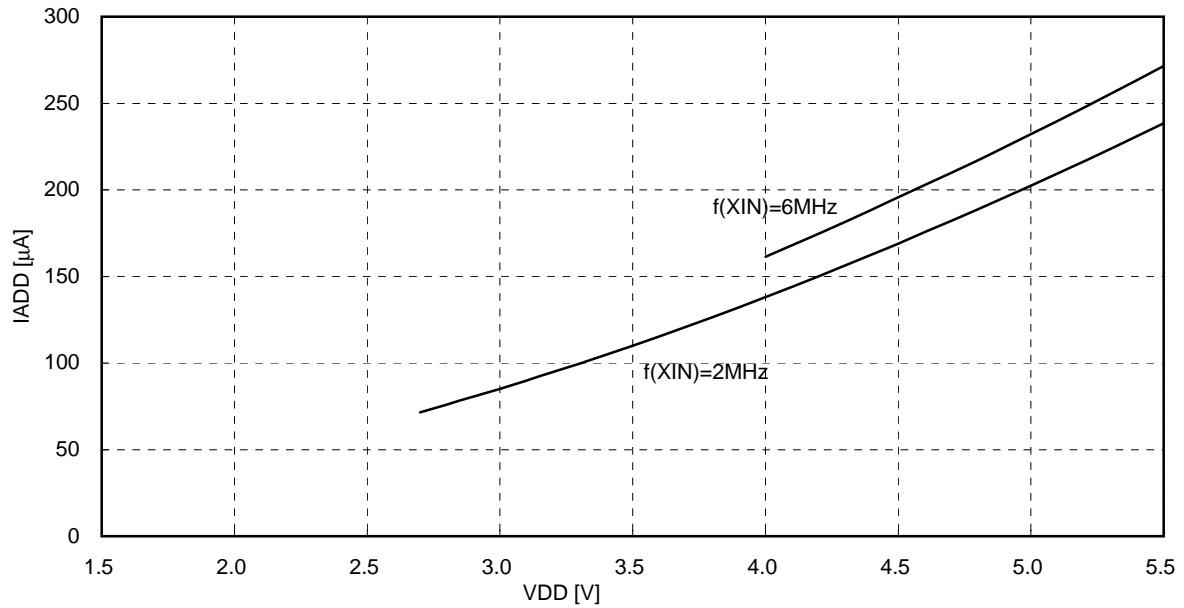
**8-4. AD converter input current (VAIN-IAIN) characteristics**  
conditions: Ta=25°C, f(Xin)=2MHz, VDD=3V, Through mode



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

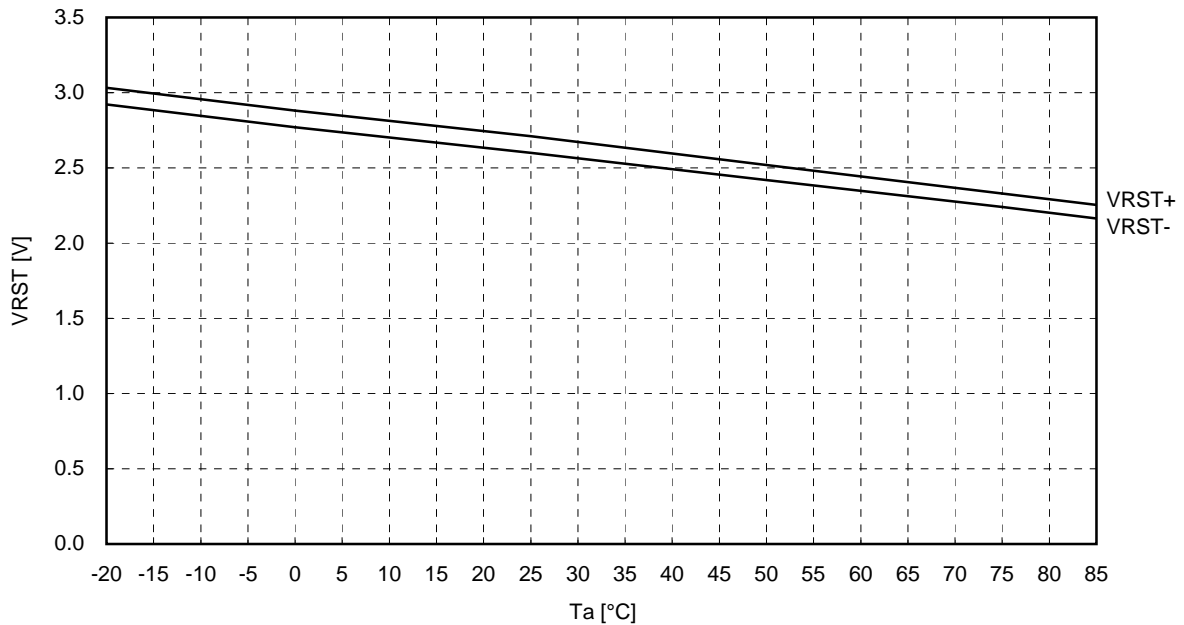
**9. A/D operation current (VDD-IADD) characteristics**  
conditions: Ta=25°C, Through mode



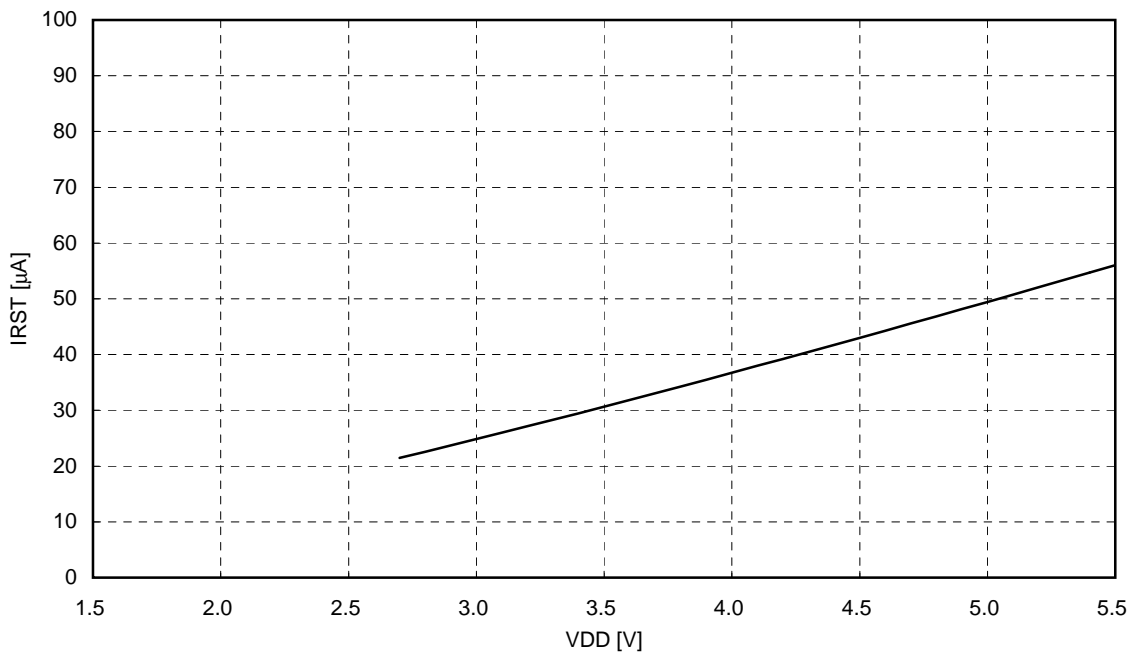
Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

M34509G4FP	M34509G4-XXXFP		
M34509G4HFP	M34509G4H-XXXFP		
M34508G4FP	M34508G4-XXXFP	M34508G4GP	M34508G4-XXXGP
M34508G4HFP	M34508G4H-XXXFP	M34508G4HGP	M34508G4H-XXXGP

**10-1. Voltage drop detection circuit detection voltage (Ta-VRST) characteristics (only for H version)**



**10-2. Voltage drop detection circuit operation current (VDD-IRST) characteristics (only for H version)**  
conditions: Ta=25°C



Standard characteristics are just examples and are not guaranteed.  
For each parameter's limits, refer to electrical characteristics of Datasheet.  
These MCUs have the equal characteristics as the above expression.

- |             |                 |             |                 |
|-------------|-----------------|-------------|-----------------|
| M34509G4HFP | M34509G4H-XXXFP |             |                 |
| M34508G4HFP | M34508G4H-XXXFP | M34508G4HGP | M34508G4H-XXXGP |



To our customers,

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## Old Company Name in Catalogs and Other Documents

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April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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