

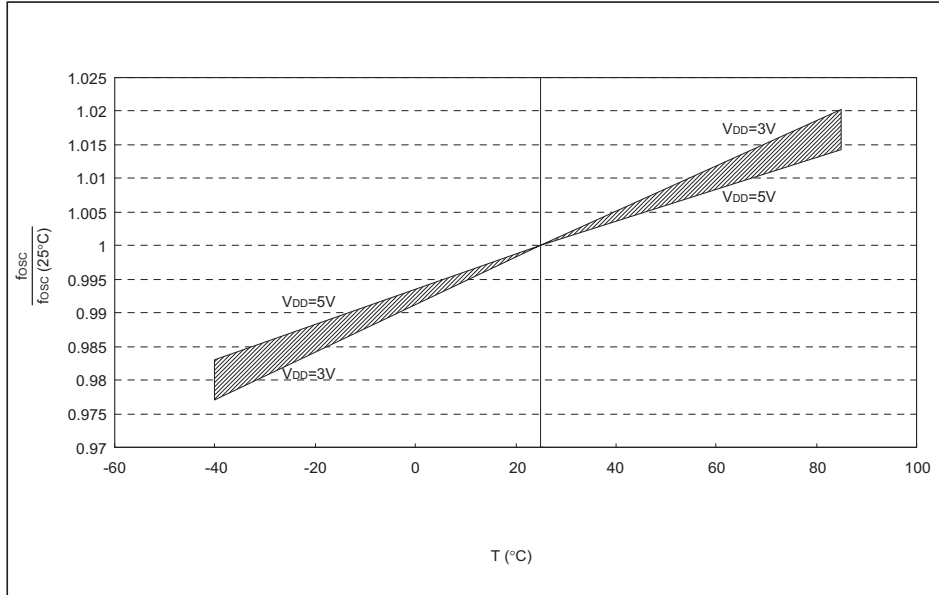
**Characteristic Curves**

The following characteristic graphics depicts typical device behavior. The data presented here is a statistical summary of data gathered on units from different lots over a period of time. This is for information only and the figures are not tested during manufacturing.

In some of the graphs, the data exceeds the specified operating range is for information purposes only. The devices will operate properly only within the specified range.

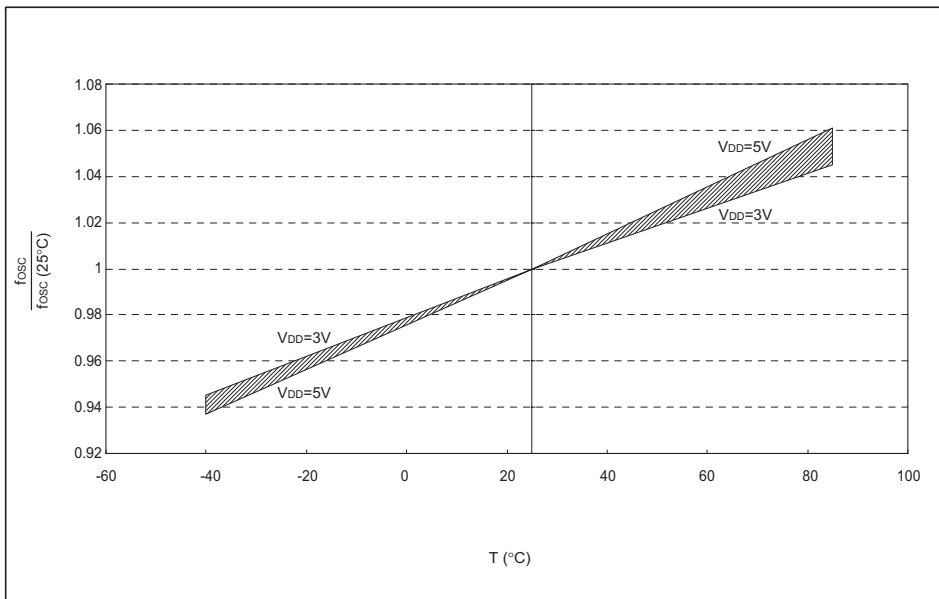
**Figure 1: Typical RC OSC vs. Temperature**

HT48R0XA-1, HT48RX0A-1, HT46R63



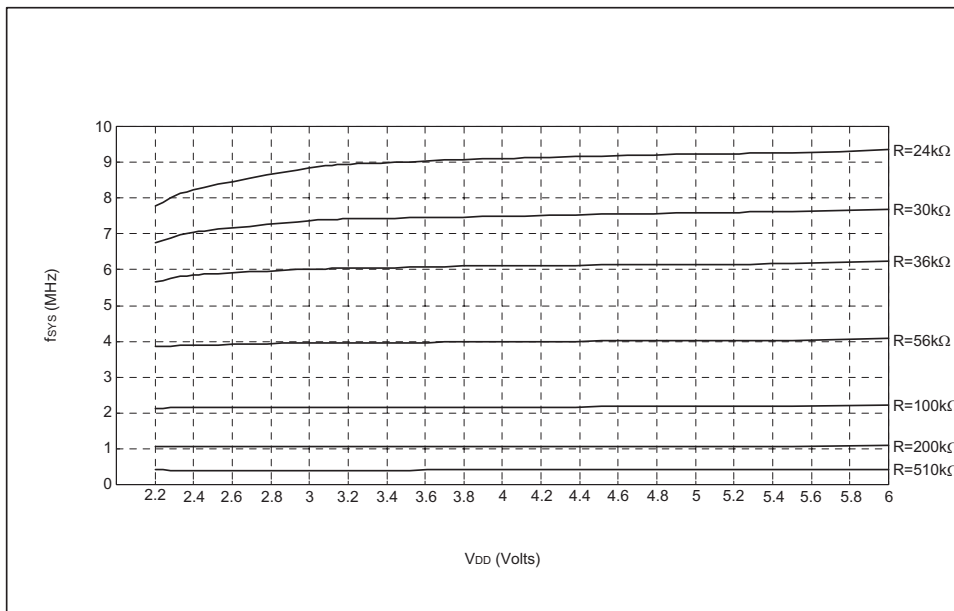
**Figure 2: Typical RC OSC vs. Temperature**

HT46R47, HT46R2X, HT46R62, HT46R64, HT46R65, HT47R20A-1, HT49RX0A-1, HT48RA0A, HT48RA3



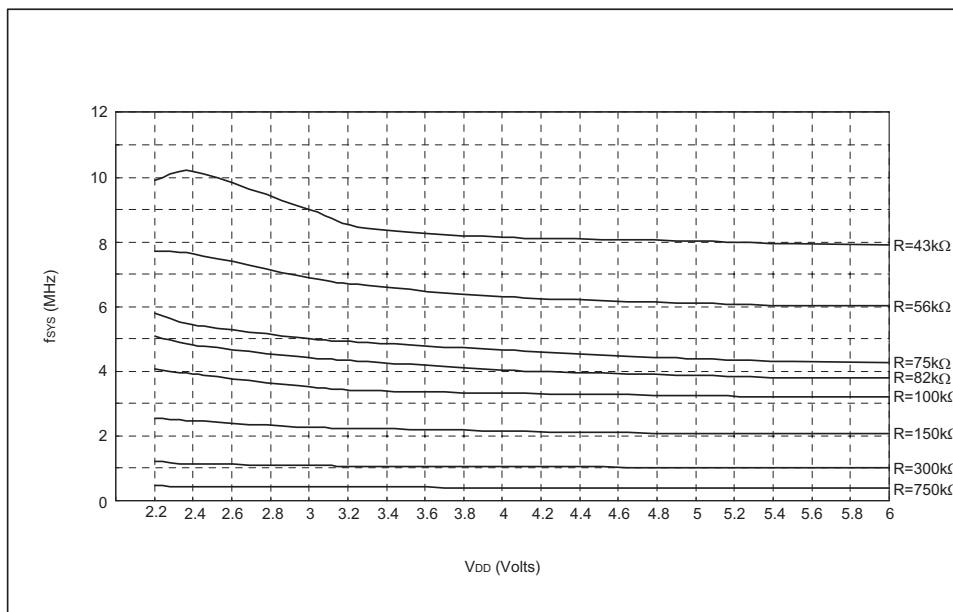
**Figure 3: Typical RC Oscillator Frequency vs.  $V_{DD}$**

HT48R0XA-1, HT48RX0A-1, HT46R63

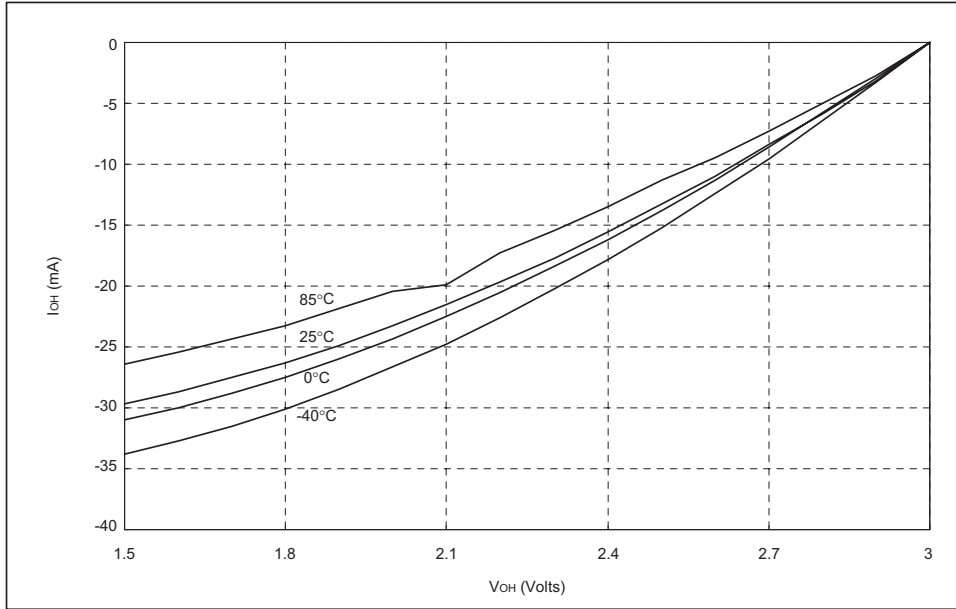


**Figure 4: Typical RC Oscillator Frequency vs.  $V_{DD}$**

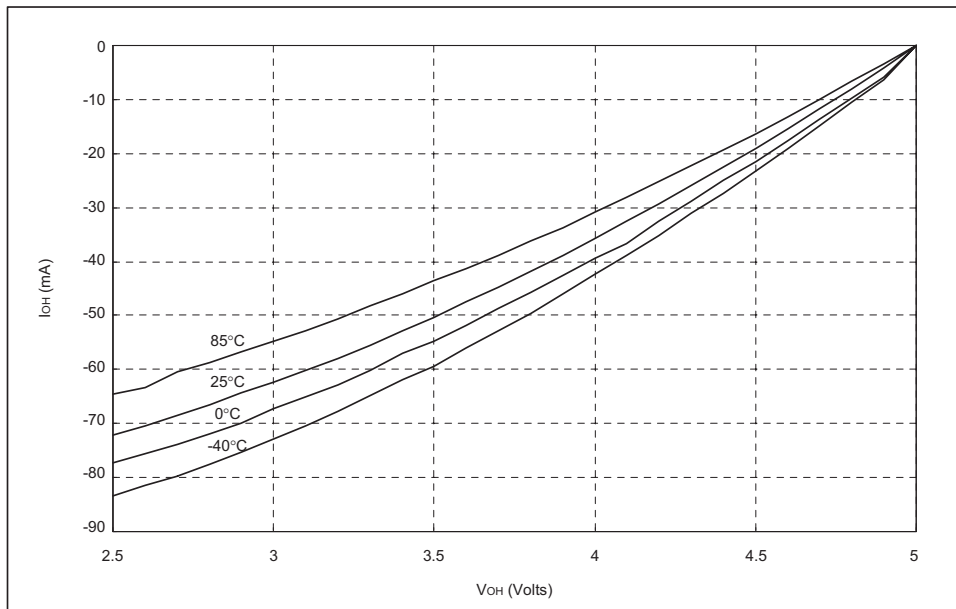
HT46R47, HT46R2X, HT46R62, HT46R64, HT46R65, HT47R20A-1, HT49RX0A-1, HT48RA0A, HT48RA3



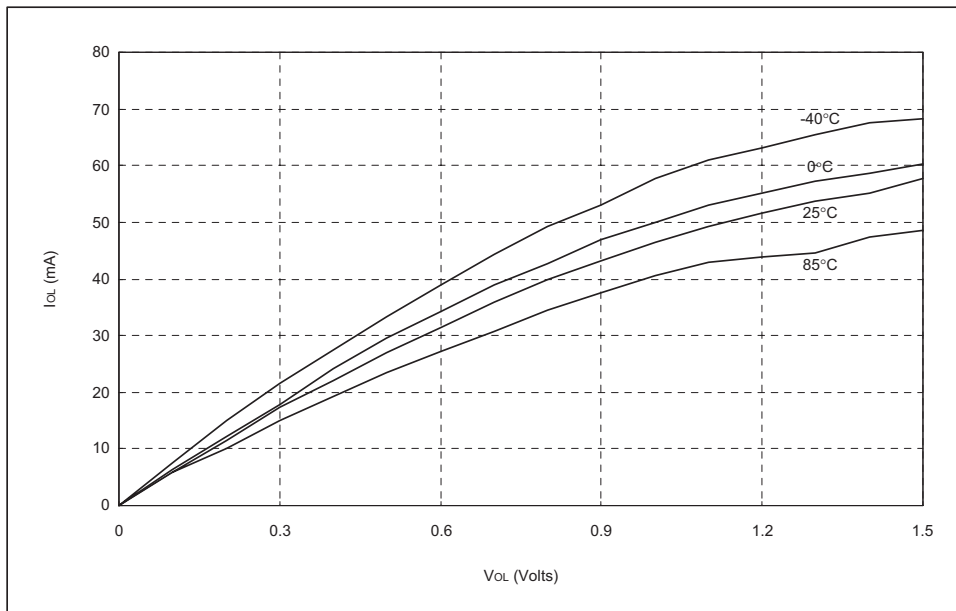
**Figure 5:  $I_{OH}$  vs.  $V_{OH}$ ,  $V_{DD}=3V$**



**Figure 6:  $I_{OH}$  vs.  $V_{OH}$ ,  $V_{DD}=5V$**



**Figure 7:  $I_{OL}$  vs.  $V_{OL}$ ,  $V_{DD}=3V$**



**Figure 8:  $I_{OL}$  vs.  $V_{OL}$ ,  $V_{DD}=5V$**

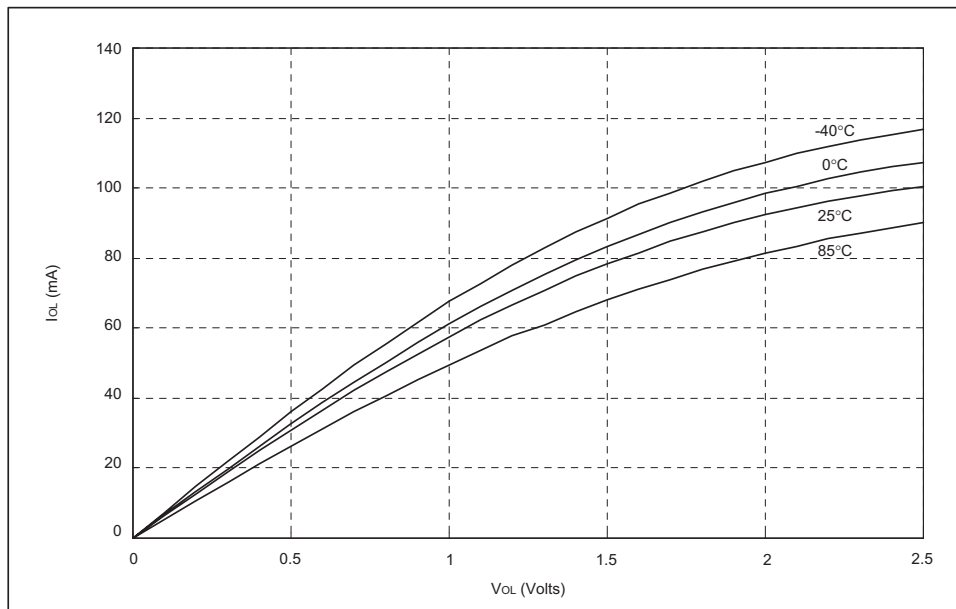


Figure 9: Typical  $R_{PH}$  vs.  $V_{DD}$

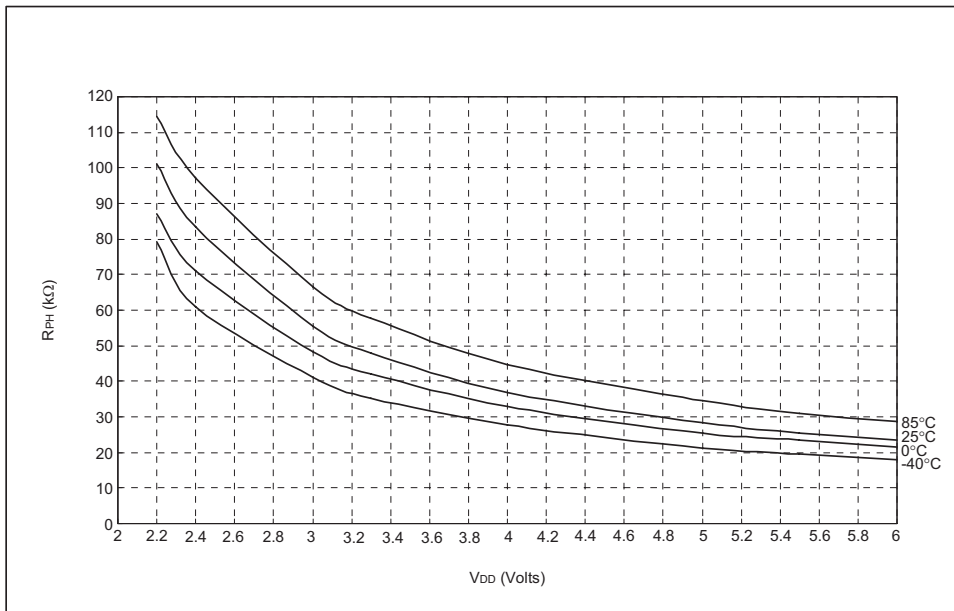
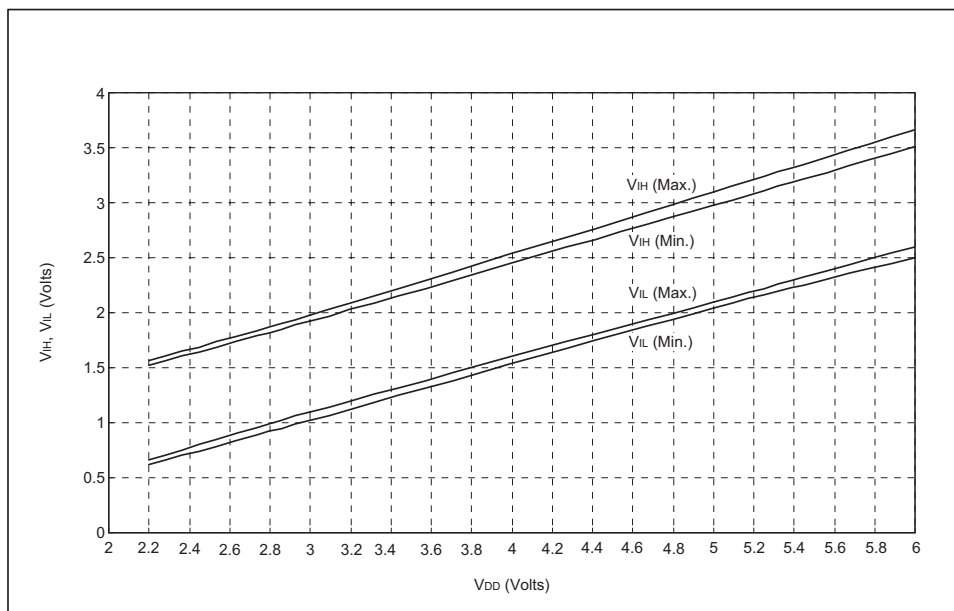
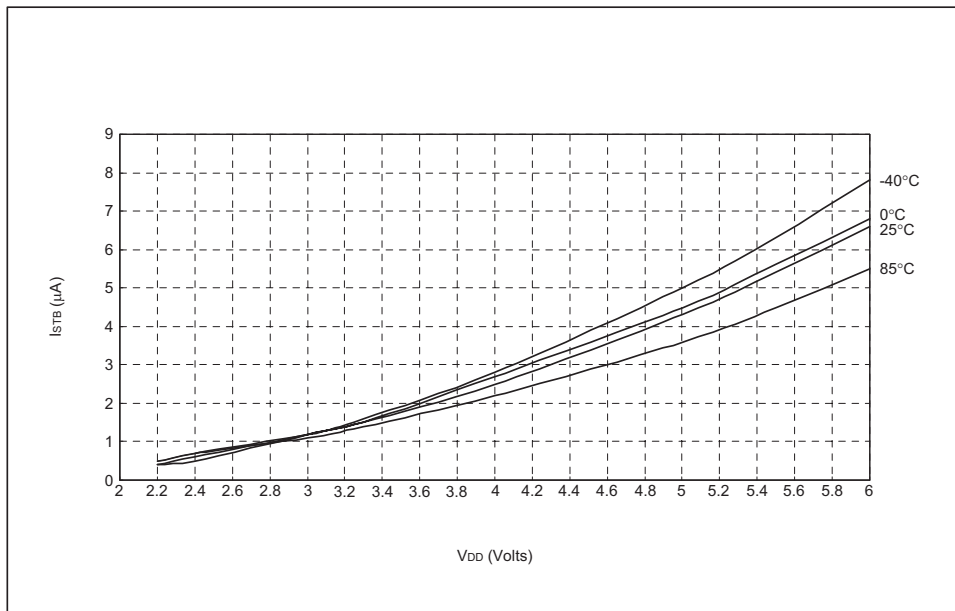


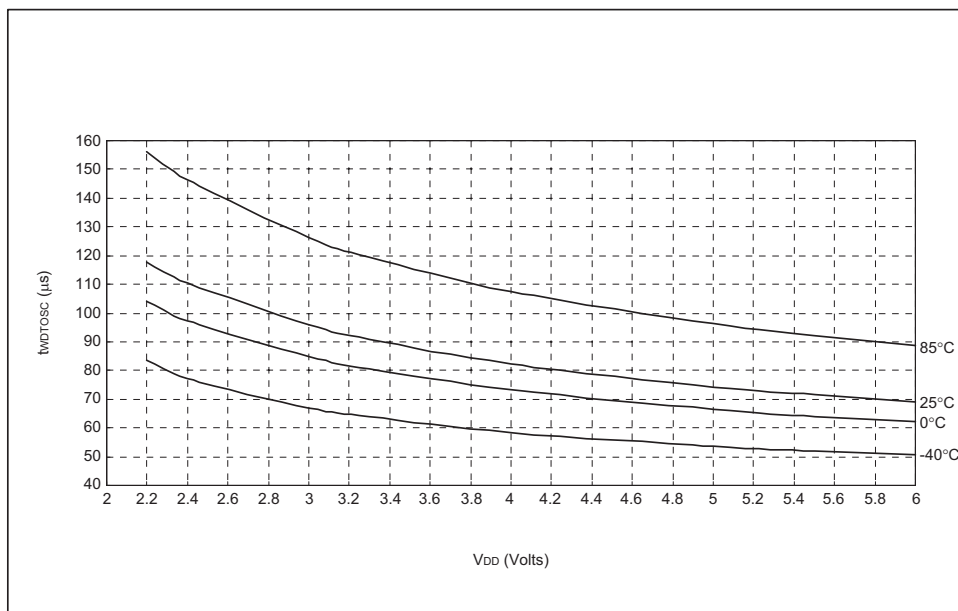
Figure 10: Typical  $V_{IH}$ ,  $V_{IL}$  vs.  $V_{DD}$  in  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$



**Figure 11: Typical  $I_{STB}$  vs.  $V_{DD}$  Watchdog Enable**

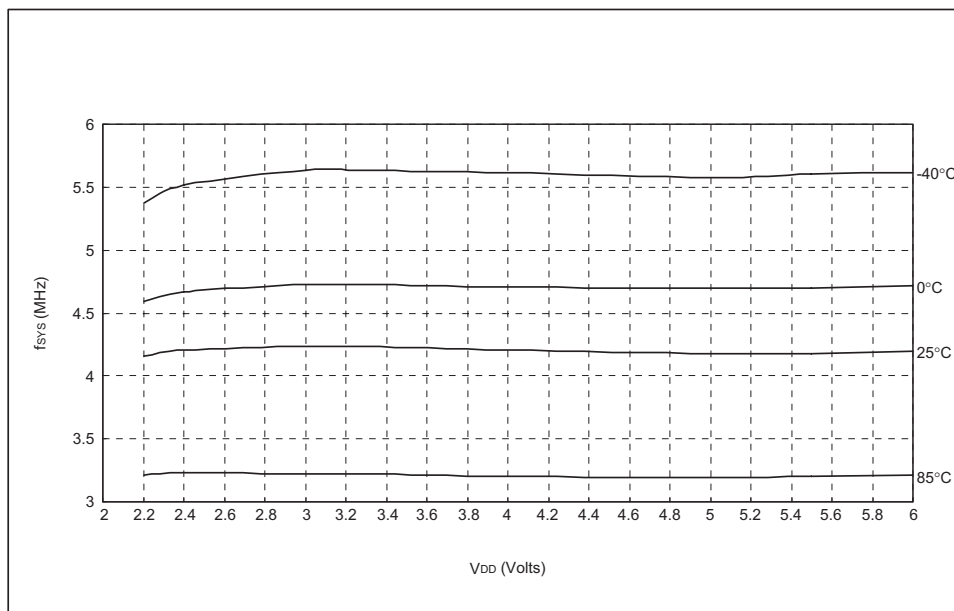


**Figure 12: Typical  $t_{WDOSC}$  vs.  $V_{DD}$**

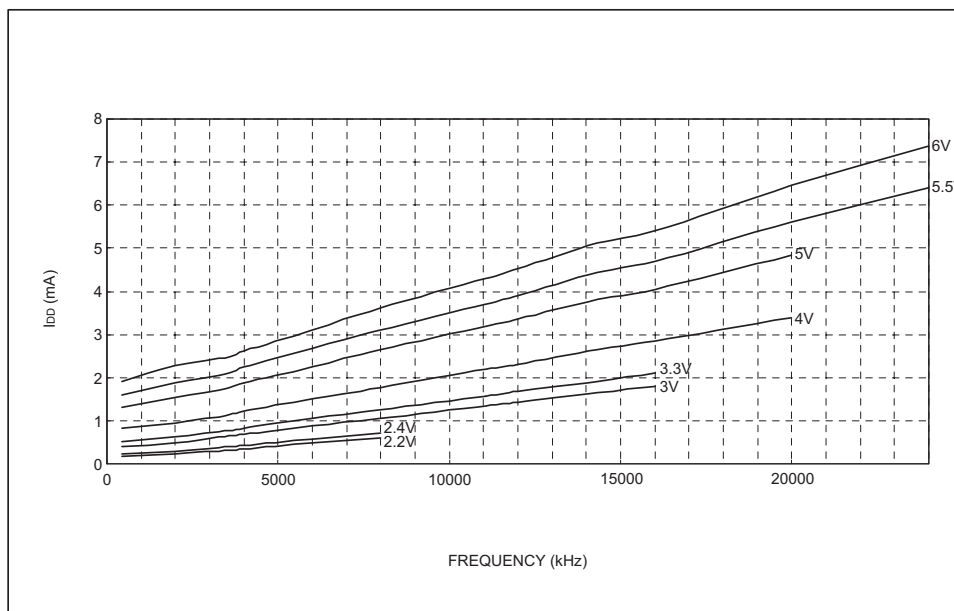


**Figure 13: Typical Internal RC OSC vs.  $V_{DD}$**

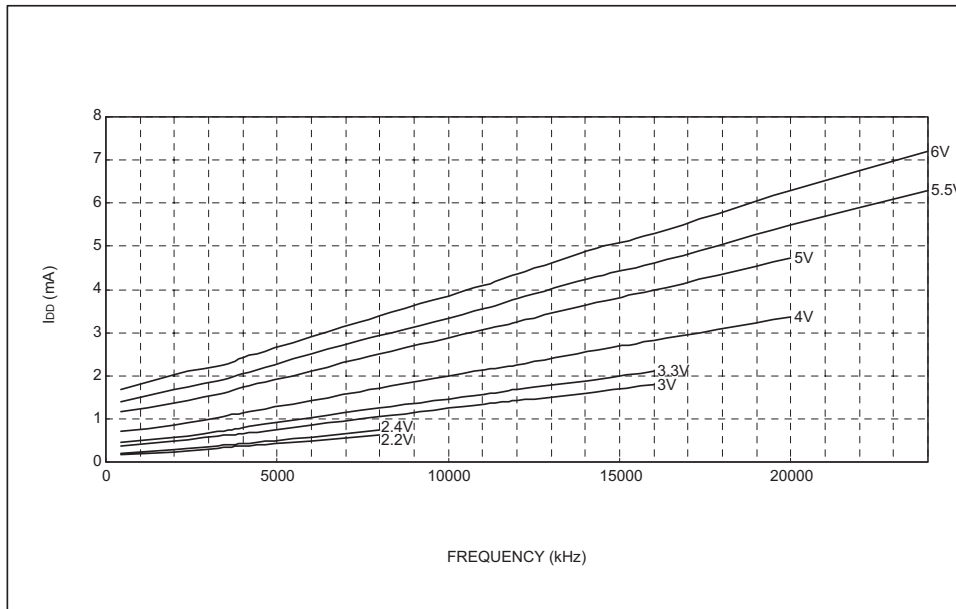
HT48RX0A-1



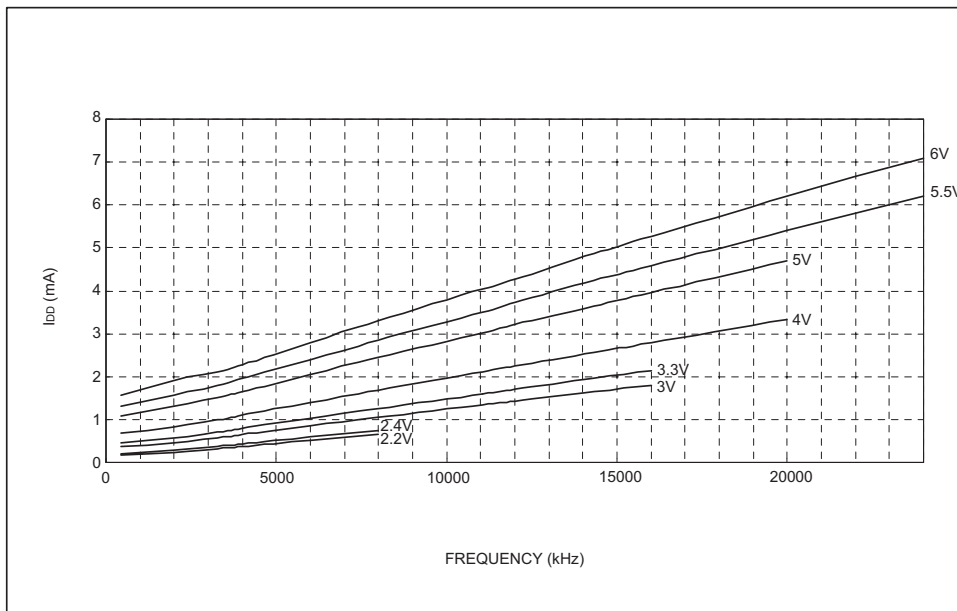
**Figure 14: Typical  $I_{DD}$  vs. Frequency (External Clock,  $T_a = -40^\circ\text{C}$ )**



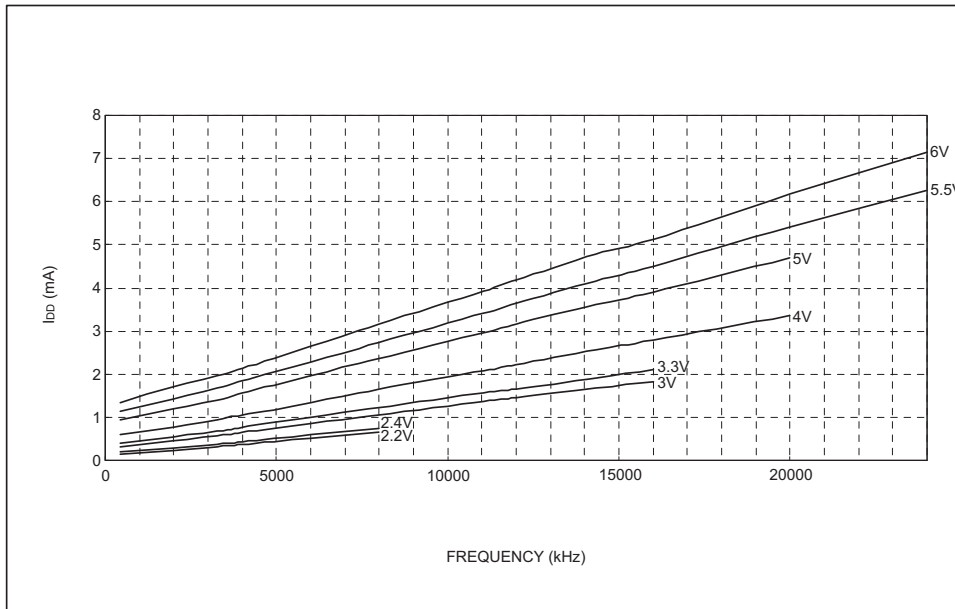
**Figure 15: Typical  $I_{DD}$  vs. Frequency (External Clock,  $T_a=0^\circ\text{C}$ )**



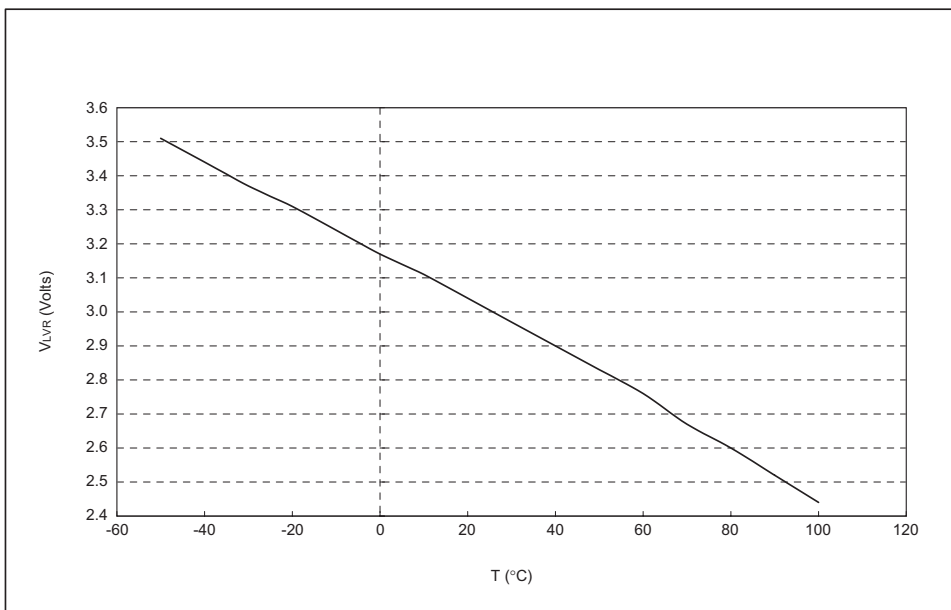
**Figure 16: Typical  $I_{DD}$  vs. Frequency (External Clock,  $T_a=25^\circ\text{C}$ )**



**Figure 17: Typical  $I_{DD}$  vs. Frequency (External Clock,  $T_a=85^\circ\text{C}$ )**



**Figure 18: Typical  $V_{LVR}$  vs. Temperature**  
 HT48R0XA-1, HT48RX0A-1, HT46R47, HT46R2X, HT46R6X



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