PRODUCT NAME
TM8727

TITLE
TM8727 Electrical Characteristics

APPLICATION NOTE

A. The characteristics in this document are only for reference. The operating current is measured in room temperature (26℃) and without loading. In mass-production, the characteristics will be influenced by process deviation, temperature, Option, loading and operating voltage.

B. Power Consumption
LCD：1/2Bias, 1/4Duty * 9Seg, Size: 1cm * 2.5cm
(1). At 3V, 26℃

TM8727(Crystal and Internal Fast 500kHz 3V)											
Condition	μA	μA	μA	μA	μA	μA	μA	μA	μA	Freq. Tolerance (s/d)	
3V	√	√	√	√	√	√	√	√	√	√	
LCD	on	on	on	on	on	on	on	OFF	OFF		
Operating	√	√	√	√							
Bcf Flag	1	0	1	0	1	1	0	1	0	1	0
Halt						√	√	√	√	√	
Stop					√						
500KHz			√	√							
32768Hz	√	√			√	√	√	√	√	√	√
Operating current(uA)	9.48	1.37	125.56	25.02	0.08	6.62	0.72	6.57	0.67		
Freq. Tolerance (sec./day)										-0.08	-0.42

TM8727(Internal Fast Only 250kHz 3V)							
3V	√	√	√	√	√	√	√
LCD	on	on	on	on	on	OFF	OFF
Operating	√	√					
Bcf Flag	1	0	1	1	0	1	0
Halt				√	√	√	√
Stop			√				
Operating current(uA	68.02	16.38	0.08	44.3	10.44	43.84	10.06

(2). At 1.5V, 26℃

TM8727(Crystal and Internal Fast 500kHz 1.5V)											
Condition	μA	μA	μA	μA	μA	μA	μA	μA	μA	Freq. Tolerance (s/d)	
1.5V	√	√	√	√	√	√	√	√	√	√	
LCD	on	on	on	on	on	on	on	OFF	OFF		
Operating	√	√	√	√							
Bcf Flag	1	0	1	0	1	1	0	1	0	1	0
Halt						√	√	√	√	√	
Stop					√						
500KHz			√	√							
32768Hz	√	√			√	√	√	√	√	√	√
Operating current(uA)	2.66	2.61	53.23	53.3	0.08	1.33	1.28	1.21	1.16		
Freq. Tolerance (sec./day)										-0.04	-0.43

TM8727(Internal Fast Only 250kHz 1.5V)							
1.5V	√	√	√	√	√	√	√
EXT-V							
LCD	on	on	on	on	on	OFF	OFF
Operating	√	√					
Bcf Flag	1	0	1	1	0	1	0
Halt				√	√	√	√
Stop			√				
Operating current(uA)	32.02	32.08	0.08	20.09	20.13	19.21	19.22

NOTE:

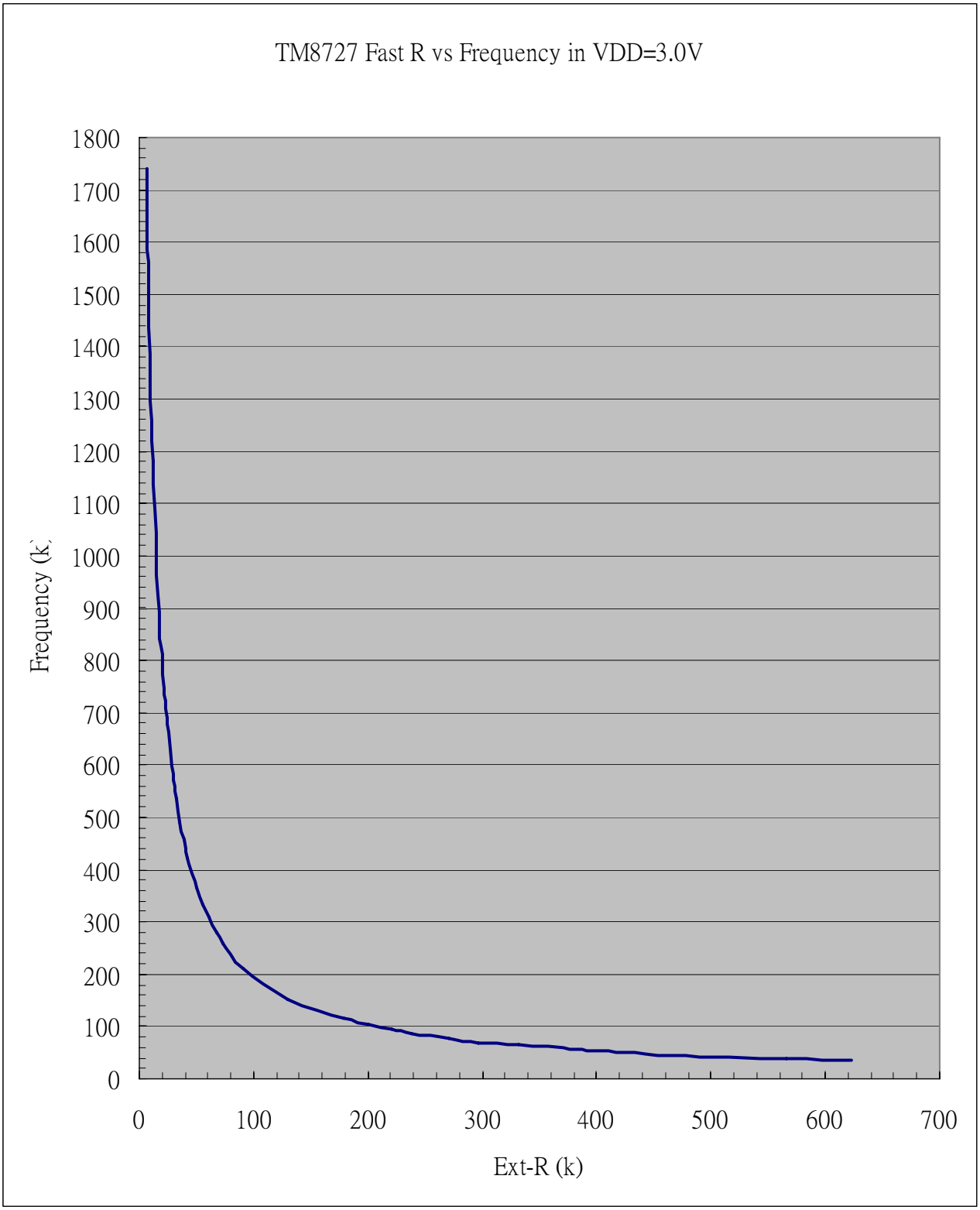
Freq. Tolerance means after trimming the capacitance of external capacitor in 32768Hz Crystal oscillator, how many seconds the real time clock function will be fast or slow everyday.

Many factors will influence the frequency tolerance, such as setting of BCF flag in MCU, manufacture/lot No./type of Crystal oscillator, PCB layout and quality of external capacitor.

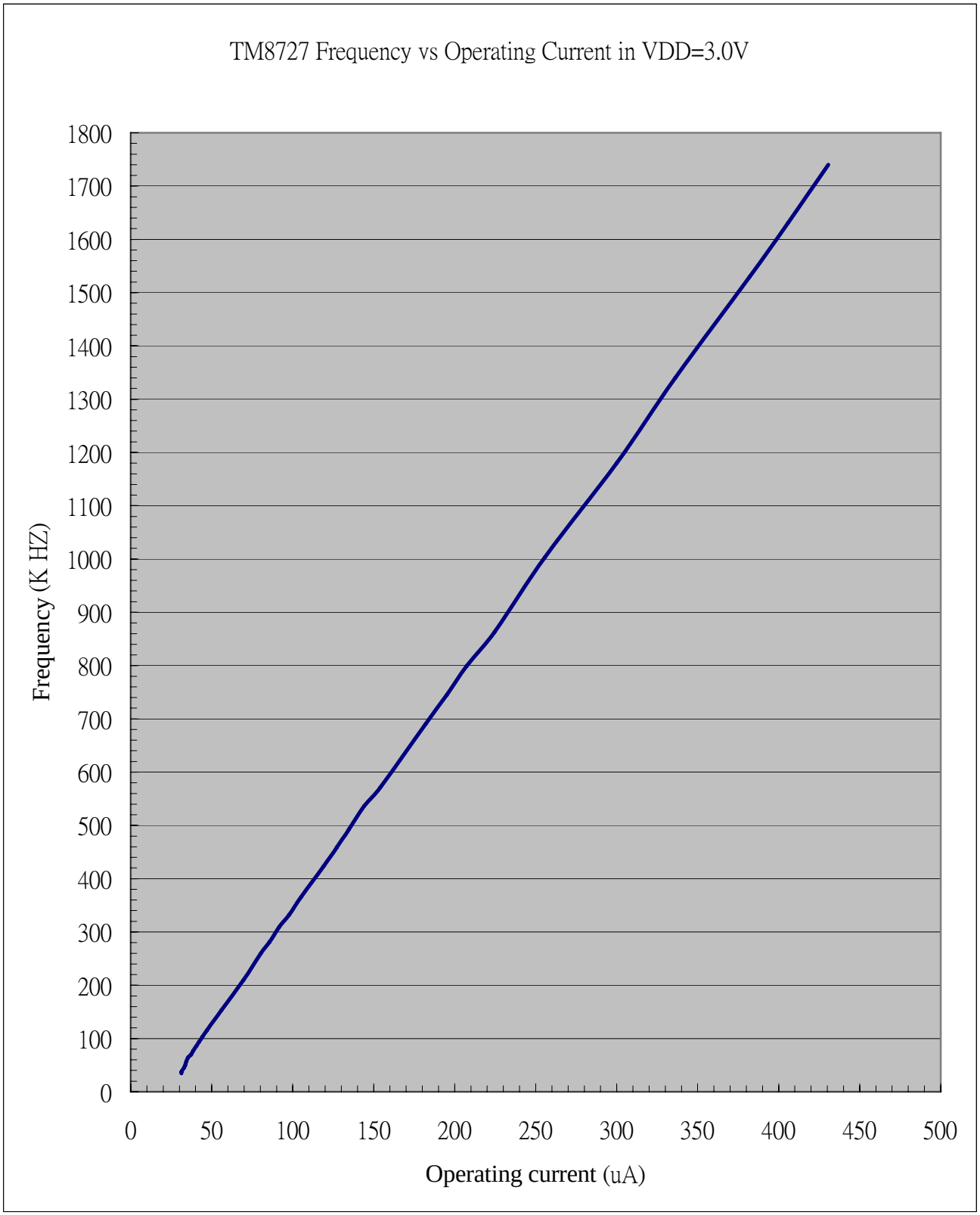
C. Ext-R vs. Frequency vs. Operating Current

(1). At 3V, 26℃

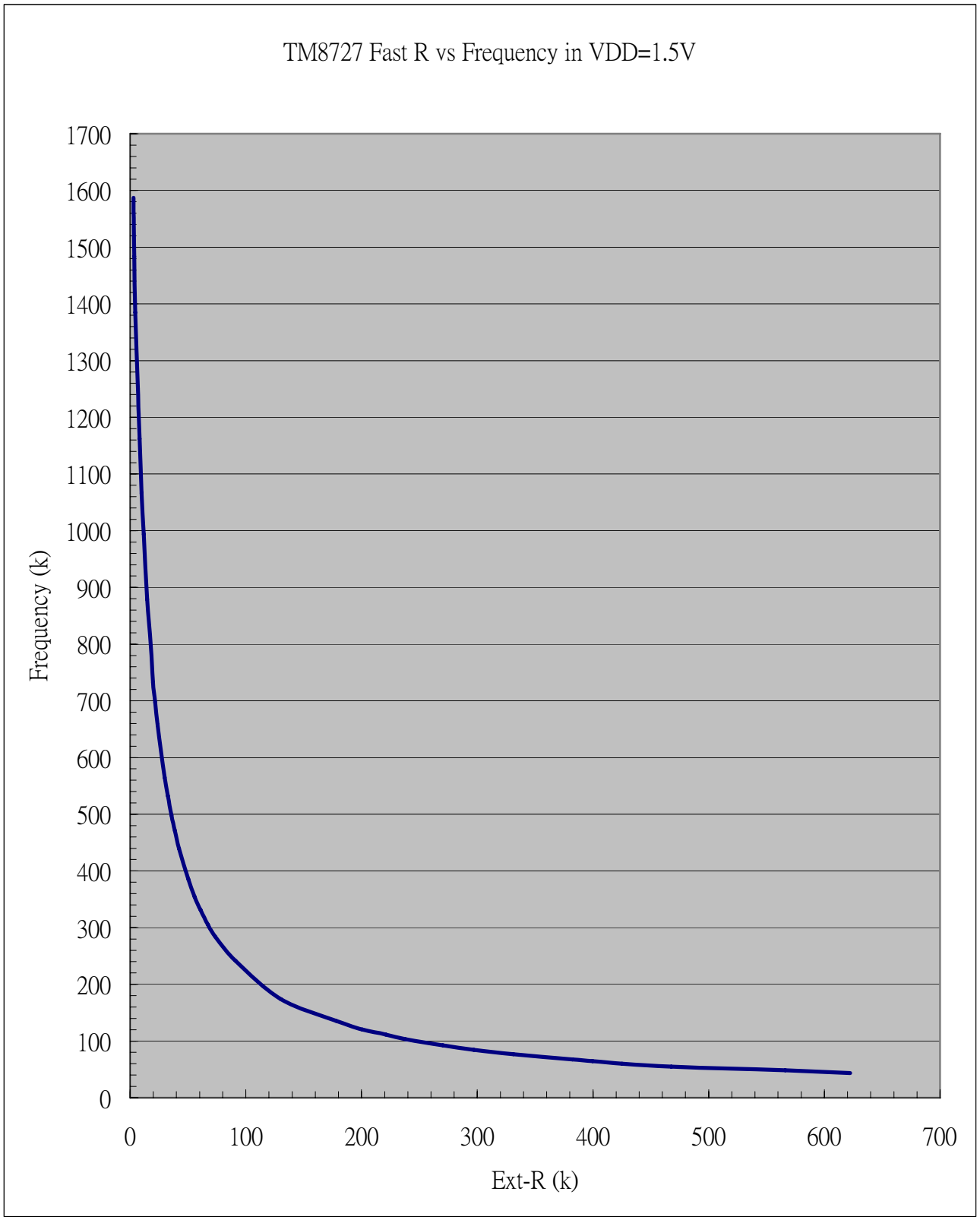
Ext-R vs. Frequency



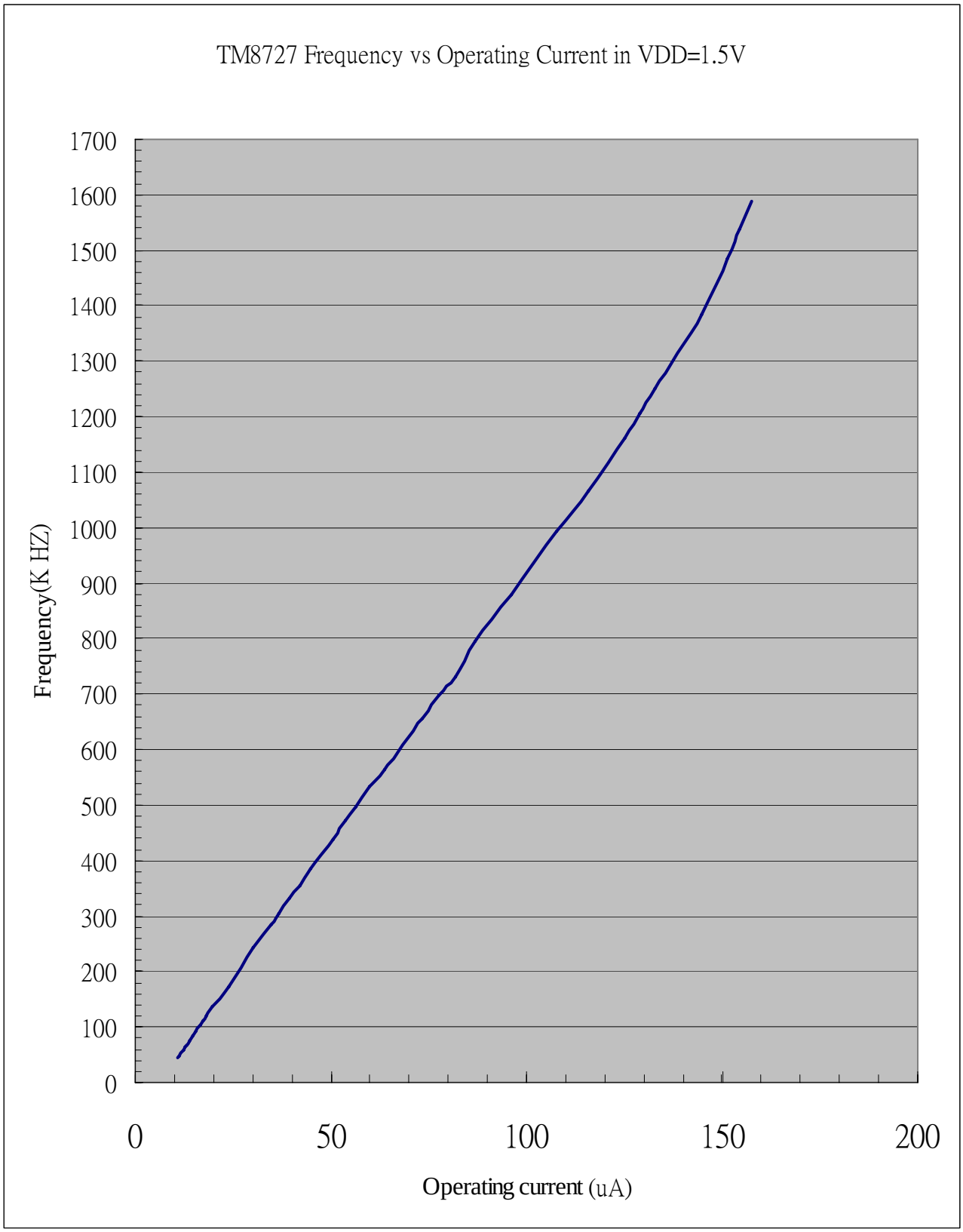
(2). At 3V, 26℃
Frequency vs. Operation Current



(3). At 1.5V, 26℃
Ext-R vs. Frequency



(4). At 1.5V, 26℃
Frequency vs. Operation Current



D. Generate 32768Hz frequency in slow RC oscillator
(1). At 3V, 26℃：220pF and 46.98 KΩ
(2). At 1.5V, 26℃：220pF and 47.36 KΩ