

## 29.2.8 ATmega328P DC Characteristics

Table 29-8. ATmega328P DC characteristics -  $T_A = -40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$ ,  $V_{CC} = 1.8\text{V}$  to  $5.5\text{V}$  (unless otherwise noted)

Symbol	Parameter	Condition	Min.	Typ. <sup>(2)</sup>	Max.	Units
$I_{CC}$	Power Supply Current <sup>(1)</sup>	Active 1MHz, $V_{CC} = 2\text{V}$		0.3	0.5	mA
		Active 4MHz, $V_{CC} = 3\text{V}$		1.7	2.5	
		Active 8MHz, $V_{CC} = 5\text{V}$		5.2	9	
		Idle 1MHz, $V_{CC} = 2\text{V}$		0.04	0.15	
		Idle 4MHz, $V_{CC} = 3\text{V}$		0.3	0.7	
		Idle 8MHz, $V_{CC} = 5\text{V}$		1.2	2.7	
	Power-save mode <sup>(3)</sup>	32kHz TOSC enabled, $V_{CC} = 1.8\text{V}$		0.8		$\mu\text{A}$
		32kHz TOSC enabled, $V_{CC} = 3\text{V}$		0.9		
	Power-down mode <sup>(3)</sup>	WDT enabled, $V_{CC} = 3\text{V}$		4.2	8	
		WDT disabled, $V_{CC} = 3\text{V}$		0.1	2	

- Notes:
1. Values with "Minimizing Power Consumption" enabled (0xFF).
  2. Typical values at  $25^{\circ}\text{C}$ . Maximum values are test limits in production.
  3. The current consumption values include input leakage current.

## 29.3 Speed Grades

Maximum frequency is dependent on  $V_{CC}$ . As shown in Figure 29-1, the Maximum Frequency vs.  $V_{CC}$  curve is linear between  $1.8\text{V} < V_{CC} < 2.7\text{V}$  and between  $2.7\text{V} < V_{CC} < 4.5\text{V}$ .

Figure 29-1. Maximum Frequency vs.  $V_{CC}$

