

## 26.5 System and Reset Characteristics

**Table 26-3.** Reset, Brown-out and Internal Voltage Characteristics<sup>(1)</sup>

Symbol	Parameter		Min	Typ	Max	Units
V <sub>POT</sub>	Power-on Reset Threshold Voltage (rising)		1.1	1.4	1.6	V
	Power-on Reset Threshold Voltage (falling) <sup>(2)</sup>		0.6	1.3	1.6	V
SR <sub>ON</sub>	Power-on Slope Rate		0.01		10	V/ms
V <sub>RST</sub>	$\overline{\text{RESET}}$ Pin Threshold Voltage		0.2 V <sub>CC</sub>		0.9 V <sub>CC</sub>	V
t <sub>RST</sub>	Minimum pulse width on $\overline{\text{RESET}}$ Pin				2.5	μs
V <sub>HYST</sub>	Brown-out Detector Hysteresis			50		mV
t <sub>BOD</sub>	Min Pulse Width on Brown-out Reset			2		μs
V <sub>BG</sub>	Bandgap reference voltage	V <sub>CC</sub> =2.7 T <sub>A</sub> =25°C	1.0	1.1	1.2	V
t <sub>BG</sub>	Bandgap reference start-up time	V <sub>CC</sub> =2.7 T <sub>A</sub> =25°C		40	70	μs
I <sub>BG</sub>	Bandgap reference current consumption	V <sub>CC</sub> =2.7 T <sub>A</sub> =25°C		10		μA

- Notes: 1. Values are guidelines only.  
2. The Power-on Reset will not work unless the supply voltage has been below V<sub>POT</sub> (falling).

**Table 26-4.** BODLEVEL Fuse Coding<sup>(1)</sup>

BODLEVEL 2:0 Fuses	Min V <sub>BOT</sub>	Typ V <sub>BOT</sub>	Max V <sub>BOT</sub>	Units
111	BOD Disabled			
110	1.7	1.8	2.0	V
101	2.5	2.7	2.9	
100	4.1	4.3	4.5	
011	Reserved			
010				
001				
000				

- Notes: 1. V<sub>BOT</sub> may be below nominal minimum operating voltage for some devices. For devices where this is the case, the device is tested down to V<sub>CC</sub> = V<sub>BOT</sub> during the production test. This guarantees that a Brown-Out Reset will occur before V<sub>CC</sub> drops to a voltage where correct operation of the microcontroller is no longer guaranteed. The test is performed using BODLEVEL = 110 and BODLEVEL = 101 for ATmega48P/88P/168PV and ATmega328P, and BODLEVEL = 101 and BODLEVEL = 100 for ATmega48P/88P/168P/328P.