

# FOC Test Report: demo\_high\_speed\_motion

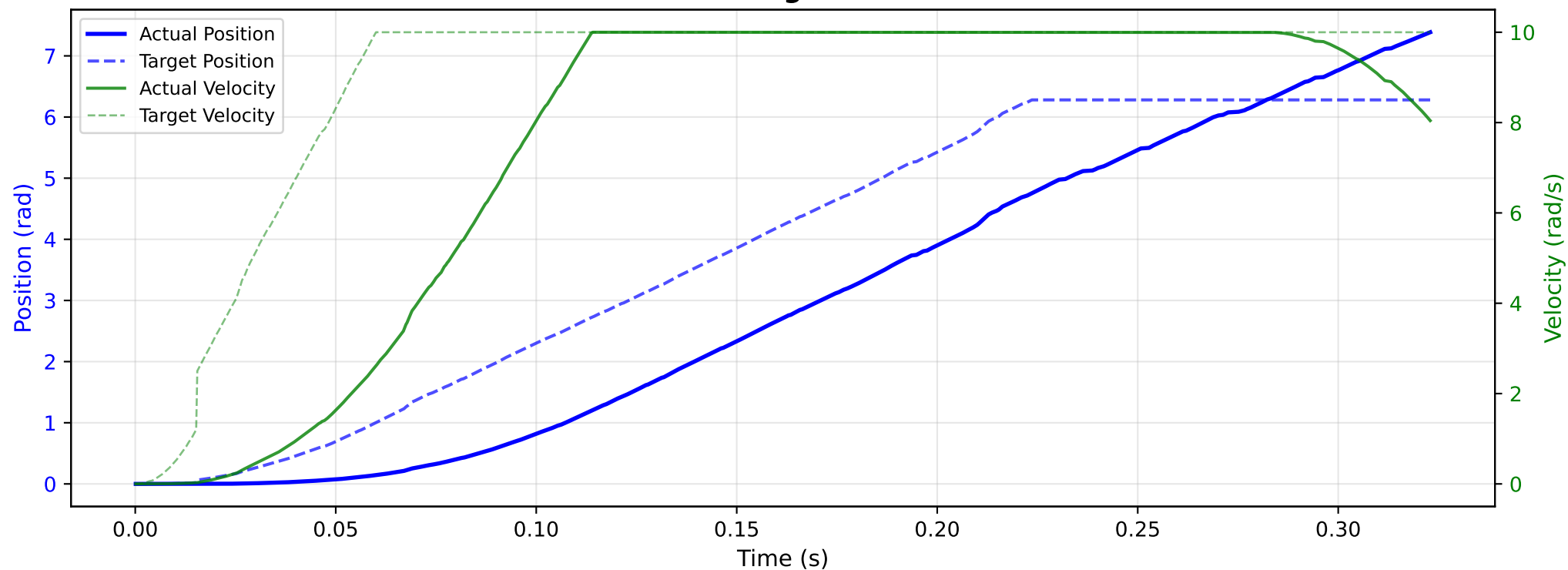
Test Name: demo\_high\_speed\_motion  
Platform: Renode STM32G431CB  
Firmware: iRPC v2.0  
Start Time: 2025-10-07 21:26:47

Samples Collected: 1000  
Test Duration: 0.323 s

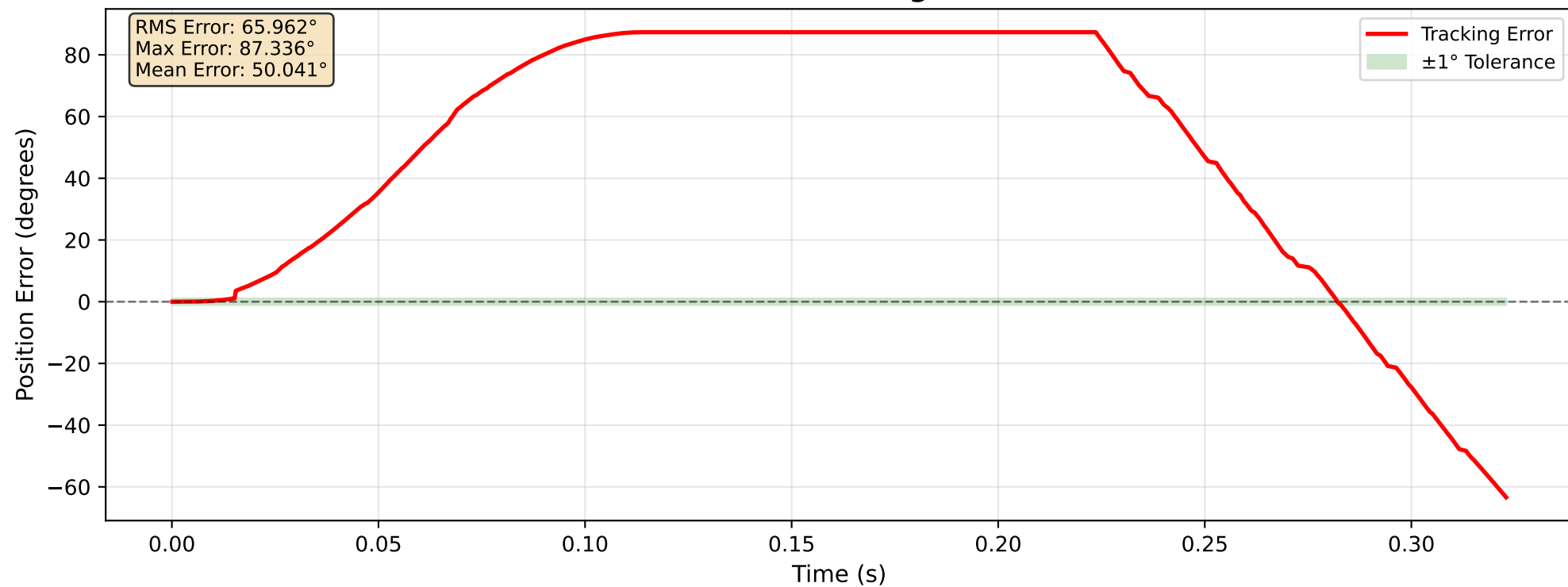
## Performance Summary:

Position Range: [0.000, 7.386] rad  
Position Std Dev: 2.435 rad  
Max Velocity: 10.000 rad/s  
Peak Current ( $I_q$ ): 5.00 A  
Mean Current ( $I_q$ ): 3.49 A

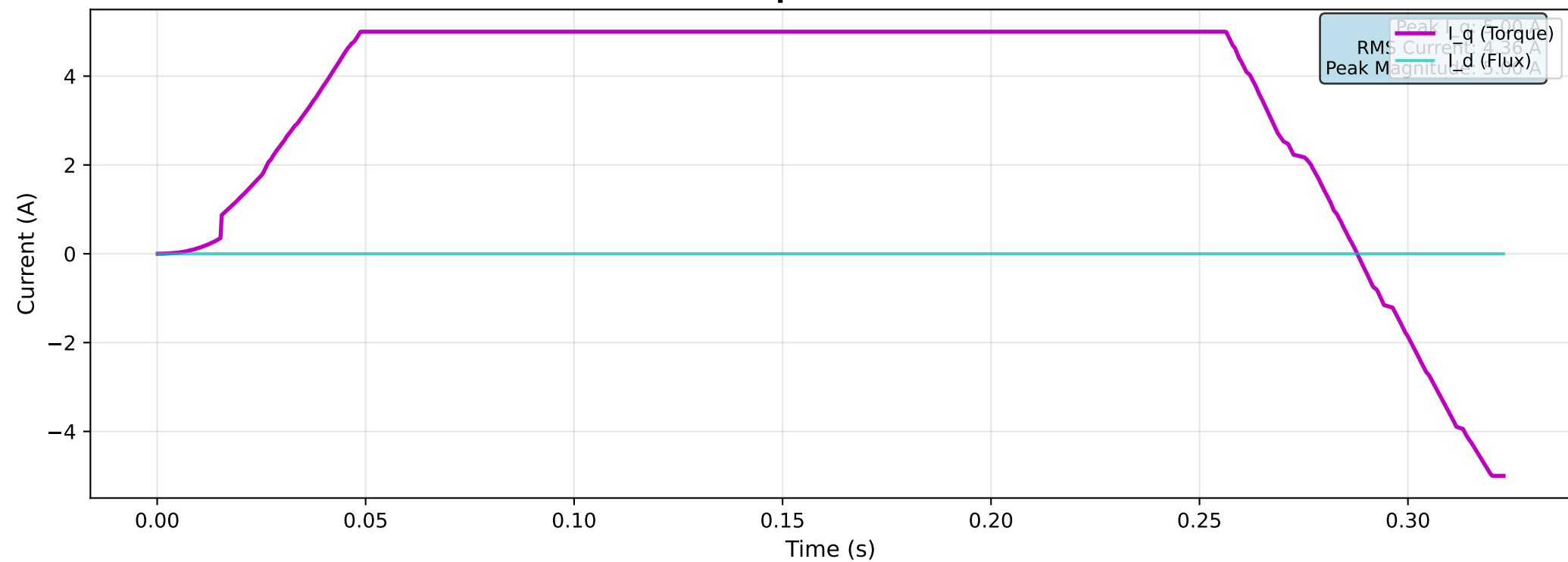
# Motion Tracking Performance



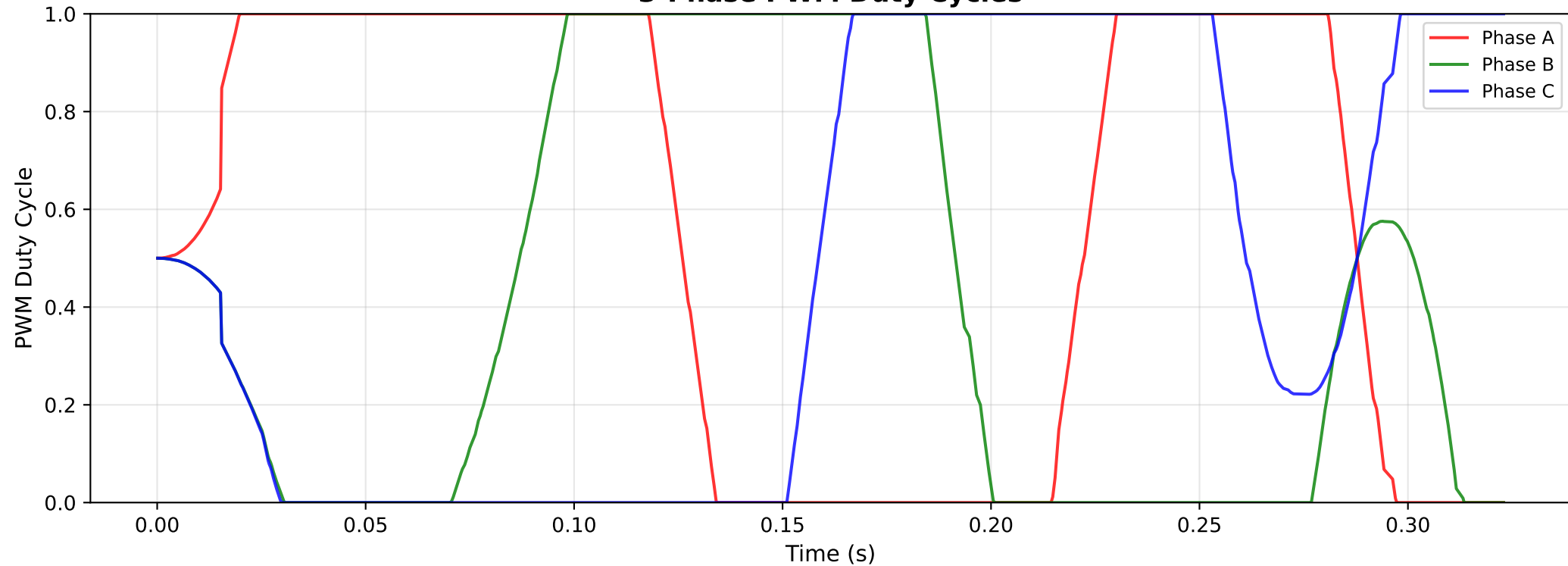
## Position Tracking Error



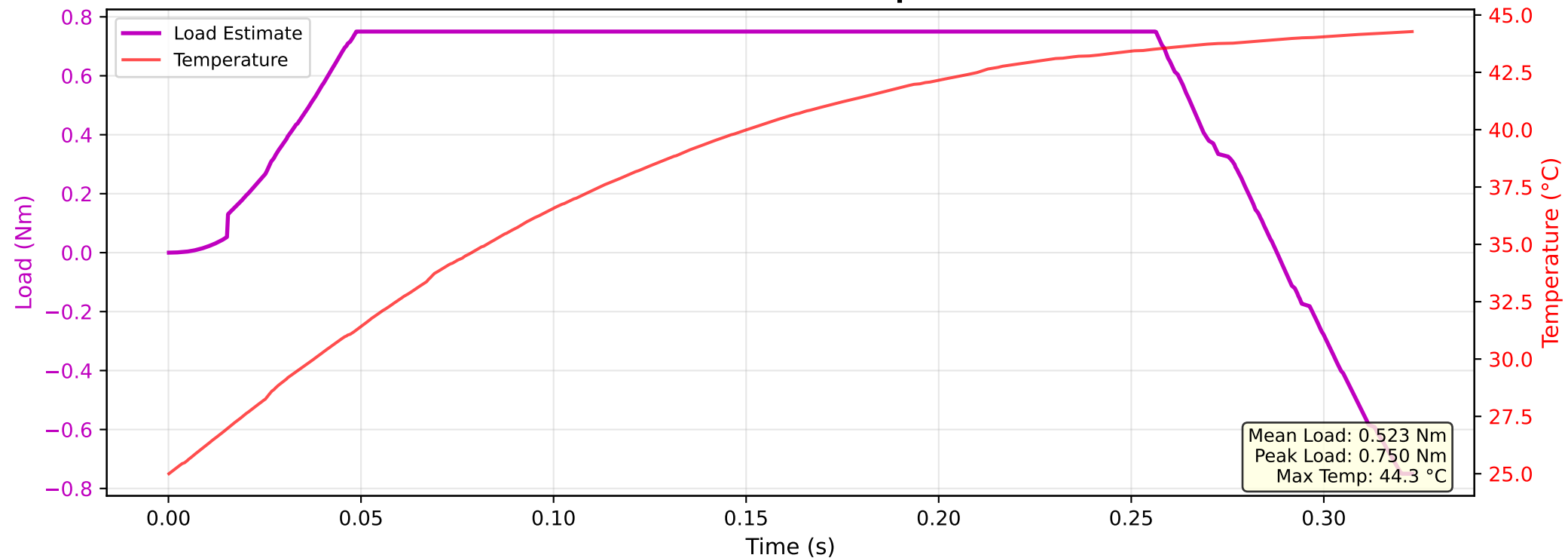
### FOC d-q Axis Currents



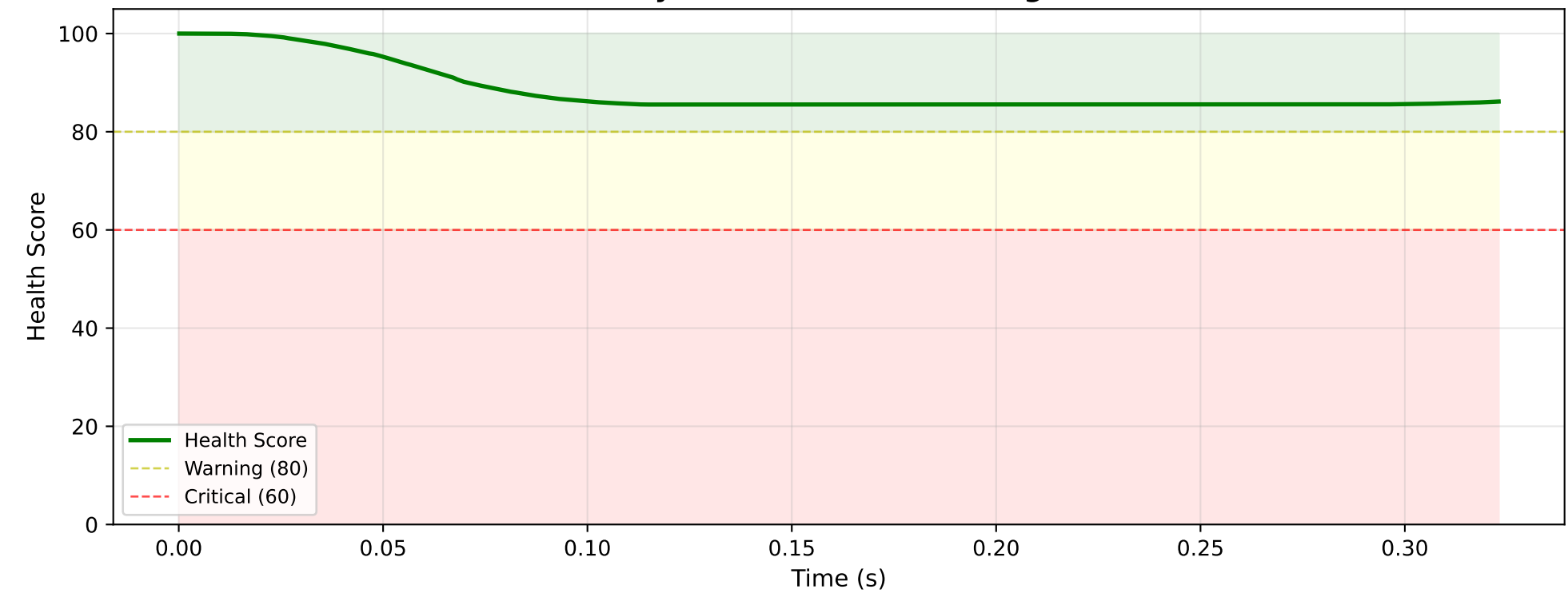
### 3-Phase PWM Duty Cycles



# Load Estimation & Temperature



# System Health Monitoring



**Phase Diagram (Position-Velocity)**

