

# FOC Test Report: demo\_trapezoidal\_profile

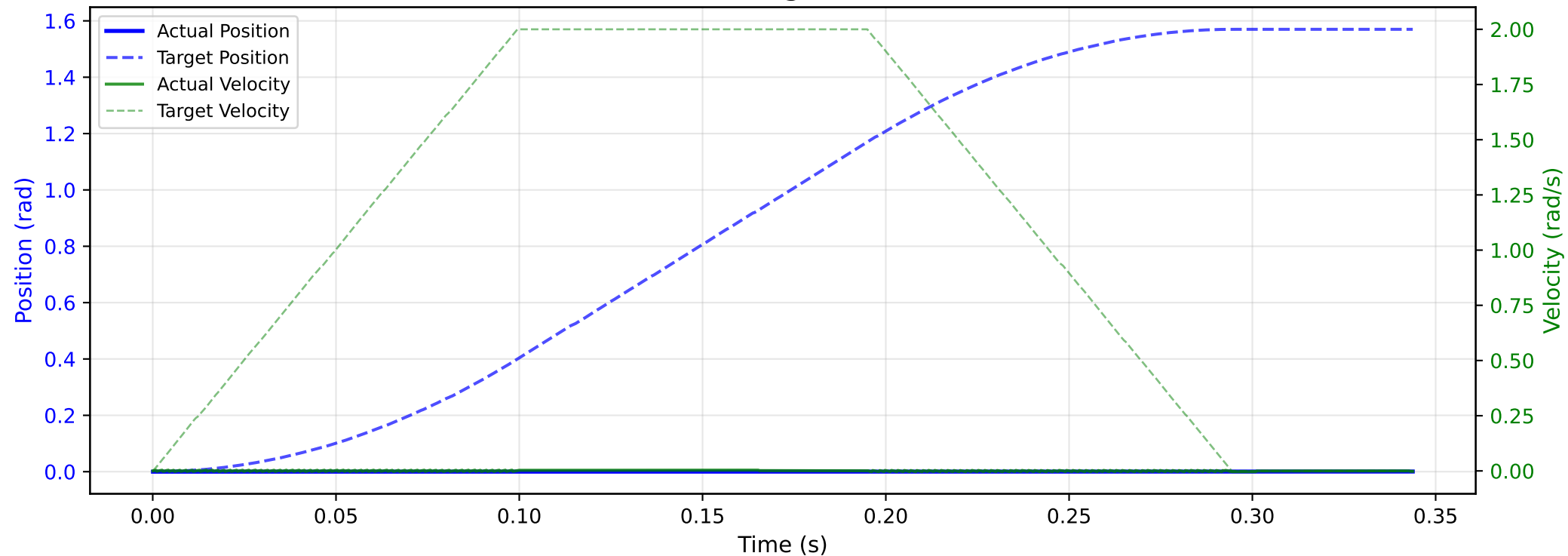
Test Name: demo\_trapezoidal\_profile  
Platform: Renode STM32G431CB  
Firmware: iRPC v2.0  
Start Time: 2025-10-10 14:47:04

Samples Collected: 1385  
Test Duration: 0.344 s

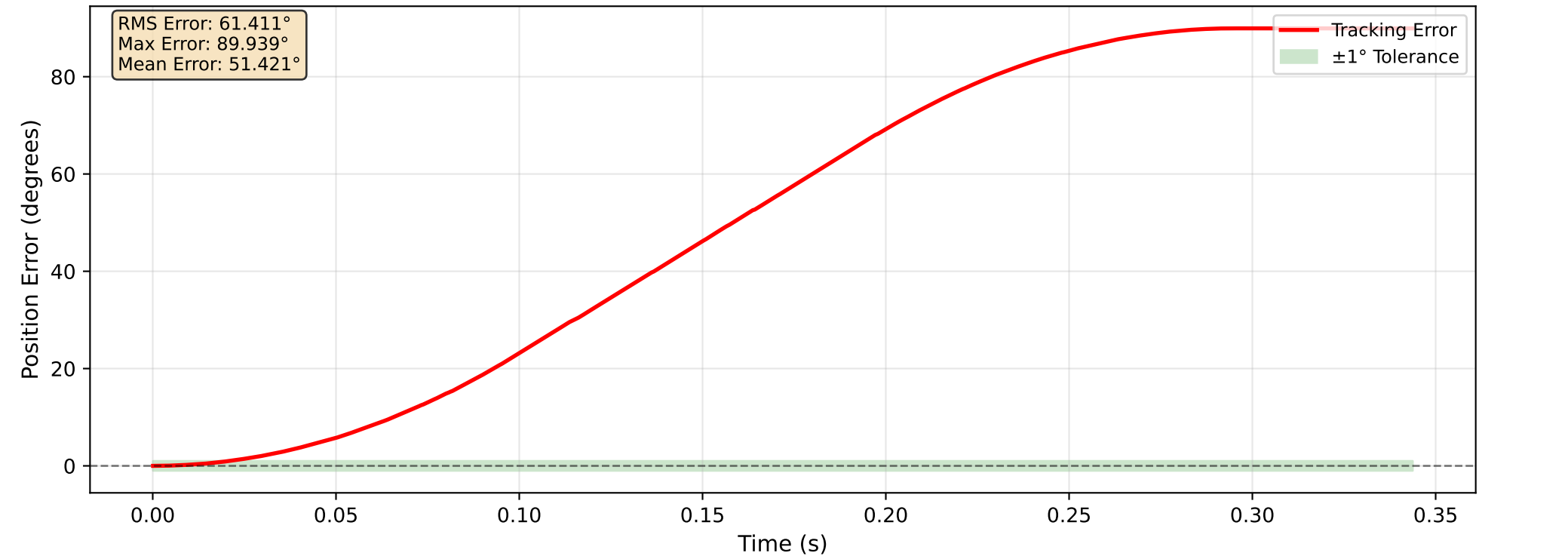
## Performance Summary:

Position Range: [-0.000, 0.001] rad  
Position Std Dev: 0.000 rad  
Max Velocity: 0.003 rad/s  
Peak Current ( $I_q$ ): 0.03 A  
Mean Current ( $I_q$ ): 0.00 A

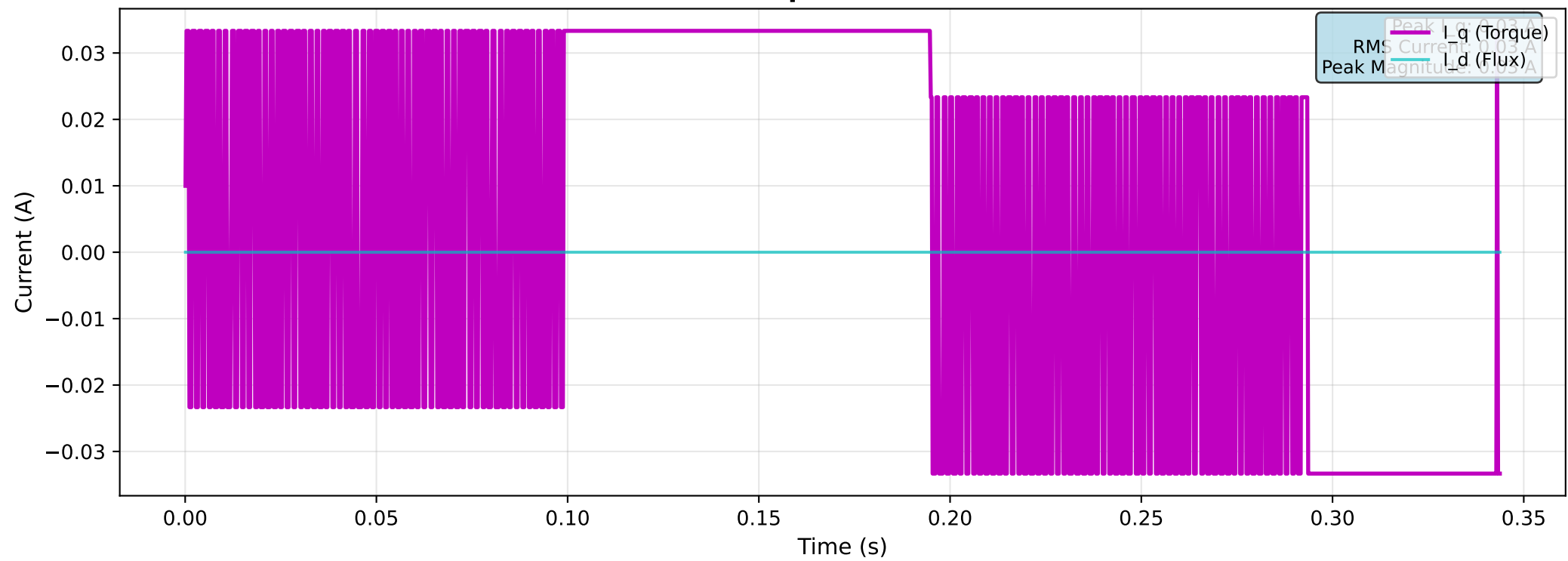
# Motion Tracking Performance



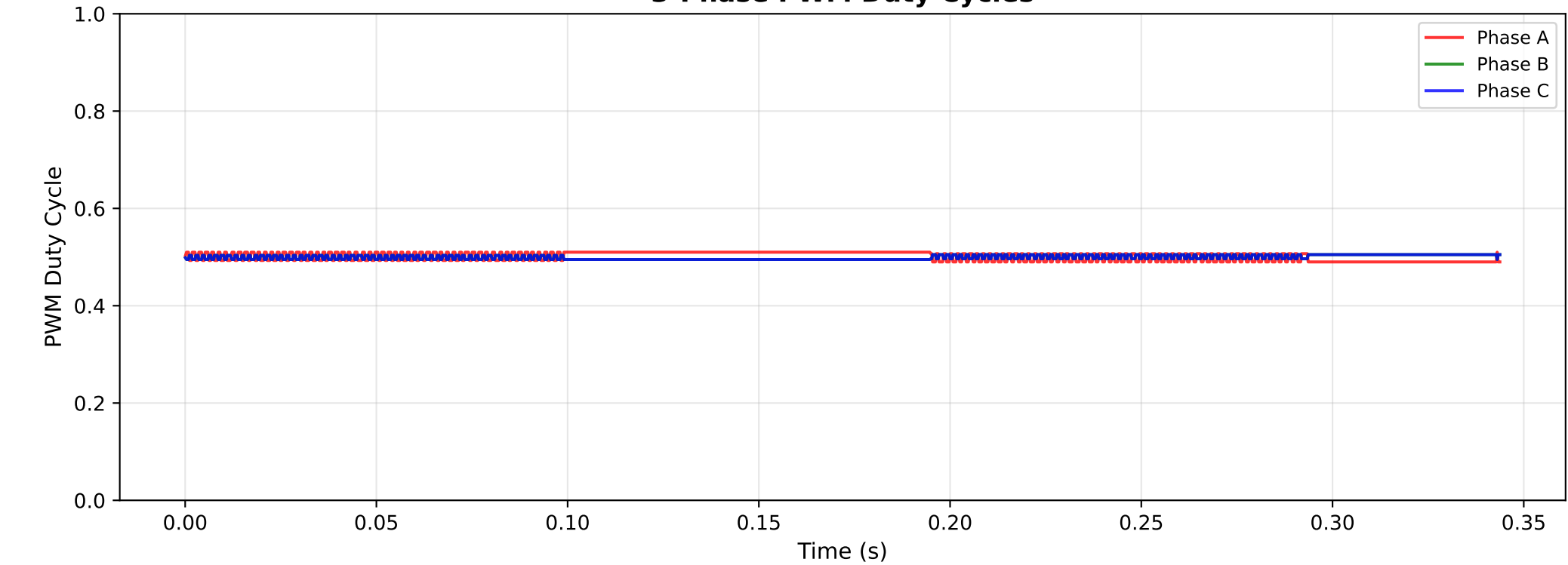
## Position Tracking Error



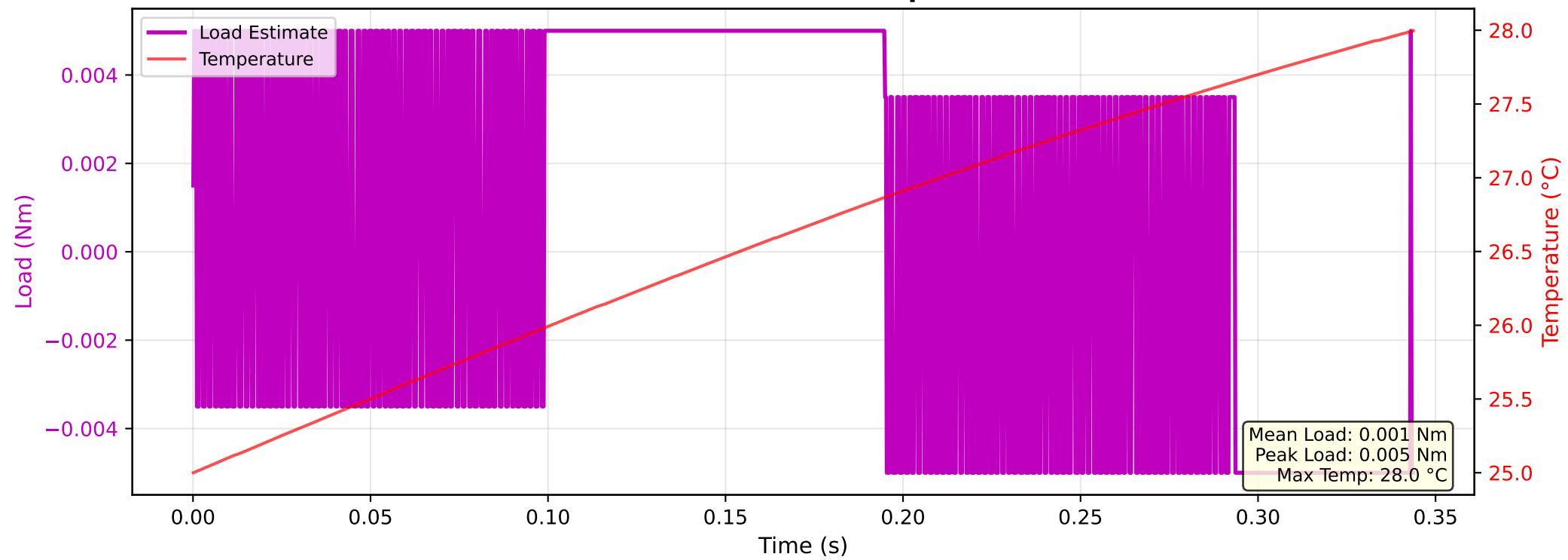
### FOC d-q Axis Currents



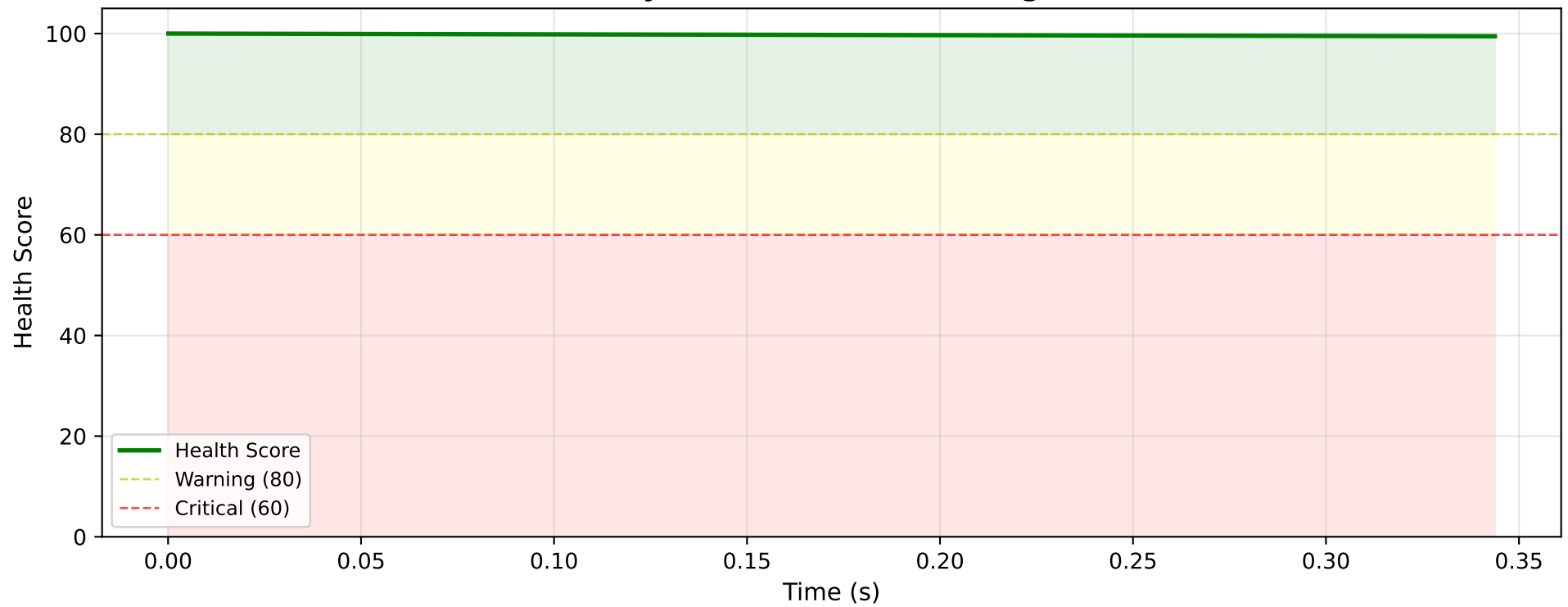
### 3-Phase PWM Duty Cycles



## Load Estimation & Temperature



## System Health Monitoring



**Phase Diagram (Position-Velocity)**

