

# FOC Test Report: demo\_trapezoidal\_profile

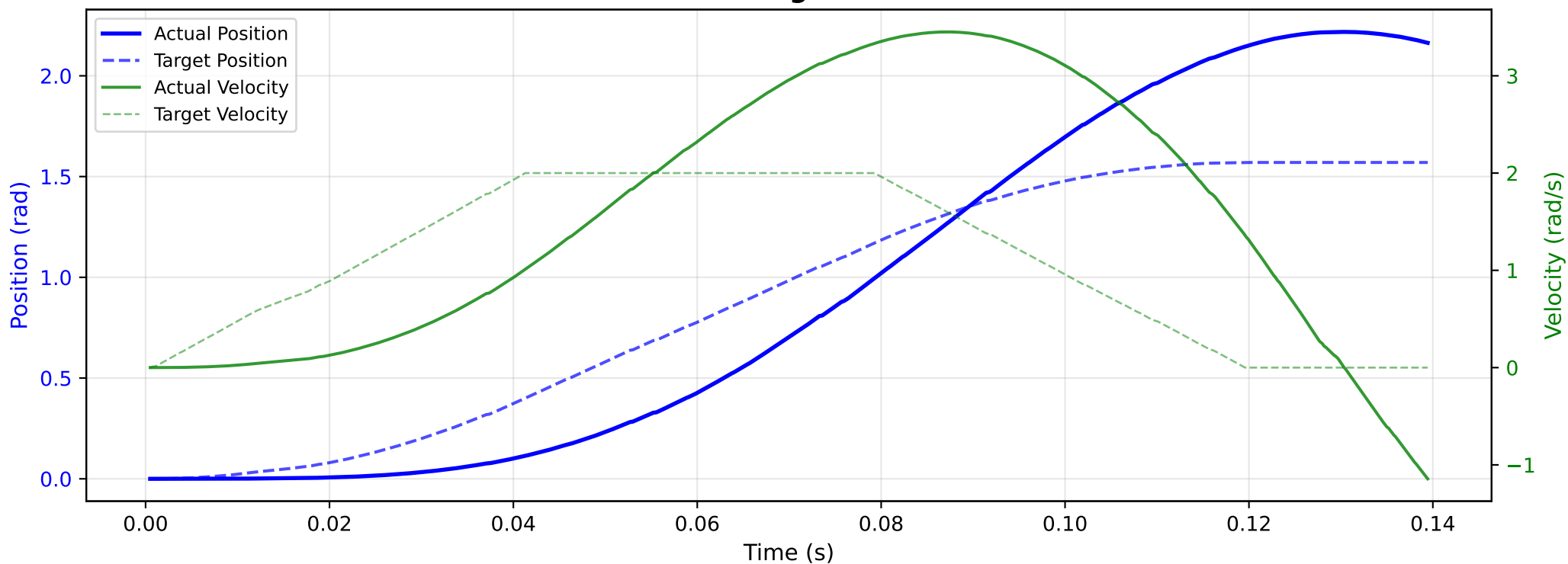
Test Name: demo\_trapezoidal\_profile  
Platform: Renode STM32G431CB  
Firmware: iRPC v2.0  
Start Time: 2025-10-07 21:26:47

Samples Collected: 1385  
Test Duration: 0.139 s

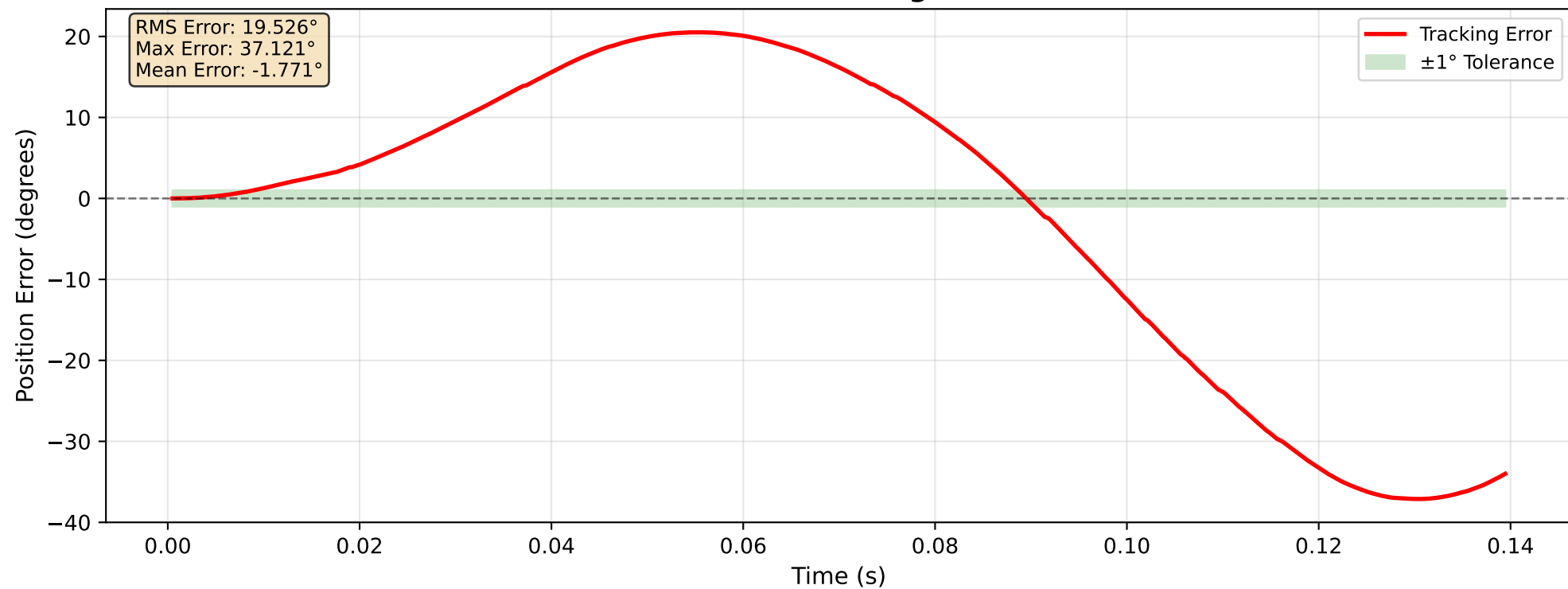
## Performance Summary:

Position Range: [0.000, 2.218] rad  
Position Std Dev: 0.850 rad  
Max Velocity: 3.451 rad/s  
Peak Current ( $I_q$ ): 1.30 A  
Mean Current ( $I_q$ ): -0.00 A

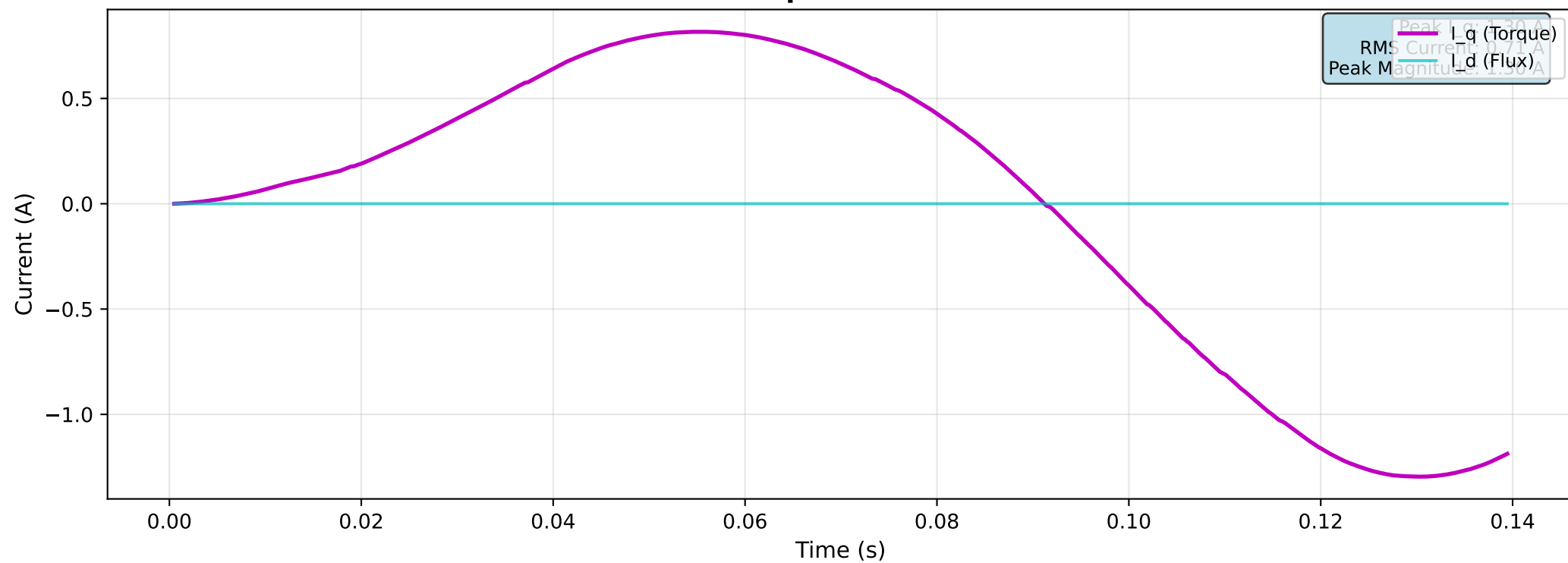
### Motion Tracking Performance



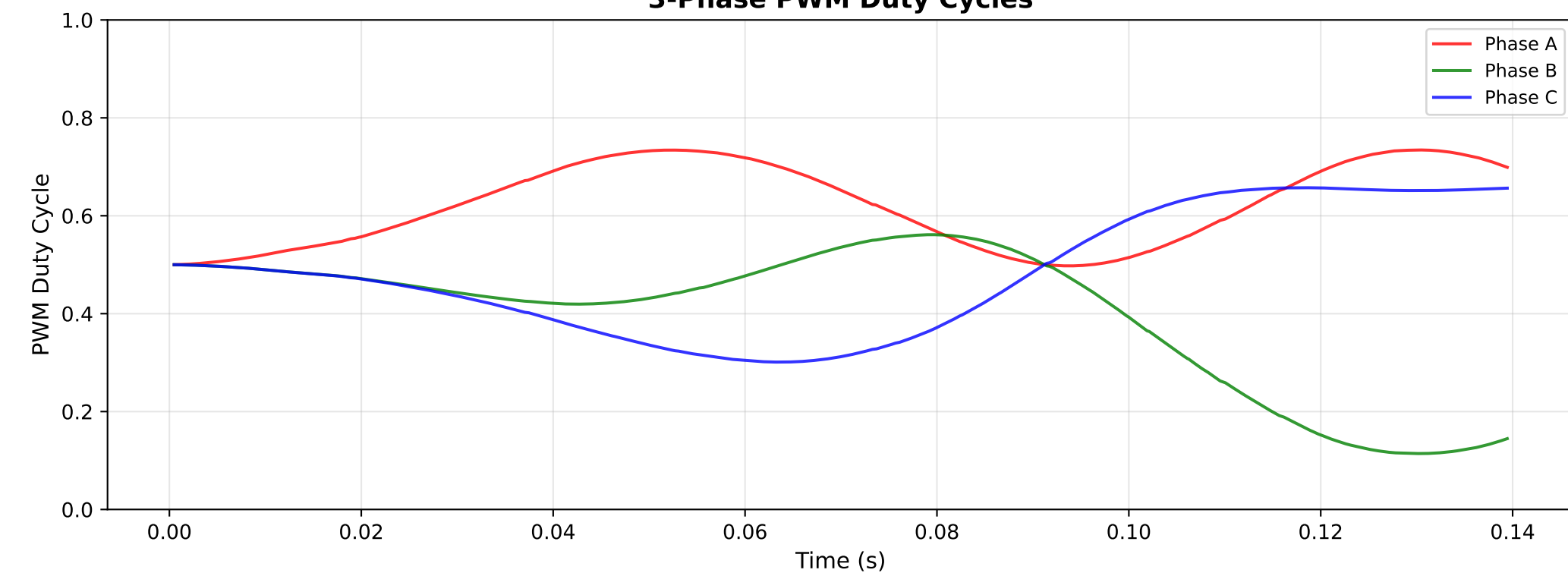
### Position Tracking Error



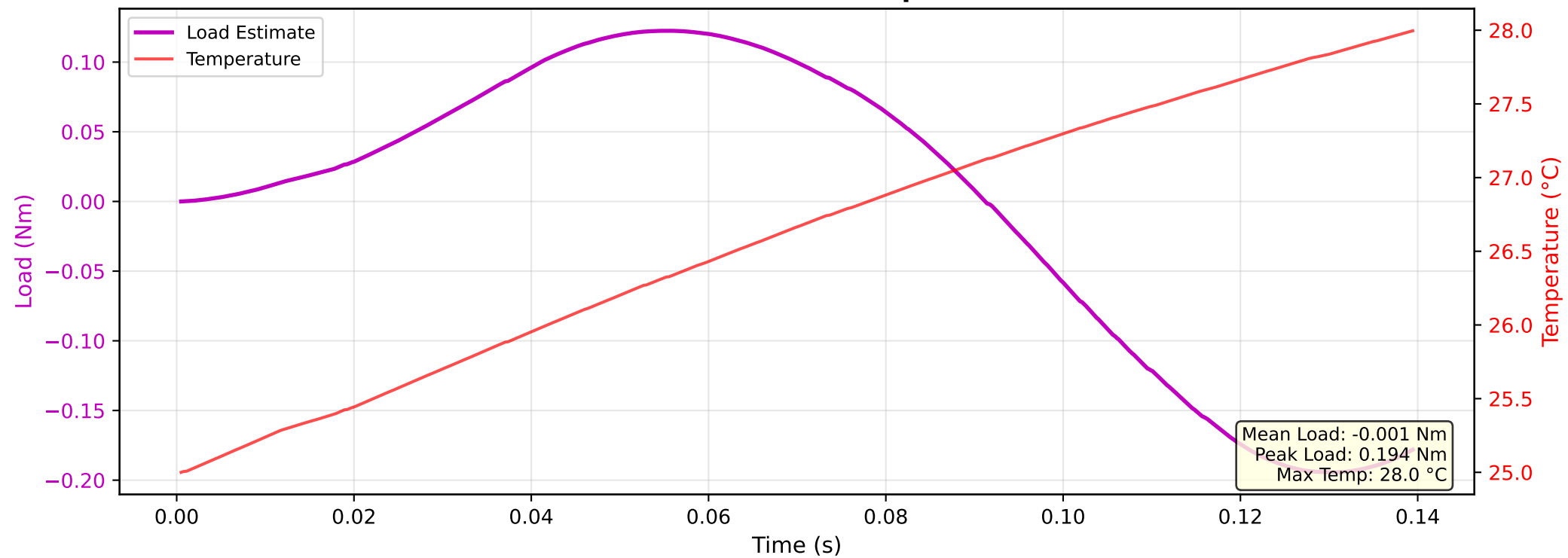
### FOC d-q Axis Currents



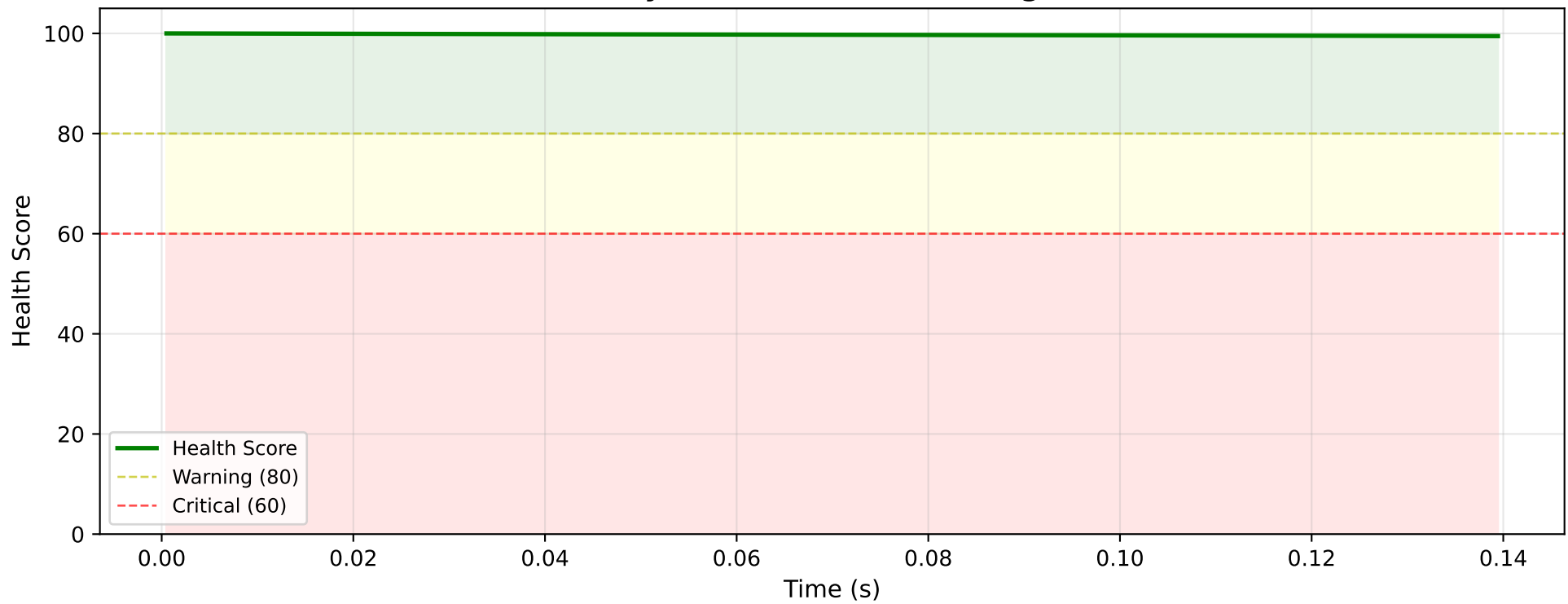
### 3-Phase PWM Duty Cycles



## Load Estimation & Temperature



## System Health Monitoring



**Phase Diagram (Position-Velocity)**

