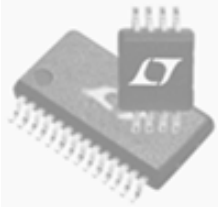


# PoE Plus IEEE 802.3at Current Limit in PD or PSE???

Clay Stanford  
Linear Technology  
July 17, 2007  
San Francisco

# SYSTEM CURRENT LIMIT



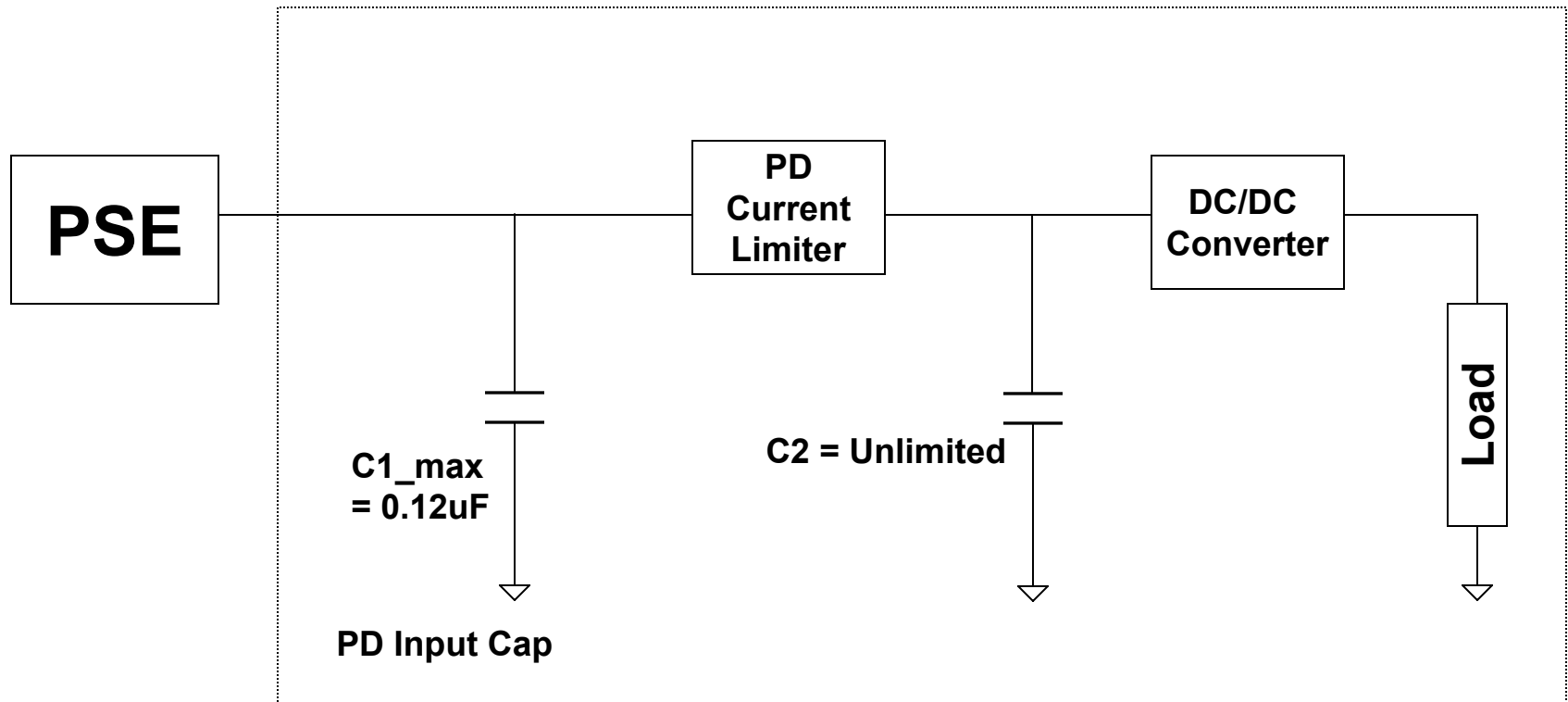
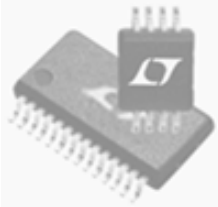
- Current Limit has traditionally worked to protect systems
- Current Limit can exist in either PSE or PD
- .af put current limit in PSE, this worked

# WHERE TO INSERT .AT CURRENT LIMIT???

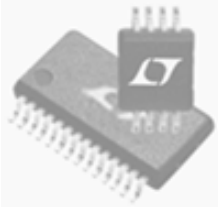


- PSE has burden of dealing with stress of 48 ports in current limit
- .af PD Solutions contain current limit even though not mandatory
- Moving current limit to PD has advantages

# Proposed Type-2 PD architecture



# .AT CURRENT LIMIT IN PD

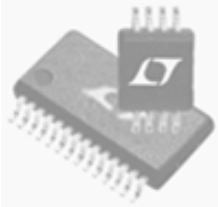


- Advantages:
  - Simplifies specification
  - Relaxes PSE requirements
  - Today's PD solutions already have current limit
  - Plugs hole found in .af spec (dv/dt and simultaneous transient PD load)
  - Solves magnetics data integrity issue
  - **PD operation is 100% self contained and not dependent on unknown PSE behavior**
  - Transient loads can be accommodated when necessary without burdening PSE

# .AT CURRENT LIMIT IN PD

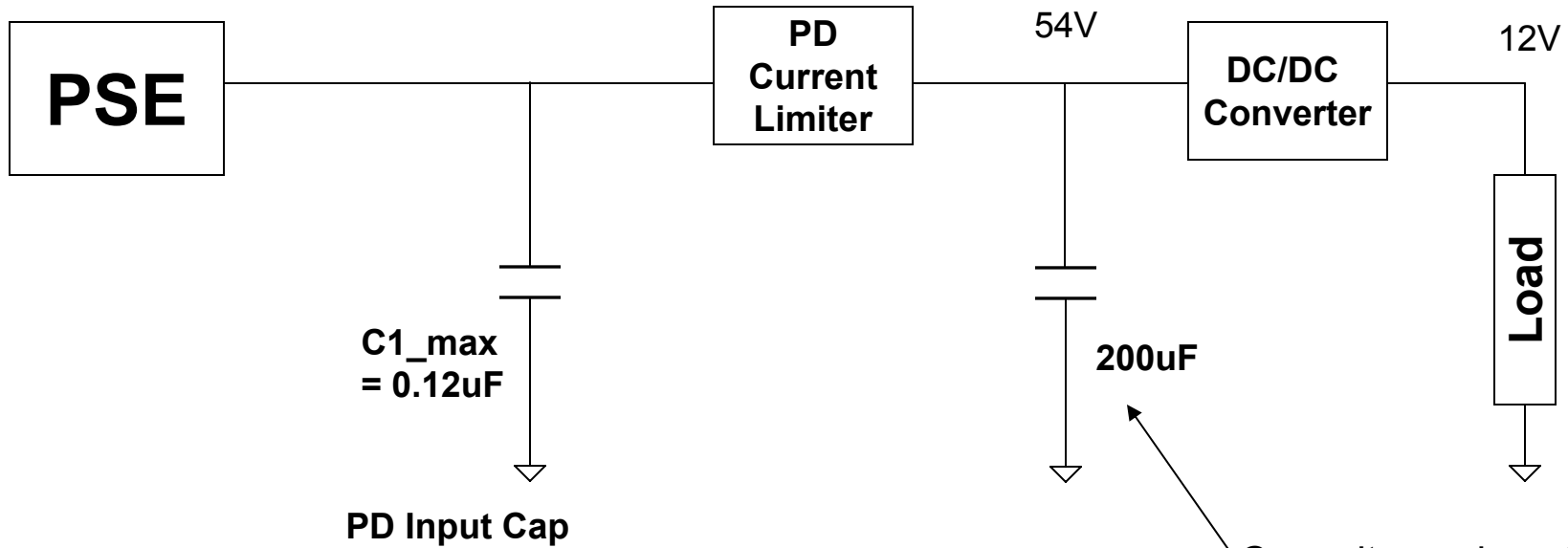
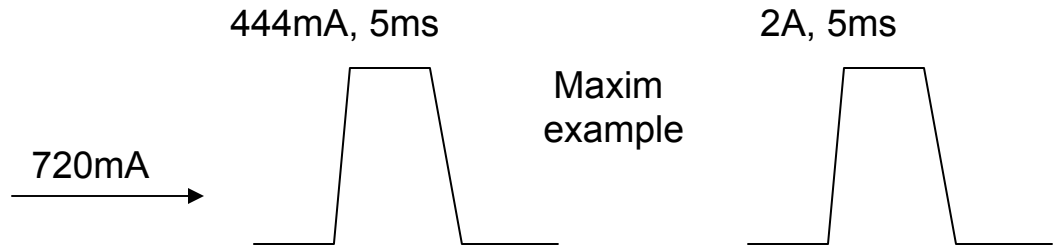


- Disadvantages:
  - PD has to decide how to limit current
    - Light load PDs may be able to use resistive limit
    - Heavy load PDs will mandate interface “chip” in PD
  - Does not allow 50mA, 50mS transient loads

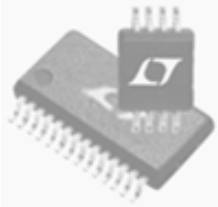


# Dealing with Transients

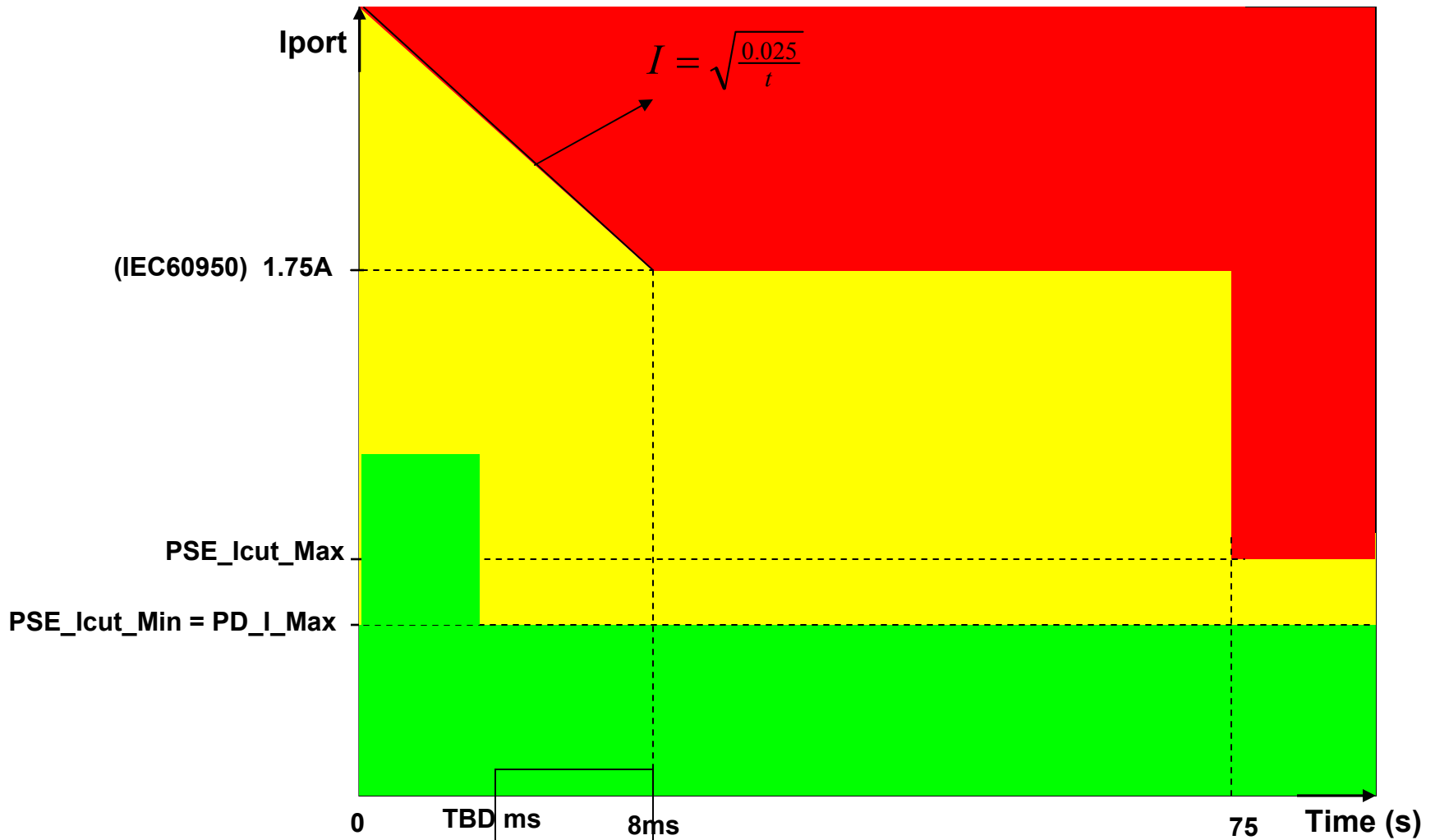
60W overload  
12V, 5A, 5ms  
54V, 1.1A, 5ms  
200uF  
Delta V = 9.5V



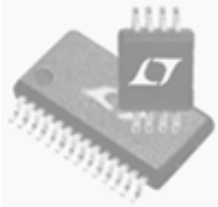
Capacitance is not limited and can be sized for applications with peak load issues



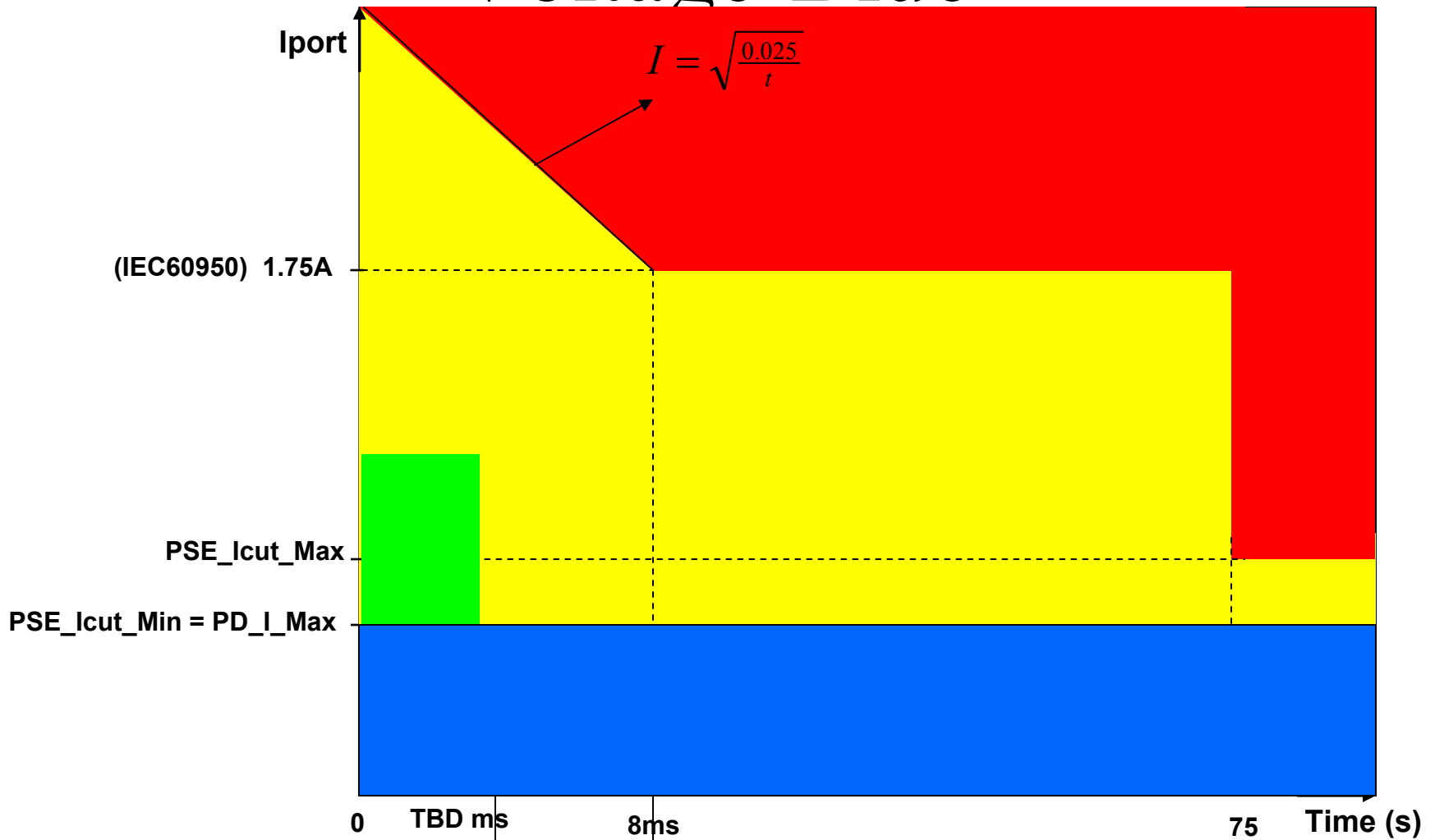
# PSE Mask Yellow (Per Schindler)



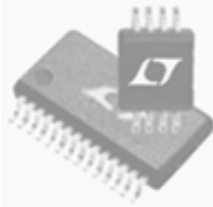




# PD Mask Under Static Port Voltage-Blue



# Motion to Implement Change



Motion by Clay Stanford  
Seconded by Anoop Vetteth

- PD current limit below PSE  $I_{LIM}$  mandatory in Type 2 PDs
- PD current limit upper threshold is set at the cable maximum current + 7.6%

All in room:  
For: 11  
Against: 13  
Abstain: 10

802.3 Voters Only:  
For: 7  
Against: 8  
Abstain: 4

# Motion to Implement Change



Motion by Clay Stanford

Seconded by Anoop Vetteth

- PSE current limit above PD current limit
- PD current limit upper threshold is set at the cable maximum current + 15%

All in room:

For: 15

Against: 7

Abstain: 11

802.3 Voters Only:

For: 10

Against: 5

Abstain: 3