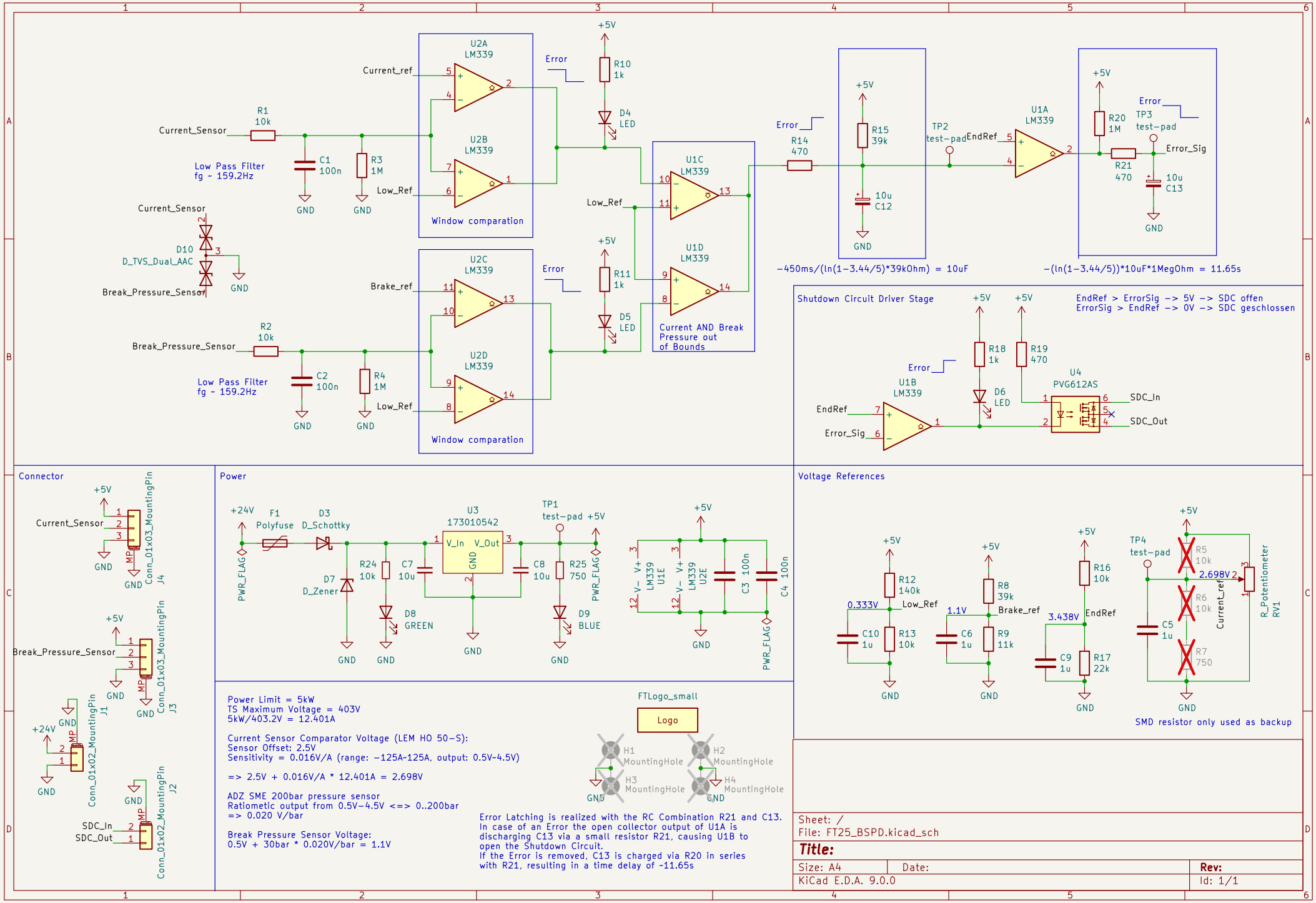
Current_Sensor
R1
10k
C1
100n
R3
1M
Low Pass Filter
fg ~ 159.2Hz
Current_ref
U2A
LM339
U2B
LM339
Low_Ref
Window comparation
Error
+5V
R10
1k
D4
LED
U1C
LM339
U1D
LM339
Current AND Break
Pressure out
of Bounds
Error
R14
470
+5V
R15
39k
10u
C12
GND
TP2
test-pad
EndRef
U1A
LM339
+5V
R20
1M
R21
470
Error
TP3
test-pad
Error_Sig
10u
C13
GND
−450ms/(ln(1−3.44/5)*39kOhm) = 10uF
−(ln(1−3.44/5))*10uF*1MegOhm = 11.65s
Current_Sensor
D10
D_TVS_Dual_AAC
Break_Pressure_Sensor
GND
Break_Pressure_Sensor
R2
10k
C2
100n
R4
1M
Low Pass Filter
fg ~ 159.2Hz
Brake_ref
U2C
LM339
U2D
LM339
Low_Ref
Window comparation
Error
+5V
R11
1k
D5
LED
Shutdown Circuit Driver Stage
EndRef > ErrorSig -> 5V -> SDC offen
ErrorSig > EndRef -> 0V -> SDC geschlossen
Error
U1B
LM339
R18
1k
R19
470
D6
LED
U4
PVG612AS
EndRef
Error_Sig
SDC_In
SDC_Out
Connector
Current_Sensor
Conn_01x03_MountingPin
J4
Break_Pressure_Sensor
Conn_01x03_MountingPin
J3
+24V
Conn_01x02_MountingPin
J1
SDC_In
SDC_Out
Conn_01x02_MountingPin
J2
Power
+24V
F1
Polyfuse
D3
D_Schottky
PWR_FLAG
U3
173010542
V_In
V_Out
GND
TP1
test-pad
+5V
R24
10k
C7
10u
D7
D_Zener
D8
GREEN
C8
10u
R25
750
D9
BLUE
C3
100n
C4
100n
Voltage References
R12
140k
0.333V
Low_Ref
C10
1u
R13
10k
R8
39k
1.1V
Brake_ref
C6
1u
R9
11k
R16
10k
3.438V
EndRef
C9
1u
R17
22k
TP4
test-pad
R5
10k
2.698V
R6
10k
R7
750
C5
1u
Current_ref
R_Potentiometer
RV1
SMD resistor only used as backup
Power Limit = 5kW
TS Maximum Voltage = 403V
5kW/403.2V = 12.401A
Current Sensor Comparator Voltage (LEM HO 50-S):
Sensor Offset: 2.5V
Sensitivity = 0.016V/A (range: −125A-125A, output: 0.5V-4.5V)
=> 2.5V + 0.016V/A * 12.401A = 2.698V
ADZ SME 200bar pressure sensor
Ratiometic output from 0.5V-4.5V <=> 0..200bar
=> 0.020 V/bar
Break Pressure Sensor Voltage:
0.5V + 30bar * 0.020V/bar = 1.1V
FTLogo_small
Logo
H1
MountingHole
H2
MountingHole
H3
MountingHole
H4
MountingHole
Error Latching is realized with the RC Combination R21 and C13.
In case of an Error the open collector output of U1A is
discharging C13 via a small resistor R21, causing U1B to
open the Shutdown Circuit.
If the Error is removed, C13 is charged via R20 in series
with R21, resulting in a time delay of ~11.65s
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