

Theory of operation:

6.8k pullup on device side of signal.

10nF is charged from power domain, turning first FET on and second FET off. Bipolar transistors turned on, connecting PROTECT_SIG to DEVICE_SIG.

If DEVICE_SIG is held low, capacitor discharges, turning off bipolar transistors and disconnecting device from bus.

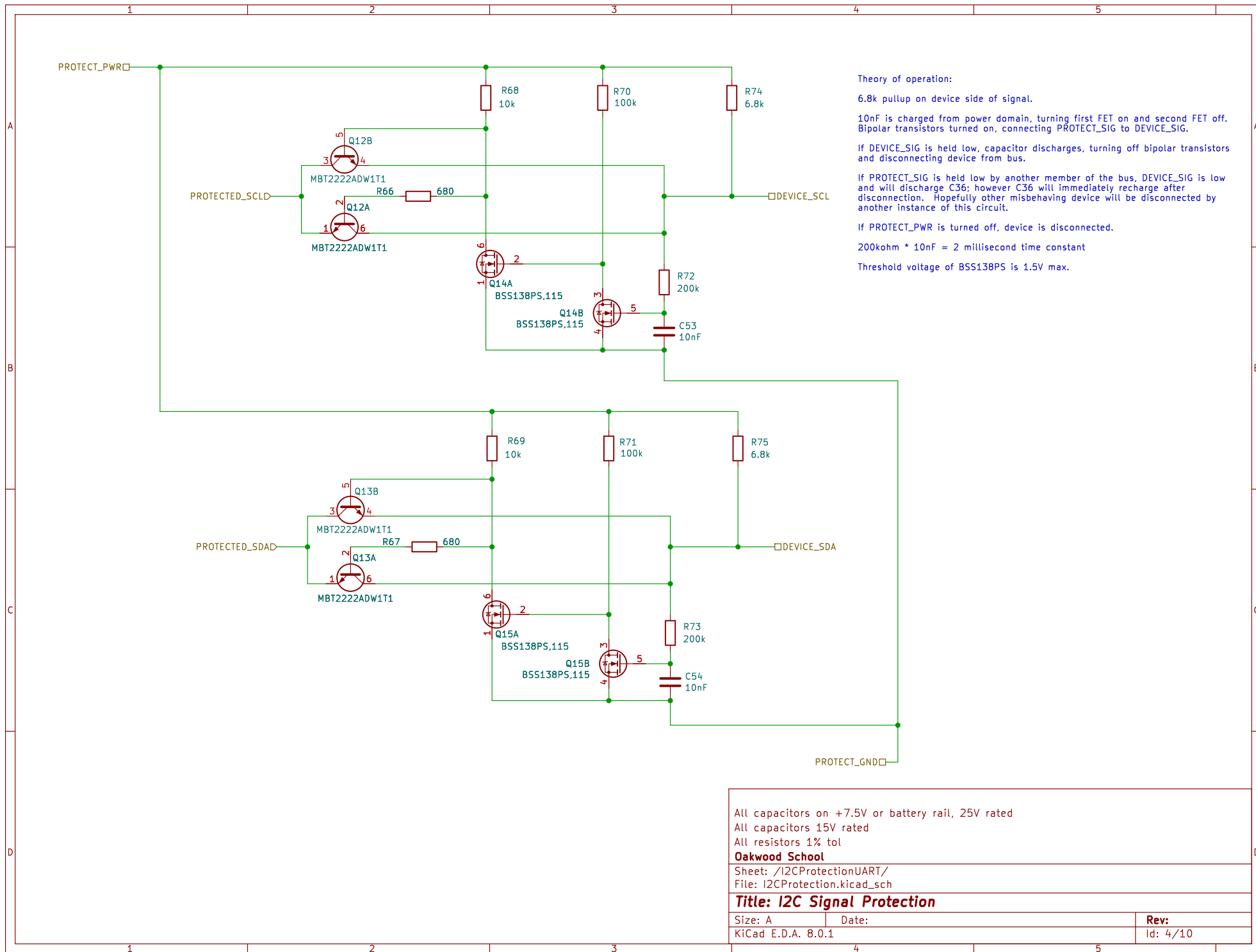
If PROTECT_SIG is held low by another member of the bus, DEVICE_SIG is low and will discharge C36; however C36 will immediately recharge after disconnection. Hopefully other misbehaving device will be disconnected by another instance of this circuit.

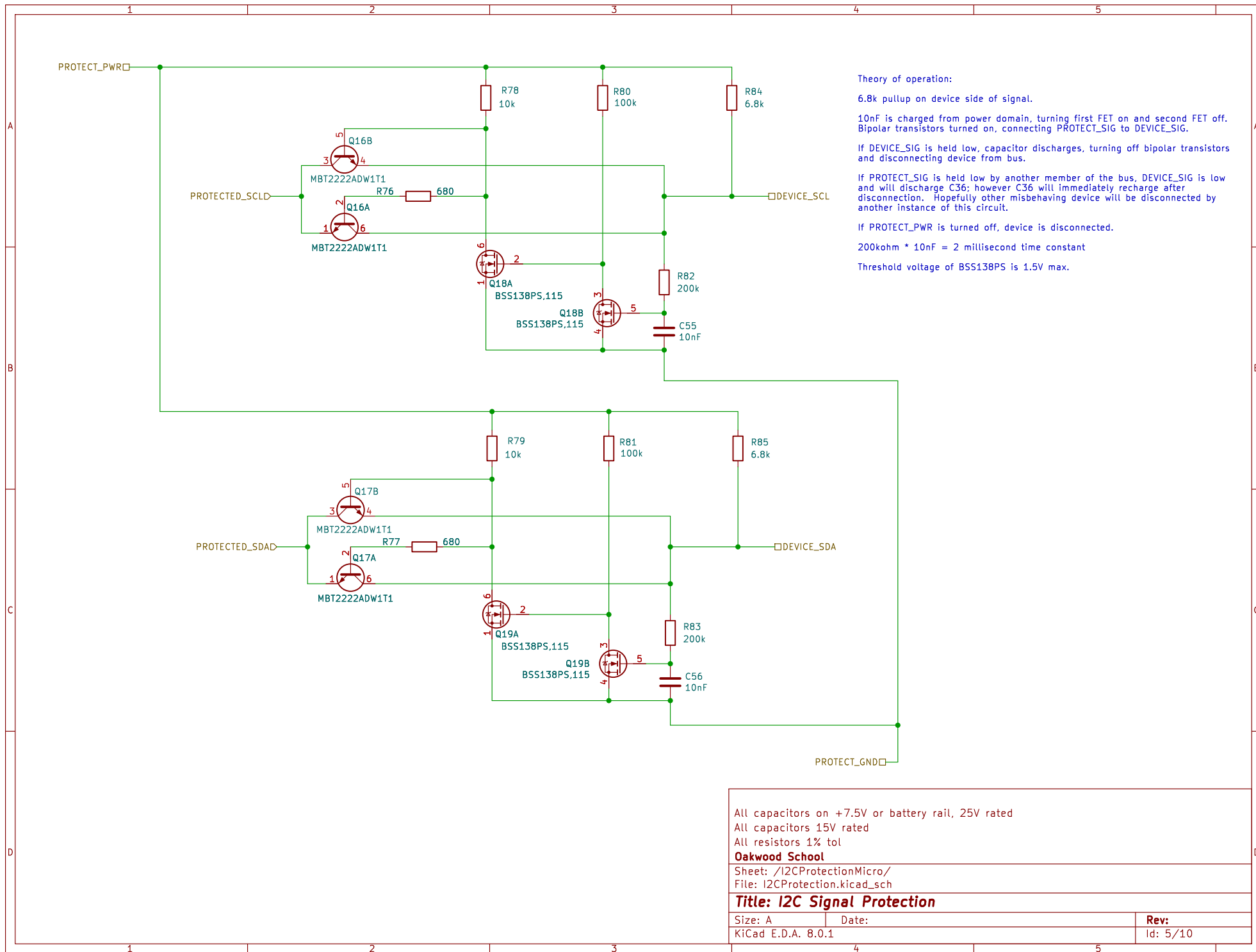
If PROTECT_PWR is turned off, device is disconnected.

$200\text{kohm} * 10\text{nF} = 2 \text{ millisecond time constant}$

Threshold voltage of BSS138PS is 1.5V max.

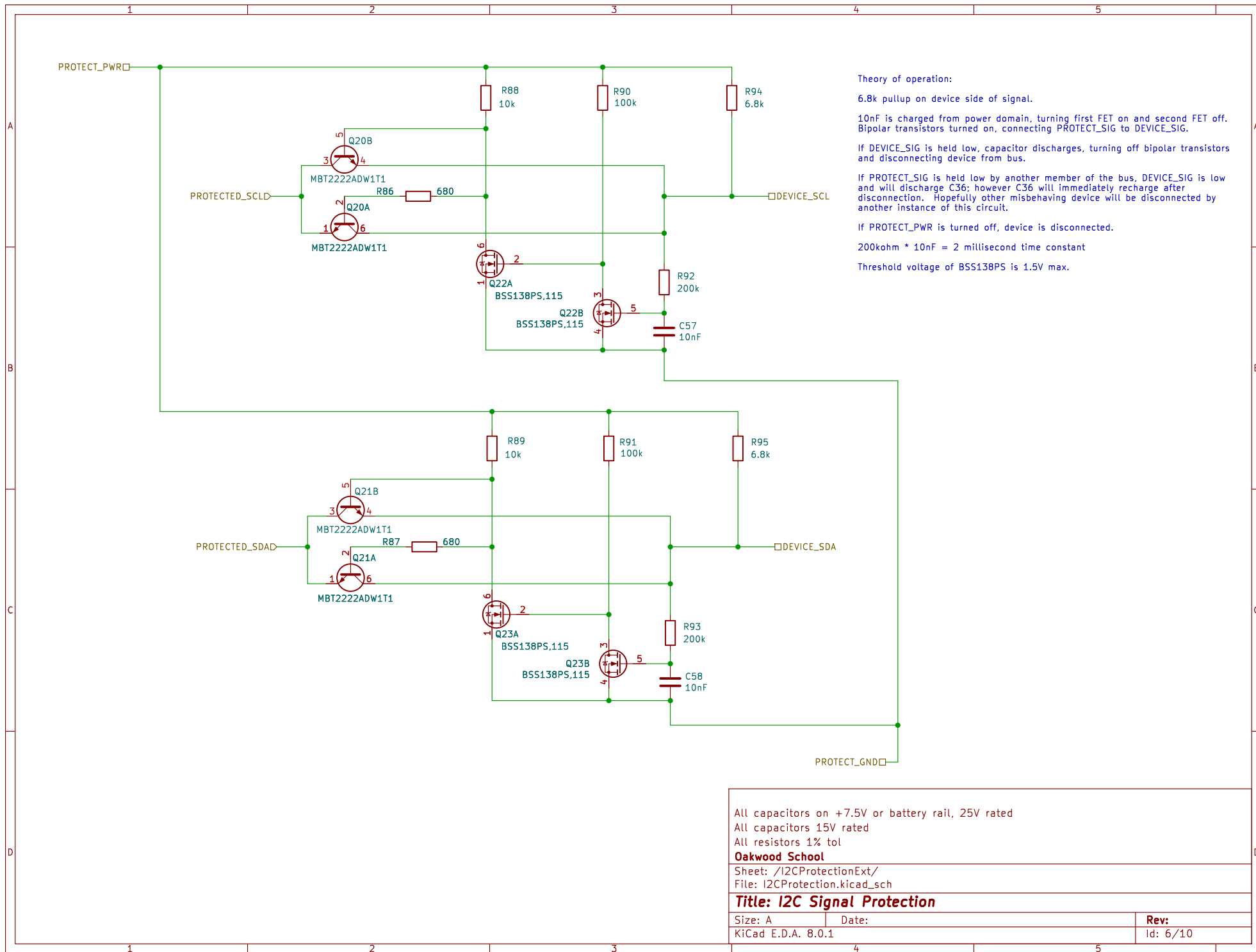
All capacitors on +7.5V or battery rail, 25V rated		
All capacitors 15V rated		
All resistors 1% tol		
Oakwood School		
Sheet: /FourFullBridges/I2CProtectionFB/		
File: I2CProtection.kicad_sch		
Title: I2C Signal Protection		
Size: A	Date:	Rev:
KiCad E.D.A. 8.0.1		Id: 3/10





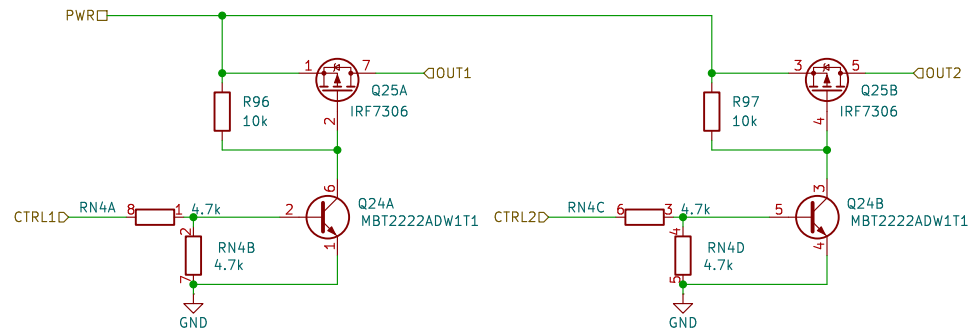
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All capacitors on +7.5V or battery rail, 25V rated	
All capacitors 15V rated	
All resistors 1% tol	
Oakwood School	
Sheet: /I2CProtectionMicro/	
File: I2CProtection.kicad_sch	
Title: I2C Signal Protection	
Size: A	Date:
KiCad E.D.A. 8.0.1	Rev: Id: 5/10



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Oakwood School	
Sheet: /I2CProtectionExt/	
File: I2CProtection.kicad_sch	
Title: I2C Signal Protection	
Size: A	Date:
KiCad E.D.A. 8.0.1	Rev: Id: 6/10



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 All capacitors 15V rated
 All resistors 1% tol

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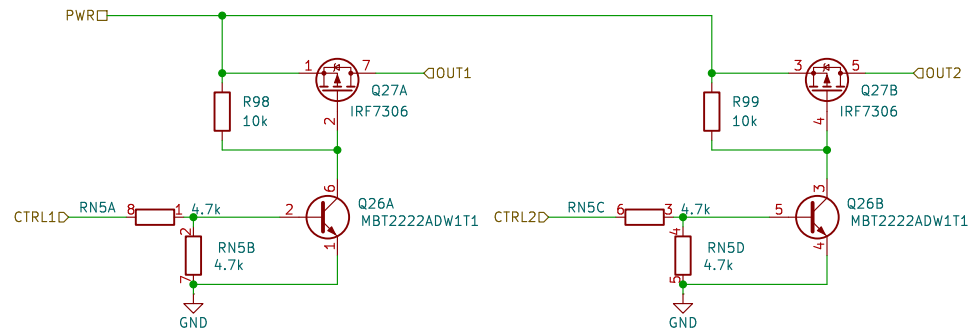
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Title:

Size: A
 KiCad E.D.A. 8.0.1

Date:

Rev:
 Id: 7/10



All capacitors on +7.5V or battery rail, 25V rated
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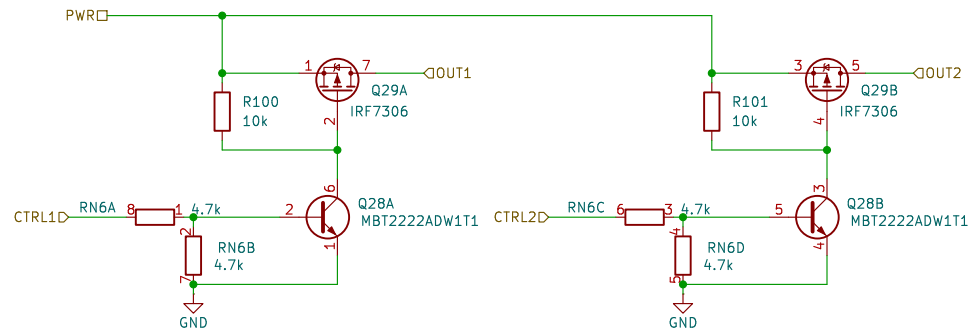
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Title:

Size: A Date:

KiCad E.D.A. 8.0.1

Rev:
 Id: 8/10



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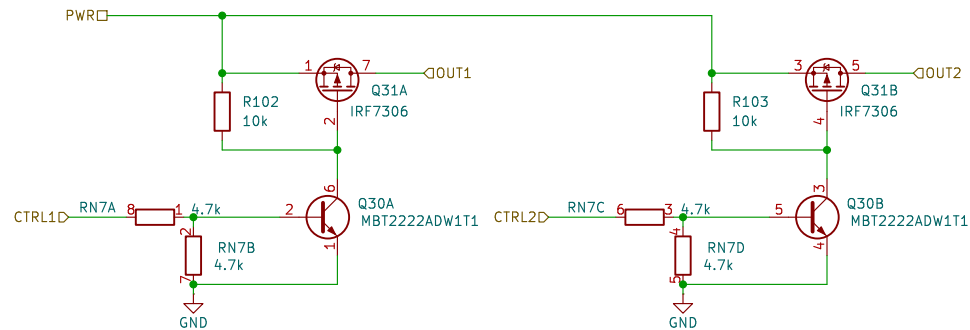
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Title:

Size: A Date:

KiCad E.D.A. 8.0.1

Rev:
 Id: 9/10



All capacitors on +7.5V or battery rail, 25V rated
 All capacitors 15V rated
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Sheet: /PairPowerSwitches4/

File: PairPowerSwitches.kicad_sch

Title:

Size: A

Date:

Rev:

KiCad E.D.A. 8.0.1

Id: 10/10