

PC1 Knee bridge connector
 A1 1
 A2 2 REF+
 A3 3 POS
 A4 4 OFFSET
 A5 5 REF-
 SIP5 molex5-53047 Molex 53047-0510

PC2 Position sensor connection
 A1 1 REF+
 A2 2
 A3 3 REF-
 A4 4 POS.SHIELD
 A5 5
 SIP5 molex5 WM4201-ND

REF+
 10k
 bourns3266w
 1/4" 12 turn POT
 W
 RO1
 10nF (X7R) = 490-1664-1-ND
 Position offset adjustment
 CCW
 CW
 REF-

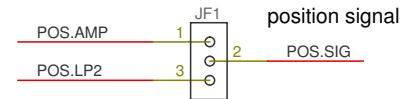
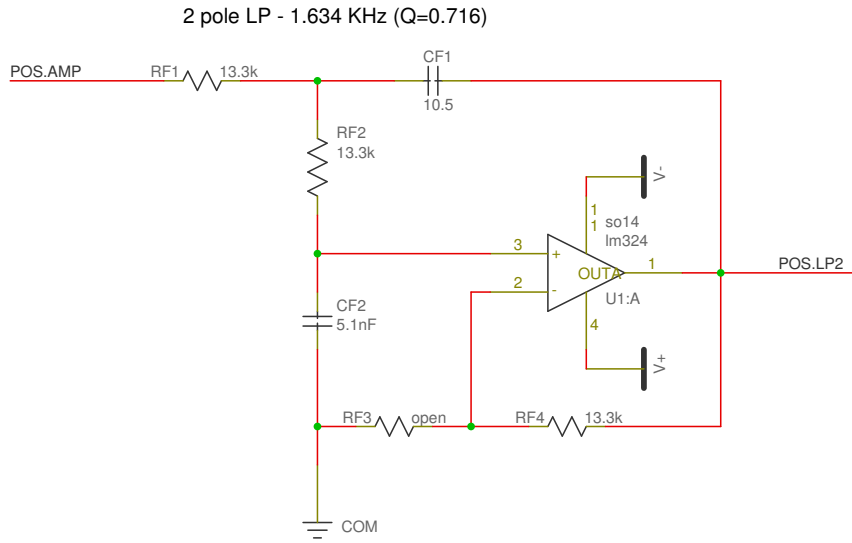
COM 1 JC1 2 POS.SHIELD
 res0603

All resistors are 0805 SMT, 1%
 All caps are 0805 SMT, 25V or greater

Gain = $1 + 50K / R$
 $V_{out} = \text{Gain} * (\text{POS} - \text{Offset})$
 UA1 INST_AMP_8
 INA128UA or LT1167
 V+
 V-
 COM
 POS.AMP

RG.A RA2 50ohm, 1%
 bourns3266w
 10k
 RA3
 W
 CCW
 CW
 RG.B

Title			Media lab pot sensor board.		
Size	Number		Rev		4
A	ceb@dideas.com		Rev A		
Date	Last mod : 6-15-05		Drawn by		
Filename	POT4A.S01		Sheet of 5		



muRata C0G 0805 caps
 GRM15/18/21/31 series
 1nF 490-1622-1-ND
 3.3nF 490-1632-1-ND
 5.1nF 490-1635-1-ND
 22nF 490-1644-1-ND

1% resistors : R0HM MCR10 series

RHM3.32kCCT-ND
 RHM6.65kCCT-ND
 RHM13.3kCCT-ND

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A

B

C

D

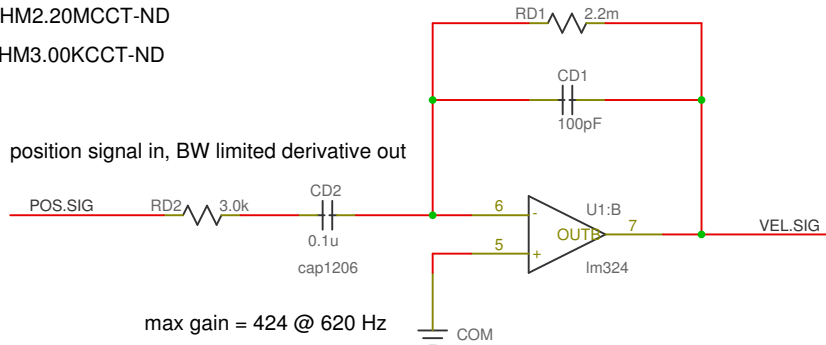
1

1

2.2M = RHM2.20MCCT-ND

3K = RHM3.00KCCT-ND

position signal in, BW limited derivative out



max gain = 424 @ 620 Hz
 decrease to 2.7K, 80pF for max gain of 586@845Hz
 slope of loglog plot flat from 1Hz to 400 Hz

2

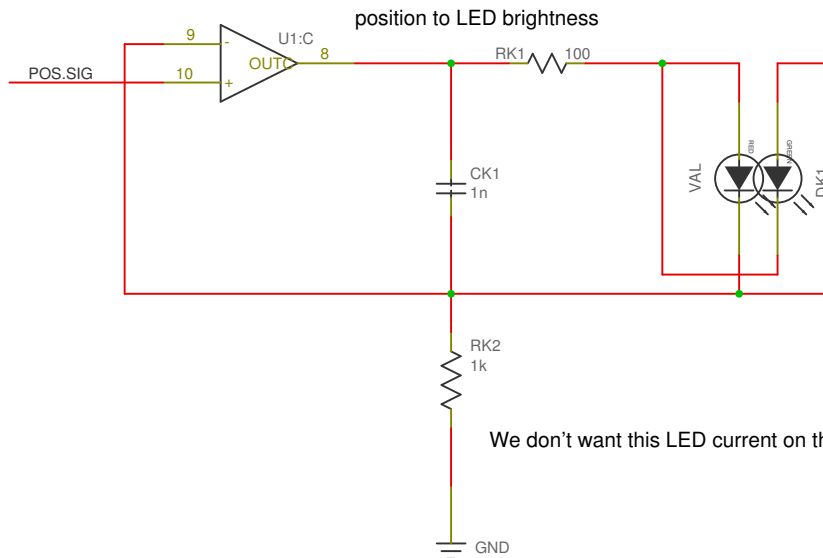
2

0.1u (X7R) 25V = 490-1673-1-ND

100pF (C0G) 50V = 490-1615-1-ND

3

3



We don't want this LED current on the COM signal

4

4

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Filename	POT4A.S01	Sheet of 5

A

B

C

D

12:11:59

Wed Jun 22 2005

A

B

C

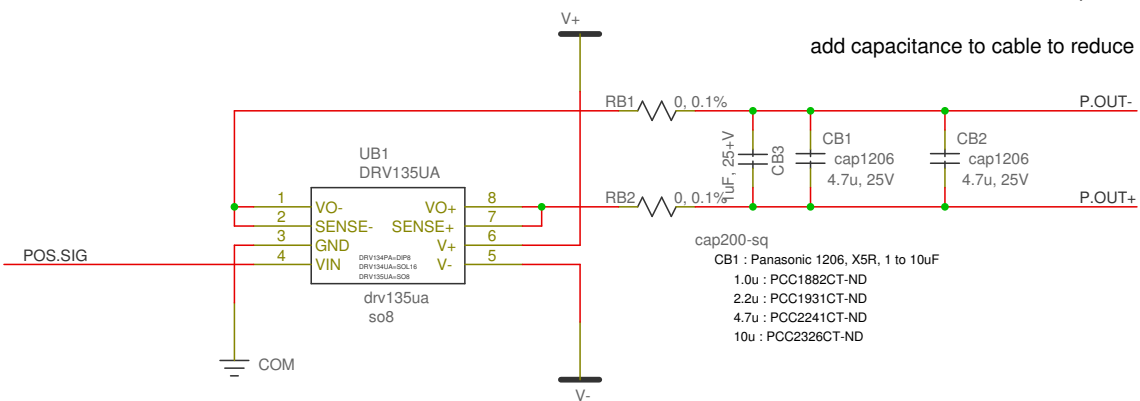
D

1

1

0ohm = RHM0.0ACT-ND 1uF MAX, bipolar, >10V

add capacitance to cable to reduce high freq impedance

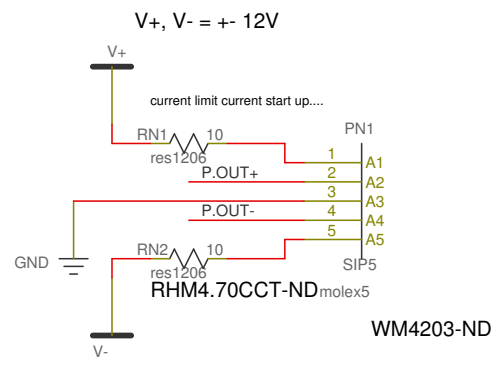


cap200-sq
 CB1 : Panasonic 1206, X5R, 1 to 10uF
 1.0u : PCC1882CT-ND
 2.2u : PCC1931CT-ND
 4.7u : PCC2241CT-ND
 10u : PCC2326CT-ND

1uF, 25V+ -> Want high quality cap
 suggest 1uF, 50V, +-5% from Epcos MKT series (B32529C5105J)
 495-1087-ND

2

2



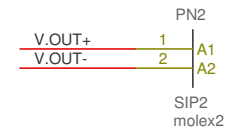
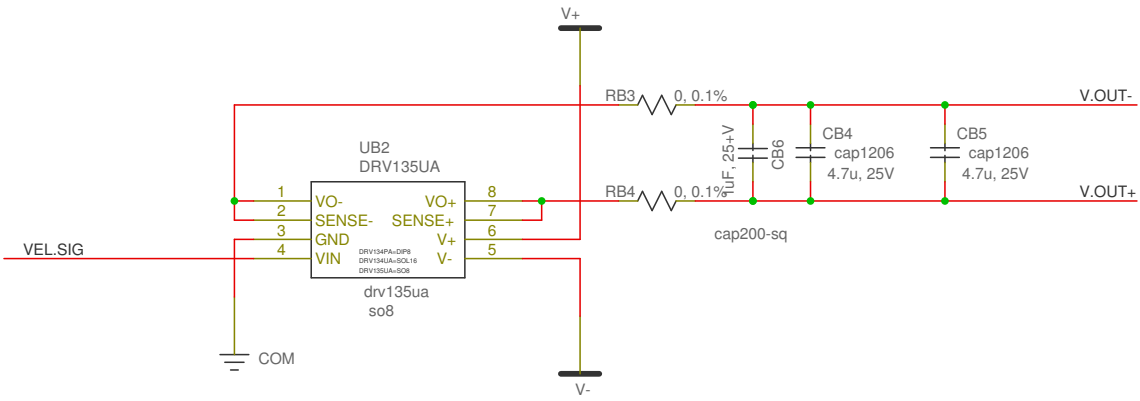
V+, V- = +- 12V

current limit current start up....

WM4203-ND

3

3



4

4

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A

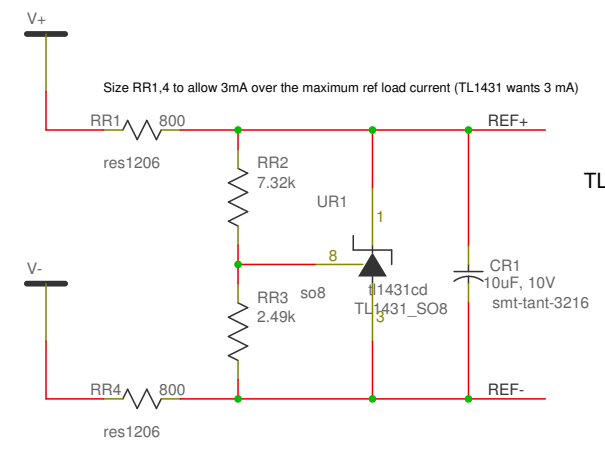
B

C

D

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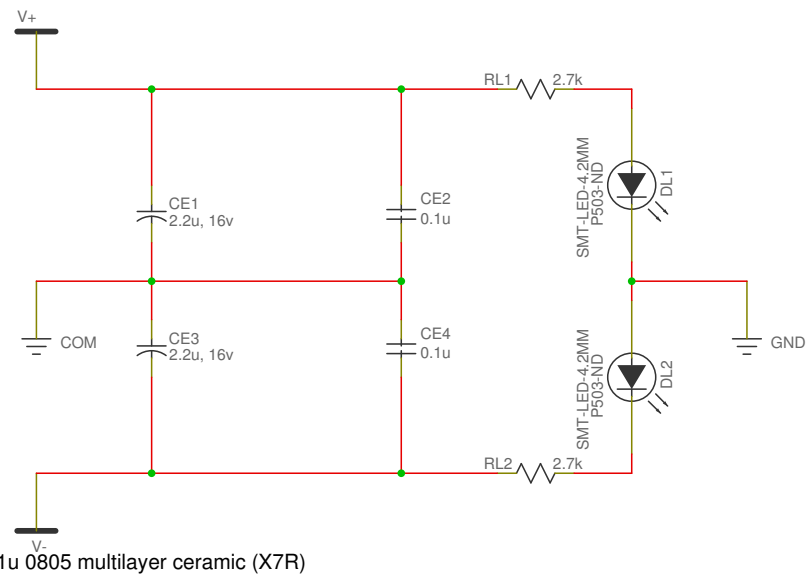
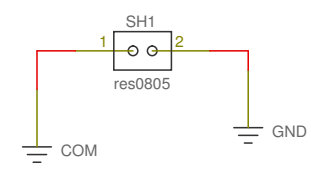
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TL1431Cd = 296-10129-1-ND

$$V_{ref(total)} = 2.5V * (1 + R_a/R_b)$$
 RHM7.32KCCT-ND
 RHM2.49KCCT-ND

place at power header.



0.1u 0805 multilayer ceramic (X7R)

Size A (3216 tantalum) 16V, 2.2-6.8uF
 6.8u, 16V tant = 493-2374-1-ND
 Nichicon: F931C685MAA

0.1u 0805 multilayer ceramic (X7R)
 0.1uF,25V = PCC1828CT-ND

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