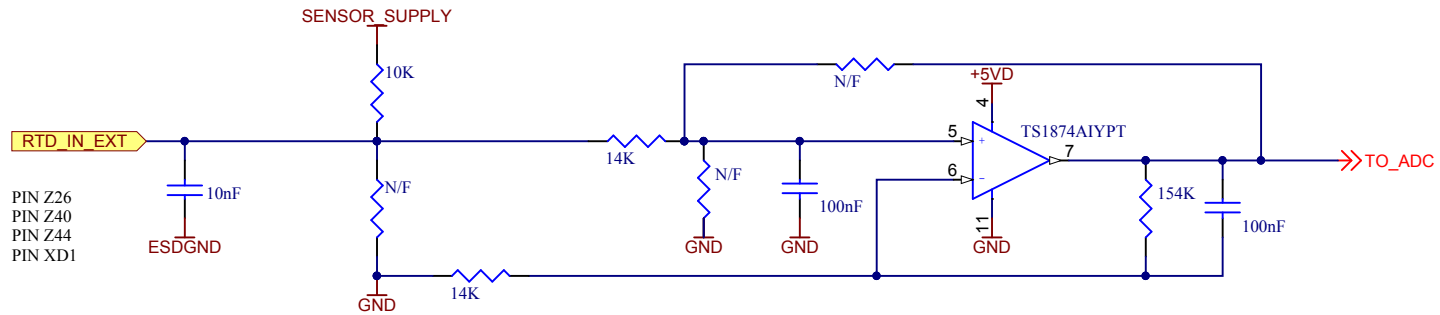
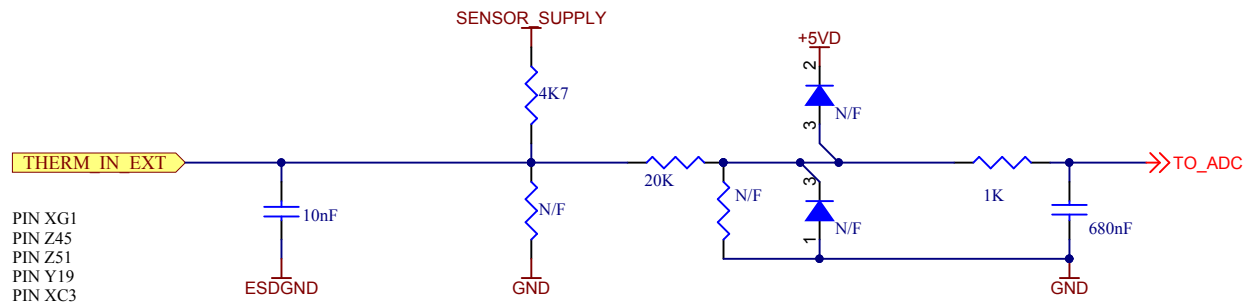


THERMAL INPUT (RTD)



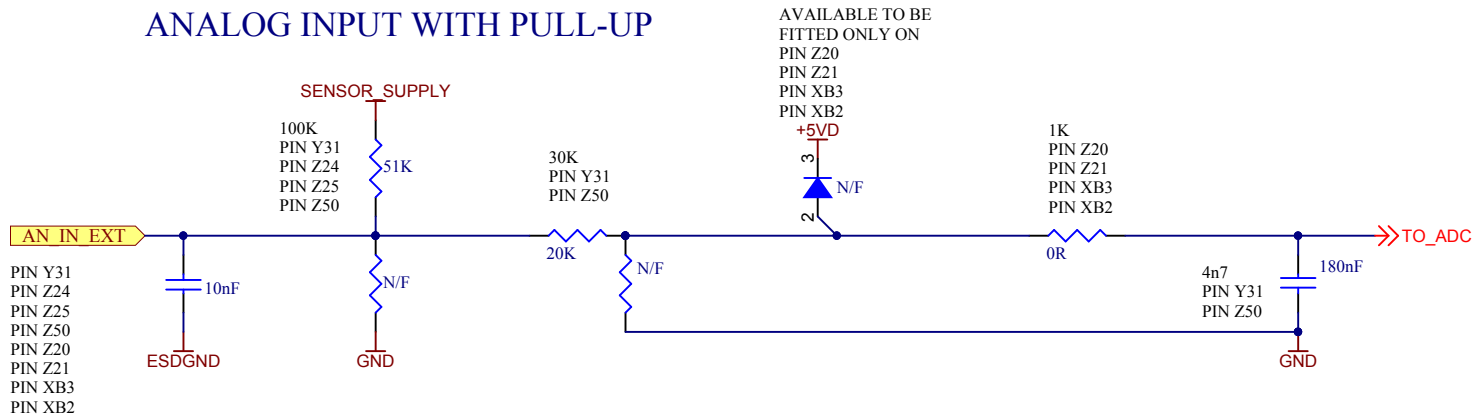
THERMAL INPUT (THERMISTOR)



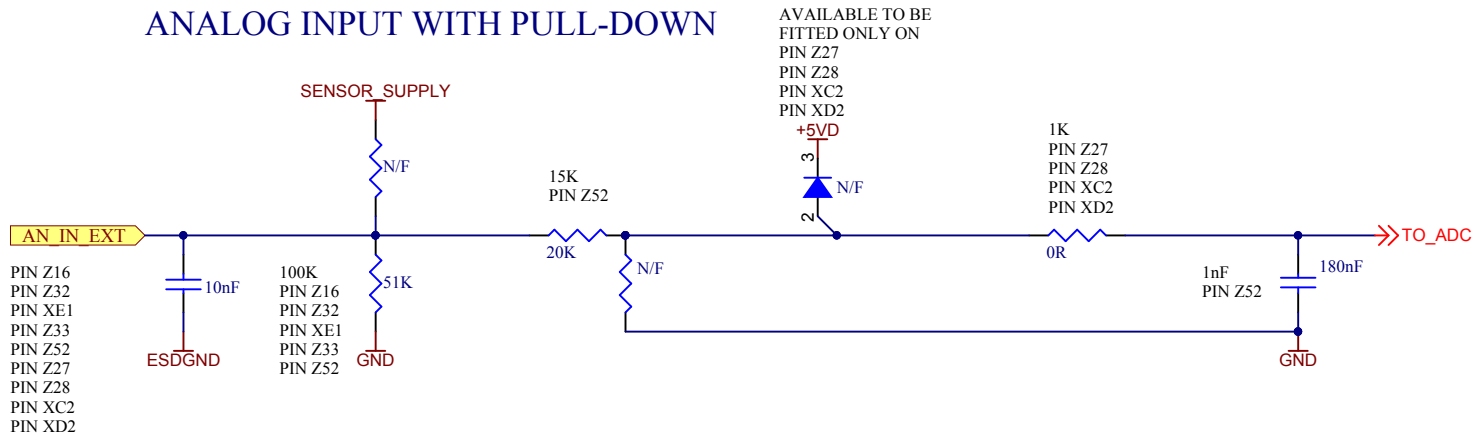
VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|---------------------------------|-----------------------------------|-----------------------|-------------------|
| | PRODUCT NAME | | |
| | M670 Simplified IO Schematics | | |
| Pi Inno | SHEET TITLE | | |
| | THERMAL INPUTS | | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision 4 | Mod State 0 |
| PCB Part Number: | | Sheet 1 of 15 | |
| Filename: Thermal Inputs.SchDoc | | Date: 1/25/2016 | |
| Date: 1/25/2016 | | SVN \$Revision:: 3732 | Drawn By: L. Lieb |

ANALOG INPUT WITH PULL-UP



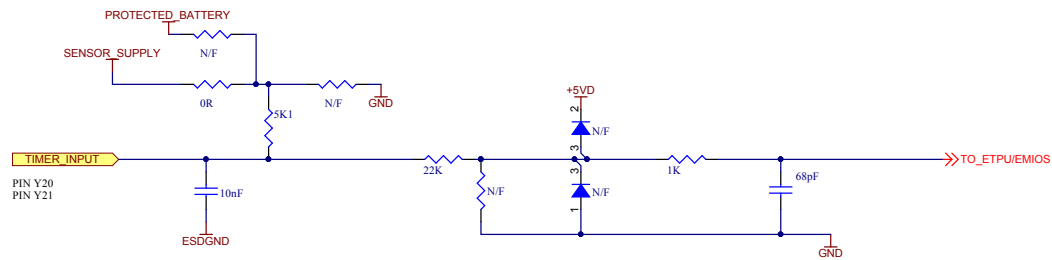
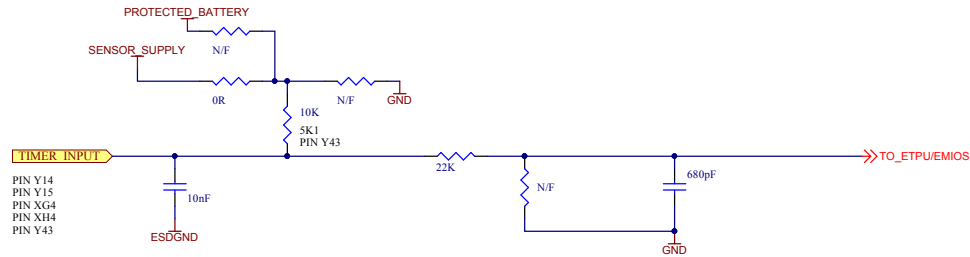
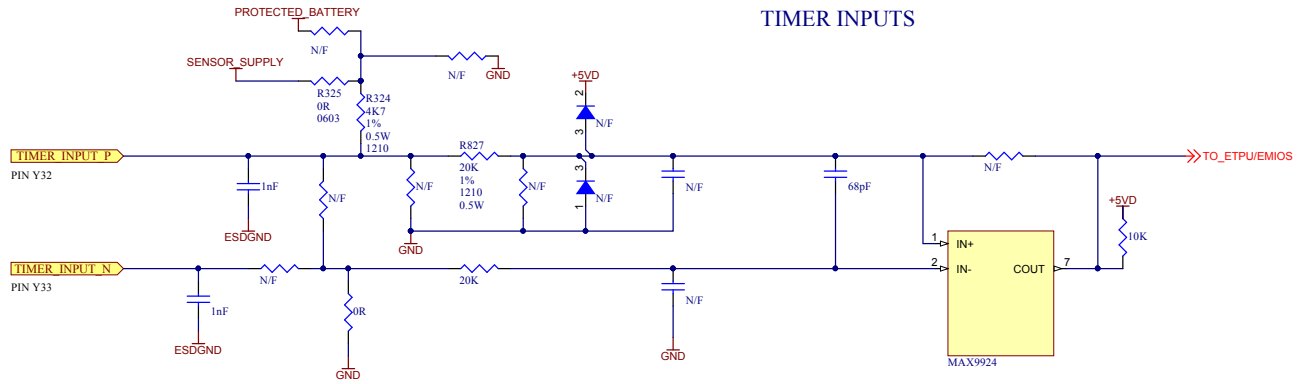
ANALOG INPUT WITH PULL-DOWN



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|--------------------------------|-----------------------------------|-------------------------------|-----------|
| | PRODUCT NAME | M670 Simplified IO Schematics | |
| | SHEET TITLE | ANALOG INPUTS | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision | Mod State |
| | PCB Part Number: | 4 | 0 |
| Filename: Analog Inputs.SchDoc | | Sheet 2 of 15 | |
| Date: 1/25/2016 | SVN \$Revision:: 3732 \$ | Drawn By: L. Lieb | |

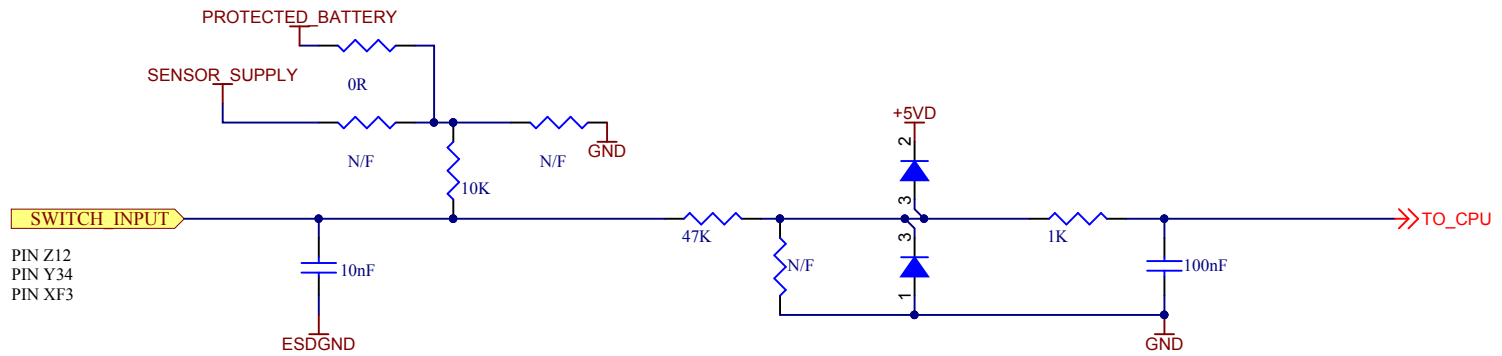
TIMER INPUTS



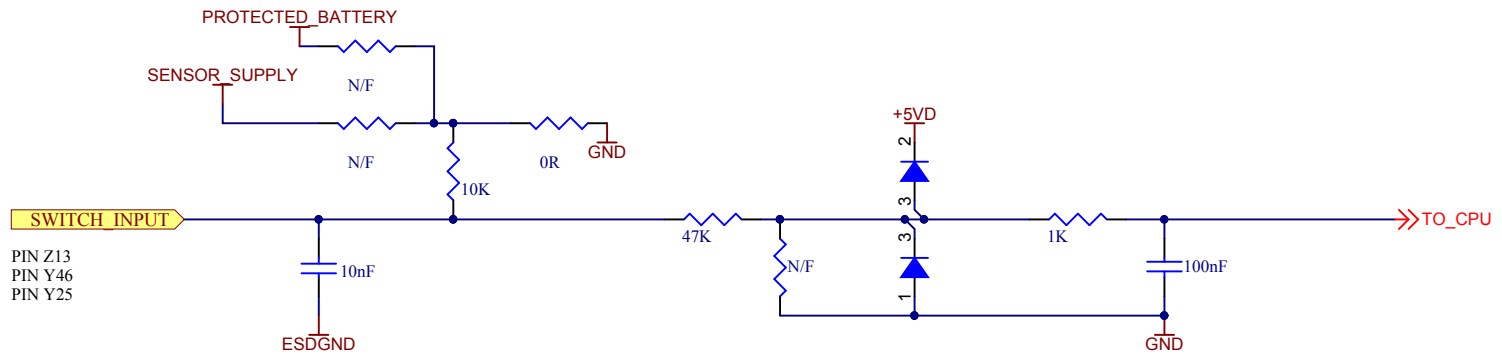
VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | | | |
|-------------------------------|-----------------------------------|-------------------------------|---|---|---|
| | PRODUCT NAME: | M670 Simplified IO Schematics | | | |
| | SHEET TITLE: | TIMER INPUTS | | | |
| A3 | Assy Part Number: 29T-068880IO-sE | Revision | 4 | Mod State | 0 |
| PCB Part Number: | | Sheet 3 | | of 15 | |
| Filename: Timer Inputs.SchDoc | | Date: 1/25/2016 | | SVN \$Revision: 3732 \$ Drawn By: L. Lieb | |

SWITCH INPUT WITH PULL-UP



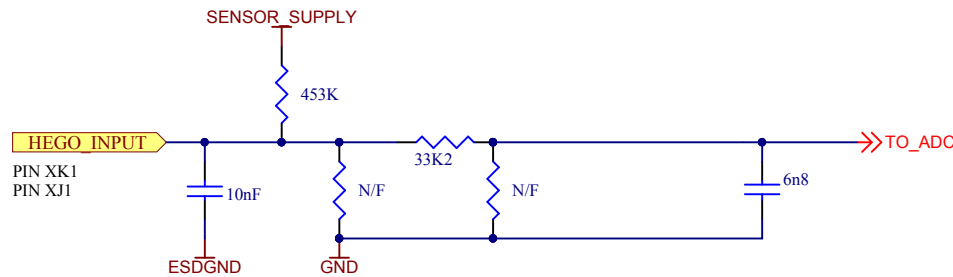
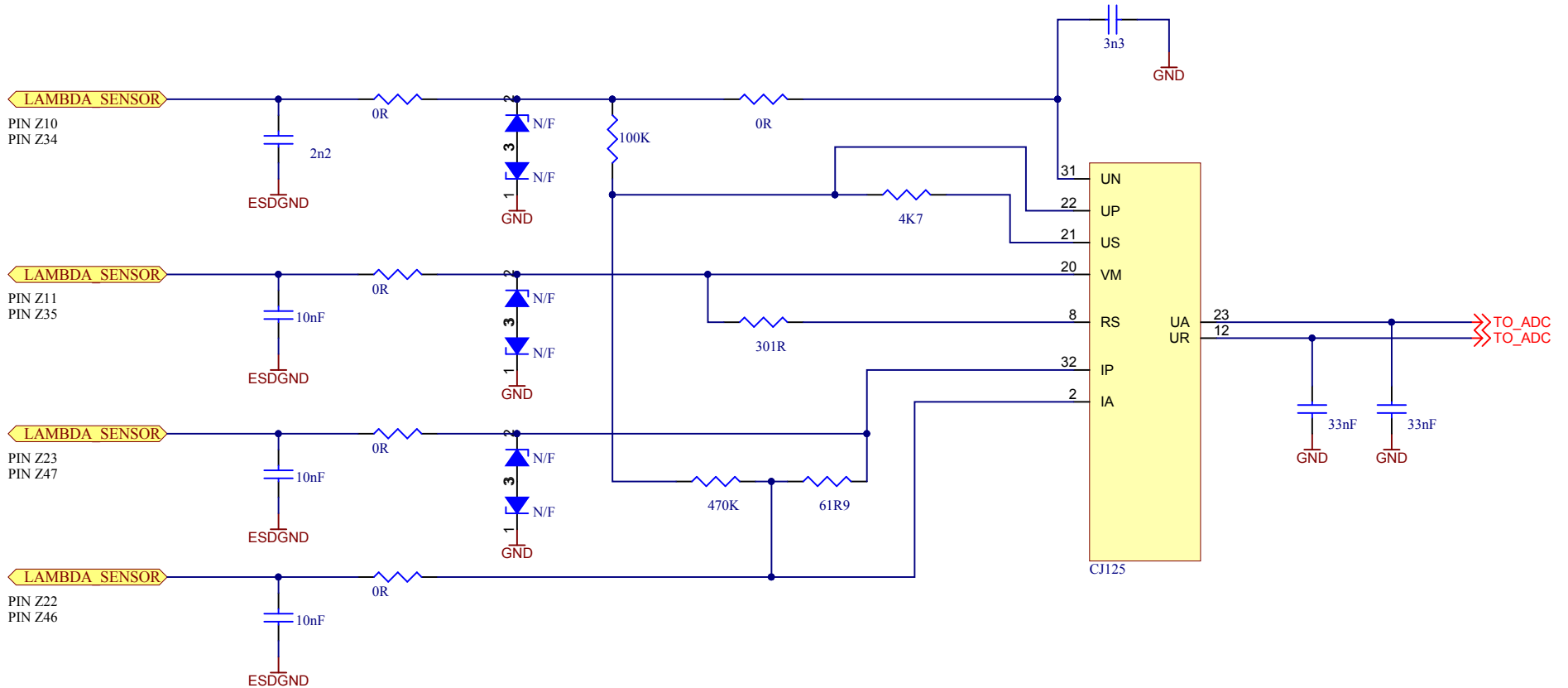
SWITCH INPUT WITH PULL-DOWN



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|--------------------------------|---|-------------------|----------------|
| | PRODUCT NAME M670 Simplified IO Schematics | | |
| | SHEET TITLE SWITCH INPUTS | | |
| A4 | Assy Part Number: 29T-068880IO-xE PCB Part Number: | Revision 4 | Mod State 0 |
| Filename: Switch Inputs.SchDoc | | Sheet 4 of 15 | |
| Date: 1/25/2016 | SVN \$Revision:: 3732 \$ | Drawn By: L. Lieb | |

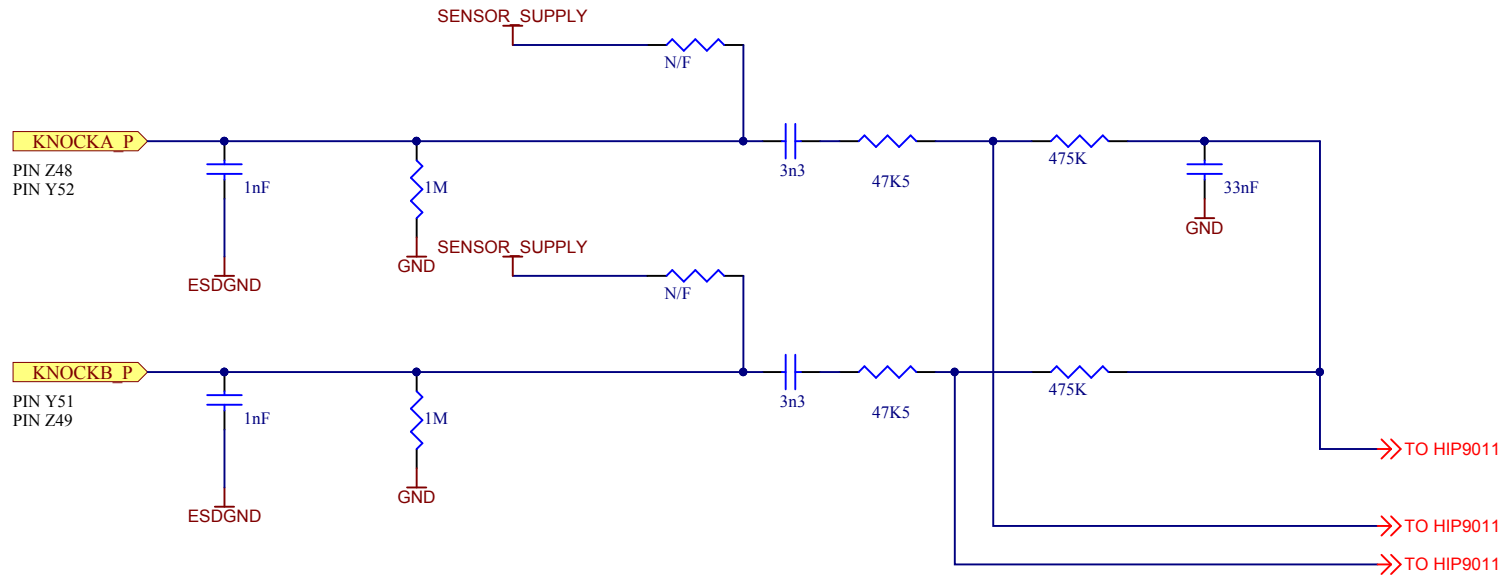
LAMBDA INPUTS




VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | | |
|--------------------------------|-----------------------------------|-------------------------------|-----------|--|
| | PRODUCT NAME | M670 Simplified IO Schematics | | |
| | SHEET TITLE | LAMBDA INPUTS | | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision | Mod State | |
| | PCB Part Number: | 4 | 0 | |
| Filename: Lambda Inputs.SchDoc | | Sheet 5 of 15 | | |
| Date: 1/25/2016 | SVN \$Revision:: 3732 \$ | Drawn By: L. Lieb | | |

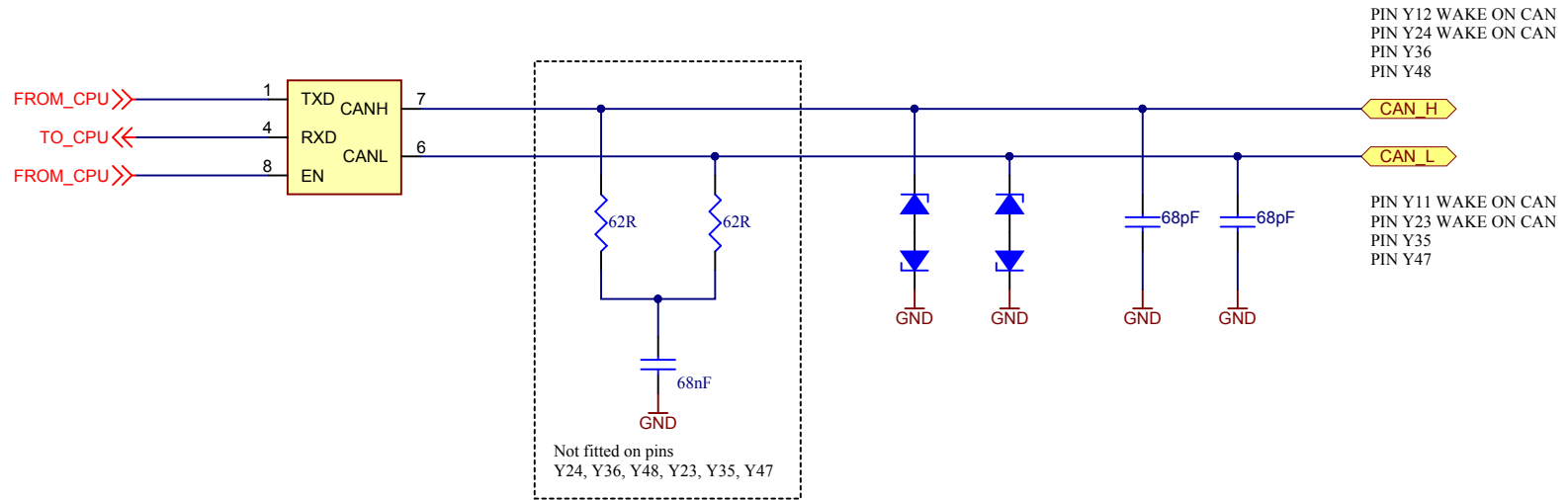
KNOCK INPUTS



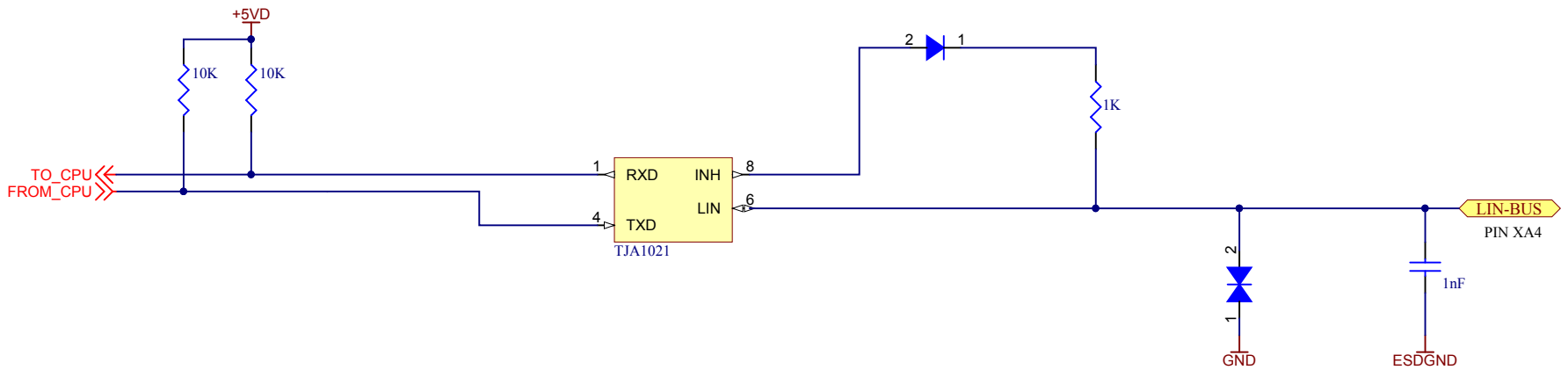
VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|---|---|-----------------------|-------------------|
|  Pi Inno | PRODUCT NAME M670 Simplified IO Schematics | | |
| | SHEET TITLE KNOCK INPUTS | | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision 4 | Mod State 0 |
| PCB Part Number: | | Sheet 6 of 15 | |
| Filename: Knock Inputs.SchDoc | | Date: 2/12/2016 | |
| Date: 2/12/2016 | | SVN \$Revision:: 3761 | Drawn By: L. Lieb |

CAN BUS

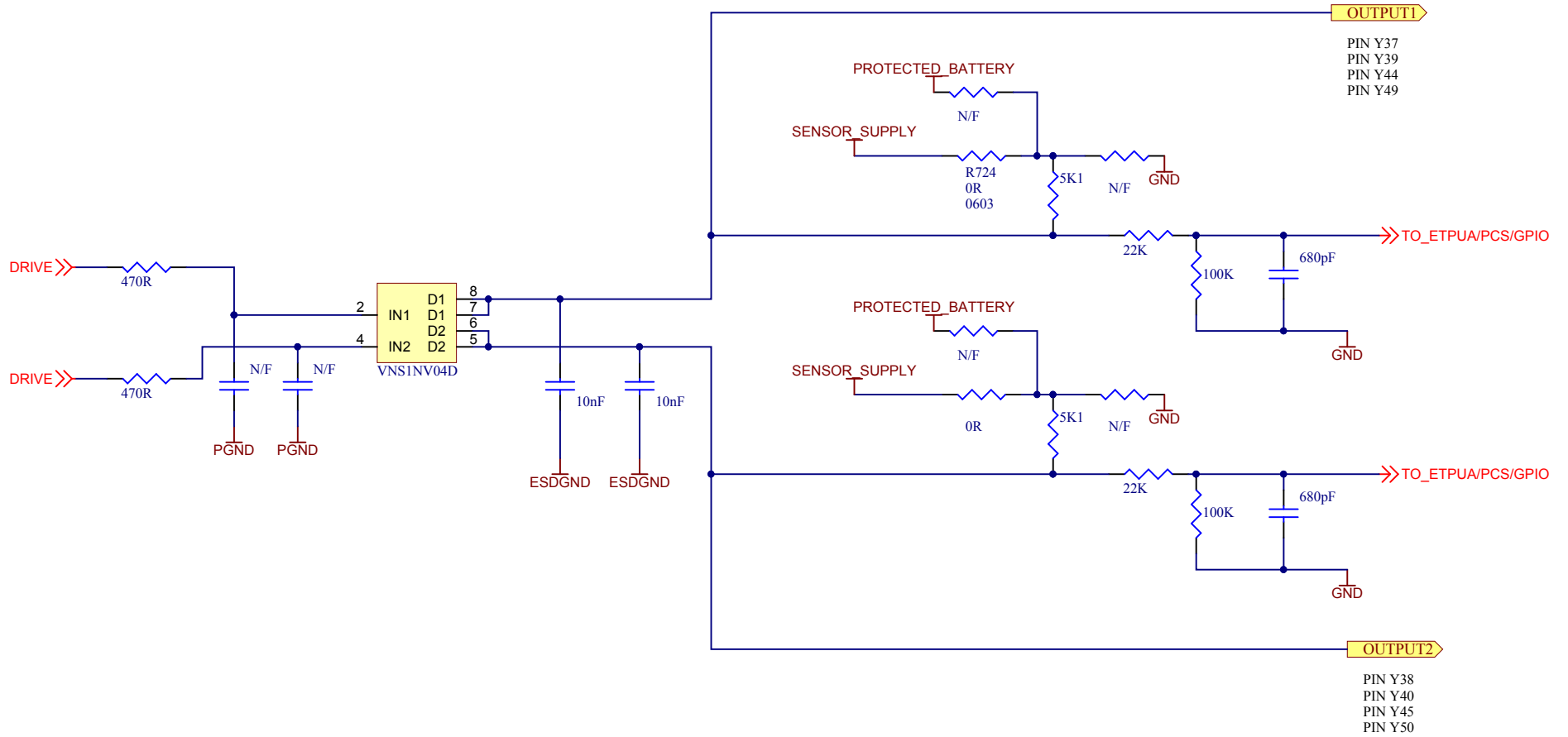


LIN BUS



| | | | |
|--------------------------------|-----------------------------------|-------------------------------|-----------|
| | PRODUCT NAME | M670 Simplified IO Schematics | |
| | SHEET TITLE | COMMUNICATION | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision | Mod State |
| | PCB Part Number: | 4 | 0 |
| Filename: Communication.SchDoc | | Sheet 7 of 15 | |
| Date: 2/12/2016 | SVN \$Revision:: 3761 \$ | Drawn By: L. Lieb | |

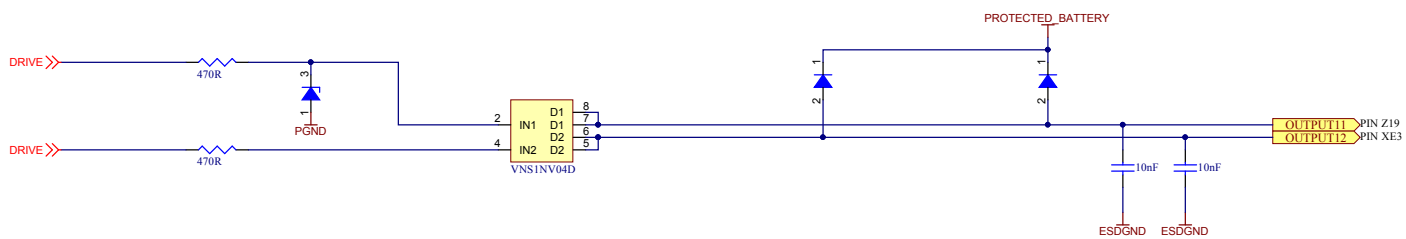
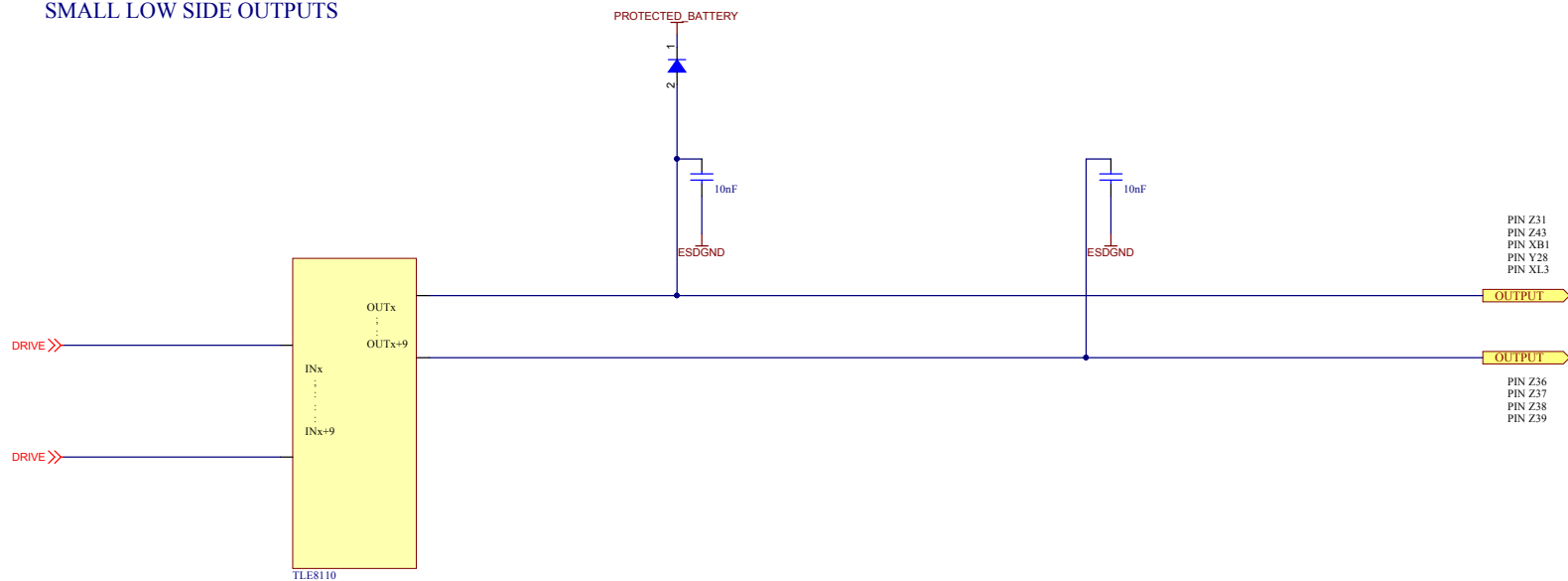
SMART SPARK OUTPUTS




VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|--------------------------------------|-----------------------------------|-------------------|-----------|
| | PRODUCT NAME | | |
| | M670 Simplified IO Schematics | | |
| A4 | SHEET TITLE | | |
| | SMART SPARK OUTPUTS | | |
| | Assy Part Number: 29T-068880IO-xE | Revision | Mod State |
| | PCB Part Number: | 4 | 0 |
| Filename: Smart Spark Outputs.SchDoc | | Sheet 8 of 15 | |
| Date: 1/25/2016 | SVN \$Revision:: 3732 \$ | Drawn By: L. Lieb | |

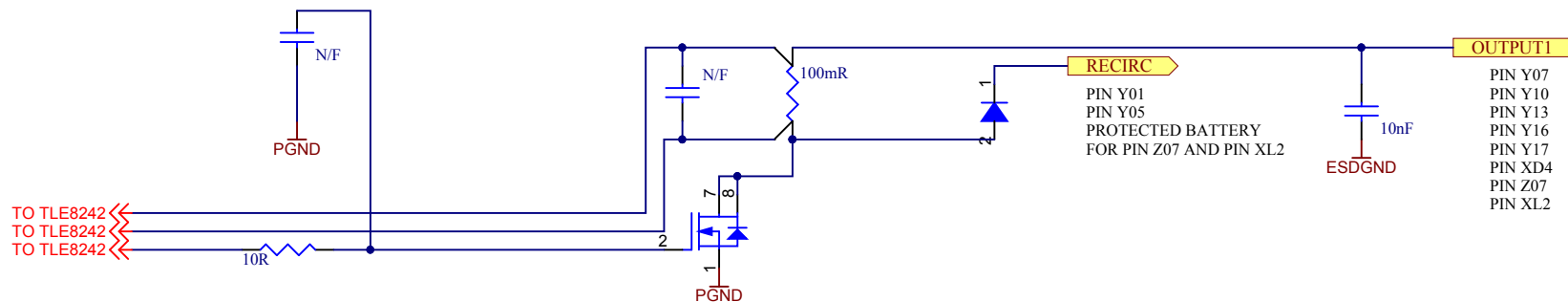
SMALL LOW SIDE OUTPUTS




VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|---|--|---|--|
|  | | PRODUCT NAME M670 Simplified IO Schematics | |
| SHEET TITLE SMALL LSD OUTPUTS | | Revision 4 | |
| Ass'y Part Number: 29T-068880IO-sE | | Mod State 0 | |
| PCB Part Number: | | Sheet 9 of 15 | |
| Filename: Small LSD Outputs SchDoc | | Date: 2/12/2016 | |
| SVN \$Revision: 3761 \$ | | Drawn By: L. Lieb | |

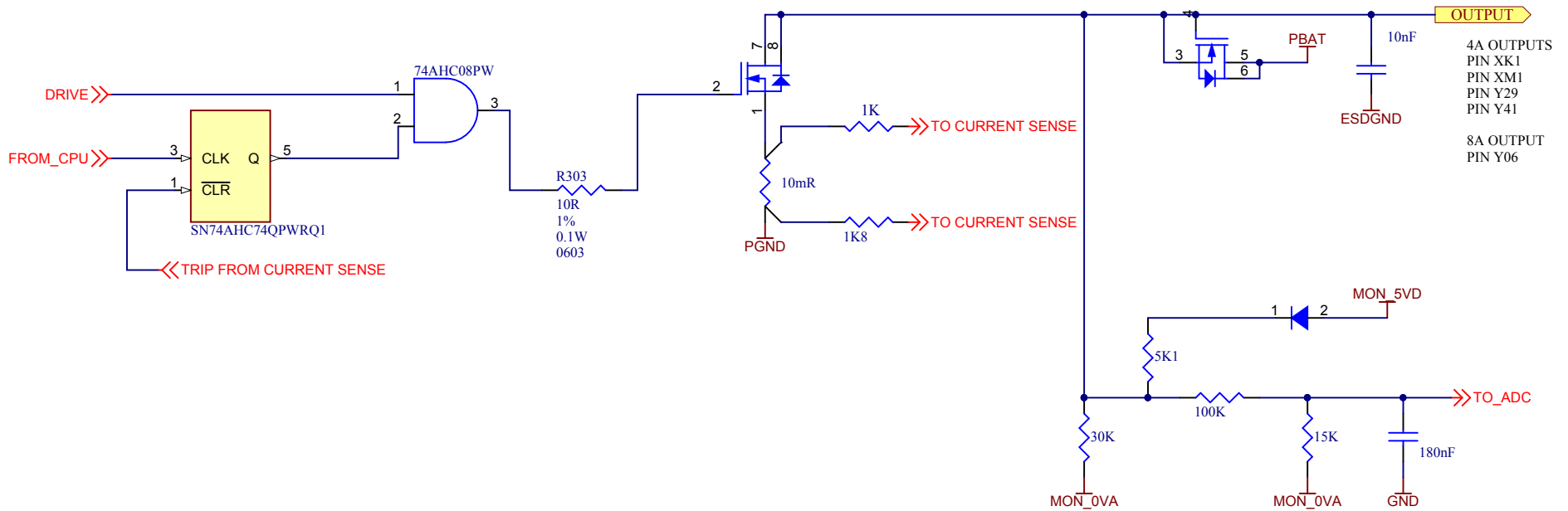
LOW SIDE 2A OUTPUTS



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|---|---|--|----------------|
|  Pi Inno | PRODUCT NAME M670 Simplified IO Schematics | | |
| | SHEET TITLE LOW SIDE OUTPUTS 2A | | |
| A4 | Assy Part Number: 29T-068880IO-xE PCB Part Number: | Revision 4 | Mod State 0 |
| Filename: Low Side Out2A.SchDoc | | Sheet 10 of 15 | |
| Date: 2/12/2016 | | SVN \$Revision:: 3761 \$ Drawn By: L. Lieb | |

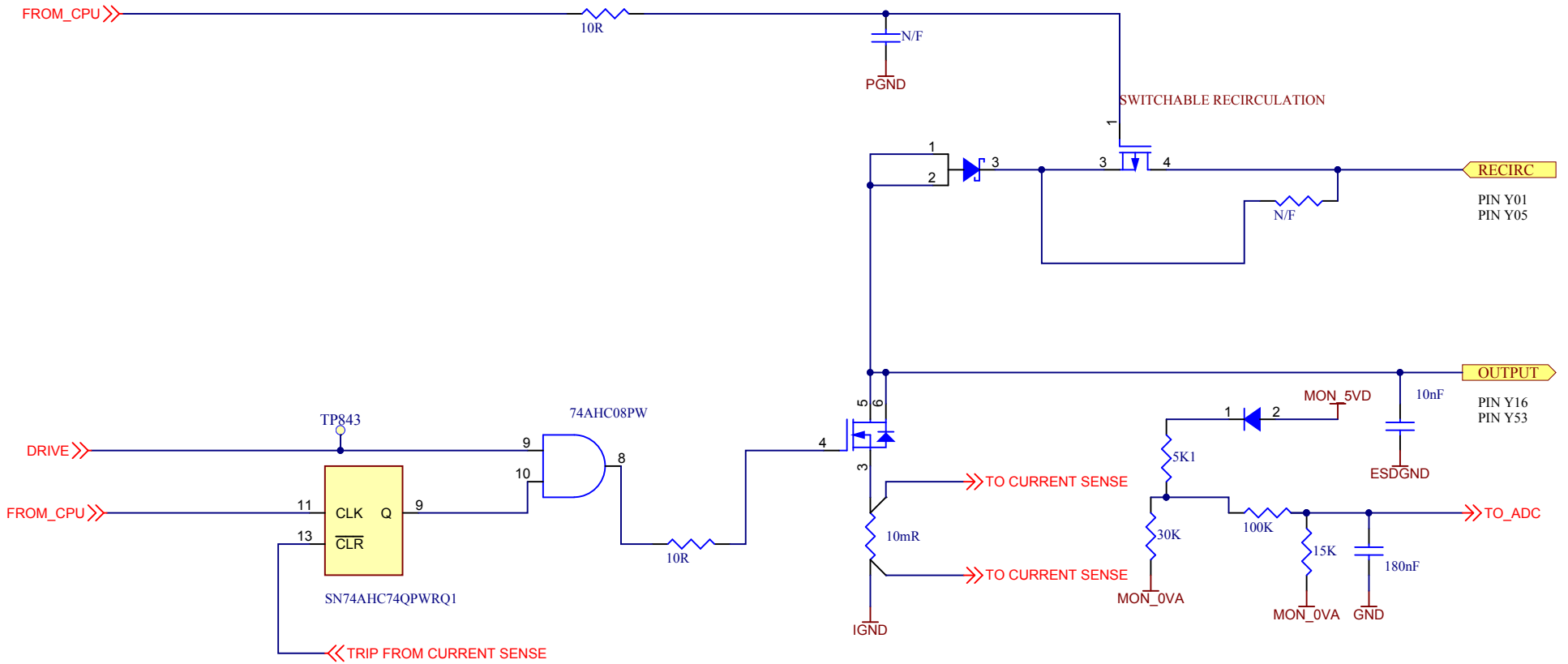
LOW SIDE 4A AND 8A OUTPUTS



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|------------------------------------|-----------------------------------|----------------|-------------------|
| | PRODUCT NAME | | |
| | M670 Simplified IO Schematics | | |
| | SHEET TITLE | | |
| | LOW SIDE OUTPTS 4A AND 8A | | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision | Mod State |
| | PCB Part Number: | 4 | 0 |
| Filename: Low Side Out4A-8A.SchDoc | | Sheet 11 of 15 | |
| Date: 2/12/2016 | SVN \$Revision:: 3761 | \$ | Drawn By: L. Lieb |

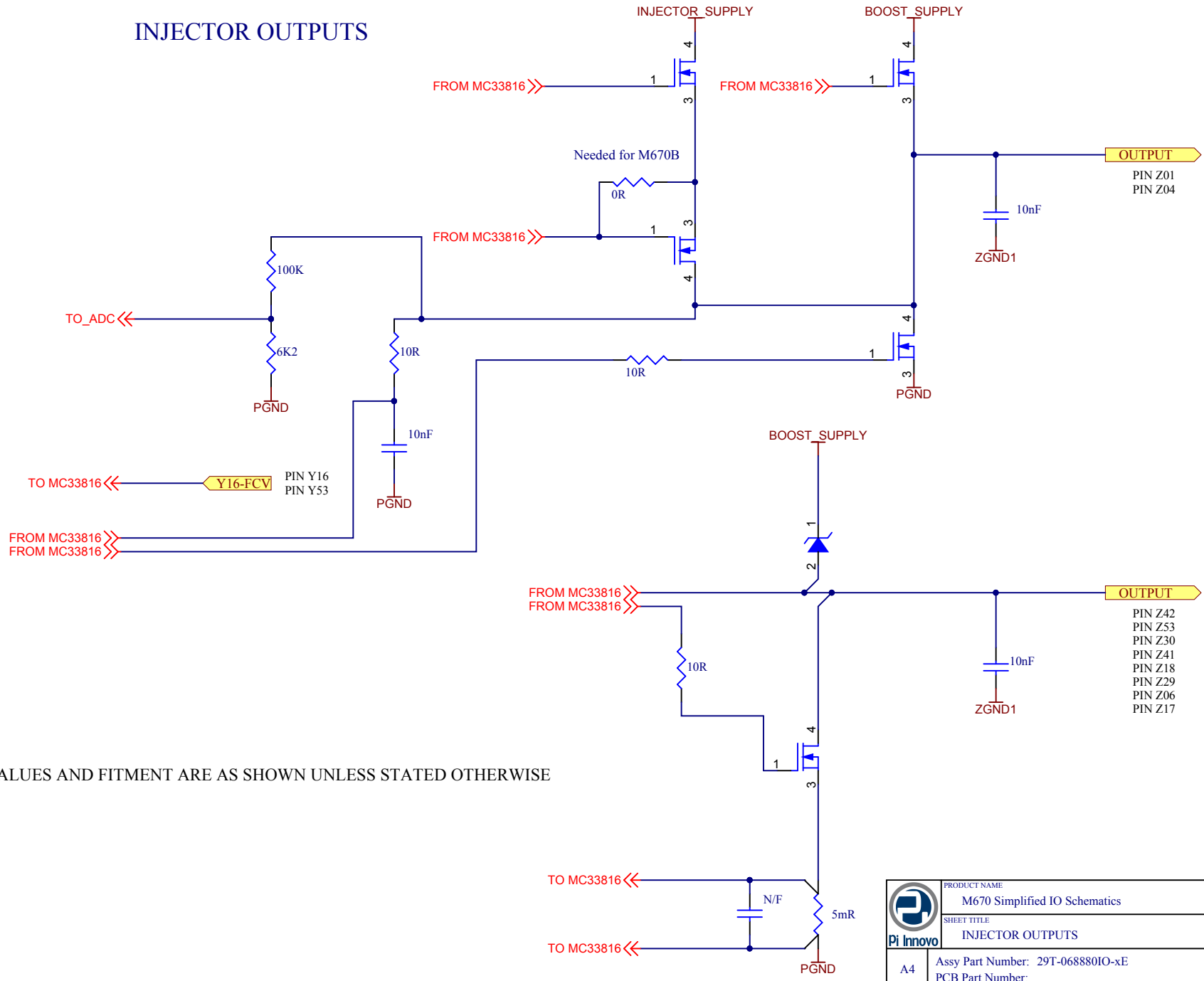
LOW SIDE 6A OUTPUTS



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|---------------------------------|-----------------------------------|-------------------------------|-----------|
| | PRODUCT NAME | M670 Simplified IO Schematics | |
| | SHEET TITLE | LOW SIDE OUTPTS 6A | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision | Mod State |
| | PCB Part Number: | 4 | 0 |
| Filename: Low Side Out6A.SchDoc | | Sheet 12 of 15 | |
| Date: 2/12/2016 | SVN \$Revision:: 3761 \$ | Drawn By: L. Lieb | |

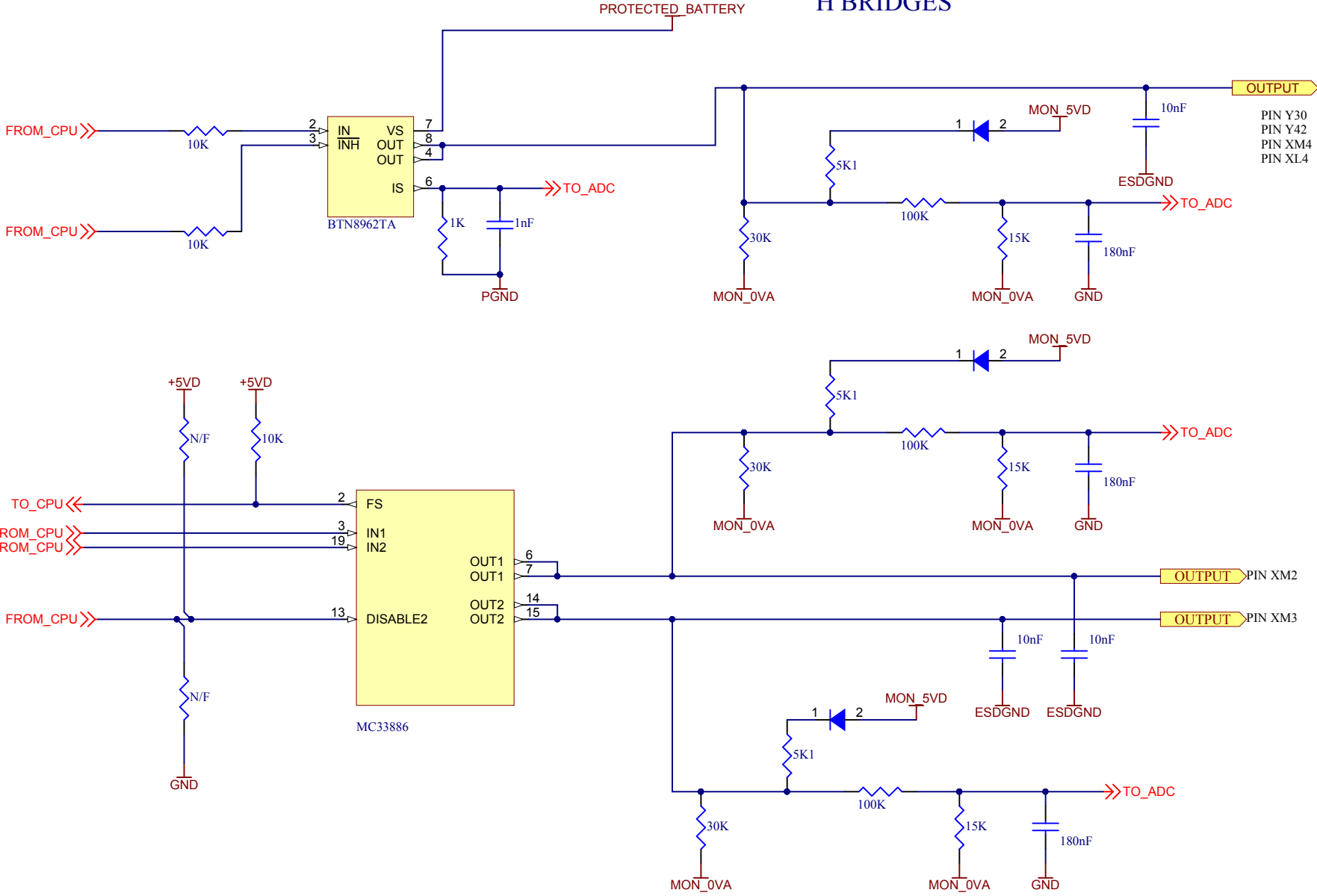
INJECTOR OUTPUTS



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|-----------------------------------|-----------------------------------|-----------------------|-------------------|
| | PRODUCT NAME | | |
| | M670 Simplified IO Schematics | | |
| | SHEET TITLE | | |
| | INJECTOR OUTPUTS | | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision 4 | Mod State 0 |
| PCB Part Number: | | Sheet 13 of 15 | |
| Filename: Injector Outputs.SchDoc | | Date: 2/12/2016 | |
| Date: 2/12/2016 | | SVN \$Revision:: 3761 | Drawn By: L. Lieb |

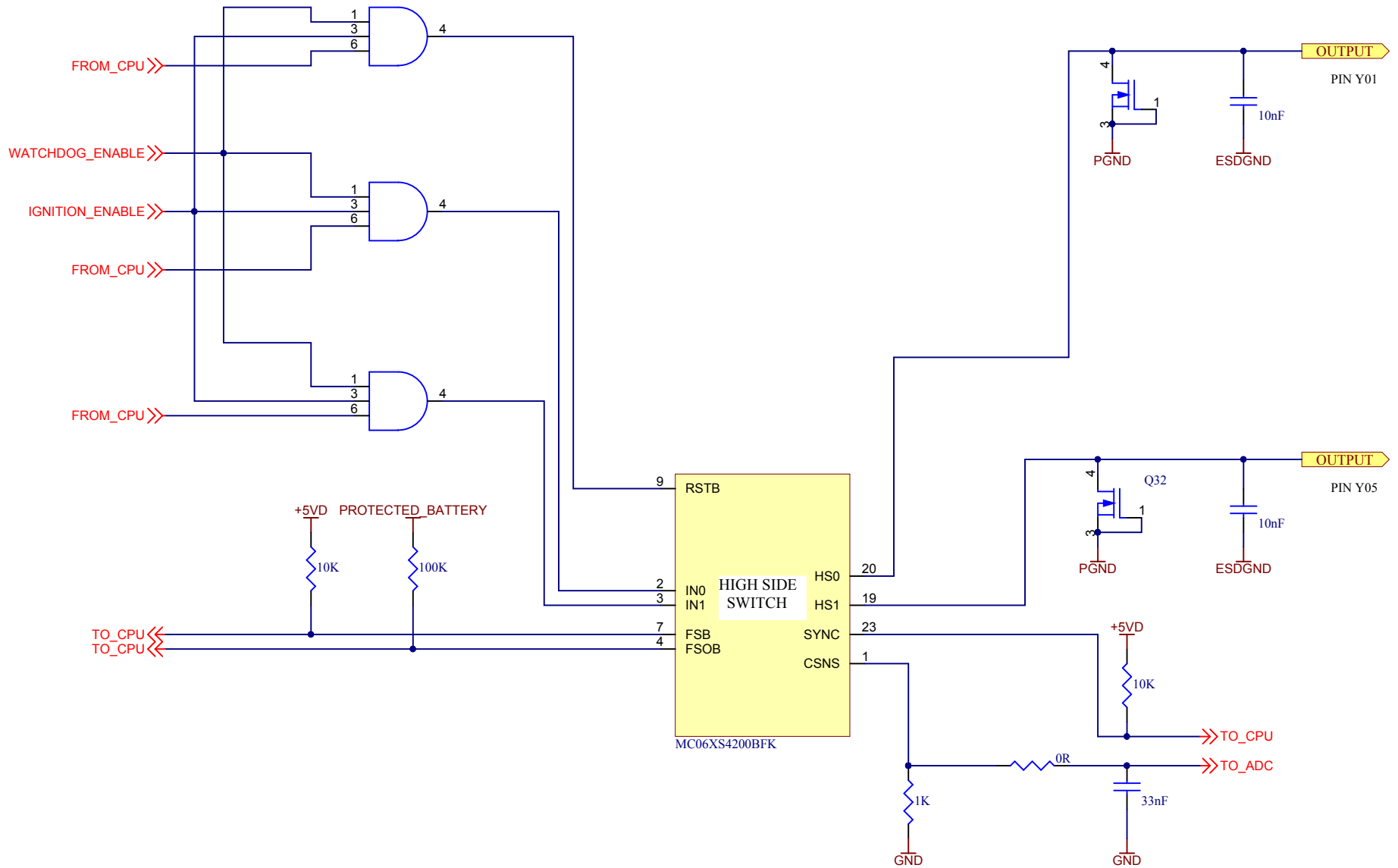
H BRIDGES



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|---------------------------|-----------------------------------|-------------------------------|-----------|
| | PRODUCT NAME | M670 Simplified IO Schematics | |
| | SHEET TITLE | H BRIDGES | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision | Mod State |
| | PCB Part Number: | 4 | 0 |
| Filename: HBRidges.SchDoc | | Sheet 14 of 15 | |
| Date: 1/25/2016 | SVN \$Revision:: 3732 \$ | Drawn By: L. Lieb | |

HIGH SIDE OUTPUTS 10A



VALUES AND FITMENT ARE AS SHOWN UNLESS STATED OTHERWISE

| | | | |
|-----------------------------------|---|-----------------------|-------------------|
| | PRODUCT NAME M670 Simplified IO Schematics | | |
| | SHEET TITLE HIGH SIDE OUTPUTS 10A | | |
| A4 | Assy Part Number: 29T-068880IO-xE | Revision 4 | Mod State 0 |
| PCB Part Number: | | Sheet 15 of 15 | |
| Filename: High Side Out10A.SchDoc | | Date: 1/25/2016 | |
| Date: 1/25/2016 | | SVN \$Revision:: 3732 | Drawn By: L. Lieb |