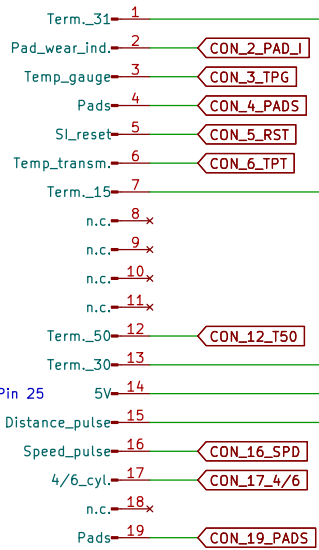


Main Connector (19 Pin)

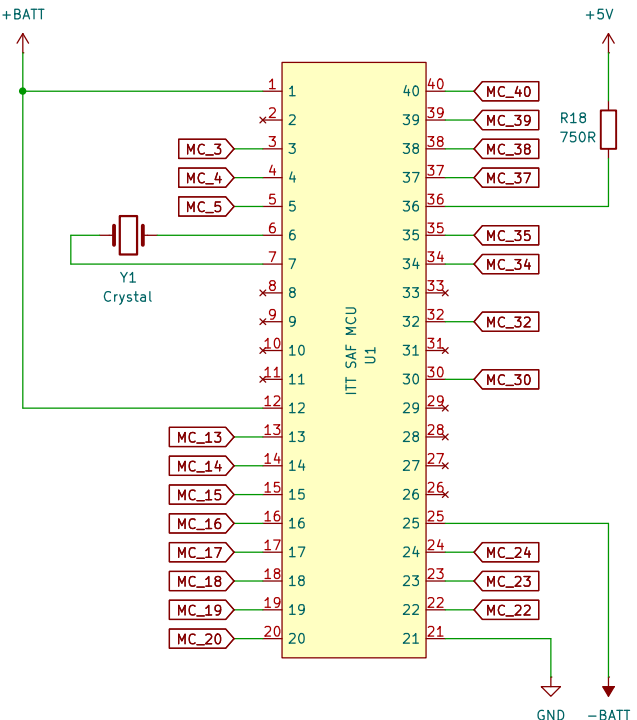
From Conn. I (blue) Pin 20 – Term. 31
To Pad Wear Indicator Bulb (h)
To Temperature Gauge
From Conn. I (blue) Pin 21
From Conn. I (blue) Pin 22
From Conn. I (blue) Pin 26
From Conn. II (white) Pin 6 – Term. 15

J2 Conn_01x19_Pin



For routing and connections on the cluster see "Cluster Wiring" page

Microcontroller



Impossible to find datasheet. 5V Logic, DIP40 Package

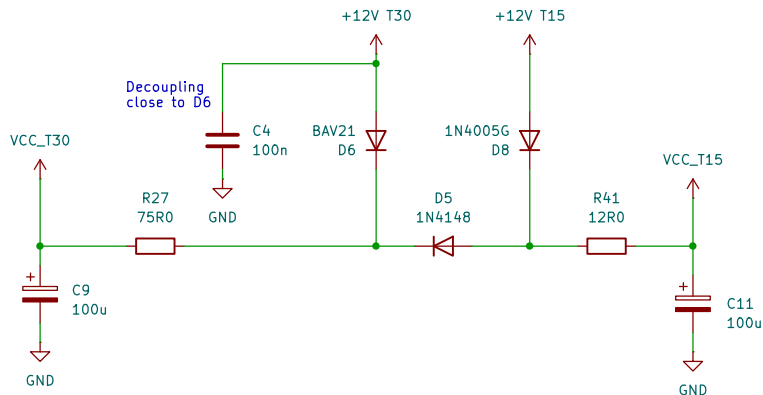
TODO: Measure crystal frequency (unmarked)

BMW_E30_VFL_SI_Board_Instrument_Cluster

Cluster Wiring

File: BMW_E30_VFL_SI_Board_Instrument_Cluster.kicad_sch

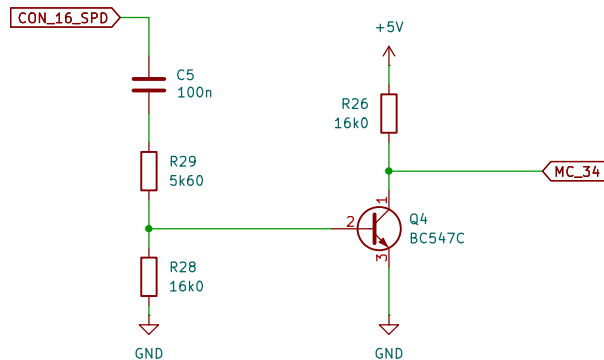
12V Power Supply



+5V supply is powered by T15 and is switched with the Ignition.

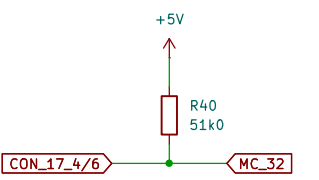
Terminal 30 (always hot) and Terminal 15 (hot with ignition) are separated. T30 powers the comparators even without T15. T15 supplies the service indicators and the relay.

Engine Speed Pulse Interfacing



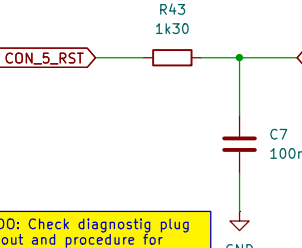
Pin MC_34 is pulled low through +12V pulse from Terminal 1 (Ignition Coil) that switches transistor Q4

Engine Coding Interface



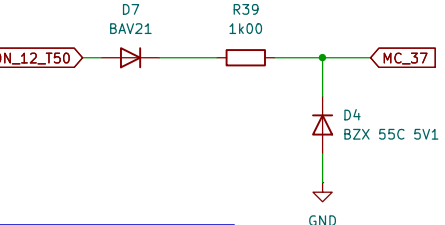
6 cylinder pulls high, 4 cylinder pulls low

SI Reset Interfacing



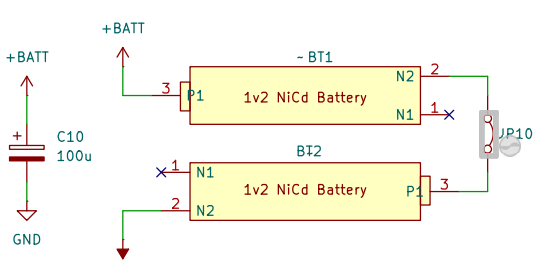
TODO: Check diagnostig plug pinout and procedure for reset

T50 Interfacing



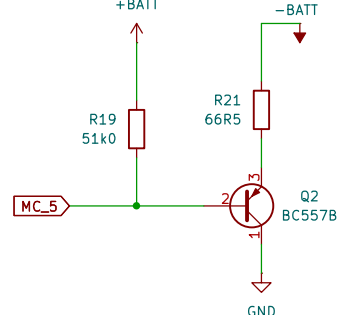
T50 is HIGH (+12V) with key in START position

Batteries



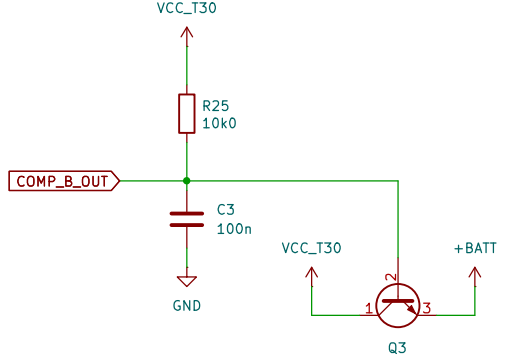
Jumper to prevent discharging of batteries while board in storage -> connect before installation

Switched -BATT to GND Connection



BC557B is a PNP: OFF when base is high through +BATT Pullup, ON when pulled low through MC_5

Switched +BATT to VCC_T30 Connection



BMW_E30_VFL_SI_Board_Comparator_Circuit

LM2901 Comparator Circuit

BMW_E30_VFL_SI_Board_Pad_Wear_Indicator

Pad Wear Indicator

BMW_E30_VFL_SI_Board_Indicator_Lights

Indicator Lights

Revision 2.1 made by Reagan Ansel

Sheet: /
File: BMW E30 VFL SI Board V2.kicad_sch

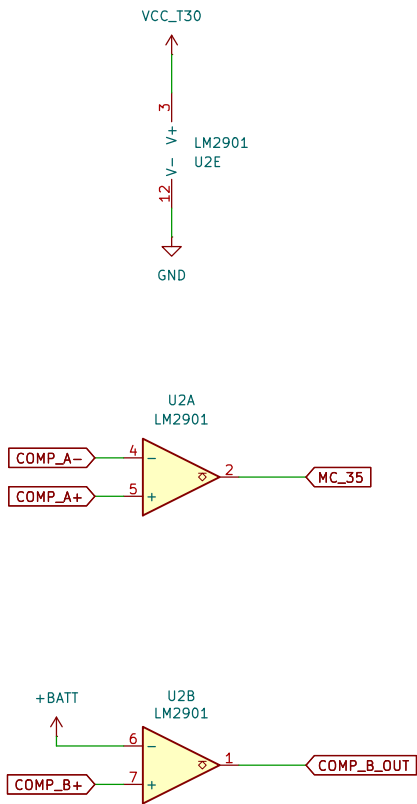
Title: BMW E30 Pre-Facelift SI Board

Size: A3
KiCad E.D.A. 9.0.3

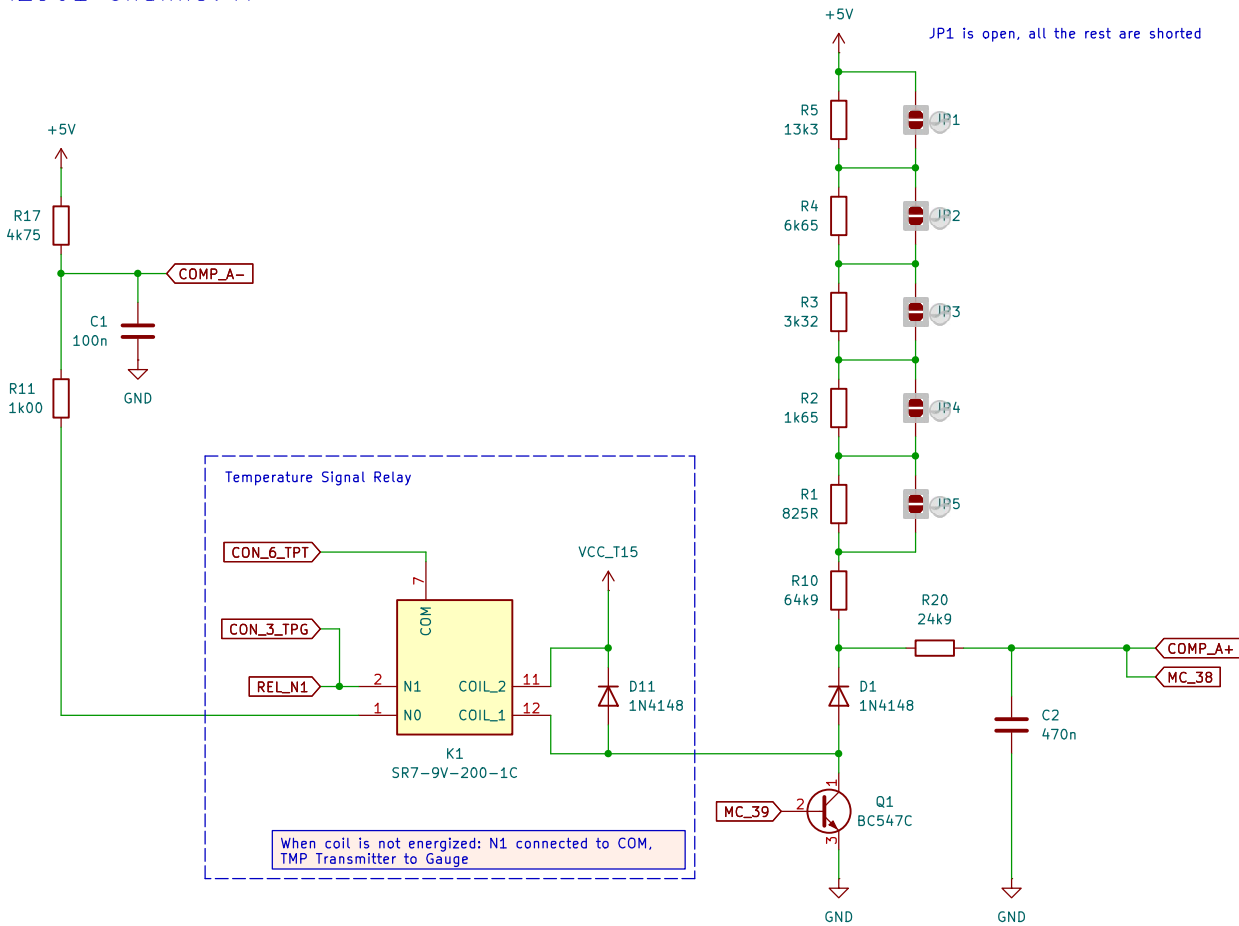
Date: 2025-07-23

Rev: 2.1
Id: 1/5

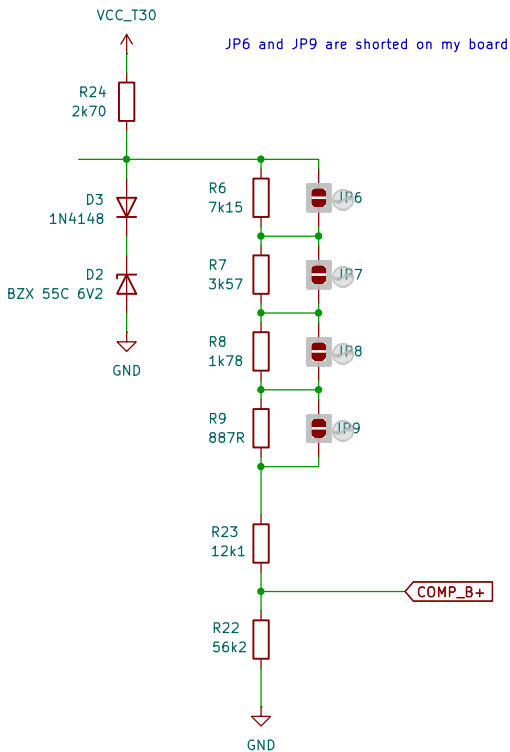
LM2901 Channels A and B



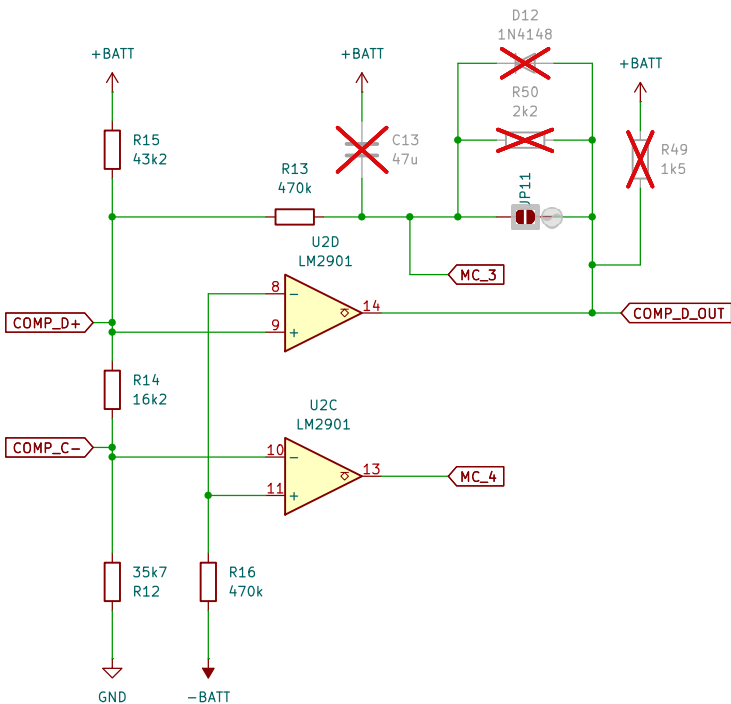
LM2901 Channel A



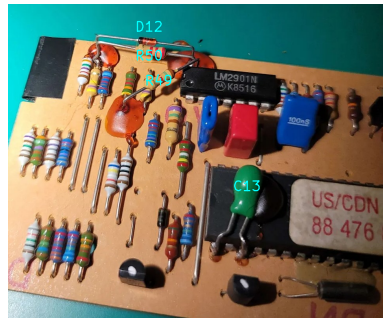
LM2901 Channel B



LM2901 Channels C and D



NOTE: Two US spec versions of this board had R49, R50, D12, and C13 provisions populated, and JP11 open. They did not have their own footprints, but rather were placed as pictured below.



These provisions were likely added to improve the charging circuit by providing a more stable voltage input to the SAF1093 chip. By doing this it can more accurately and precisely monitor the charge status of the batteries. This signal is likely used to control Q2 on page 1 to connect the negative battery terminal to ground.

Comparator D appears to be used for telling when the batteries have reached a sufficiently charged voltage. It changes its output state to high at this point (~1.15 V on each battery). It is probable that this triggers the SAF chip to turn off Q2 to disable charging.

Comparator C pulls low when the batteries reach a nominal voltage of ~1.55 V each. This may be an overvoltage protection measure for the charging circuit.

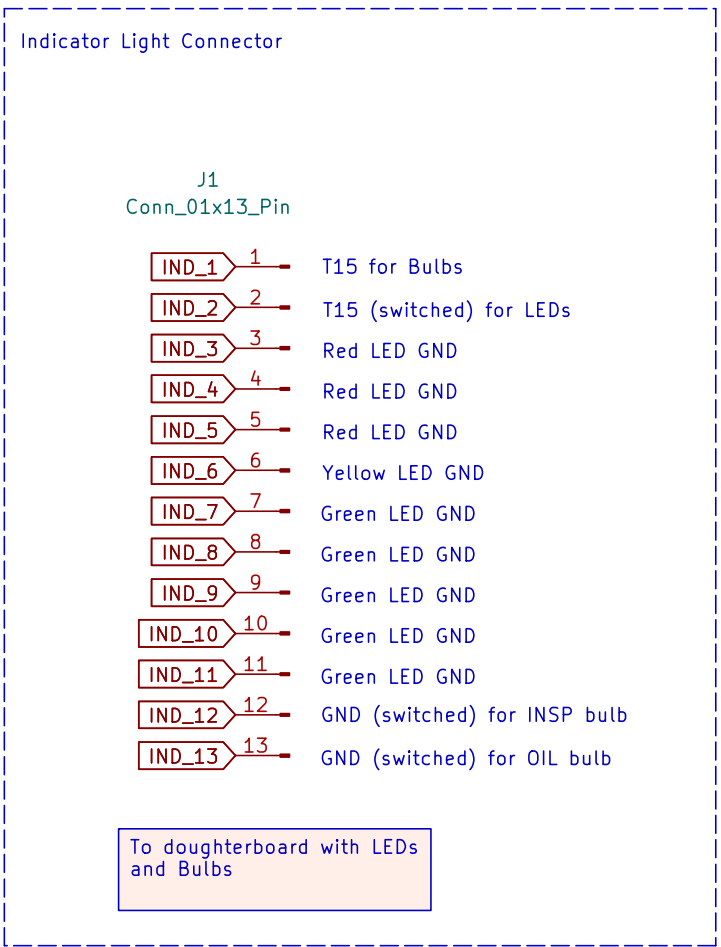
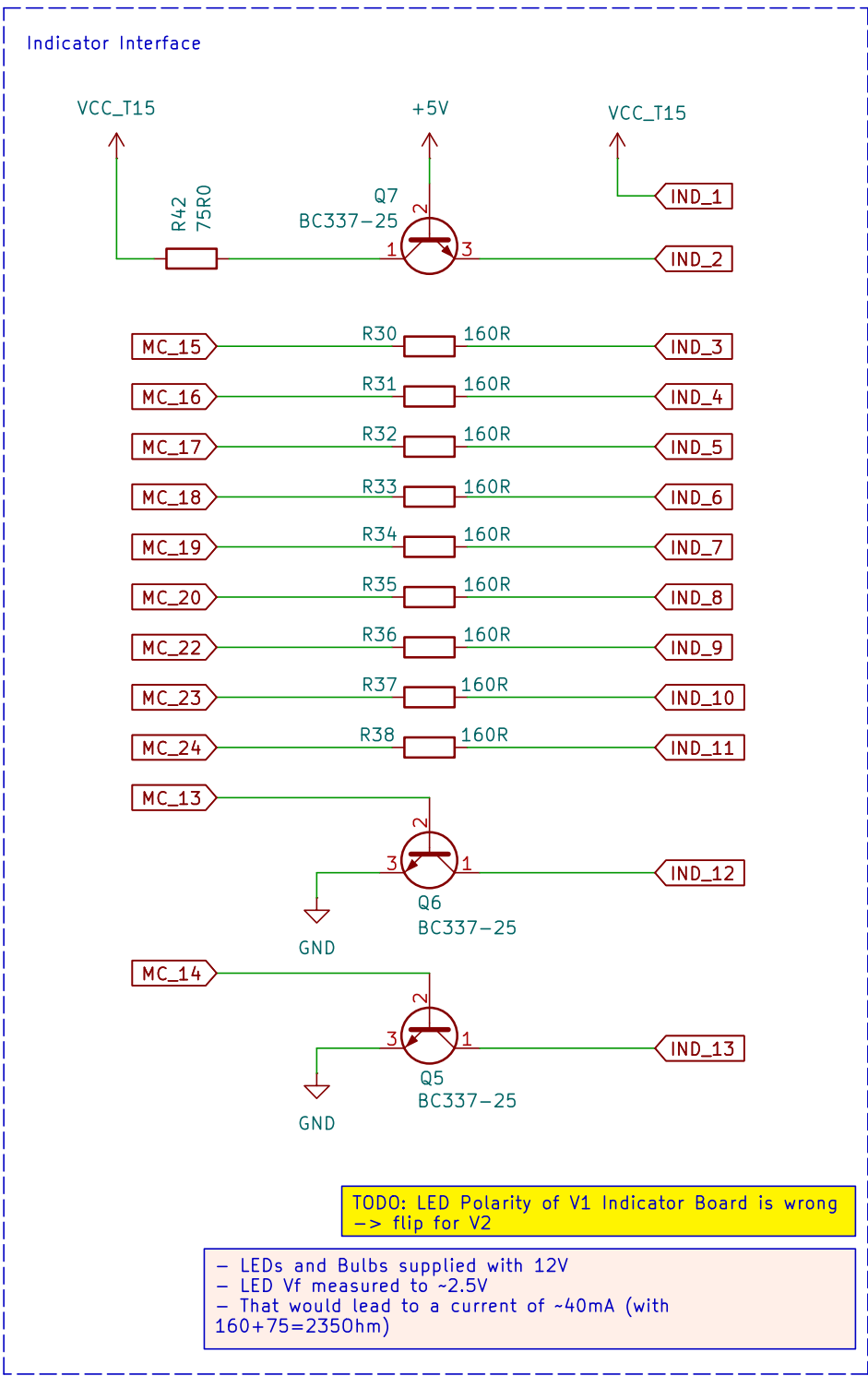
BMW_E30_VFL_SI_Board_Comparator_Circuit
Revision 2.1 made by Reagan Ansel

Sheet: /BMW_E30_VFL_SI_Board_Comparator_Circuit/
File: BMW_E30_VFL_SI_Board_Comparator_Circuit.kicad_sch

Title: BMW E30 Pre-Facelift SI Board

Size: A3 Date: 2024-06-15
KiCad E.D.A. 9.0.3

Rev: 2
Id: 2/5



BMW_E30_VFL_SI_Board_Indicator_Lights

Revision 2.1 made by Reagan Ansel

Sheet: /BMW_E30_VFL_SI_Board_Indicator_Lights/
File: BMW_E30_VFL_SI_Board_Indicator_Lights.kicad_sch

Title: BMW E30 Pre-Facelift SI Board

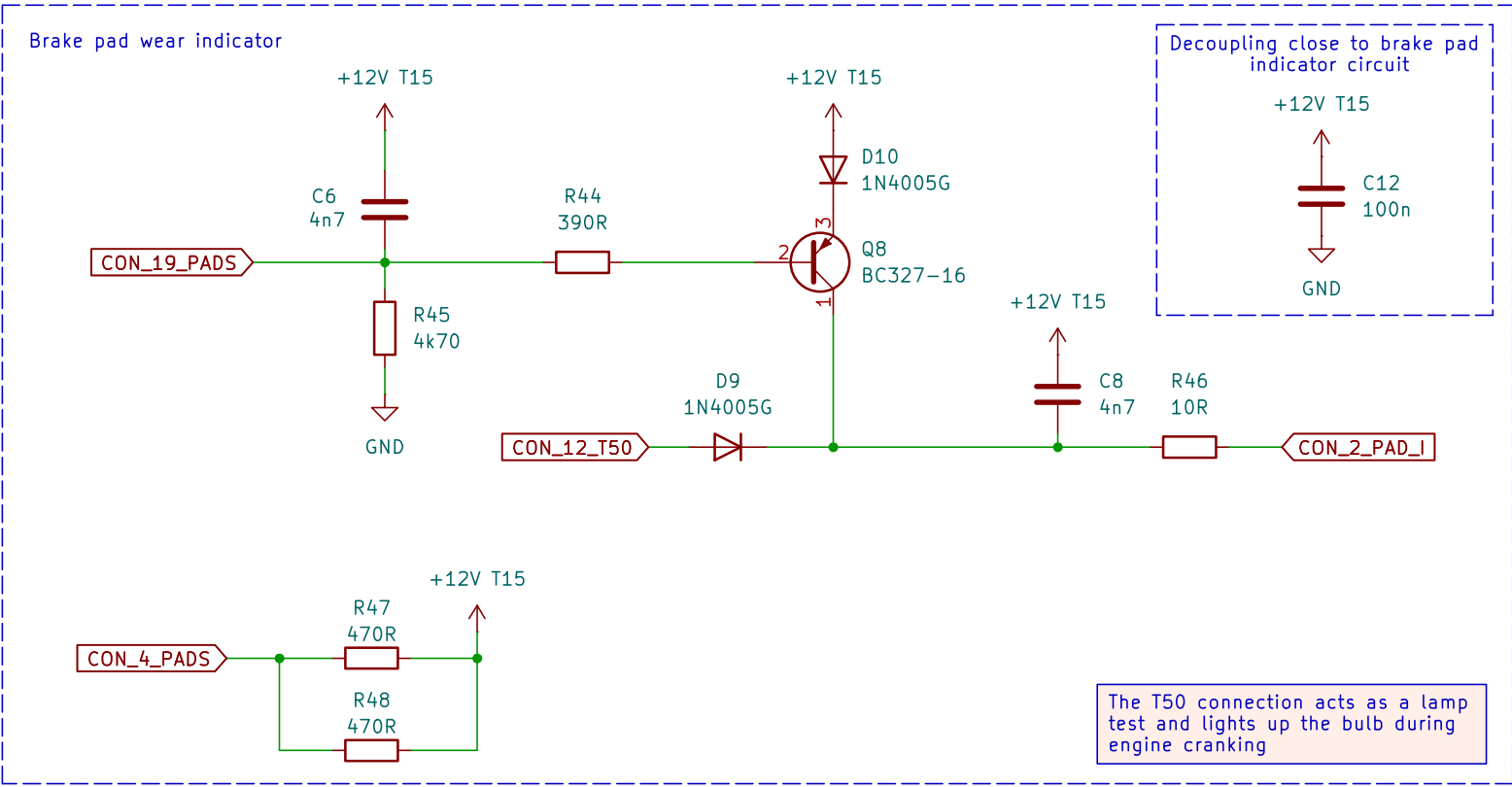
Size: A4

Date: 2024-06-15

Rev: 2

KiCad E.D.A. 9.0.3

Id: 3/5



BMW_E30_VFL_SI_Board_Pad_Wear_Indicator

Revision 2.1 made by Reagan Ansel

Sheet: /BMW_E30_VFL_SI_Board_Pad_Wear_Indicator/
File: BMW_E30_VFL_SI_Board_Pad_Wear_Indicator.kicad_sch

Title: BMW E30 Pre-Facelift SI Board

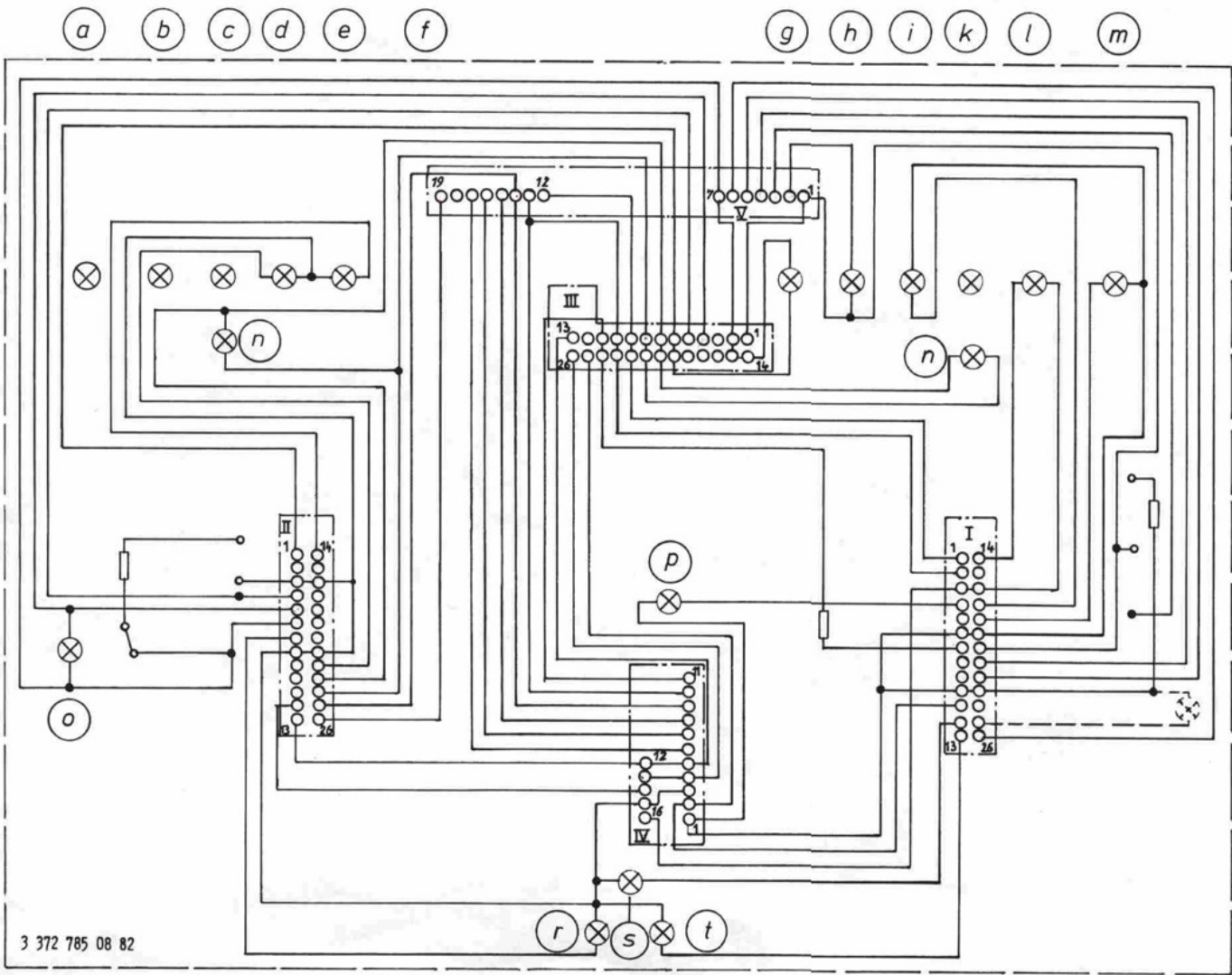
Size: A4

Date: 2024-06-15

Rev: 2

KiCad E.D.A. 9.0.3

Id: 4/5



Erläuterung zum Schaltplan Instrumenten-Kombination
– LL und RL – E 30 alle Modelle

Stiftleiste blau (I)					Stiftleiste weiß (II)				
Steckplatz	Benennung	Signal	Ausgang	Eingang	Steckplatz	Benennung	Signal	Ausgang	Eingang
1	Kl. 50	+12 V		x	1	Handbremse	Masse		x
2	Kl. 30	+12 V		x	2	frei			
3	Kl. 61	+12 V			3	Kl. 31	Masse		
4	Zentr. Kontrolle	(Frequenz)		x	4	Tank-Geber	$R(\Omega) = 3...72(\Omega)$		x
5	frei				5	Tank-Warn	$R(\Omega) =$		x
6	Kl. 15	+12 V			6	Kl. 15	+12 V		x
7	Kl. 1	+12 V		x	7	Blinker links	+12 V		x
8	frei				8	Kl. 31	Masse		
9	frei				9	frei			
10	Kl. 15	+12 V			10	frei			
11	Kl. 11 (Einspritzsignal)	+12 V (Frequenz)		x	11	frei			
12	Kl. 56a (Fernlicht)	+12 V		x	12	Kl. 31b	(Frequenz)		x
13	Blinker rechts	+12 V		x	13	Kl. R	+12 V		x
14	Kl. 15 (Ladekontrolle)	+12 V		x	14	Nebelschluß	+12 V		x
15	frei				15	frei			
16	Kl. 61 (Ladekontrolle)	+12 V		x	16	Kl. 31	Masse		x
17	Bremse	Masse		x	17	frei			
18	Öldruck	Masse		x	18	frei			
19	Kl. 15	+12 V			19	frei			
20	Kl. 31	Masse		x	20	frei			
21	Bremsbelag	Masse		x	21	Kl. 31	Masse		
22	Reset SI (Diagnose)	+5 V		x	22	Nebel vorn	+12 V		x
23	Kl. 15	+12 V		x	23	Kl. 58k	+12 V		x
24	frei				24	Kl. 31g	geregelt		x
25	Temp. Warn	Masse			25	5V Ausgang	5V		x
26	Temp. Geber	$R(\Omega) = 18...287(\Omega)$		x	26	Bremsbelag	Masse		x

- a Diesel vorglühen
- b Diesel Start
- c frei
- d Nebelscheinwerfer
- e Nebelschlußleuchte
- f Anhänger Blinker
- g Handbremse
- h Bremsbelagverschleißanzeige
- i Bremskontrolle

Stiftleiste gelb (III)					Stiftleiste (IV) DZM, EC, Uhr, E-Tacho		Stiftleiste (V) Service-Intervall	
Steckplatz	Benennung	Signal	Ausgang	Eingang	Steckplatz	Benennung	Steckplatz	Benennung
1	Kl. 31	Masse	x		1	Kl. 15	1	Kl. 31
2	Kl. 15	+12 V	x		2	Kl. 11	2	Bremsbelagverschl.
3	frei				3	Kl. 31	3	Temp.-Anzeige
4	Tank-Warn	$R(\Omega) =$	x		4	Analogsig.-Tacho	4	Bremsbelag
5	Tank-Geber	$R(\Omega) = 3...72(\Omega)$	x		5	Kl. R	5	SI-Reset
6	Handbremse	Masse			6	4/6 Zyl.	6	Temperaturgeber
7	Kl. 58k	+12 V	x		7	DZM Impuls	7	Kl. 15
8	Kl. 31g	geregelt	x		8	Wegimpuls	8	
9	Kl. 50	+12 V	x		9	5 V	9	
10	Kl. 30	+12 V	x		10	Kl. 30	10	
11	Kl. 1	+12 V	x		11	Kl. 1	11	
12	frei				12	Kl. 61	12	Kl. 50
13	Kl. R	+12 V	x		13	Kl. 31	13	Kl. 30
14	Kl. 15	+12 V	x		14	Kl. 31b	14	5 V
15	Kl. 15	+12 V	x		15	Analogsignal Tacho	15	Wegimpuls
16	frei				16	Kl. R	16	DZM Impuls
17	frei						17	4/6 Zyl.
18	frei						18	frei
19	Handbremse	Masse					19	Bremsbelag
20	Kl. 58k	+12 V	x					
21	Kl. 31g	geregelt	x					
22	Kl. 50	+12 V	x					
23	Kl. 30	+12 V	x					
24	Kl. 1	+12 V	x					
25	Kl. 11	+12 V (Frequenz)	x					
26	Analogausgang Tachometer	Frequenz	x					

DZM = Drehzahlmesser EC = Economy Control E-Tacho = electron. Tacho Kl. = Klemme SI = Service-Intervall

- k Antiblockiersystem
- l Ladekontrolle
- m Öldruck
- n Instrumentenbeleuchtung
- o Tankwarnleuchte
- p Zentrale Kontrollleuchte
- r Blinker links
- s Fernlicht
- t Blinker rechts

Cluster Schematic and Pin Assignment

Revision 2.1 made by Reagan Ansel

Sheet: /BMW_E30_VFL_SI_Board_Instrument_Cluster/
File: BMW_E30_VFL_SI_Board_Instrument_Cluster.kicad_sch

Title: BMW E30 Pre-Facelift SI Board

Size: A3 Date: 2024-06-15 Rev: 2

KiCad E.D.A. 9.0.3 Id: 5/5