

**LDO** : For 12V to 3.3V conversion.

The diagram illustrates a Linear Dropout Regulator (LDO) circuit designed for converting a 12V input to a 3.3V output. The circuit components and their connections are as follows:

- Input:** A 12V input is connected to the VIN Plus terminal.
- Voltage Divider:** A network of resistors (R1, R2, R19) and capacitors (C2, C3) is used to set the output voltage. R1 (100mR) and R2 (100mR) are in series with the input. R19 (1K) is connected to the VIN Minus terminal. R20 (1K) is connected to the output. C2 (10uF, 25V) and C3 (1uF, 25V) are connected to the output.
- LDO:** The LDO is labeled U2: RAA2142504GSP#HA0. It has two input pins (VIN\_1, VIN\_2), two output pins (VOUT\_1, VOUT\_2), and three control pins (EN, GND, EP). The EN pin is connected to the output. The GND pin is connected to ground. The EP pin is connected to ground. The VOUT\_1 pin is connected to the output. The VOUT\_2 pin is connected to ground.
- Output:** The output is connected to a 3V3 output terminal. A feedback network (R4, R5) is connected to the output. R4 (100K) and R5 (57.6K) are connected to the output. C1 (22pF, DNP) and C4 (4.7uF, 16V) are connected to the output.

## PMOD Connector :

PMOD1 : PMOD Interface Type 6A (Expanded I2C)

Output PMOD

Input PMOD

U1\_PIN2\_Direction Control\_M1 7 1 Power\_Monitor\_Alert 1 7 U1\_PIN2\_Direction Control\_M1

U1\_PIN20\_PWM Duty Control\_M2 8 2 U1\_PIN14\_Reset 2 8 U1\_PIN20\_PWM Duty Control\_M2

U1\_PIN19\_PWM Duty Control\_M1 9 3 U1\_PIN15\_SCL 3 9 U1\_PIN19\_PWM Duty Control\_M1

U1\_PIN3\_Direction Control\_M2 10 4 U1\_PIN16\_SDA 4 10 U1\_PIN3\_Direction Control\_M2

11 5 11

12 6 12

3V3

C5

10uF

16V

GND

3V3\_M

C6

10uF

16V

DNP

GND

**HPAK IC:**

3V3

C9 10uF 25V

C10 0.1uF 16V

J5

J6

R7 10K

R8 10K

R9 10K

U1

VDD

VDD2\_A

SENSE\_A

GND\_HV

GPIO0

GPIO1

SCL/GPIO2

SENSE\_B

SDA/GPIO3

VDD2\_B

GPIO4

GPIO5

HV\_GPO1

HV\_GPO2

HV\_GPO3

HV\_GPO4

GND

SLG47105V

12V0

C8 1uF 25V

C7 10uF 25V

R10 1R

R11 1R

R12 1R

R13 1R

R14 1R

R15 1R

C12 1uF 25V

C11 10uF 25V

Bottom layer with same 0805 parts

U1\_PIN3\_Direction Control\_M2

U1\_PIN2\_Direction Control\_M1

U1\_PIN14\_Reset

U1\_PIN15\_SCL

U1\_PIN16\_SDA

Power\_Monitor\_Alert

U1\_PIN19\_PWM Duty Control\_M1

U1\_PIN20\_PWM Duty Control\_M2

7 Motor Terminal\_1

8 Motor Terminal\_2

9 Motor Terminal\_3

10 Motor Terminal\_4

# Power ON LED:

12V Power ON LED

12V0 R6 1.82K D1 150060GS75000 GND

3.3V Power ON LED

3V3 R16 300R D2 150060RS55040 GND

## Terminal Block:

12V0V

5V-12V VIN

GND

J4

1

2

J7

1

2

J8

1

2

Motor Terminal 1

Motor Terminal 2

Motor Terminal 3

Motor Terminal 4

## Arduino Shield:

The diagram illustrates the wiring of an Arduino Shield with four modules. Red 'X' marks indicate connections that are not made.

- J18 (2698925 POWER1):**
  - Pin 8 (IOREF) is connected to 3V3\_M.
  - Pin 7 (RESET) is connected to U1\_PIN14\_Reset.
  - Pin 6 (3V3) is connected to 3V3\_M.
  - Pin 5 (5V) is connected to 3V3\_M.
  - Pin 4 (GND) is connected to GND.
  - Pin 3 (GND) is connected to GND.
  - Pin 2 (GND) is connected to GND.
  - Pin 1 (VIN) is connected to GND.
- J24 (2698789 IOH1):**
  - Pin 10 (SCL) is connected to U1\_PIN15\_SCL.
  - Pin 9 (SDA) is connected to U1\_PIN16\_SDA.
  - Pin 8 (AREF) is connected to AREF.
  - Pin 7 (GND) is connected to GND.
  - Pin 6 (IO13) is connected to GND.
  - Pin 5 (IO12) is connected to GND.
  - Pin 4 (IO11) is connected to GND.
  - Pin 3 (IO10) is connected to GND.
  - Pin 2 (IO9) is connected to GND.
  - Pin 1 (IO8) is connected to GND.
- J19 (2699075 AD1):**
  - Pin 1 (AD0) is connected to U1\_PIN19\_PWM Duty Control\_M1.
  - Pin 2 (AD1) is connected to U1\_PIN20\_PWM Duty Control\_M2.
  - Pin 3 (AD2) is connected to GND.
  - Pin 4 (AD3) is connected to GND.
  - Pin 5 (AD4) is connected to GND.
  - Pin 6 (AD5) is connected to GND.
- J23 (2698925 IOL1):**
  - Pin 8 (IO7) is connected to Power\_Monitor\_Alert.
  - Pin 7 (IO6) is connected to U1\_PIN2\_Direction Control\_M1.
  - Pin 6 (IO5) is connected to U1\_PIN3\_Direction Control\_M2.
  - Pin 5 (IO4) is connected to GND.
  - Pin 4 (IO3) is connected to GND.
  - Pin 3 (IO2) is connected to GND.
  - Pin 2 (IO1) is connected to GND.
  - Pin 1 (IO0) is connected to GND.

## Power Monitor Section:

Note1: if you want to operate device from PMOD please mount capacitor (C6) and check the jumper setting of J1 accordingly.  
 Note2: Simultaneously jumper short of J10 and J1 PIN1 & PIN2 are strongly not recommended.  
 Note3: Reset pin on this board is active low.

<h1>AS025-HVPAK PMOD</h1>				
AS025-HVPAK PMOD.SchDoc				
Release Date: 10/25/2023 Last Updated: 8/23/2023	Revision: 01	Drawn by: Gaurav	Checked by: Prachi	Approved By: Rishi
SHEET 1 OF 1	SIZE A3	Renesas Electronics India Pvt Ltd.		
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