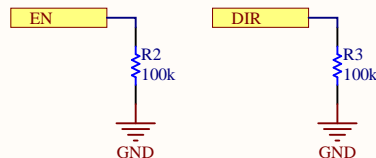
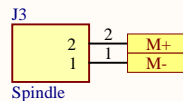
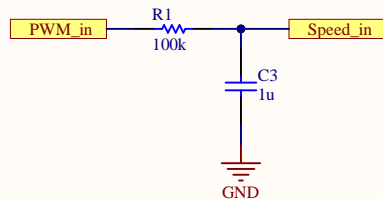
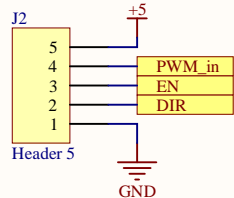
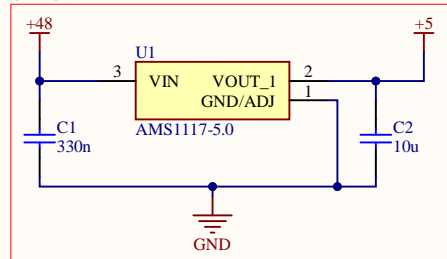
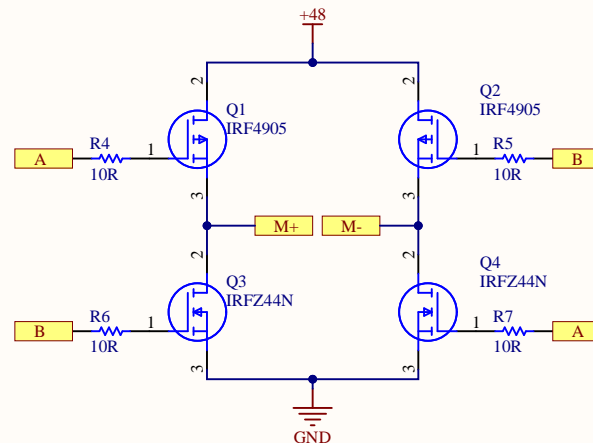
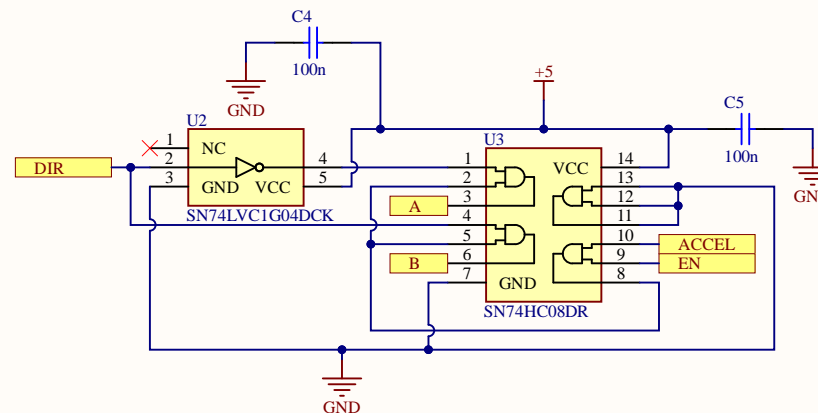
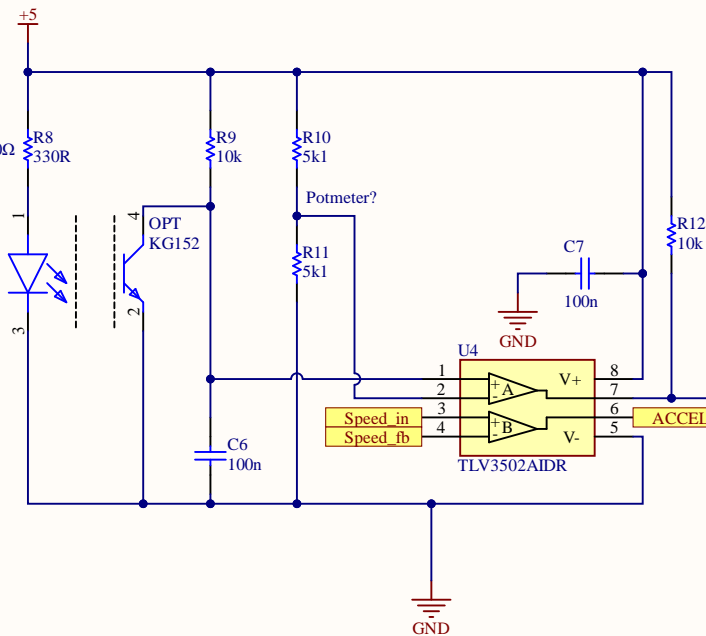


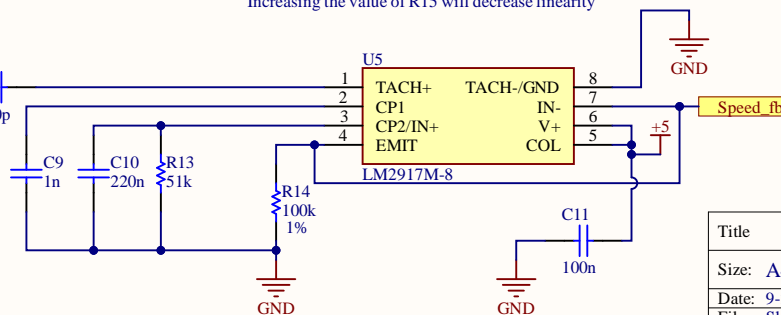
OPTIONAL



5V-1.2V=3.8V  
3.8V/20mA=190Ω



$5V * 1nF * 50k\Omega * 1 = 0.25mV/Hz$   
Change C9 if slope should be different  
Increasing the value of R15 will decrease linearity



Title		
Size: A4	Number:	Revision: 0
Date: 9-2-2026	Time: 22:10:56	Sheet 1 of 1
File: Sheet1.SchDoc	Drawn by	

Comment	Description	Designator	Footprint	LibRef	Quantity
_General SMD Capacitor		C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11	_General 1206	_General SMD Capacitor	11
48V in	Connector	J1	KF3012P	KF301-2P	1
Header 5	Header, 5-Pin	J2	HDR1X5	Header 5	1
Spindle	Connector	J3	KF3012P	KF301-2P	1
KG152	Opto Interruptor	OPT	GK152	KG152	1
IRF4905	MOSFET (P-Channel)	Q1, Q2	TO254P469X1042X19 67-3P	IRF4905	2
IRFZ44N	MOSFET (N-Channel)	Q3, Q4	TO254P440X1000X19 00-3P	IRFZ44N	2
_General SMD Resistor		R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14	_General 1206	_General SMD Resistor	14
AMS1117-5.0	Integrated Circuit	U1	SOT229P700X180-4N	AMS1117-5.0	1
SN74LVC1G04DCK	Diode	U2	SOT65P210X110-5N	SN74LVC1G04DCK	1
SN74HC08DR	Integrated Circuit	U3	SOIC127P600X175- 14N	SN74HC08DR	1
TLV3502AIDR	Integrated Circuit	U4	SOIC127P600X175-8N	TLV3502AIDR	1
LM2917M-8	Integrated Circuit	U5	SOIC127P600X175-8N	LM2917M-8	1