프로젝트

Solenoid_Braille

- 시각 장애인을 위한 점자 장치 -

- 강민성 , 김동주 -

진행 상황(4.8 ~ 4.12)

- 솔레노이드 코어의 형태 구상

코일의 자기장을 최대한 활용하기 위해
자속을 코어로 유도하여 자속 밀도를 최대한
높이는 구조로 구상하였습니다.

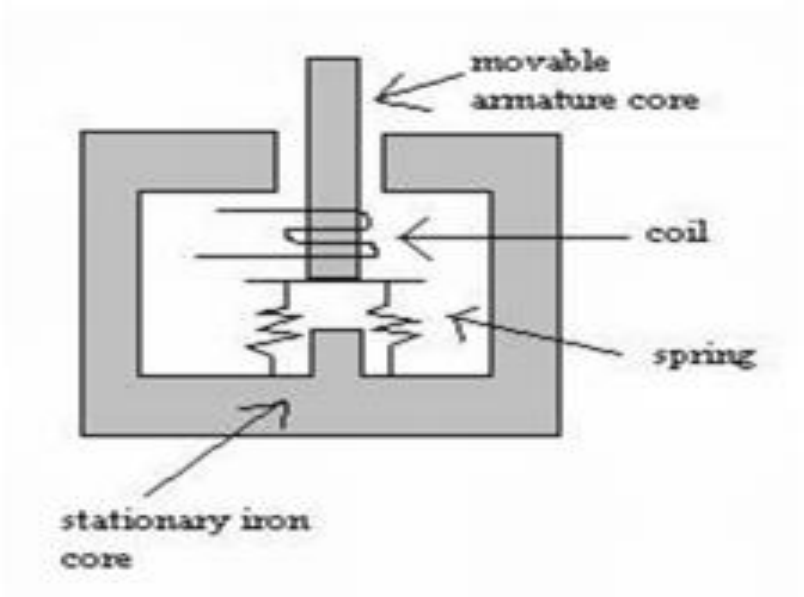


Fig. 1 A solenoid.

진행 상황(4.8 ~ 4.12)

- 고속 스위칭에 적합한 트랜지스터를 고르는 중에 있음.

리스트

1. BSS4130

30V 1A 100MHz

ROHM SEMICONDUCTOR

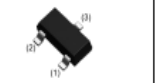
BSS4130

General purpose amplification (30V, 1A) Datasheet

Parameter	Value
V_{CEO}	30V
I_C	1A

●Outline

SOT-23

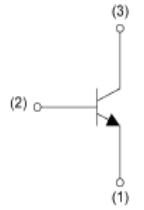


SST3

●Features

1)A collector current is large
2)Collector-Emitter saturation voltage is low.
$V_{CE(sat)} \leqq 350mV$
at I_C=500mA /I_B=25mA
3)Complements the BSS5130.

●Inner circuit



(1) Emitter
(2) Base
(3) Collector

●**Electrical characteristics** (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = 10μA	30	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA	30	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 10μA	6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 30V	-	-	100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 6V	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 500mA, I_B = 25mA	-	140	350	mV
DC current gain	h_{FE}*4	V_{CE} = 2V, I_C = 100mA	270	-	680	-
Transition frequency	f_T*4	V_{CE} = 2V, I_E = -100mA, f = 100MHz	-	400	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A, f = 1MHz	-	5	-	pF

*1 Pw=1ms, Single Pulse.
*2 Each terminal mounted on a reference land.
*3 Mounted on a ceramic board (7.0×5.0×0.6mm).
*4 Measured using pulse current.

진행 상황(4.8 ~ 4.12)

2. 2SC4081U3 HZG

50V 150mA 100MHz

ROHM SEMICONDUCTOR

2SC4081U3 HZG

General purpose small signal amplifier(50V, 150mA) Datasheet

AEC-Q101 Qualified

Parameter	Value
V_{CEO}	50V
I_C	150mA

●Outline

SOT-323
SC-70

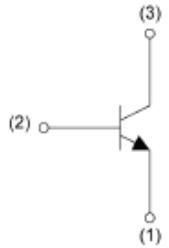
UMT3

●Features

1)Low Cob.Cob=2.0pF(Typ.)

2)Complements the 2SA1576U3 HZG.

●Inner circuit



(1) Emitter
(2) Base
(3) Collector

●Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = 50μA	60	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA	50	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 50μA	7	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 60V	-	-	100	nA
Emitter cut-off current	I_{EBO}	V_{EB} = 7V	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA	-	-	400	mV
DC current gain	h_{FE}	V_{CE} = 6V, I_C = 1mA	120	-	560	-
Transition frequency	f_T	V_{CE} = 12V, I_E = -2mA, f = 100MHz	-	180	-	MHz
Output capacitance	C_{ob}	V_{CB} = 12V, I_E = 0A, f = 1MHz	-	2.0	3.5	pF

hFE values are calssified as follows :

rank	Q	R	S	-	-
h_{FE}	120-270	180-390	270-560	-	-

*1 Pw=1ms, Single Pulse.

*2 Each terminal mounted on a reference land.

문제점

- 솔레노이드 코어를 소형으로 정밀 가공해줄 업체가 없음.
- 스프링을 소형으로 제작해줄 업체를 찾아야함.
- 전기자 코어도 소형으로 제작해줄 업체를 찾아야함.
- 코일 배달에 소식이 없음.