실험 보고서

No.	학번	이름
조		
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2016년 12월 8일

실험 목적

- 광 측정 센서(cds : 광도전셀)를 사용하기 위한 회로를 구성한다.
- PUT 을 이용하여 스피커를 동작시킨다

실험 내용

- **온도센서 회로 구성**
  - 간단한 온도센서 회로 구성

- **PUT을 이용하여 스피커를 동작**
  - 전압에 변화에 따른 스피커 구성

준비물

- 파워 서플라이
- 오실로스코프
- 트랜지스터 (npn)
- 저항
- CSD(광센서)
- 브레드보드
- 기타 공구
- 스피커
- 디지털 멀티미터
- PUT(prgramerble uijuction trngester
- OP-AMP(LM324)
- 커패시터
- LED
- 점퍼 케이블

1. CDS

- **CDS (GL5537)**
  - 광도전 셀

JCHL

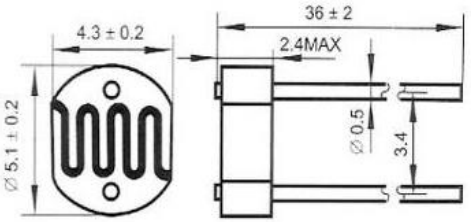
晶诚和立 **GL5537**

MINIATURE CADMIUM SULPHIDE PHOTOCONDUCTIVE CELL

FEATURES

- Miniature open frame package
- Epoxy coated
- Moisture resistant
- Spectral response similar to the human eye
- Applications include dusk-dawn lighting control

LIGHT DEPENDENT RESISTOR



Dimensions in millimetres

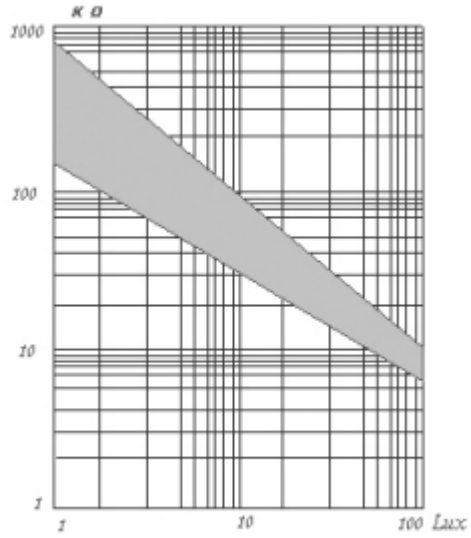
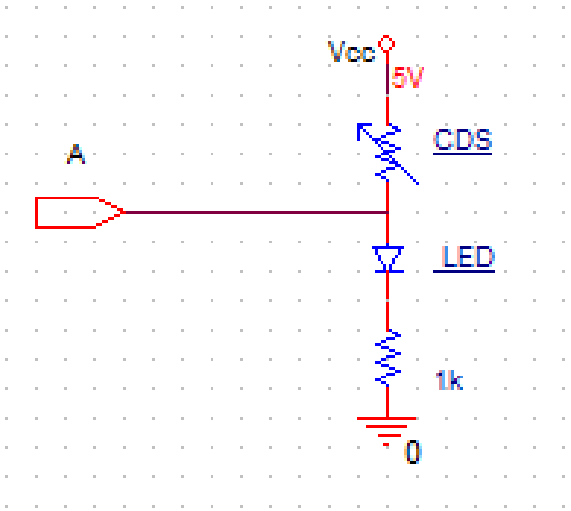


Fig. 4

Type	Max. Voltage	Max. power	Environmental temp.	Spectrum peak value
GL5516	150	90	-30~+70	540
GL5528	150	100	-30~+70	540
GL5537-1	150	100	-30~+70	540
GL5537-2	150	100	-30~+70	540

1. CDS (3)

- **실험 1**
  - 회로를 구성 전에 CDS 센서를 어두운 곳과 밝은 곳에서 멀티미터로 저항을 측정하여 차이를 비교해 보시오.



밝을 때(Ω)	어두울 때(Ω)

  - A의 파형의 변화에 대해 서술하시오.

2. PUT를 이용한 스피커 작동

- **PUT(Programmable Unijunction Transistor) – 2N6027**

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

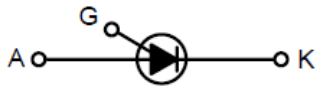
Rating	Symbol	Value	Unit
Power Dissipation* Derate Above 25°C	P_F $1/\theta_{JA}$	300 4.0	mW mW/°C
DC Forward Anode Current* Derate Above 25°C	I_T	150 2.67	mA mA/°C
DC Gate Current*	I_G	±50	mA
Repetitive Peak Forward Current 100 µs Pulse Width, 1% Duty Cycle 20 µs Pulse Width, 1% Duty Cycle*	I_{TRM}	 1.0 2.0	A
Non−Repetitive Peak Forward Current 10 µs Pulse Width	I_{TSM}	5.0	A
Gate to Cathode Forward Voltage*	V_{GKF}	40	V
Gate to Cathode Reverse Voltage*	V_{GKR}	−5.0	V
Gate to Anode Reverse Voltage*	V_{GAR}	40	V
Anode to Cathode Voltage* (Note 1)	V_{AK}	±40	V
Capacitive Discharge Energy (Note 2)	E	250	µJ
Power Dissipation (Note 3)	P_D	300	mW
Operating Temperature	T_{OPR}	−50 to +100	°C
Junction Temperature	T_J	−50 to +125	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

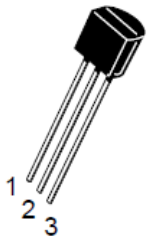
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

*Indicates JEDEC Registered Data

1. Anode positive, R_{GA} = 1000 Ω
   Anode negative, R_{GA} = open
2. E = 0.5 • CV^2 capacitor discharge energy limiting resistor and repetition.
3. Derate current and power above 25°C.

PUTs
40 VOLTS, 300 mW



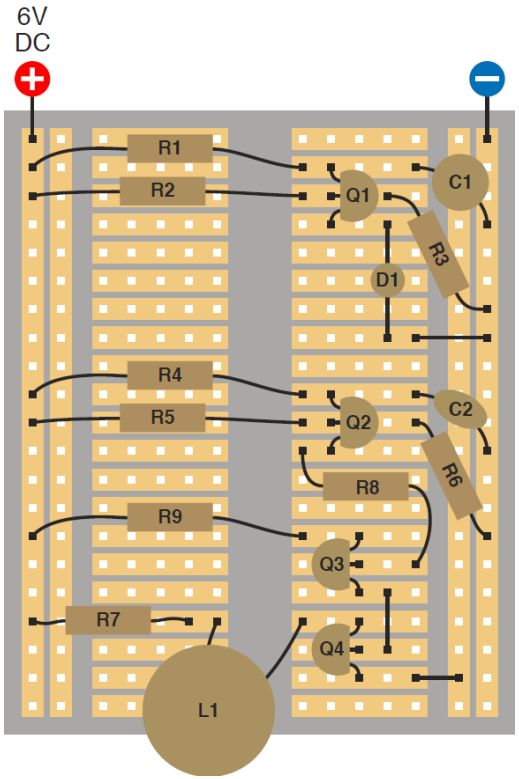


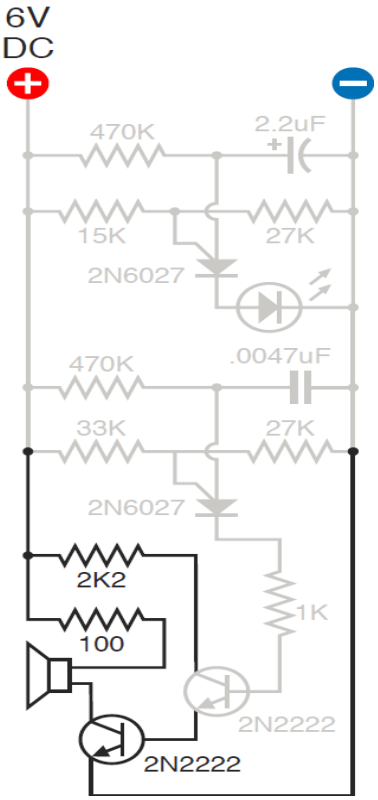
TO−92 (TO−226AA)
CASE 029
STYLE 16

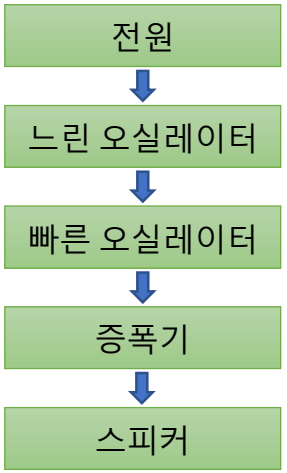
PIN ASSIGNMENT	
1	Anode
2	Gate
3	Cathode

3. PUT을 이용한 스피커 작동

- **실험 3**
  - 박자가 있는 형태의 출력 만들기







- Vcc(4~6V)를 인가하였을 때 스피커의 변화에 대하여 설명하시오.
  - 커패시터의 용량을 변경하여 차이점에 대해 설명하시오.