

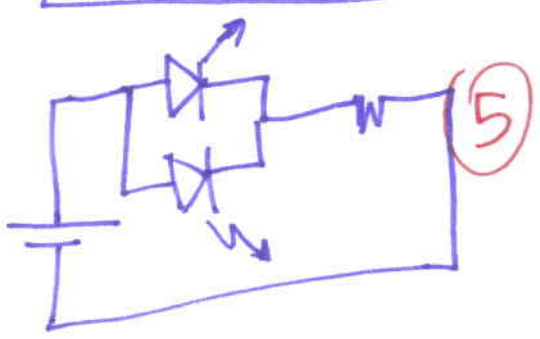
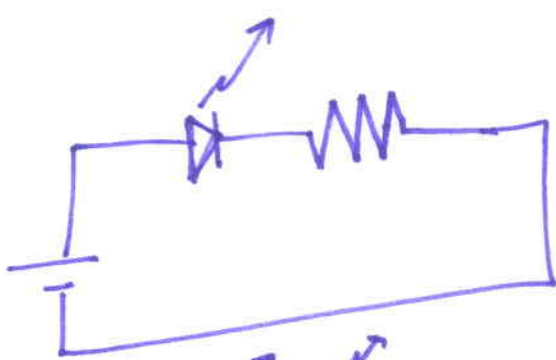
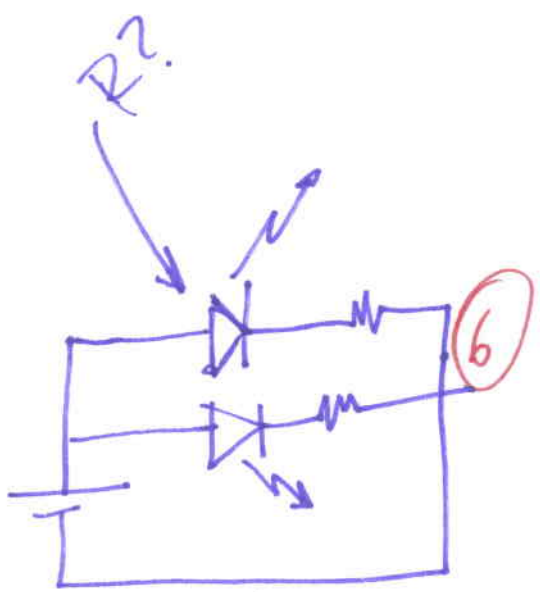
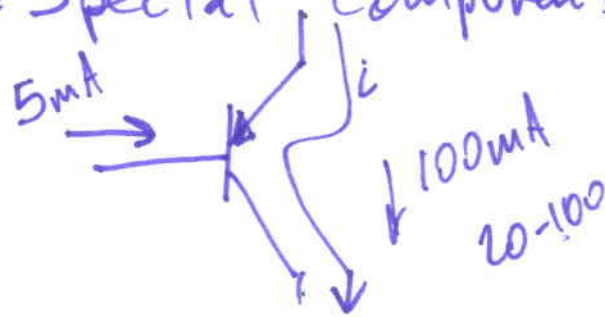
The following 4 pages are from last year's class & are helpful

Lab 1

①

- \* You can work in a team of 2 or 3
- \* Provide a bread board (1 per team)
- \* Provide your own wire
- \* We provide \* LEDs
- \* Resistors

\* "Special" Component Transistor

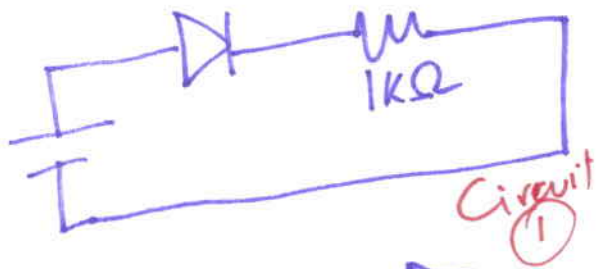


$V = IR$

EPIC 2148

ENGR 1202

2/21/2013

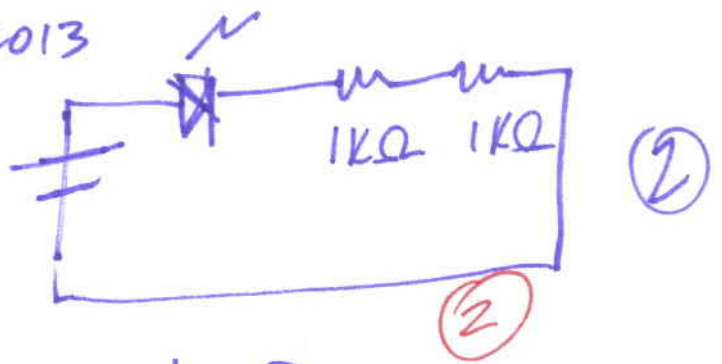


$$V = IR$$

$$3V = I \cdot 1k$$

$$\frac{3}{1000} = I$$

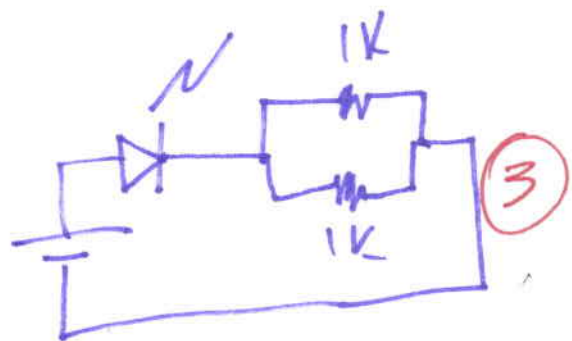
$$3mA = I$$



$$V = IR$$

$$3V = I \cdot 2k\Omega$$

$$1.5mA = I$$



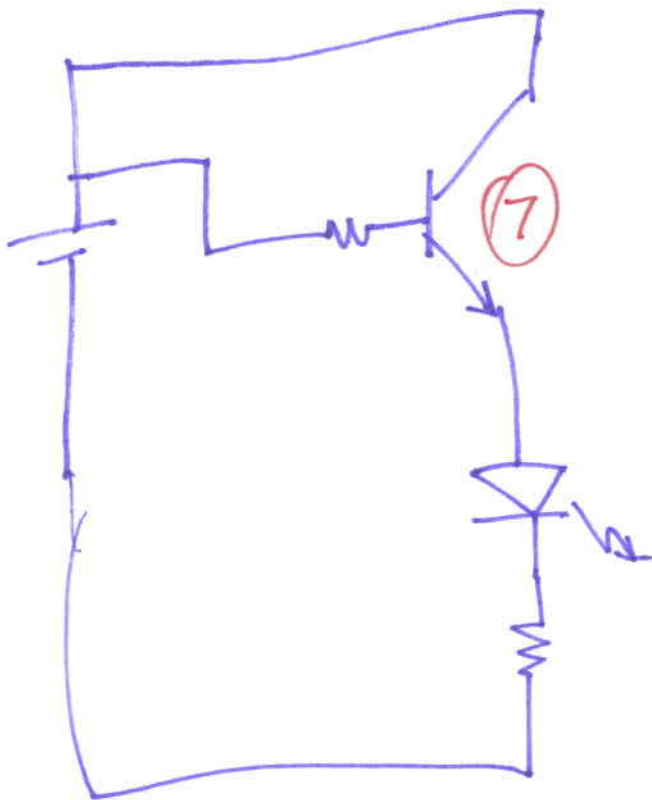
$$= \frac{1k \cdot 1k}{1k + 1k} \cdot \frac{R1 + R2}{R1 + R2}$$

$$= 500$$

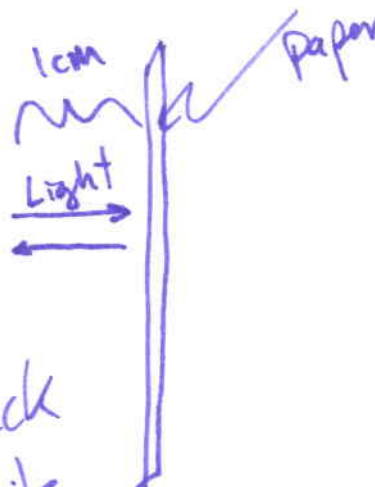
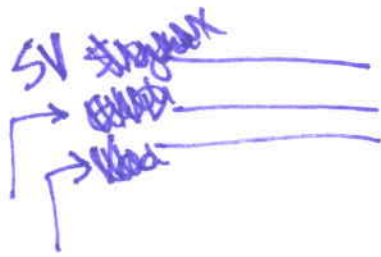
$$V = IR$$

$$V = I \cdot 500$$

$$6mA = I$$



### QTI Sensor



Black  
white

Skill - look up a data sheet

# P2N2222A

## Amplifier Transistors

### NPN Silicon

#### Features

- These are Pb-Free Devices\*

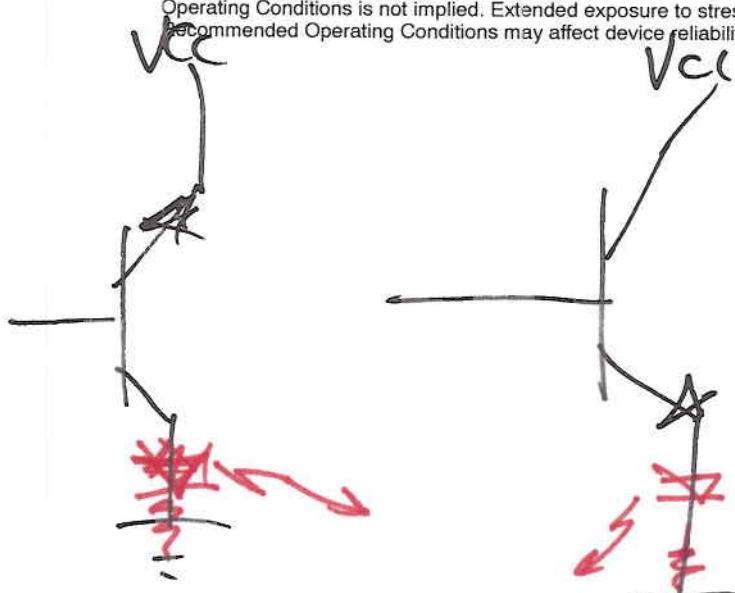
#### MAXIMUM RATINGS (T<sub>A</sub> = 25°C unless otherwise noted)

Characteristic	Symbol	Value	Unit
Collector - Emitter Voltage	V <sub>CEO</sub>	40	Vdc
Collector - Base Voltage	V <sub>CB0</sub>	75	Vdc
Emitter - Base Voltage	V <sub>EB0</sub>	6.0	Vdc
Collector Current - Continuous	I <sub>C</sub>	600	mAdc
Total Device Dissipation @ T <sub>A</sub> = 25°C Derate above 25°C	P <sub>D</sub>	625 5.0	mW mW/°C
Total Device Dissipation @ T <sub>C</sub> = 25°C Derate above 25°C	P <sub>D</sub>	1.5 12	W mW/°C
Operating and Storage Junction Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to +150	°C

#### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	200	°C/W
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	83.3	°C/W

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.

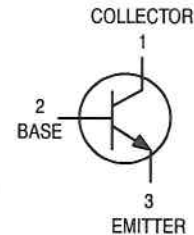


\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

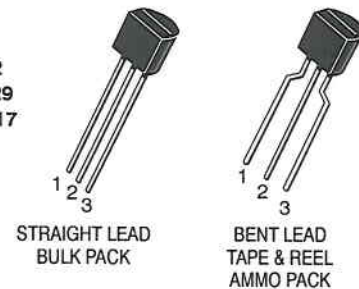


ON Semiconductor®

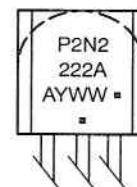
<http://onsemi.com>



TO-92  
CASE 29  
STYLE 17



#### MARKING DIAGRAM



- A = Assembly Location
- Y = Year
- WW = Work Week
- = Pb-Free Package

(Note: Microdot may be in either location)

#### ORDERING INFORMATION

Device	Package	Shipping†
P2N2222AG	TO-92 (Pb-Free)	5000 Units/Bulk
P2N2222ARL1G	TO-92 (Pb-Free)	2000/Tape & Ammo

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.