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Electronic Symbols and Formulae Sheets

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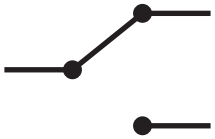
2EP01	GCSE Design and Technology: Electronic Products

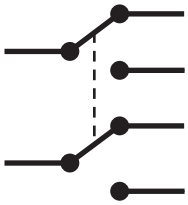
The following sheets contain examples of the common symbols that Edexcel will use in GCSE D&T Electronic Products examination papers. Centres are advised to ensure that their candidates are familiar with these symbols. These are standard symbols published by the Institute of Electrical and Electronics Engineers (IEEE). The complete set has not been published here as they are not all applicable to the GCSE D&T Electronic Products specification.

IEEE Electrical and Electronic Symbols for GCSE

Single pole single throw switch SPST



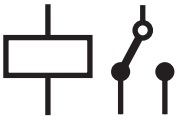
Single pole double throw switch SPDT



Double pole double throw switch DPDT

Push to break switch PTB

Push to make switch PTM



Relay

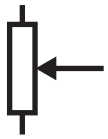
Light dependant resistor LDR

Thermistor

Piezo transsducer

Resistor

Variable resistor



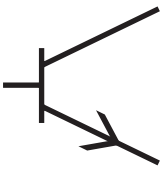
Potentiometer

Capacitor

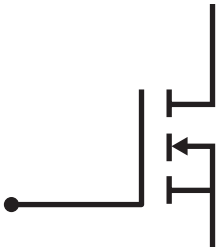
Polarised/Electrolytic Capacitor

Thyristor

Semiconductor diode

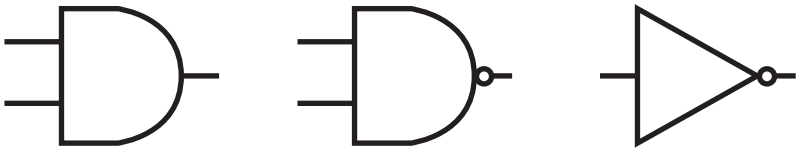


NPN transistor

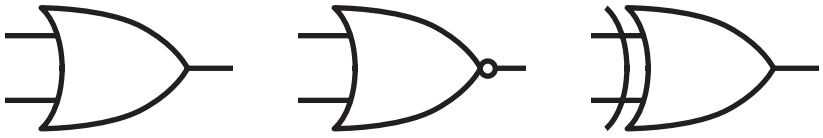


Field Effect Transistor

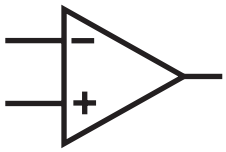
IEEE Electrical and Electronic Symbols for GCSE



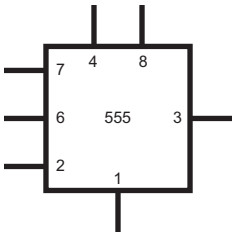
AND NAND NOT (Inverter)



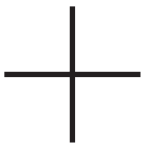
OR NOR XOR



Operational amplifier

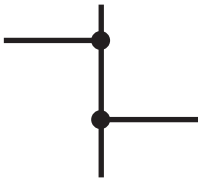


555 timer IC



Crossing of conductors with no electrical connection

Junction of conductors



Double junction

Primary or secondary cell

Battery of cells

Terminal

ac supply

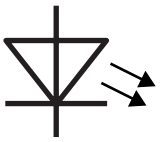
Earth

Ammeter

Voltmeter

IEEE Electrical and Electronic Symbols for GCSE

Bulb / Lamp



Light emitting diode LED

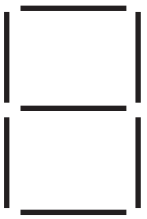
Buzzer

Loudspeaker

Solenoid

Motor

Moisture sensor (probe)



7 seg display

Formulae for GCSE Electronic Products

Formulae for GCSE Electronic Products

Electronic Products students should learn the following units and formulae:

Units

Current (amp)
Resistance (ohm)
Voltage (volt)
Capacitance (farad)

Resistors in Series

Rtotal = R1 + R2 + R3 etc.

Resistors in Parallel

$$\text{Rtotal} = \frac{R1 \times R2}{R1 + R2}$$

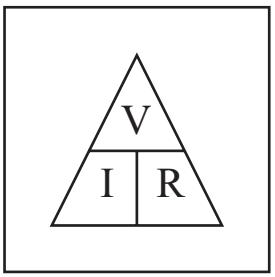
or

$$1/\text{Rtotal} = \frac{1}{R^1} + \frac{1}{R^2} + \frac{1}{R^3}$$

Time Period

Time period = Resistance x Capacitance (T = R x C)

Ohm's Law



Voltage = Current x Resistance
(V = I x R)

Resistance = Voltage / Current

Current = Voltage / Resistance

Resistor Colour Code

Colour	Band 1	Band 2	Band 3 No. of zeros	Band 4 % tolerance
Black	0	0	None	
Brown	1	1	0	1%
Red	2	2	00	2%
Orange	3	3	000	
Yellow	4	4	0000	
Green	5	5	00000	
Blue	6	6		
Violet	7	7		
Grey	8	8		
White	9	9		
				Gold - 5%
				Silver - 10%

Resistor values will relate to the E12 preferred range:
10, 12, 15, 18, 22, 27, 33, 39, 47, 56, 68, 82