

Power Budget

Team Number:	Team 209
Project Name:	Smart Door Sensor
Team Member Names:	Bryce, Mathew, Andrew, Dylan
Version:	01

A. List ALL major components (active devices, integrated circuits, etc.) except for power sources, voltage regulators, resistors, capacitors, or passive elements

All Major Components	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	PIC18F57Q43 Curiosity Nano	DM164150	+1.8V - 5.1V	1	100	100	mA
	Ultrasonic Sensor	HC-SR04	+5V	1	15	15	mA
	Op-Amp	MCP6004-I/P	+1.8V - 6V	1	0.1	0.1	mA
	+5V Voltage Regulator	L7805ABV	+5V - 18V	1	1500	1500	mA

B. Assign each major component above to ONE power rail below. Try to minimize the number of different power rails in the design.

+12V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	N/A	N/A	N/A	N/A	N/A	N/A	mA
					Subtotal	0	mA
					Safety Margin	25%	
					Total Current Required on +12V Rail	0	mA
c1. Regulator or Source Ch	+12V regulator	N/A	N/A	N/A	N/A	N/A	mA
					Total Remaining Current Available on +12V Rail	#VALUE!	mA

+5V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	PIC18F57Q43 Curiosity Nano	DM164150	+1.8V - 5.1V	1	100	100	mA
	Ultrasonic Sensor	HC-SR04	+5V	1	15	15	mA
	Op-Amp	MCP6004-I/P	+1.8V - 6V	1	0.1	0.1	mA
					Subtotal	115.1	mA
					Safety Margin	25%	
					Total Current Required on +5V Rail	143.875	mA
c2. Regulator or Source Ch	+5V Regulator	L7805ABV	+5V - 18V	1	1500	1500	mA
					Total Remaining Current Available on +5V Rail	1356.125	mA

-5V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	N/A	N/A	N/A	N/A	N/A	N/A	mA
					Subtotal	0	mA
					Safety Margin	25%	
					Total Current Required on -5V Rail	0	mA
c3. Regulator or Source Ch	-5V Regulator	N/A	N/A	N/A	N/A	N/A	mA
					Total Remaining Current Available on -5V Rail	#VALUE!	mA

+3.3V Power Rail	Component Name	Part Number	SupplyVoltageRange	Qty.	AbsoluteMaximumCurrent (mA)	TotalCurrent(mA)	Unit
	N/A	N/A	N/A	N/A	N/A	N/A	mA
					Subtotal	0	mA
					Safety Margin	25%	
					Total Current Required on +3.3V Rail	0	mA

c4. Regulator or Source Ch		+3.3V low-dropout regulator	N/A	N/A	N/A	N/A	N/A	N/A	#VALUE!	mA
Total Remaining Current Available on 3.3V Rail									#VALUE!	mA
C. For each power rail above, select a specific voltage regulator using the same process as for major component selection. Confirm that the Total Remaining Current Available on each rail above is not negative.										
D. Select a specific external power source (wall supply or battery) for your system, and confirm that it can supply all of the regulators for all of the power rails simultaneously. If you need multiple power sources, list										
External Power Source 1	Component Name	Part Number	SupplyVoltageRange	Output Voltage	AbsoluteMaximumCurrent (mA)		TotalCurrent(mA)		Unit	
Power Source 1 Selection	Plug-in Wall Supply	L6R36-090	264VAC	+9V - 36V	5000		5000		mA	
Power Rails Connected to External Power Source 1	+12V regulator	N/A	N/A	N/A	N/A		N/A		mA	
	+5V Regulator	L7805ABV	+5V - 18V	1	1500		1500		mA	
	+3.3V low-dropout regulator	N/A	N/A	N/A	N/A		N/A		mA	
Total Remaining Current Available on External Power Source 1								3500	mA	
External Power Source 2	Component Name	Part Number	SupplyVoltageRange	Output Voltage	AbsoluteMaximumCurrent (mA)		TotalCurrent(mA)		Unit	
Power Source 2 Selection	N/A	N/A	N/A	N/A	N/A		N/A		mA	
Power Rails Connected to External Power Source 2	-5V Regulator	N/A	N/A	N/A	N/A		N/A		mA	
	Total Remaining Current Available on External Power Source 2								#VALUE!	mA
E. Calculate Battery Life (if applicable). For each battery, also check the worst-case lifetime of the battery by indicating the capacity in mAh.										
	Component Name	Part Number	SupplyVoltageRange		Capacity(mAh)		RequiredByRegulators			
	Battery	N/A	N/A	N/A	N/A		N/A			
	Battery Life							#VALUE!	hours	
Notes										

External Supply Voltage should be determined by the dropout voltage for highest-voltage regulator (e.g., +14V for a +12V regulator).

If you have multiple units in your design (e.g., a base unit and remote unit) then you need a separate power budget for each unit