IR Emitter/Detector Subsystem Power Budget

Team Number: 103

External Power Source 1

Project Name: Private-Use Door Automation

+5V Regulator

Team Member Names: Seth Merwin, Isaac Smith, Christo Joseph, Lakshanand Sugumar

Op Amp MCP602: SOURCE 12V 5A Switching Power Supply 352 +5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620	7Q43-CNANO +1.8 - 5.5\(2-1/P \) +2.5 - 5.5\(\) 110 - 220\(\) Supply Voltage Range 0 N/A 7Q43-CNANO +1.8 - 5.5\(\)	V 1 1 2 4 4 2 V 1	200 350 30 Subtotal Safety Margin Total Current 5000 Total Remaining Absolute Maximum Current (mA) 200 350	400 350 60 810 25% 1012.5 5000 3987.5 Total Current (mA) 400	mA mA mA mA mA mA mA
SOURCE 12V 5A Switching Power Supply 352 +5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	2-I/P +2.5 - 5.5 110 - 220\text{ Supply Voltage Range 0 N/A 7Q43-CNANO +1.8 - 5.5\text{ 110 - 220\text{ N/A 7Q43-CNANO +1.8 - 5.5\text{ N/A 7 - 5.5\text{	V 1 1 2 4 4 2 V 1	30 Subtotal Safety Margin Total Current 5000 Total Remaining Absolute Maximum Current (mA) 200 350	60 810 25% 1012.5 5000 3987.5 Total Current (mA)	mA mA mA mA Unit
SOURCE 12V 5A Switching Power Supply 352 +5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Supply Voltage Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 2V 1	Subtotal Safety Margin Total Current 5000 Total Remaining Absolute Maximum Current (mA) 200 350	810 25% 1012.5 5000 3987.5 Total Current (mA)	mA mA mA MA
+5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Supply Voltage t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 SV 1	Safety Margin Total Current 5000 Total Remaining Absolute Maximum Current (mA) 200 350	25% 1012.5 5000 3987.5 Total Current (mA)	mA mA mA
+5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Supply Voltage t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 SV 1	Total Current 5000 Total Remaining Absolute Maximum Current (mA) 200 350	1012.5 5000 3987.5 Total Current (mA)	mA mA mA
+5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Supply Voltage t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 SV 1	Absolute Maximum Current (mA) 200 350	5000 3987.5 Total Current (mA)	mA mA Unit
+5V Power Rail Component Name Part 940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Supply Voltage t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 SV 1	Absolute Maximum Current (mA) 200 350	Total Current (mA) 400	mA Unit mA
940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Voltage t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 iV 1	Absolute Maximum Current (mA) 200 350	Total Current (mA)	Unit
940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	Voltage t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 iV 1	Maximum Current (mA)	Current (mA)	mA
940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 SV 1	Current (mA) 200 350	(mA) 400	mA
940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	t Number Range 0 N/A 7Q43-CNANO +1.8 - 5.5\	# 2 SV 1	Current (mA) 200 350	(mA) 400	mA
940nm IR Emitting Diode TSAL620 Microcontroller PIC18F57	0 N/A 7Q43-CNANO +1.8 - 5.5\	2 iV 1	200 350	400	
Microcontroller PIC18F57					
		5V 2	30	60	mA
			Subtotal	810	mA
			Safety Margin	25%	
	Total Co	urrent Req	uired on +5V Rail	1012.5	mA
Regulator +5V Regulator LM7805	+5 - 35V	/ 1	1500	1500	mA
	Total Remaining Cu	urrent Avai	lable on +5V Rail	487.5	mA
	Supply		Absolute	Total	
	Voltage			Current	
External Power Source 1 Component Name Part		•		(mA)	Uni
External Power Source 1 Component Name Part Power Source 1 Selection 12V 5A Switching Power Supply 352	t Number Range	Voltage		UIIIA	Ulli

LM7805

+5 - 35V

Total Remaining Current Available on External Power Source 1

1500

1500 mA

3500 mA