3.3 Voltage regulator - LM2937-3.3

Part	Worst Case Current Draw @ 3.3 V	Comment
Processor	140 mA	Total output current sunk by all I/O and Control Pins
LED (2)	15 mA (30 mA total)	Assuming 100% on rate, based on resistor and LED voltage drop values
Total	170 mA	

LP2950CZ

Variable	Value	Comment
$max(T_i)$	125 C	Maximum operating junction temperature
i_{out}	170 mA	Maximum current draw of 3.3 V components
v_{in}	9.6 V	Maximum voltage of a 9 V battery
v_{out}	3.3 V	Operating voltage of components
Θ_{ja}	65 C/W	Thermal resistance of junction to ambient per datasheet
T_a	38 C	Hot day

$$T_j = i_{out}(v_{in} - v_{out})(\Theta) + T_a \approx 108\,C < max(T_i)$$

5V Voltage regulator µA7805

Part	Worst Case Current Draw @ 5 V	Comment
L298N H Bridge (3)	70 mA (210 mA total)	Max assuming: Ven = H; Vi = H; IL= 0
GA12-N20 Motors (6)	30 mA (180 mA total)	Current consumed under load at 500 rpm
Total	390 mA	

µA7805

Variable	Value	Comment
$max(T_i)$	150 C	Maximum operating junction temperature
i_{out}	390 mA	Max current draw of 5 V components
v_{in}	9.6 V	Maximum voltage of 9 V battery
v_{out}	5 V	Operating voltage of components
Θ_{ja}	19 C/W	Thermal resistance of junction to ambient per datasheet
T_a	38 C	Hot Day

$$T_j = i_{out}(v_{in} - v_{out})(\Theta_{jc}) + T_a \approx 72\,℃ < max(T_i)$$