



# BOM process

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[1]

U3, the MCP73833 battery charger and U4, the ADM3101E RS232 line driver will both get specific part numbers right off the bat. I may change packages as I get into the layout, but I still will usually fill the BOM for those items when I put them in the schematic.

Item #	Qty	Ref Des	Manufacturer	Manf part num	DigiKey Part number	Description	Package	Type
1	1	U1	Microchip	PIC18F45K50-I/MV	PIC18F45K50-I/MV-ND	MCU	40-UFQFN 5x5mm	BGA
2	1	U2	Allegro	A3901SEJTR-T	620-1159-1-ND	Motor driver	10-TDFN 3x3mm	BGA
3	1	U3	Microchip	MCP73833-AMI/UN	MCP73833-AMI/UN-ND	Li Charger	10-MSOP	FP
1	1	U3alt	Microchip	MCP73833T-AMI/MF	MCP73833T-AMI/MF-ND		10-DFN 3x3mm	DNS

[2]

I've put U3, the charger chip in my BOM twice, each with a different package, because my preferred package isn't available at the moment but might be soon. It's not best-practice, but you can do that as long as the reference designator differs in some way and the part is labeled "DNS" (Do Not Stuff). I simply gave my alternate the part number "U3alt".

R6 and R8 get specific values because the battery charger chip calls out for specific values. Q1 will be a small P-channel MOSFET, but the specific part number can come later. All of the rest of the resistors and caps will also be defined later.

The biggest trap I have to watch for when filling out the BOM in this order is forgetting any design decisions or leaving fields blank when I go back and fill in the rest of the part number information.

12	2	C3, C4				.01uf, 25V	0402	SMT
13	2	C5, C6				.1uf 50V	0603	SMT
14	2	C7, C9	AVX	TAJA106M016RNJ	478-3859-1-ND	10uf, 16v	1206	SMT
		C8, C10, C11, C12,						
15	7							
16	1	C16	GRM	GRM155R71C224KA12D	490-5418-1-ND	.22uf, 16V	0402	SMT
17	3	R1, R9,	Panasonic			24K	0402	SMT
		R2, R3,						
18	6	R4, R5,	Yageo					
19	1	R6	Yageo	RC0402JR-072KL	311-2.0KJRCT-ND	2K	0402	SMT
20	1	R8	Yageo	RC0402JR-0710KL	1-10KJRCT-ND	10K	0402	SMT

[3]

This is typical of a BOM of mine just after I've finished the layout. If I were building this by hand out of my own parts bins, this would be fine. But when sending it out for assembly, it's not. I personally know that C3 and C4 could be any of a dozen different part numbers. The only things that matter in that case are that it's .01uf, it's an 0402 and the voltage rating is 10 volts or higher. I know that R2, R3, R4 and R5 are just LED current limiting resistors and can be anything between 220 and 680 ohms for this particular circuit.

I know those things, but the assembly house doesn't know that those parts have pretty loose specs. It will just cause delays if I don't find an exact part number before sending it out. It may seem obvious, but just because it's obvious to me

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doesn't mean that it's obvious to anyone else. That ambiguity has to be gone before anyone else sees it.

Duane Benson  
Knock three times  
on the ceiling if you want p-channel.  
Twice on the pipe if the answer is n-channel.

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