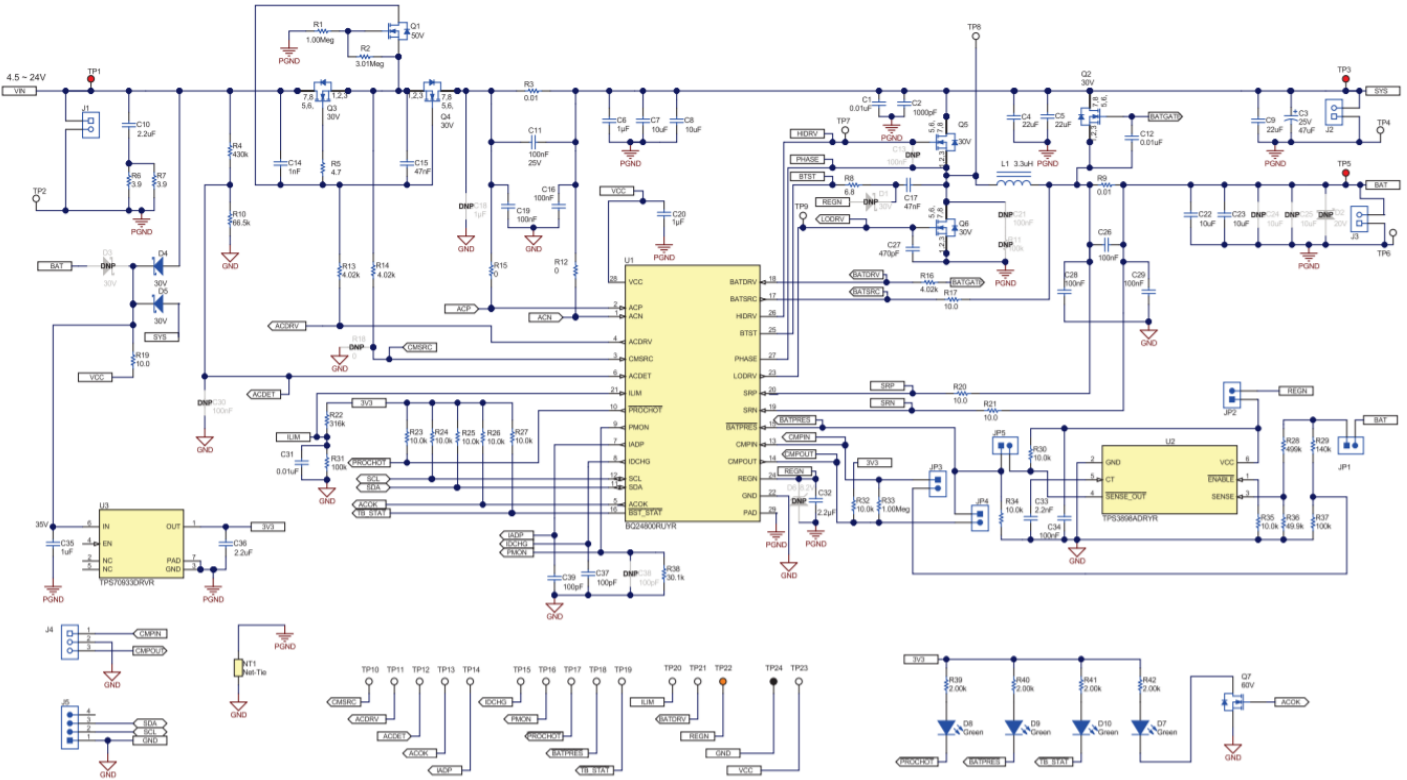
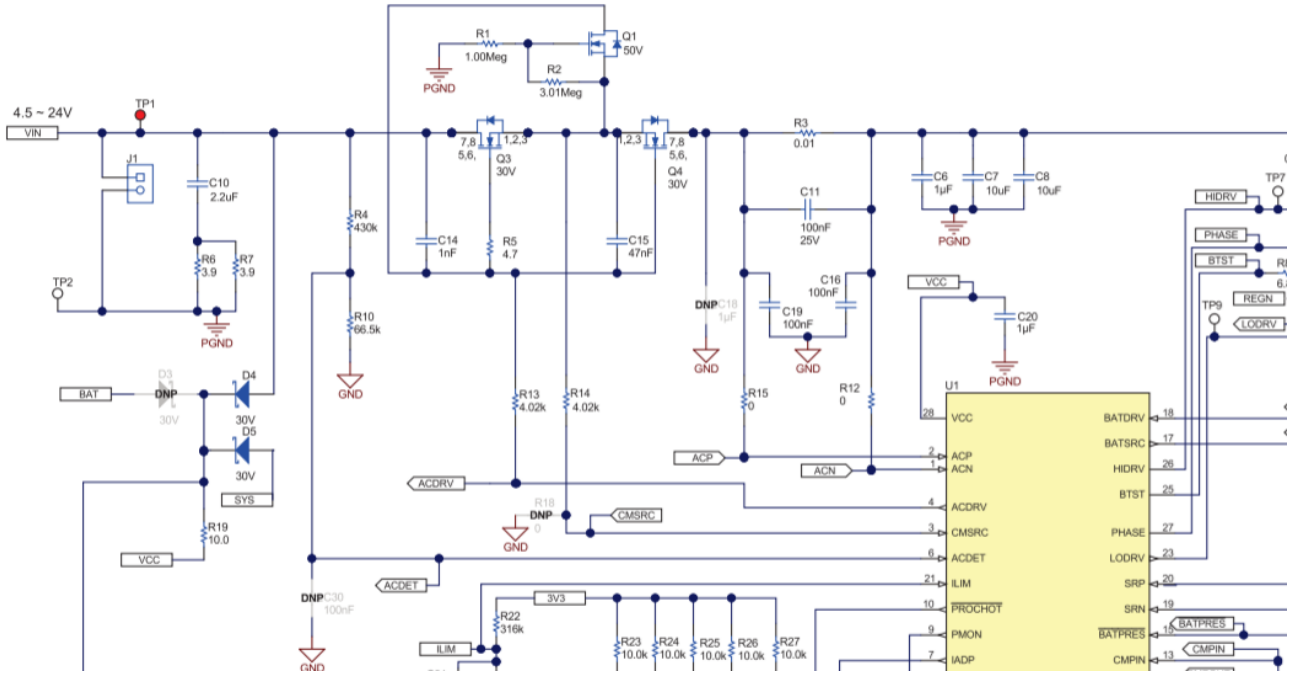


BQ24800 TYPICAL SCHEMATIC



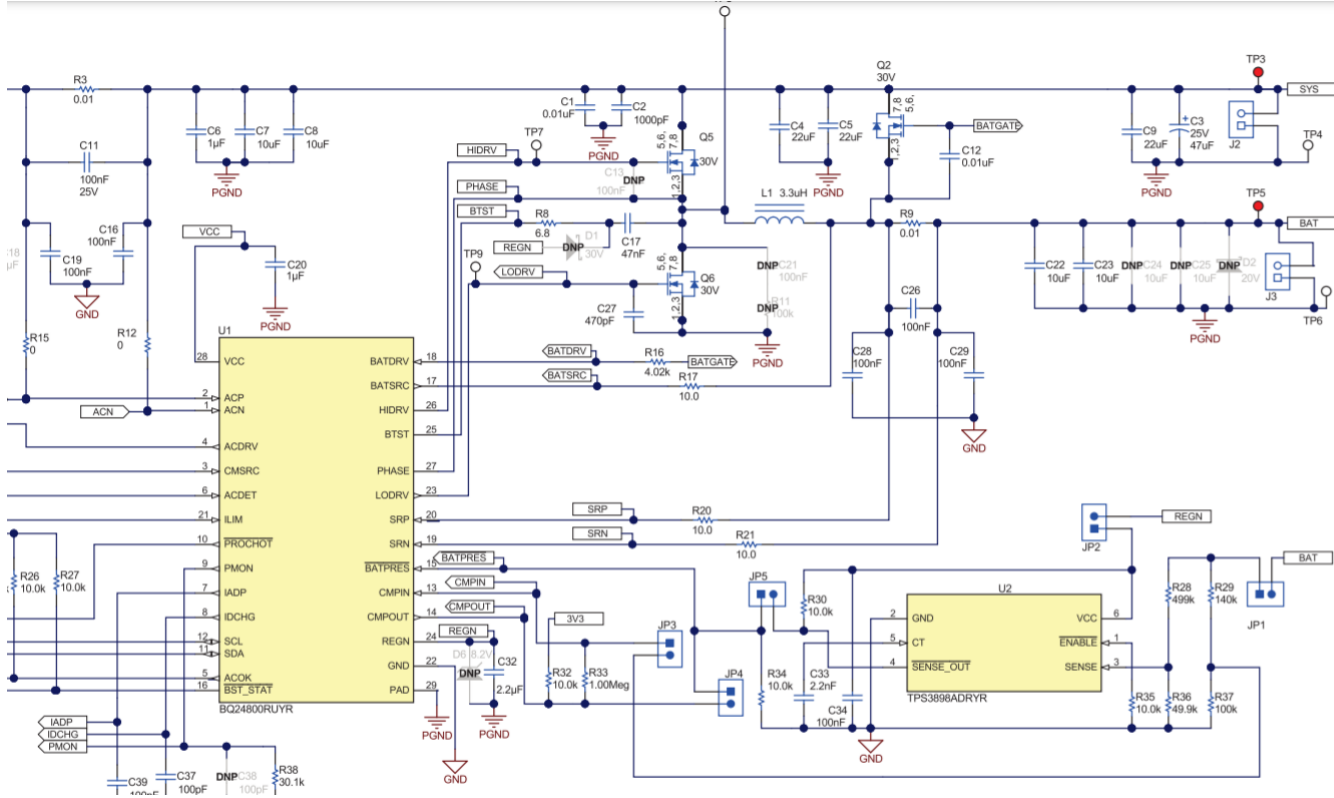
\*Please refer to BQ24800 EVM User's Guide and datasheet for more information. If there are any discrepancies, the datasheet should be referred.

**BQ24800 - Input Power Design**



INPUT POWER - DESIGN CHECKLIST							
PIN NAME	REQUIREMENT	COMPONENT	MIN	TYP	MAX	DESCRIPTION	
ACDRV & CMSRC	<b>Input source to the charger</b>						
	pin 3 and pin 4	Required	Q3	-	-	-	Back-to-back input protection N-Channel MOSFETs
		Required	R14	-	4.02 kΩ	-	Current-limiting resistors
	pin 3 and pin 4	Recommended	R6/R7	-	2 Ω	-	Input hot-plug snubber circuit
		Recommended	C10	-	2.2 uF	-	Used to dampen the ringing due to input plug-in
			R5	-	4.7 Ω	-	
C14			-	1000 pF	-	Input MOSFETs turn-on/turn-off delay	
C15	-	0.047 uF	-				
ACP-CAN	<b>Differential input current sensing</b>						
	pin 1 and pin 2	Required	R3 (R <sub>int</sub> )	-	10 mΩ	-	Input current sensing resistor
		Recommended	C6	-	1 uF	-	Switching noise filtering
		Recommended	C11	-	0.1 uF	-	Differential mode noise filtering
		Recommended	C16	-	0.1 uF	-	Common mode noise filtering
Recommended		C19	-	0.1 uF	-		
ACDET	<b>AC Detect Resistor-Divider</b>						
	6	Required	R4	-	* kΩ	-	High side of resistor-divider for adapter detection threshold
Required		R10	-	* kΩ	-	Low side of resistor-divider for adapter detection threshold	
VCC	<b>IC power positive supply</b>						
	28	Required	R19	-	10 Ω	-	VCC inrush current limiting
		Required	C20	-	1.0 uF	-	VCC decoupling capacitor
		Required	D4	-	-	-	-
D5			-	-	-	-	Adapter/Battery Diode-OR

## BQ24800 - Output Power Design



### OUTPUT POWER - DESIGN CHECKLIST

PIN NAME	REQUIREMENT	COMPONENT	MIN	TYP	MAX	DESCRIPTION	COMMENTS AND RELEVANT EQUATIONS
						<b>System output</b>	
	Required	C7/C8		20 uF		High frequency converter input capacitor(s)	For more information please refer to EVM and "Application and Implementation" section of the datasheet
	Required	C4/C5		44 uF		VSYS filtering caps	
	Required	C9/C3		69 uF			
						<b>BATFET power path gate driver</b>	
BATDRV	Required	Q2		-		External N-Channel BATFET for power path	
	Required	R16		4.02 kΩ		BATDRV current limiting resistor	
	Recommended	C12		0.01 uF		BATFET turn on/off delay capacitor	
						<b>Switching Regulator Output Stage</b>	
	Required	L1		*uH		Switching regulator inductor	For more information, please refer to EVM and "Application and Implementation" section of datasheet.
Switching Regulator Output Stage	Required	C22/C23		*uF		Switching regulator output capacitor(s)	
						<b>Differential charge current sensing</b>	
	Required	R9 (R <sub>CS</sub> )		10 mΩ		Charge current sensing resistor	
SRP-SRN	Recommended	C26		0.1 uF		Differential mode noise filtering	
	Recommended	C28		0.1 uF		Common mode noise filtering	
	Recommended	C29		0.1 uF			
						<b>Internal LDO output</b>	
REGN	Required	C32		2.2 uF		Internal LDO output stabilizing capacitor	

Table 20. Suggested Component Values by Charge Current for 600-kHz and 800-kHz (Default) Switching Frequencies

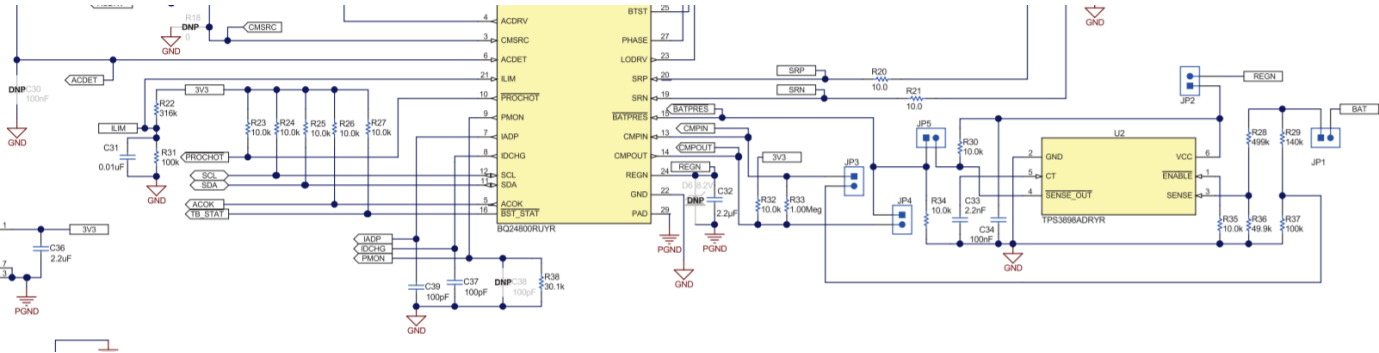
CHARGE CURRENT	2A	3A	4A	6A	8A
L <sub>1</sub> (μH)	6.8 or 8.2	5.6 or 6.8	3.3 or 4.7	3.3	2.2
C <sub>BATFET</sub> (μF)	20	20	30	30	40
Sense Resistor (mΩ)	10 or 20	10 or 20	10 or 20	10	10

Table 21. Suggested Component Values by Charge Current for 300-kHz and 400-kHz Switching Frequencies

CHARGE CURRENT	2A	3A	4A	6A	8A
L <sub>1</sub> (μH)	Not Recommended	Not Recommended	6.8 or 8.2	5.6	4.7
C <sub>BATFET</sub> (μF)	Not Recommended	Not Recommended	20	20	20
Sense Resistor (mΩ)	Not Recommended	Not Recommended	10 or 20	10	10

LODRV	23	Recommended	C27		470 pF	Low-Side N-Channel MOSFET driver	
		Required	Q6		-	Converter Low-Side N-Channel MOSFET	Slowing MOSFET turn-on/off reduces noise and EMI, but also reduces efficiency.
PHASE & BTST	25 & 27	Required	C17		47nF	Converter bootstrap capacitor	
		Recommended	R8		6.8 Ω	Bootstrap capacitor snubbing resistor	
		Optional	R11		* Ω	Switching converter snubber circuit	Snubber circuit values empirically determined if required. Recommend unpopulated footprint on new designs.
			C21		* uF		
HIDRV	26	Required	Q5		-	High-Side N-Channel MOSFET driver	
		Optional (DNP)	C13		* pF	Converter active High-Side N-Channel MOSFET	Slowing MOSFET turn-on/off reduces noise and EMI, but also reduces efficiency.
EMI Reduction	HIFET	Optional	C2		1 nF	EMI	
		Optional	C1		10 nF	HI-side FET EMI Filter Caps	

**BQ24800 - Miscellaneous Components Design**



Miscellaneous - DESIGN CHECKLIST							
PIN	REQUIREMENT	COMPONENT	MIN	TYP	MAX	DESCRIPTION	COMMENTS AND RELEVANT EQUATIONS
SDA/SCL pin 11 and pin 12	Required	R24		10 kΩ		Pull-up resistors to 3.3V	
	Required	R25		10 kΩ			
ACOK	Required	R26		10 kΩ		ACOK Pullup ACOK pull-up resistor to 3.3V	
/PROCHOT	Required	R23		10 kΩ		Prochot Pullup PROCHOT pull-up resistor to 3.3V	
PMON	Optional	R38		* Ω		Power Monitor	
	Optional	C38		0	100 pF		
IDCHG	Optional	C37		100 pF	100 pF	Discharge Current	
IADPT	Optional	C39		100 pF	100 pF	Adapter Current	
ILIM	Required	R22		* Ω		External Current Limit	
	Required	R31		* Ω			
/BST_STAT	Optional	R27		10 kΩ		Hybrid Power Boost Status /BST_STAT pull-up resistor to 3.3V	
CMPIN/CMPOUT	Optional			-		Independent Comparator	If unused, Ground CMPIN and float CMPOUT
AGND & PAD	Required	-		-		IC Ground return	Recommend separate analog and power ground. AGND pin 22 connects to analog ground, PAD connects to power ground. Join analog and power ground at single point with 0-ohm resistor, net tie or 10 mil trace.