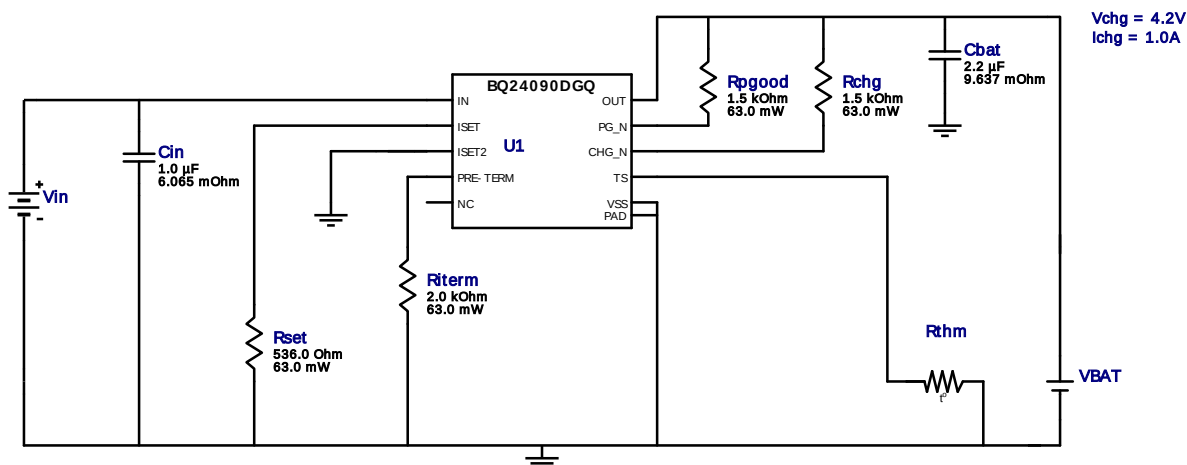


WEBENCH® Design Report

Design : 4077713/59 BQ24090DGQR
BQ24090DGQR 5.0V-6.0V to 4.20V @ 1.0A

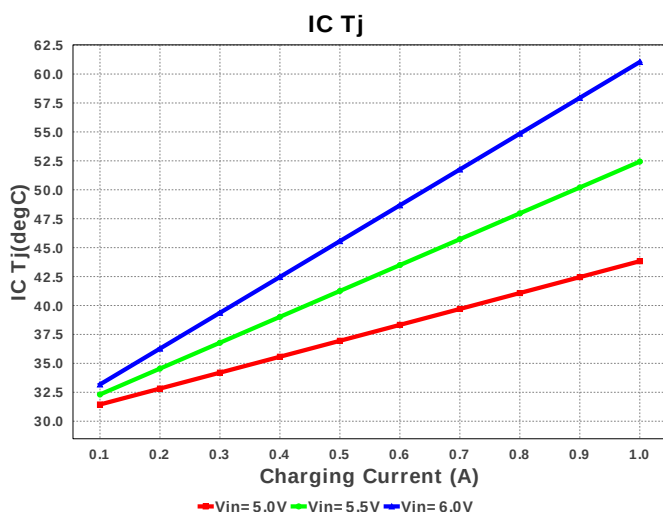
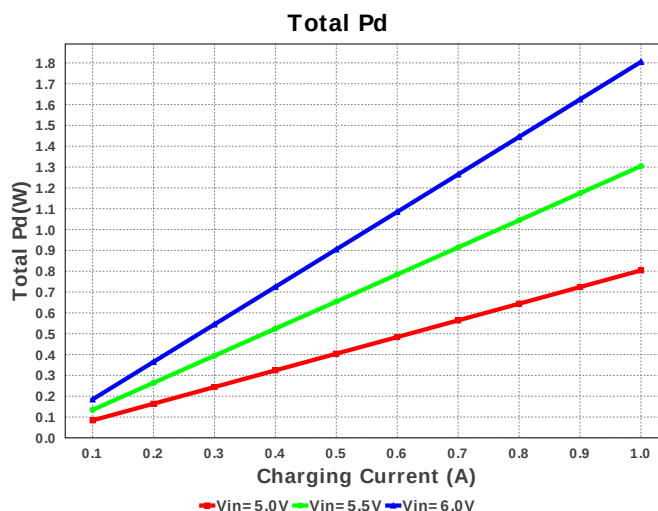
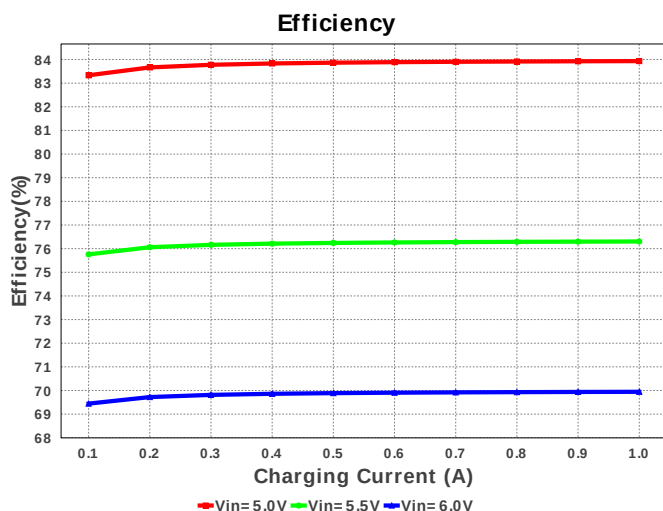


My Comments

No comments

Electrical BOM

#	Name	Manufacturer	Part Number	Properties	Qty	Price	Footprint
1.	Cbat	MuRata	GRM188R61A225KE34D Series= X5R	Cap= 2.2 uF ESR= 9.637 mOhm VDC= 10.0 V IRMS= 1.24283 A	1	\$0.02	 0603 5 mm ²
2.	Cin	MuRata	GRM188R61A105KA61D Series= X5R	Cap= 1.0 uF ESR= 6.065 mOhm VDC= 10.0 V IRMS= 1.30675 A	1	\$0.01	 0603 5 mm ²
3.	Rchg	Vishay-Dale	CRCW04021K50FKED Series= CRCW..e3	Res= 1.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
4.	Rterm	Vishay-Dale	CRCW04022K00FKED Series= CRCW..e3	Res= 2.0 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
5.	Rpgood	Vishay-Dale	CRCW04021K50FKED Series= CRCW..e3	Res= 1.5 kOhm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
6.	Rset	Vishay-Dale	CRCW0402536RFKED Series= CRCW..e3	Res= 536.0 Ohm Power= 63.0 mW Tolerance= 1.0%	1	\$0.01	 0402 3 mm ²
7.	Rthm	MuRata	NCP15XH103E03RC Series= NCP15	Thermistor	1	\$0.03	 0402 3 mm ²
8.	U1	Texas Instruments	BQ24090DGQR	Switcher	1	\$0.40	 DGQ0010D_NV_N 24 mm ²



Operating Values

#	Name	Value	Category	Description
1.	BOM Count	8	General	Total Design BOM count
2.	Cell Capacity	2.0 000mAh	General	Cell Capacity
3.	Cells in Parallel	1.0	General	Cells in Parallel
4.	Cells in Series	1.0	General	Cells in Series
5.	FootPrint	48.0 mm ²	General	Total Foot Print Area of BOM components
6.	Total BOM	\$0.5	General	Total BOM Cost
7.	Total Battery Capacity	2.0 000mAh	General	Total Battery Capacity
8.	IBAT_SHORT	15.0 mA	Op_Point	Source current for BAT pin short-circuit detection
9.	ICThetaJA Effective	17.2 degC/W	Op_Point	Effective IC Junction-to-Ambient Thermal Resistance
10.	Ichg_OP	1.0 A	Op_Point	Battery charging current
11.	Ichg_Sch	1.0 A	Op_Point	Charge current selected
12.	IinMax_Sch	1.0 A	Op_Point	Maximum input current selected
13.	Iprecharge	250.0 mA	Op_Point	Pre-charge Current
14.	Itermination	125.0 mA	Op_Point	Termination comparator threshold for termination detection
15.	VBAT_LOWV	2.5 V	Op_Point	Pre-charge to fast-charge transition threshold
16.	VBAT_SHORT	800.0 mV	Op_Point	BAT pin short-circuit detection threshold
17.	Vchg_OP	4.2 V	Op_Point	Battery output voltage
18.	Vchg_Sch	4.2 V	Op_Point	Charge voltage selected
19.	Efficiency	69.944 %	Op_point	Steady state efficiency
20.	IC Tj	61.043 degC	Op_point	IC junction temperature
21.	VIN_OP	6.0 V	Op_point	Vin operating point
22.	Total Pd	1.805 W	Power	Total Power Dissipation

Design Inputs

#	Name	Value	Description
1.	IchgMax	1.0	Ichg
2.	IinMax	1.0	IinMax
3.	Vchg	4.2	Vchg
4.	VinMax	6.0	Maximum input voltage
5.	VinMin	5.0	Minimum input voltage

#	Name	Value	Description
6.	base_pn	BQ24090	Base Product Number
7.	source	DC	Input Source Type
8.	Ta	30.0	Ambient temperature

Design Assistance

1. **BQ24090** Product Folder : <http://www.ti.com/product/bq24090> : contains the data sheet and other resources.

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