Application Report
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Selecting the Best bq2407x, bq2423x Single Cell Battery Charger for your Application

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ABSTRACT

The bq2407x, bq2407xT, bq2423x series of devices are integrated Li-ion linear chargers and system power path management devices targeted at space-limited portable applications. The devices operate from either a USB port or AC adapter. This application note provides a selection table that highlights different specification and feature of these linear chargers. If dual input is needed, the bq2403x could be a good option. If a switch mode charger is needed, consider using bq2416x for dual input applications or bq2427x for single.

Table 1. Selection Table

Specification or Feature	bq24230	bq24232	bq24072	bq24073	bq24074	bq24075	bq24079	bq24072T	bq24075T	bq24079T
Minimum Vin (V)	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35	4.35
Maximum Vin (V)	6.4	10.2	6.4	6.4	10.2	6.4	6.4	6.4	6.4	6.4
VOUT(REG)(V)	4.4	4.4	V_{BAT}+225mV	4.4	4.4	5.5	5.5	V_{BAT}+225mV	5.5	5.5
VOVP(V) (1)	6.6	10.5	6.6	6.6	10.5	6.6	6.6	6.6	6.6	6.6
Battery Charge Voltage (V)	4.2	4.2	4.2	4.2	4.2	4.2	4.1	4.2	4.2	4.1
VDPPM (V) (2)	VO(REG) – 100 mV	VO(REG) – 100 mV	VO(REG) – 100 mV	VO(REG) – 100 mV	VO(REG) – 100 mV	4.3V	4.3V	VO(REG) – 100 mV	4.3V	4.3V
Functions	TD (3)	ITERM (4)	TD (3)	TD (3)	ITERM (4)	SYSOFF (5)	SYSOFF (5)	TD (3)	SYSOFF (5)	SYSOFF (5)
Status Indication	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)	CHG, PG (6)
Adapter Current Limiting	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Max Input Current (A)	0.5	0.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Max Charge Current	0.5	0.5	1.500 (7)	1.500 (7)	1500 (7)	1500 (7)	1500 (7)	1500 (7)	1500 (7)	1500 (7)
Package	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16	3x3 QFN-16
Temp Sensing Mode (TS) (8)	Current Mode	Current Mode	Current Mode	Current Mode	Current Mode	Current Mode	Current Mode	Voltage Mode	Voltage Mode	Voltage Mode
USB (9)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Termination Current	Internally Set	Programmable	Internally Set	Internally Set	Programmable	Internally Set	Internally Set	Internally Set	Internally Set	Internally Set

(1) Overvoltage protection (OVP) circuit is implemented that shuts off the internal LDO and discontinues charging when $V_{IN} > V_{OVP}$ for a period long than $t_{DGL(OVP)}$.
(2) Dynamic Power-Path Managemen
(3) Termination Disable Input. Connect TD high to disable charger termination. Connect TD to VSS to enable charger termination.
(4) Termination Current Programming Input
(5) System Enable Input
(6) PG: Power Good for AC Adapter and USB Port Present Status Outputs. CHG: Charge Status Indicator Output.
(7) The IC operational charging life is reduced to 20,000 hours, when charging at 1.5A and 125°C. The thermal regulation feature reduces charge current if the IC's junction temperature reaches 125°C; thus without a good thermal design the maximum programmed charge current may not be reached.
(8) Device features an external battery pack temperature monitoring input. The TS input connects to the NTC thermistor in the battery pack to monitor battery temperature and prevent dangerous over-temperature conditions.
(9) Integrated USB Charge Control

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