連顧科技有限公司 Linkas Tech. Inc.



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LSK105, Li & NiMH Battery 4 Channel (6 Slots) Priority Charge Control with LED Indication IC Brief Specification

A.) Input Power: Type-C, 5V/3A

- B.) Battery type (total 6 Slots for 4 independent control channel), which
 - a.) Li Battery (18650): 2 Slots
 - b.) NiMH Battery (AA, or AAA): 4 Slots (2 slots as one channel), The same channel of 2 slots must be AA (or AAA) batteries at the same time, AA & AAA batteries cannot be mixed.

C.) Charge control flow:

- 1.) Priority Option: by using Largest current of total power to charge 1st priority Slot, after charge full, then charge 2nd priority Slot. And so on to charge all Slots.
 - -Priority Selection: Base on customer's different models (or directly select by end user), can be set Li Battery or NiMH battery as 1st priority. The default is Li battery.
 - -Priority Largest Charge Current will be base on Battery type:
 - Li Battery (18650, 2500mAh): 2500mA, around 1.2 hr to charge full.
 - NiMH Battery (AA, 2800mAh): 2500mA, around 1.4 hr to charge full.
 - NiMH Battery (AAA, 1000mAh): 1000mA, around 1.2 hr to charge full.
 - -Example of Priority : Slot # 1, Slot # 2 are Li Battery,

Slot # 3 & 4, Slot # 5 & 6 are NiMH Battery.

a.) If Priority is Li Battery: The charge sequence is following:

Slot # 1 charge full, then charge Slot # 2.

Slot # 2 charge full, then charge Slot # 3 & 4.

Slot # 3 & 4 charge full, then charge Slot # 5 & 6.

b.) If Priority is NiMH Battery: The charge sequence is following:

Slot # 3 & 4 charge full, then charge Slot # 5 & 6.

Slot # 5 & 6 charge full, then charge Slot # 1.

Slot # 1 charge full, then charge Slot # 2.

- 2.) Constant Current Charge Control Method:
 - a.) Li Battery:
 - -Constant Voltage: 4.20V (±30mV) / Cell.
 - -The Value of Charge current when charge full: 0.15C.
 - Battery Voltage Over charge Protection: 4.30V (±30mV) / Cell
 - -Over Temperature of Battery (by detecting NTC at battery negative port):
 - i.) 58°C (±3.5°C)
 - ii.) when Over Temperature, suspending the charge flow 10 min. then re-act charge flow..

Suspending time won't be count into the total Charge Time.

Suspending period, will charge next Priority Slot.

-Charge Time Protection: 2.0hr ($\pm 10\%$)



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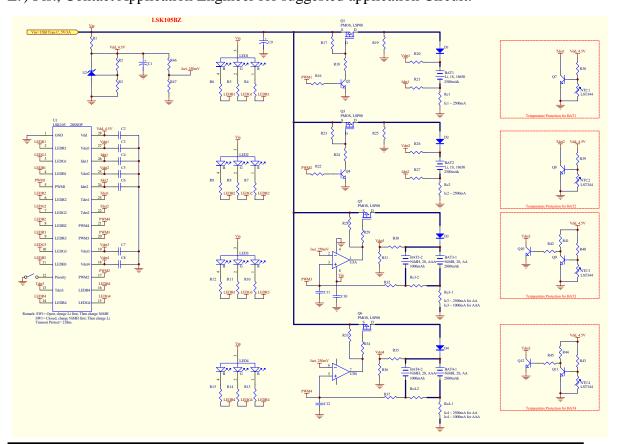
b.) NiMH Battery:

- -Charge Full Detection by: -deltaV & 0 deltaV.
- -Over Battery Voltage Protection: 3.20V (±30mV) / 2Cells.
- -Full detection by Temperature (by detecting NTC at battery negative port) : 58°C ($\pm 3.5^{\circ}\text{C}$).
- -Charge Time Protection: 2.0hr (±10%)

D.) Charge Status (RGB 5-colors LED Display) summary:

Slot Status	Display Icon	Li battery Or NiMH battery	
During Charge	Capacity<25%		Red LED: On
	25% < Capacity < 50%		Orange LED: On
	50% < Capacity < 75%		Yellow LED: On
	75% < Capacity < 99%		Blue LED: On
Charge Full	Capacity=~100%		Green LED: On
Waiting for Charge			Yellow LED: Slow flash
			(0.5s on, 0.5s off)
Over Temperature (for Li Battery only)			Red LED: Slow flash
			(0.5s on, 0.5s off),
			(& Charge Suspending till
			Temperature cool down)
Over Voltage Defects			Red LED: Fast flash
			(0.2s on, 0.2s off)
			(& Stop Charge flow, till
			Unplug Battery)

E.) Pls., Contact Application Engineer for suggested application Circuit.



Page: 2 / 2