



芯高科技
HIGH TECH
TECHNOLOGY LIMITED

HT6020 (20W + 20W)車載充電板應用 雙通道 QC

應用注解
Application Note

雙輸出車載充電器
測試單元: 20030601

2020/12/17 機密文件

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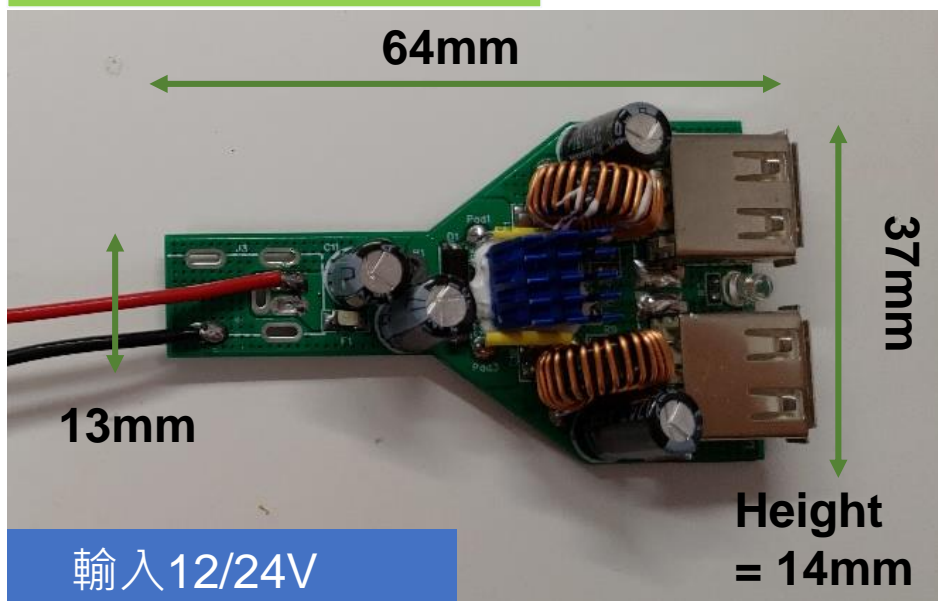
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1. 演示板介紹

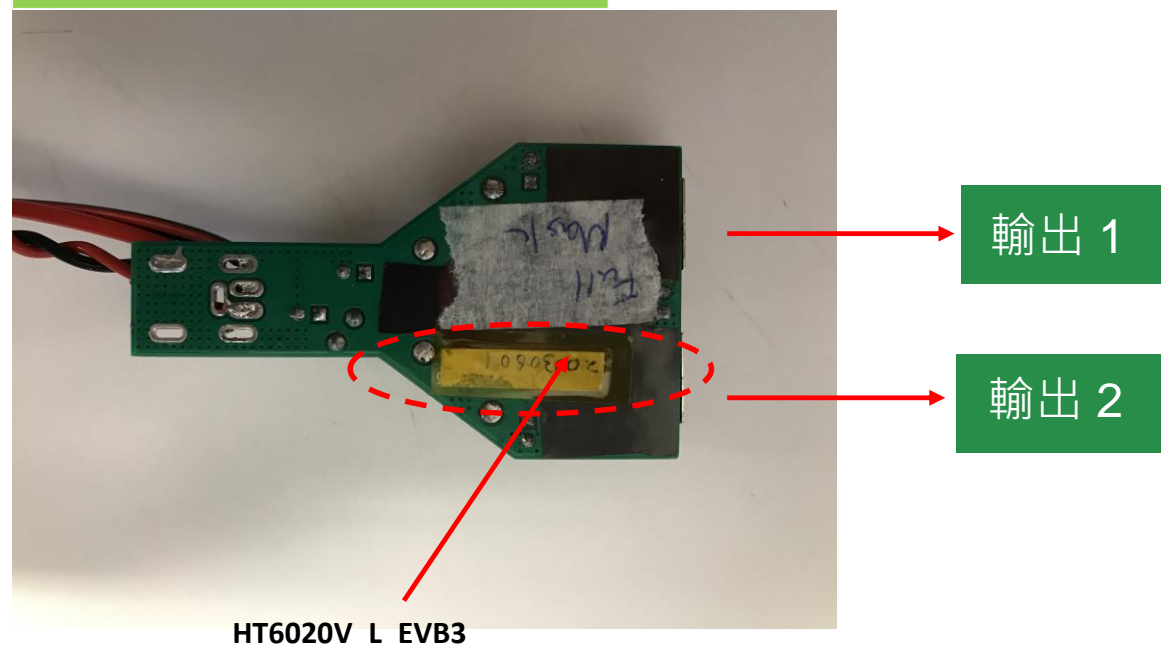


- 演示板 (測試單元: 20030601)
- 尺寸: 64mm(長) x 37mm(闊) x 14mm(高)

演示板 (頂視圖)



演示板 (底視圖)



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2. 摘要



操作模式:	單通道	雙通道
輸入電壓範圍	12V to 24V	
輸出電壓和電流範圍 (最大輸出功率是 20W + 20W)	(5V 3A), (9V 2A), (12V 1.5A), (20V – 1A)	雙通道的最大總輸出電流為 5A
主要支持的快速充電協議	QC 3.0**	
尺寸	64mm(長) X 37mm(闊) X 14mm(高)	
最大輸出功率	20W	40W
負載調節(Load Regulation)準確度	輸出電壓在不同負載下準確度達 99% (Vin=24V)	
最大功率轉換效率	96%	97%
短路(Short Circuit)測試	✓	

** QC3.0: Based on QUALCOMM webpage: Charge up to 4 times faster than conventional 5W chargers.
(<https://www.qualcomm.com/news/onq/2015/09/14/introducing-quick-charge-30-next-generation-fast-charging-technology>)

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3. 測試規格



輸入電壓

12 V to 24 V

輸出電壓和電流

- 5 V, 0 – 3A (15 W)
- 9 V, 0 – 2 A (18 W)
- 12 V, 0 – 1.5 A (18 W)
- 20 V, 0 – 1 A (20 W) (只適用於 $V_{in} = 24V$)

雙路輸出的總輸出電流及功率

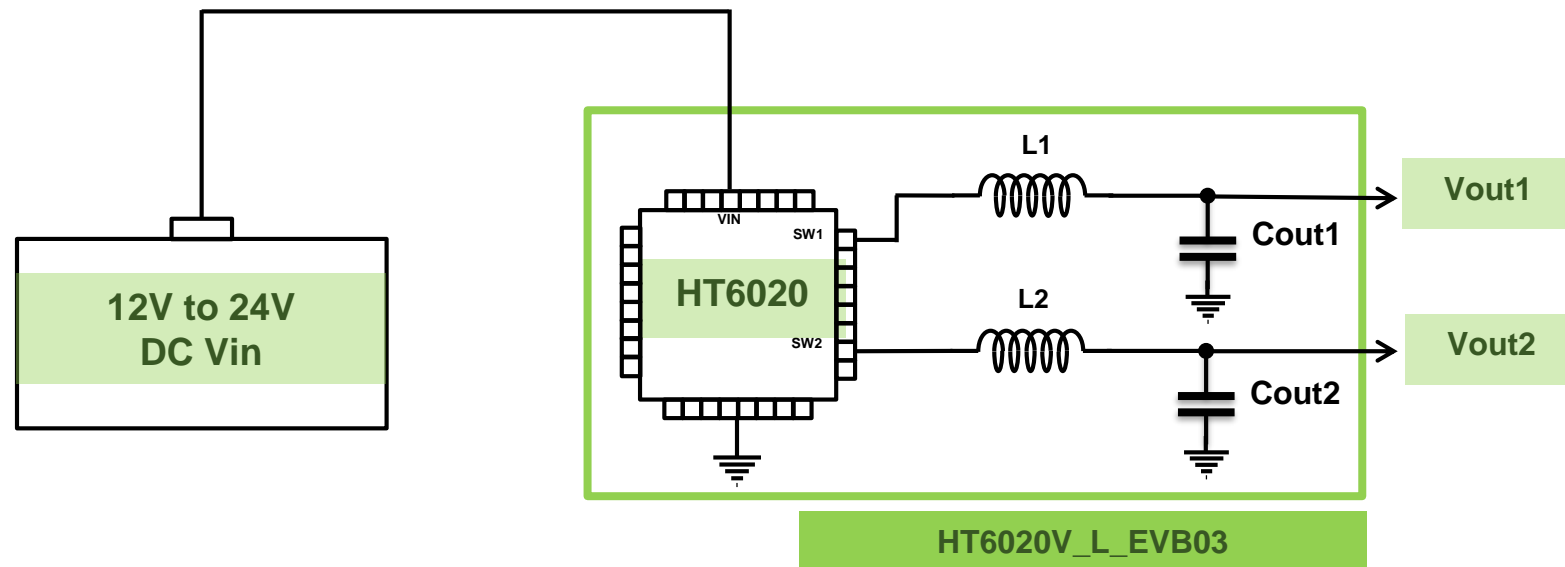
- 最大總輸出電流為 5 A
- 總功率最高為40 W {20W (20V, 1A) + 20W (20V, 1A)}

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4. 演示板介紹



設計簡約*



* 有關完整的電路圖，請參見附錄I。

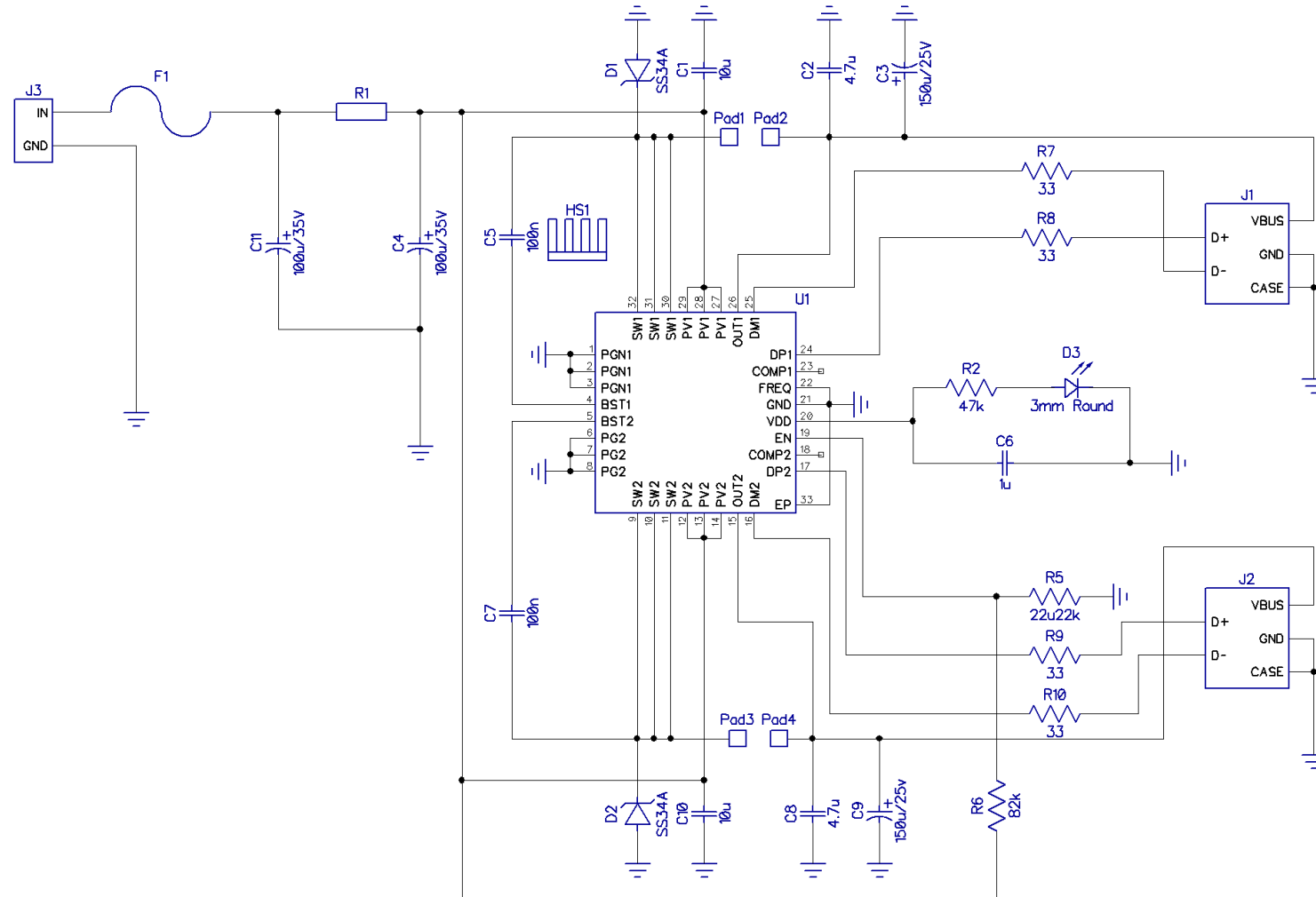
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5. 附錄 I

HT6020 (20W + 20W)車載充電板應用 雙通道 QC



- 演示板原理圖
(物料清單詳見附錄II)



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6. 附錄 II



• 演示板物料

RefDes	NAME	VALUE
C1	CAP_1206	10u
C2	CAP_0805	4.7u
C3	E-Cap 2.5/6.3	150u/25V
C4	E-Cap 2.5/6.3	100u/35V
C5	CAP_0603	100n
C6	CAP_0603	1u
C7	CAP_0603	100n
C8	CAP_0805	4.7u
C9	E-Cap 2.5/6.3	150u/25v
C10	CAP_1206	10u
C11	E-Cap 2.5/6.3	100u/35V
D1	SMA	SS34A
D2	SMA	SS34A
D3	LED-3R_Red	3mm Round
F1	FUSE	7A 1206
HS1	HS_9*9*10	Heat Sink

RefDes	NAME	VALUE
J1	USB_F	Connector
J2	USB_F	Connector
J3	Car_Charger_H	Connector/Wire
Pad1	Pad_2.5/1.6	Inductor 47uH,9mm
Pad2	Pad_2.5/1.6	Inductor 47uH,9mm
Pad3	Pad_2.5/1.6	Inductor 47uH,9mm
Pad4	Pad_2.5/1.6	Inductor 47uH,9mm
R1	Ferrite Bead	
R2	RES_0603	47k
R5	RES_0603	22k
R6	RES_0603	82k
R7	RES_0603	33
R8	RES_0603	33
R9	RES_0603	33
R10	RES_0603	33
U1	HT6020V-LRC	

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HIGH TECH
TECHNOLOGY LIMITED

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