



High Tech  
Technology Limited  
芯高科技有限公司

# HT6020 1A+1C AC充電器應用

應用注解  
Application Note

雙輸出充電器  
測試單元: 21040101

2020/4/15 | 機密文件

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# 1. 演示板介紹



- 演示板 (測試單元: 21040101)
- 尺寸: 55mm(長) x 39mm(闊) x 23mm(高)

演示板 (頂視圖)



輸出 1

輸出 2

演示板 (底視圖)



HT6020V\_L\_ACDC\_DB03

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## 2. 摘要



操作模式:	通道1(Ch.1)	通道2(Ch.2)
輸入電壓範圍	110V to 220V	
輸出電壓和電流範圍 (最大輸出功率是 20W + 18W)	(5V 3A), (9V 2A), (12V 1.5A), (20V – 1A)	(5V 2.4A), (9V 2A)
主要支持的快速充電協議	QC 3.0	PD 2.0
尺寸	55mm(長) X 39mm(闊) X 23mm(高)	
最大輸出功率	20W	18W
負載調節(Load Regulation)準確度	輸出電壓在不同負載下準確度達 94%	
最大功率轉換效率	87%	83%
短路(Short Circuit)測試	✓	

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# 3. 測試規格



## 輸入電壓

110 V, 220 V

## 輸出電壓和電流

- CH1 QC
  - 5 V, 0 – 3 A (15 W)
  - 9 V, 0 – 2 A (18 W)
  - 12 V, 0 – 1.5 A (18 W)
  - 20 V, 0 – 1 A (20 W)
- CH2 PD
  - 5 V, 0 – 2.4 A (12 W)
  - 9 V, 0 – 2 A (18 W)

## 雙路輸出的總輸出電流及功率

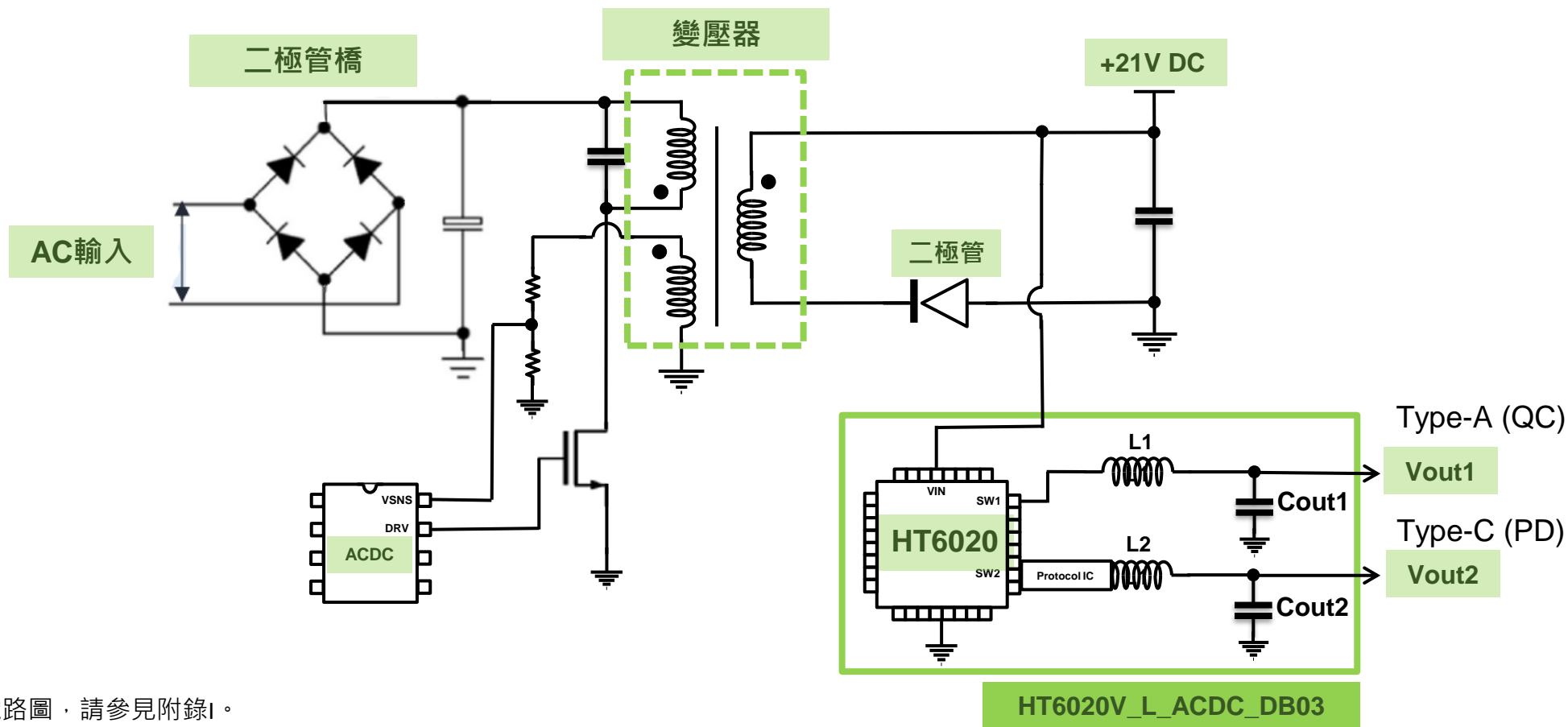
- 最大總輸出電流為 5 A
- 總功率最高為 38 W {20W (20V, 1A) + 18W (9V, 2A)}
- CH1
  - 5 V, 0 – 2.6 A (13 W)
  - 9 V, 0 – 2 A (18 W)
  - 12V, 0 – 1.5 A (18 W)
  - 20 V, 0 – 1 A (20 W)
- CH2
  - 5 V, 0 – 2.4 A (12 W)
  - 9 V, 0 – 2 A (18 W)

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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。

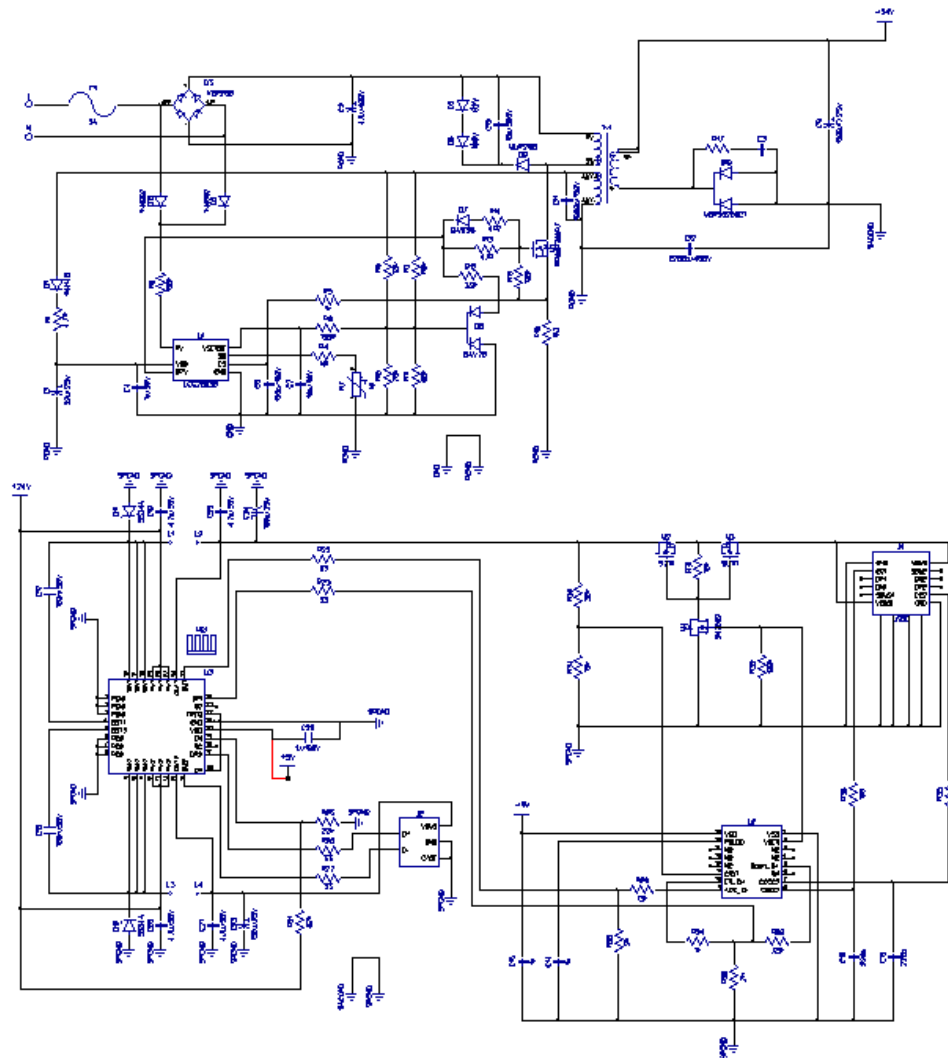
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# 5. 附錄 I



- 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	Part Number	Package
C1	5X6.8	22u/25V	UPW1E220MDD	CAPPR-2/5h11
C2	7.5/16X20	47u/400V	UCY2G470MHD1TN	Cap-H-16X20
C3	CAP_0603			
C4	CAP_0603	1u/50V		603
C5	CAP_0603	120p/100V		603
C7	CAP_0603	10p/50V		603
C9	5/10x13	1000uF/25V	EEU-HD1V681	CAPPR-5/10h10.5
C10	CAP_1206	10p/500V		1206
C11	CAP_0805	1000p/100V		805
C12	Y1 10X4	2200p/400V		CAPD-10x2/9x4
C13	CAP_0603	220p		603
C14	CAP_0603	1n		603
C15	CAP_0603	1u		603
C16	CAP_0603	220p		603
C17	CAP_0603	100n/50V		603
C18	CAP_0603	100n/50V		603
C19	CAP_0805	4.7u/50V		
C20	CAP_0805	4.7u/50V		
C21	CAP_0805	4.7u/50V		
C22	CAP_0805	4.7u/50V		
C23	E-Cap 2.5/6.3	150u/25V	25ZLJ150M6.3X11	CAPPR-2.5/6.3h9.8
C24	E-Cap 2.5/6.3	150u/25V	25ZLJ150M6.3X11	CAPPR-2.5/6.3h9.8
C25	CAP_0603	1u/100V		603
D1	1N4148	100V/2A	1N4148	SOD-323
D2	1N4007	1000V/1A	1N4007	SMB
D3	RECTIFIER-KBP	600v/2A	KBP206	KBP
D5	Zenor-SMB	82V	1SMB5947	SMB

D6	Zenor-SMB	100V	1SMB5949	SMB
D7	BAS316	100V/250mA	BAS316	SOD-323
D8	BAV70	75V/2A	BAV70	SOT23
D9		600V/1A	MURS160	SMB
D10	MBR2020OCT	100V/20A	MBR2020OCT	TO-220
D11	SMA(SS34A)	40V/3A	SS34A	SMA
D12	SMA(SS34A)	40V/3A	SS34A	SMA
D13	1N4007	100V/2A	1N4007	SMB
F1	FUSE 3mm_v	3A		3mm_V
HS1	HS_9*9			
J2	USB_F10mm_H			USB_10mm_V_2
J4	Type-C-16p	USBC		
L	Pad2.5/1.2			Pad2.5/1.2
L1	TESTPOINT_1.5/0.9			
L2	TESTPOINT_1.5/0.9			
L3	TESTPOINT_1.5/0.9			
L4	TESTPOINT_1.5/0.9			
M1	N-MOSFET	650V/26A	IPP60R360P7	TO-220
M2	PMOS_PDFN3333	SI7111		
M3	PMOS_PDFN3333	SI7111		
M4	2N7002	2N7002		
N	Pad2.5/1.2			Pad2.5/1.2
R1	RES_0805	4.7R		805
R2	RES_0603	110k		603
R3	RES_1206	100k		1206
R4	RES_0603	Nil		603
R5	RES_0603	1k		603
R6	RES_0603	100R		603
R7	NTC	Nil	B57164K0474J000	CAPD-5x1.2/9x3

R9	RES_0603	33k		603
R10	RES_0603	75k		603
R11	RES_0603	68k		603
R12	RES_0603	3.9k		603
R13	RES_0603	47R		603
R14	RES_0603	4R7		603
R15	RES_0603	100k		603
R16	RES_2512		0.2	2512
R17	RES_1206			
R20	RES_0603	7.5k		603
R21	RES_0603	82k		603
R22	RES_0603		33	603
R23	RES_0603		33	603
R24	RES_0603	1k		603
R25	RES_0603	22k		603
R26	RES_0603		33	603
R27	RES_0603		33	603
R28	RES_0603	2k		603
R29	RES_0603	13k		603
R30	RES_0603	2k		603
R31	RES_0603	10k		603
R32	RES_0603	100k		603
R33	RES_0603	36k		603
R34	RES_0603	12k		603
R35	RES_0603		100	603
R36	RES_0603		100	603
Tx1	RM8_Flyback_7p			RM8_7p
U1	UCC28630		UCC28630	SOIC-7/150mil
U2	LDR6023SS			
U3	HT6020V-L			

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HIGH TECH  
TECHNOLOGY LIMITED

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