



SP6850EVM

20 Watts Adaptor with SP6850 Green-Mode Controller

FEATURES

- Universal input
- Overload and short circuit protection
- High performance and low cost
- High Efficiency

ELECTRICAL SPECIFICATIONS

INPUT

- Voltage
 - 90 ~ 240 VAC (Wide Range)
- Current
 - 600mA RMS Max
- Frequency
 - 60Hz ~ 75 Hz

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ENVIRONMENTAL

- Operating Temperature
 - 0°C ~ 45°C
- Storage Temperature
 - -10°C ~ +75°C

CONFIGURATION

ELECTRICAL SPECIFICATIONS

OUTPUT

- Voltage
 - +12V / 1.66A
- Tolerance
 - 5 %
- Power (Po)
 - 20W (max)
- Hold Up Time
 - 10ms (min) , full load , 115VAC
- Short Circuit Protection
 - Pulse Mode, Auto recovery
- Efficiency
 - 83 % (Typical) , full load , 90VAC

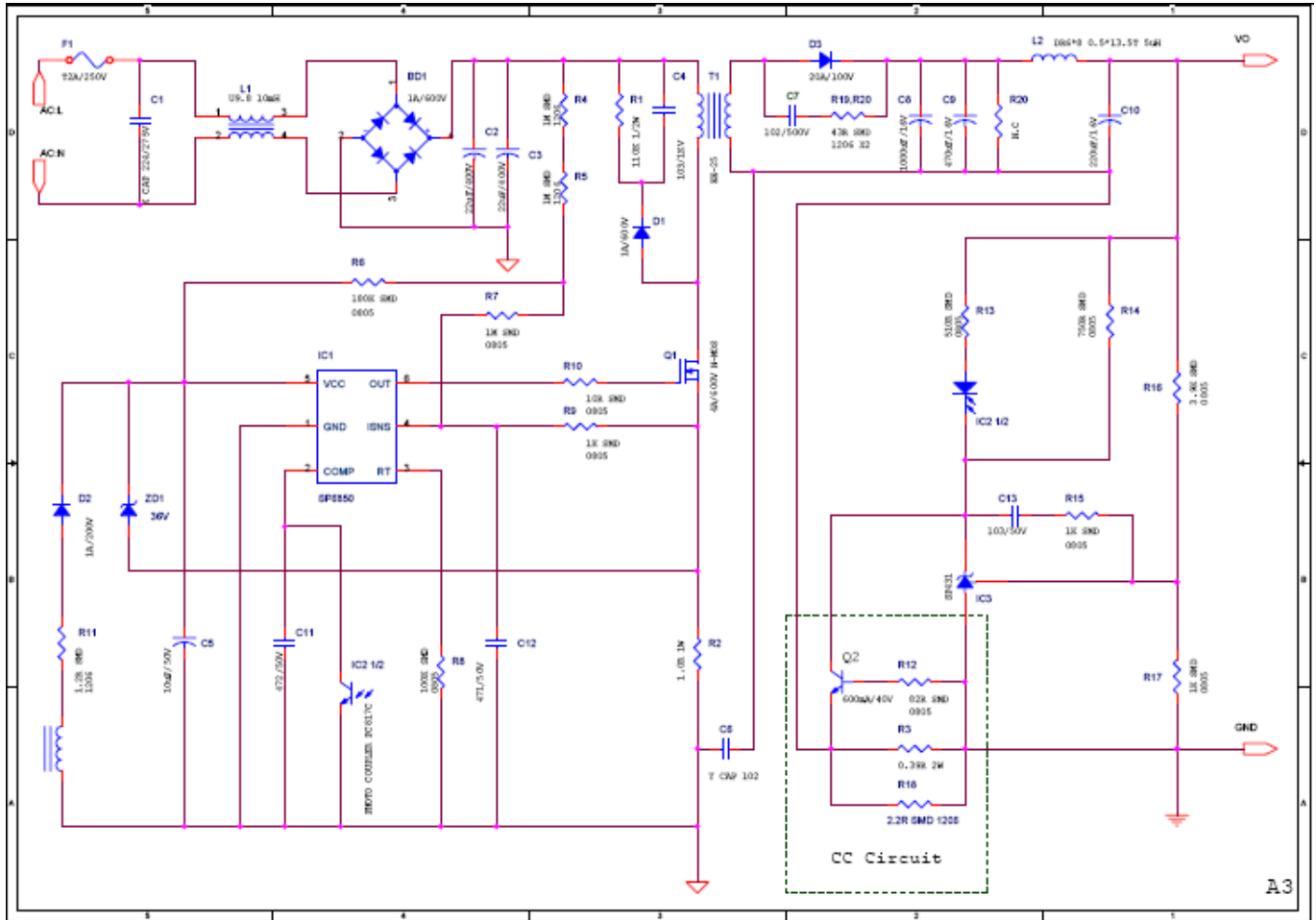




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DEMO BOARD CIRCUIT DIAGRAM

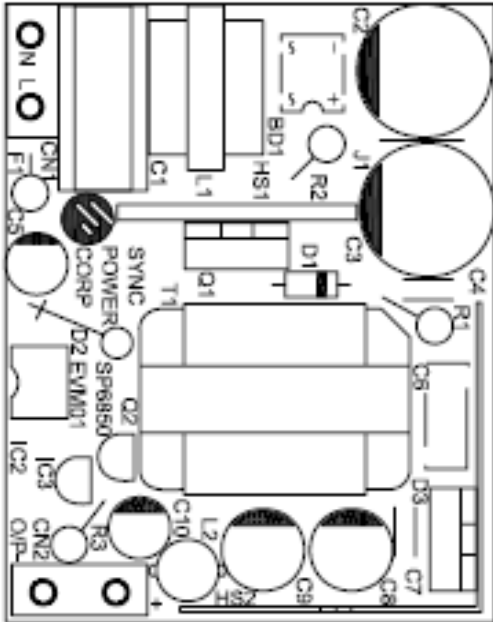




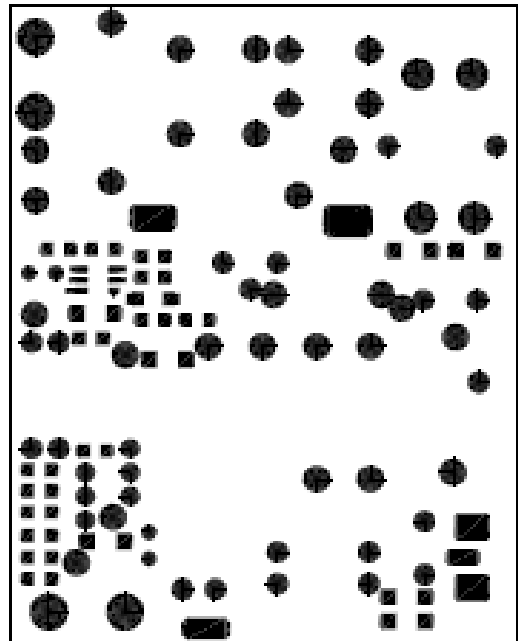
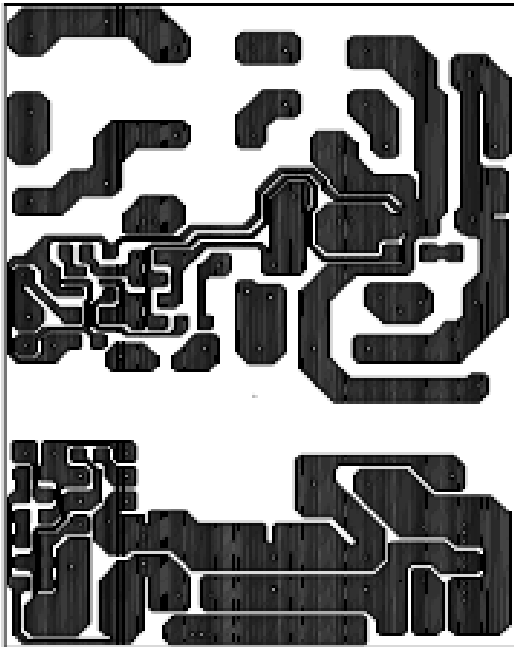
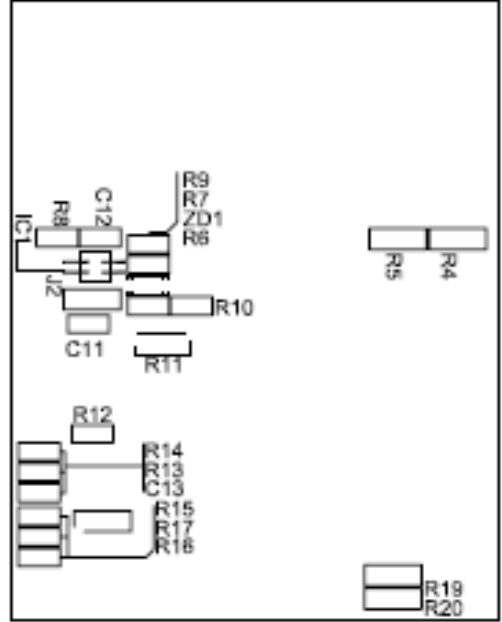
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PCB LAYOUT DIAGRAM



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DEMO BOARD BOM

Quantity	Part Number	Description	Note
1	IC1	SMD PWM Controller (SP6850)	
1	IC2	PHOTO COUPLER DIP-4P SHARP PC817C	
1	IC3	REG, IC SP431	
1	Q1	N-MOS 4A/600V TO-220F 絕緣型	
1	Q2	NPN TR 600mA/40V	
1	D1	ULTRA FAST SWITCHING RECTIFIER 1A/600V DO-41(T/P)	
1	D2	ULTRA FAST SWITCHING RECTIFIER 1A/200V DO-41(T/P)	
1	D3	SCHOTTKY 20A/100V TO-220	
1	BD1	BRIDGE 1A/600V	
1	ZD1	SMD ZENER DIODE 0.5W 36V	
1	C1	X CAP 224/275V 18*14.5*8.5mm (小型化)	
2	C2, C3	EC 220/400V 105°C 13*20 P=5mm	
1	C4	CER CAP 103/500V P=5mm	
1	C5	EC 10U/50V 105°C 5*11 P=2.5mm	
1	C6	Y CAP 102	
1	C7	CER CAP 102/500V P=5mm	
1	C8	EC 1000U/16V 105°C 8*20 P=5mm	
1	C9	EC 470U/16V 105°C 8*15 P=5mm	
1	C10	EC 220U/16V 105°C 6*11 P=2.5mm	
1	C11	SMD MCC 472/50V (K) (X7R) 0805	
1	C12	SMD MCC 471/50V (K) (X7R) 0805	
1	C13	SMD MCC 103/50V (K) (X7R) 0805	
1	R1	1/2W ±5% 110K MOFR	
1	R2	1W ±5% 1Ω WWR 疏繞	
1	R3	2W ±5% 0.39Ω WWR 疏繞	
2	R4, R5	1/4W ±5% 1M SMD (1206)	
1	R6	1/8W ±5% 180K SMD (0805)	
1	R7	1/8W ±5% 1M SMD (0805)	
1	R8	1/8W ±5% 100K SMD (0805)	
3	R9, R15, R17	1/8W ±5% 1K SMD (0805)	
1	R10	1/8W ±5% 10Ω SMD (0805)	
1	R11	1/4W ±5% 1.2Ω SMD (1206)	
1	R12	1/8W ±5% 82Ω SMD (0805)	
1	R13	1/8W ±5% 510Ω SMD (0805)	
1	R14	1/8W ±5% 750Ω SMD (0805)	
1	R16	1/8W ±5% 3.9K SMD (0805)	
1	R18	1/4W ±5% 2.2Ω SMD (1206)	
2	R19, R20	1/4W ±5% 43Ω SMD (1206)	
1	J2	1/4W ±5% 0Ω SMD (1206)	
1	T1	X'FMR EE-25 立式 8PIN	
1	L1	COMMON CHECK UU9.8	
1	L2	CHOKE DR6*8 0.5φ13.5T	
1	F1	FUSE S-BLOW 2A/250V 3.6*10 (+PIN) (美規)	
2	CN1, CN2	BASE 2 PIN	
1	J1	JUMP WIRE 0.6φ 10mm	



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EFFICIENCY (TA=25°C)

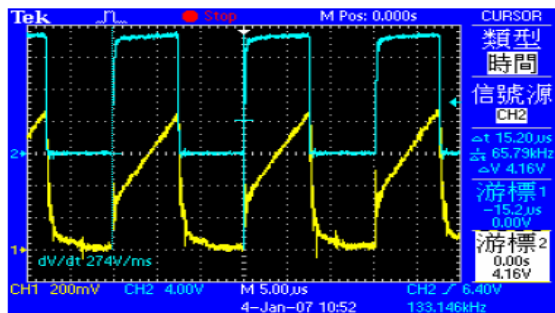
	Pin(W)	Iin(A)	Iout(A)	Vout(V)	Pout(W)	Eff(%)
90V/47Hz	26.31	0.468	1.8	12.2	21.98	83.54
115V/60Hz	25.84	0.394	1.8	12.215	21.98	85.06
132V/60Hz	25.74	0.358	1.8	12.215	21.98	85.39
180V/60Hz	25.74	0.267	1.8	12.215	21.98	85.39
230V/60Hz	25.75	0.234	1.8	12.215	21.98	85.36
264V/60Hz	25.72	0.2036	1.8	12.215	21.98	85.46

CHARACTERISTIC WAVEFORMS (TA=25°C)

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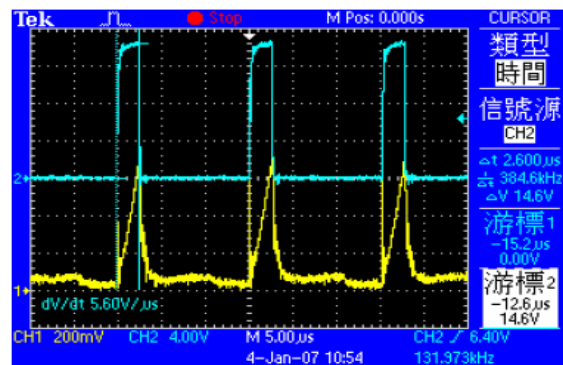
Duty Cycle, Ft: (Full load = 1.66A)

90V /47 Hz
 f_T = 65.79kHz
 T_{on} = 7.8us
 T = 15.2us
 Duty Cycle = 51.3%



CH1- CS PIN
CH2- Gate output

264V /60 Hz
 f_T = 65.79kHz
 T_{on} = 2.6us
 T = 15.2us
 Duty Cycle = 17.1%



CH1- CS PIN
CH2- Gate output

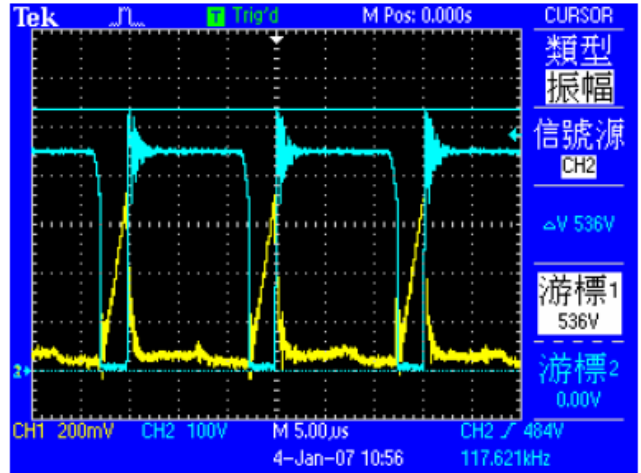
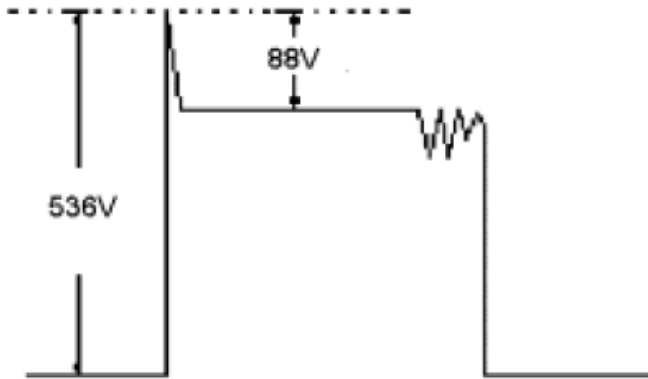


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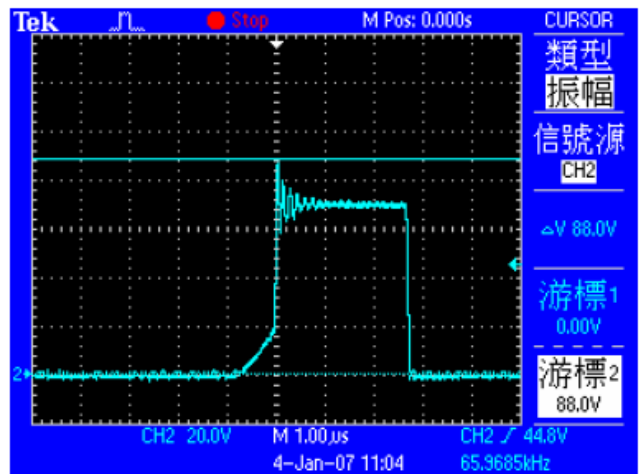
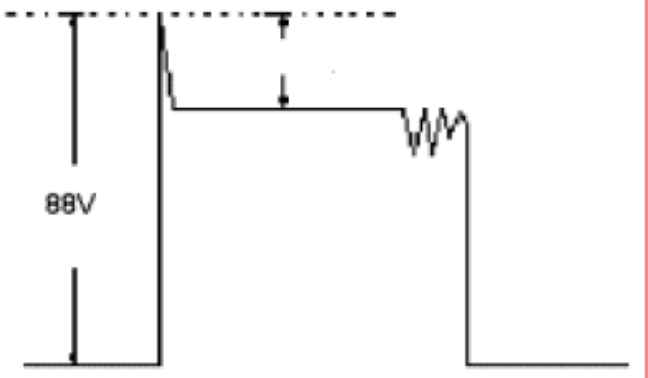
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Stress (264V / 63Hz full load) :

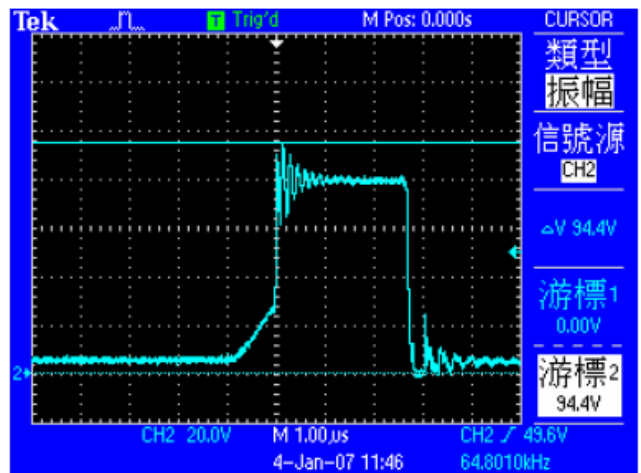
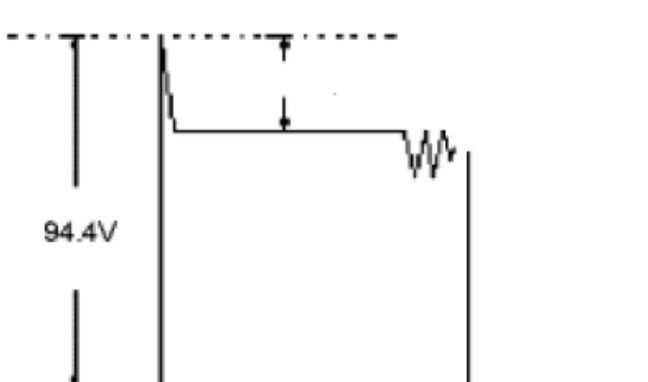
Q1 MOSFET:



D3:



D2:





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