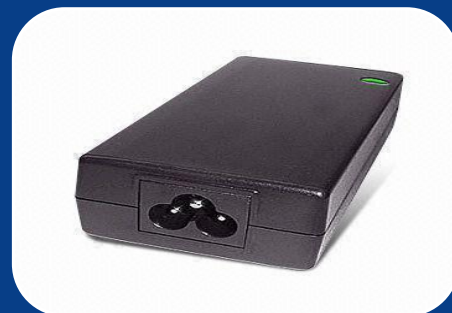




UNISONIC Technologies Co., Ltd.

UTC Semiconductor
Professional Design

PWM IC For SMPS Introduction





Support. Service. Solution.

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Support. Service. Solution.

UTC Semiconductor Provides Professional Knowledge, Really Solution, Quickly Design , Eco-design Requirements of Green Power Supply.

Efficiency Standards

The efficiency in the active power supply must to according to standards organizations, like ENERGY STAR, USA CEC, Europe EUP etc. UTC Semiconductor actively participate in global energy organizations to work in energy efficiency . UTC Semiconductor have ability to support customers got solution and promotion adaptor power in marketing, and meet all of the specification requirements.

Power Supply Expertise

UTC Semiconductor provides all kinds of power supply, enabling quick development products of cost-effective and meet evolving global efficiency standards. Our expertise in quick design and high efficiency power helps solve your Challenges in all focus area for efficiency enhancement:

- **No load mode power consumption.**
- **High active power efficiency.**
- **Power factor correction.**

UTC Semiconductor provides all kinds of integrated circuit, to help customers design for Adaptor power supply. Like:

- **Power factor controllers.**
- **Pulse Wide-Modulation controllers.**
- **Power MOS-FET.**
- **Diode and Transistor.**
- **Power Management Controllers.**
- **Supervisory controllers.**

Support and Solution

Products Design Centers

UTC Semiconductor can support design circuit, PCB artwork, BOM, test data, and EMI report, even our SMPS design group co-design with manufacturers and design experience.

IC Design Centers

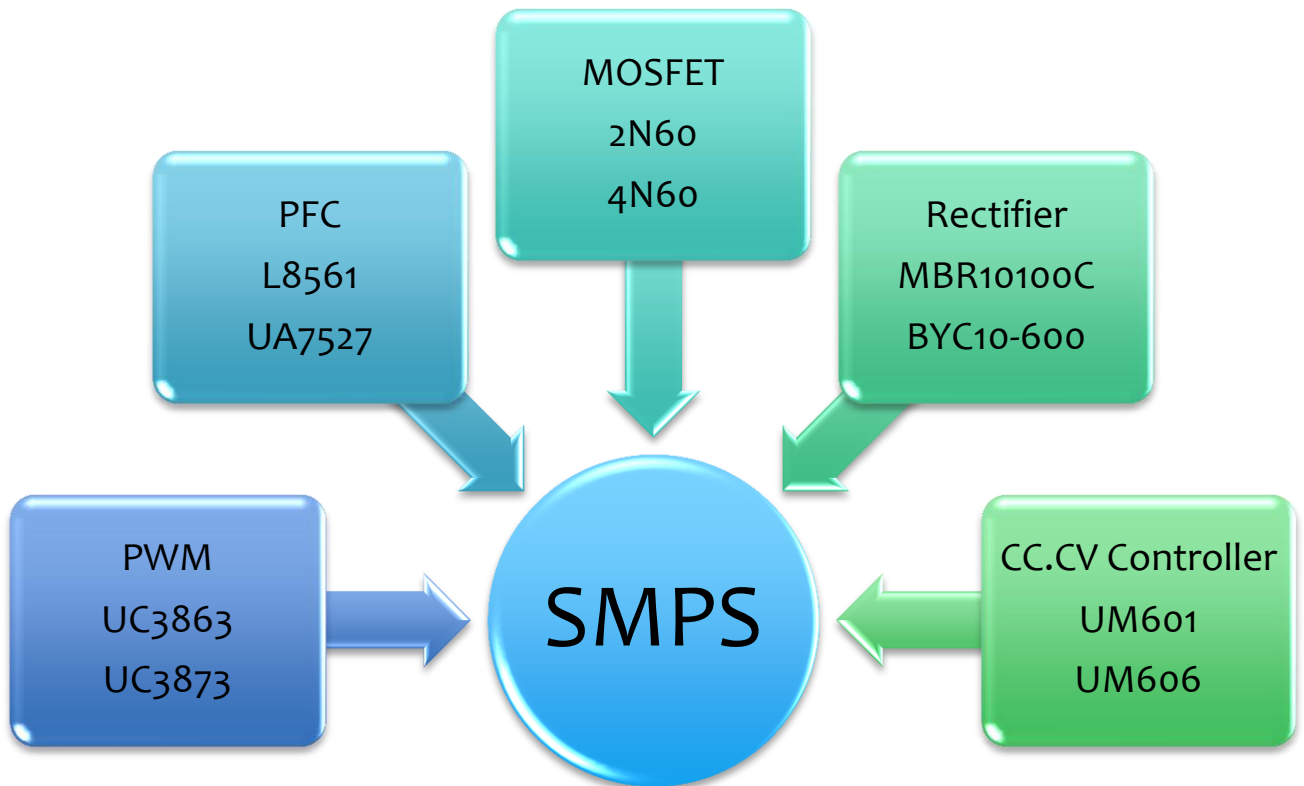
UTC Semiconductor can support and develop advanced power management integrated circuits, to lower design, approved , process time and modify SMPS to simplify, standard.

Field Application Centers

UTC Semiconductor field application engineer provides fully support any issues in SMPS. Including specification, feature, application, failure analysis, solutions, training, and pay attention to design.

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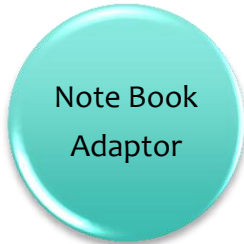
SMPS Product Line





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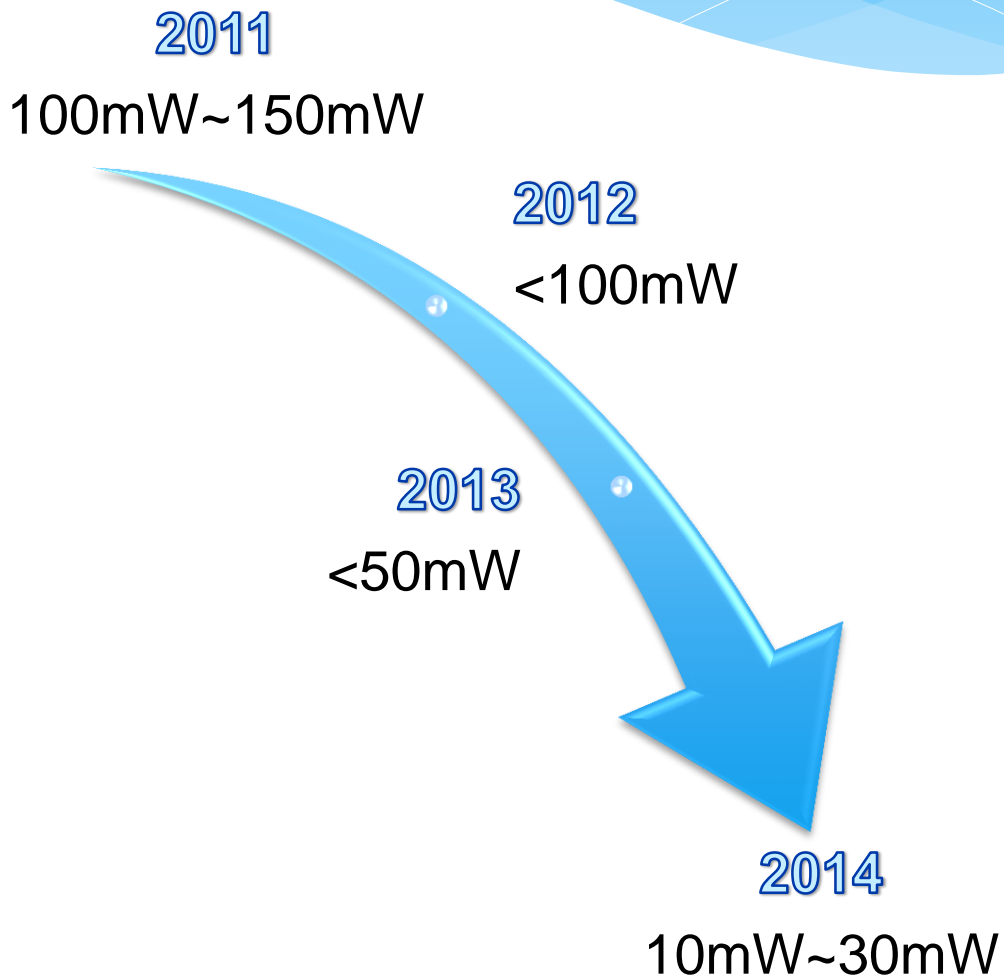
SMPS Applications





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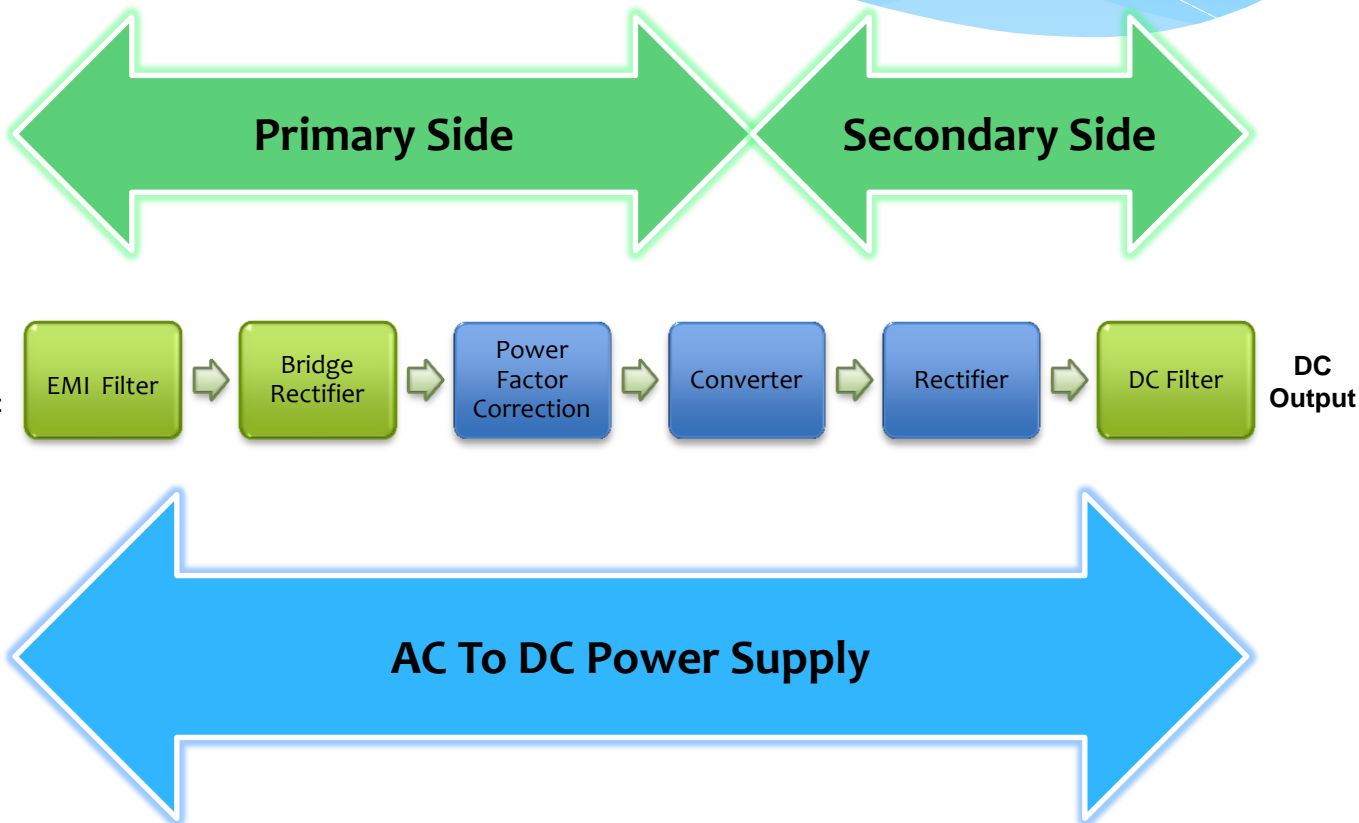
Power Consumption



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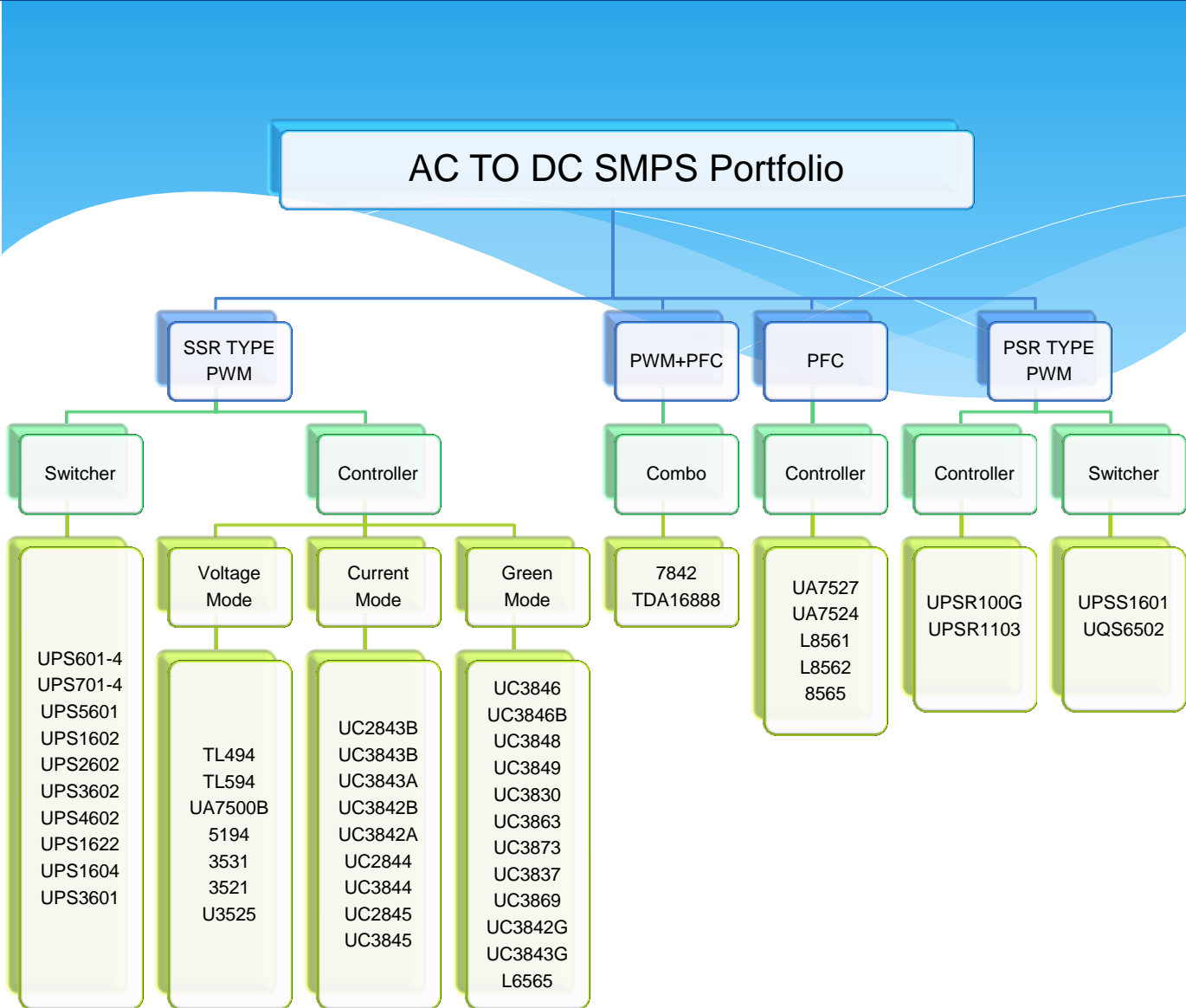
Total of Power Supply Functions

AC to DC SMPS Functions





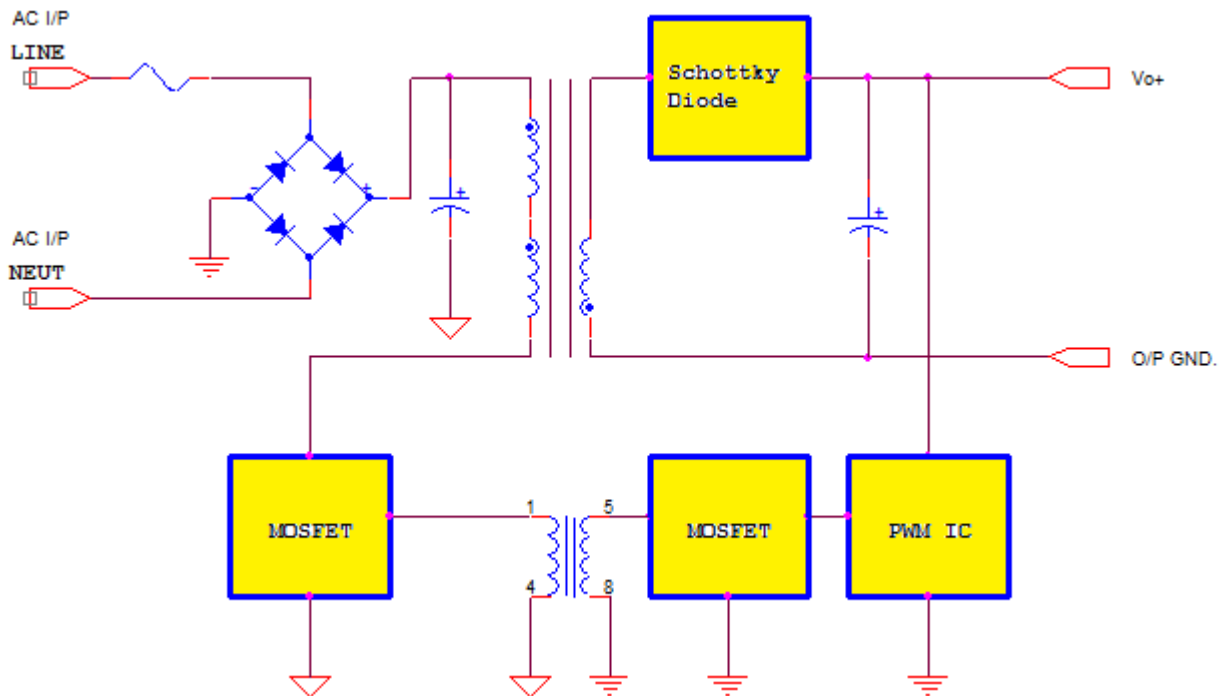
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A/D Voltage Mode PWM IC Design Reference

Comparable Block Diagram

Voltage Mode PWM IC Design





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A/D Voltage Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (Voltage Mode)

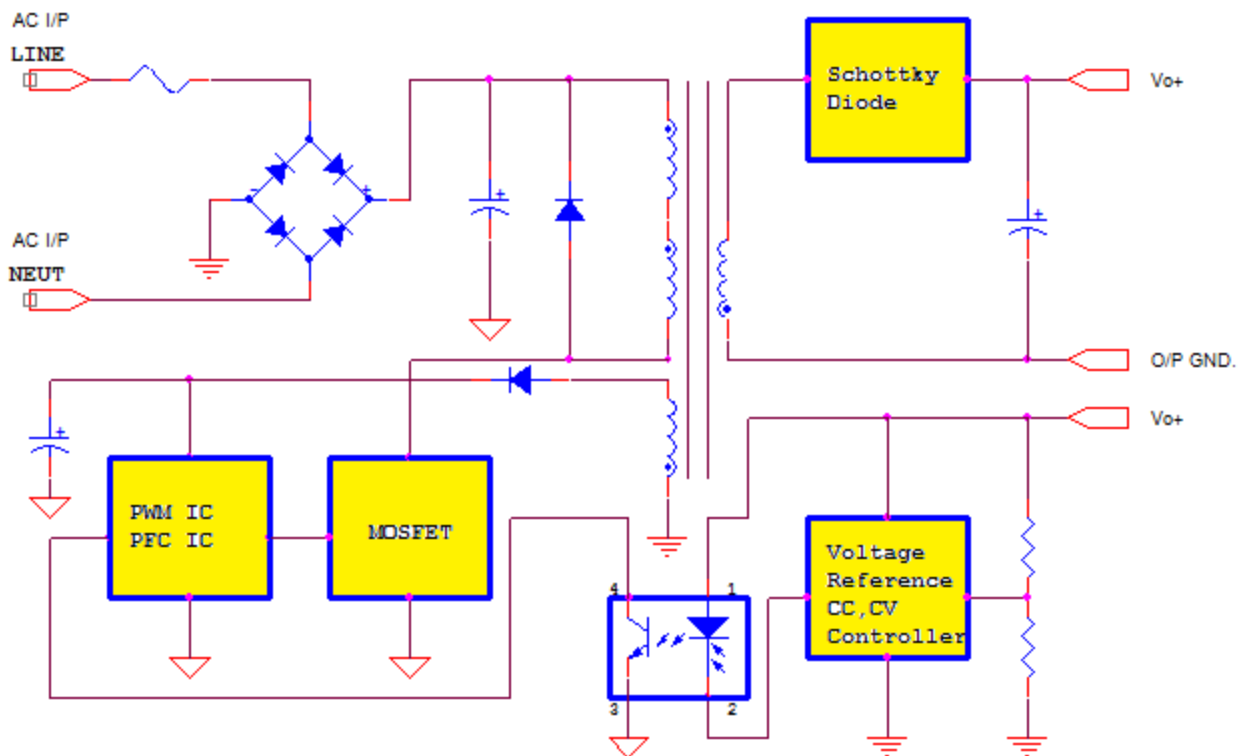
Model No.	Application	Marketing	Description	General Design Function
TL494/ TL594 UA7500B/ 51494	AC To DC Up to 400W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	1. I/P: 110VAC/230VAC 2. O/P: 5V~UP
3531	AC To DC Up to 400W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	1. I/P: 110VAC/230VAC 2. O/P: 5V~UP 3. OVP, UVP,OPP, SCP, OCP. 4. Remote Control, PG/PF. 5. Stand-By Power Control. 5. Totem Pole Output
3521	AC To DC Up to 400W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	1. I/P: 110VAC/230VAC 2. O/P: 5V~UP 3. OVP, UVP,OPP, SCP, OCP. 4. Remote Control, PG/PF. 5. Totem Pole Output
U3525	AC To DC Up to 400W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	1. I/P: 110VAC/230VAC 2. O/P: 5V~UP

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A/D Current Mode PWM IC Design Reference

Comparable Block Diagram

Current & Green Mode PWM IC Design





Support. Service. Solution.

A/D Current Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (Current Mode)

Model No.	Application	Marketing	Description	General Design Function
UC3843A/B	AC To DC Up to 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none"> I/P: 110VAC/230VAC O/P: 5V~UP UC3843A=Frequency: RT=10KΩ,CT=3.3nF 47KHz-57KHz UC3843B=Frequency: RT=10KΩ,CT=3.3nF 49KHz-55KHz. Totem Pole design for MOSFET. Duty Cycle up to 100%. UVLO: VTH(st)=8.4V. Vopr(min.)=7.6V. OCP: Current Sense pin CS (1.0V Typical) SCP, OLP Build in. T(OP)= -0~+70°C
UC2843B	AC To DC 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none"> I/P: 110VAC/230VAC O/P: 5V~UP UC2843B=Frequency: RT=10KΩ,CT=3.3nF 49KHz-55KHz. Totem Pole design for MOSFET. Duty Cycle up to 100%. UVLO: VTH(st)=8.4V. Vopr(min.)=7.6V. OCP: Current Sense pin CS (1.0V Typical) SCP, OLP Build in. T(OP)= -40~+85°C
UC3842A/B	AC To DC 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none"> I/P: 110VAC/230VAC O/P: 5V~UP UC3842A=Frequency: RT=10KΩ,CT=3.3nF 47KHz-57KHz UC3842B=Frequency: RT=10KΩ,CT=3.3nF 49KHz-55KHz. Totem Pole design for MOSFET. Duty Cycle up to 100%. UVLO: VTH(st)=16V. Vopr(min.)=10V. OCP: Current Sense pin CS (1.0V Typical) SCP, OLP Build in. T(OP)= -0~+70°C



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A/D Current Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (Current Mode)

Model No.	Application	Marketing	Description	General Design Function
UC3844	AC To DC Up to 350W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none">1. I/P: 110VAC/230VAC2. O/P: 5V~UP3. UC3844=Frequency: RT=10KΩ,CT=3.3nF 47KHz-57KHz4. Totem Pole design for MOSFET.5. Duty Cycle up to 48%.6. UVLO: VTH(st)=16.0V. Vopr(min.)=10V.7. OCP: Current Sense pin CS (1.0V Typical)8. SCP, OLP Build in.9. T(OP)= -0~+70°C
UC2844	AC To DC 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none">1. I/P: 110VAC/230VAC2. O/P: 5V~UP3. UC2844=Frequency: RT=10KΩ,CT=3.3nF 47KHz-57KHz4. Totem Pole design for MOSFET.5. Duty Cycle up to 48%.6. UVLO: VTH(st)=16.0V. Vopr(min.)=10V.7. OCP: Current Sense pin CS (1.0V Typical)8. SCP, OLP Build in.9. T(OP)= -40~+120°C



Support. Service. Solution.

A/D Current Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (Current Mode)

Model No.	Application	Marketing	Description	General Design Function
UC3845	AC To DC 350W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none">1. I/P: 110VAC/230VAC2. O/P: 5V~UP3. UC3845=Frequency: RT=10KΩ,CT=3.3nF 47KHz-57KHz4. Totem Pole design for MOSFET.5. Duty Cycle up to 48%.6. UVLO: VTH(st)=8.4V. Vopr(min.)=7.6V.7. OCP: Current Sense pin CS (1.0V Typical)8. SCP, OLP Build in.9. T(OP)= -0~+70°C
UC2845	AC To DC 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc.	<ol style="list-style-type: none">1. I/P: 110VAC/230VAC2. O/P: 5V~UP3. UC2845=Frequency: RT=10KΩ,CT=3.3nF 47KHz-57KHz4. Totem Pole design for MOSFET.5. Duty Cycle up to 48%.6. UVLO: VTH(st)=8.4V. Vopr(min.)=7.6V.7. OCP: Current Sense pin CS (1.0V Typical)8. SCP, OLP Build in.9. T(OP)= -40~+120°C



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A/D Green Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (**Green Mode**)

Model No.	Application	Marketing	Description	General Design Function	Compatible
UB3846	AC To DC Up To 65W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR/Set-top Box/ Business Machines/ Open Frame Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> 1. I/P V=25V(Max.) 2. Totem Pole High Speed Design for MOSFET. $I_o > 200\text{mA}$. 3. OVP, OLP, OTP, UVLO. OCP cycle by cycle. 4. Standby Mode with Burst Mode at 10% below. 5. Programmable PFM Frequency. (Load at 10% -25% variable). 6. Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) 7. UTC hopping technology for improved EMI. 8. Typical 74% Duty Cycle. 	SG6848
UB3846 B	AC To DC Up To 65W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR/Set-top Box/ Business Machines/ Open Frame Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> 1. I/P V=25V(Max.) 2. Totem Pole High Speed Design for MOSFET. $I_o > 200\text{mA}$. 3. OVP, OLP, OTP, UVLO. OCP cycle by cycle. 4. OTP can to sense by RT pin. 5. Standby Mode with Burst Mode at 10% below. 6. Programmable PFM Frequency. (Load at 10% -25% variable). 7. Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) 8. UTC hopping technology for improved EMI. 9. Typical 74% Duty Cycle. 	SG6846
UC3848	AC To DC Up To 65W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR/Set-top Box/ Business Machines/ Open Frame Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> 1. I/P V=30V(Max.) 2. Totem Pole High Speed Design for MOSFET. $I_o > 200\text{mA}$. 3. Soft start, OVP, OLP, OTP, UVLO OCP cycle by cycle. 4. Standby Mode with Burst Mode at 10% below. 5. Programmable PFM Frequency. (Load at 10% -25% variable). 6. Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) 7. UTC hopping technology for improved EMI. 8. Typical 74% Duty Cycle. 	



Support. Service. Solution.

A/D Green Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (**Green Mode**)

Model No.	Application	Marketing	Description	General Design Function	Compatible
UC3849	AC To DC Up To 65W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR/Set-top Box/ Business Machines/ Open Frame Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> 1. I/P V=25V(Max.) 2. Totem Pole High Speed Design for MOSFET. $I_o > 200\text{mA}$. 3. OVP, OLP, OTP, UVLO.OCP cycle by cycle. 4. AC input detector pin UVP at Vin pin. 5. OTP can to sense by RT pin. 6. Standby Mode with Burst Mode at 10% below. 7. Programmable PFM Frequency. (Load at 10% -25% variable). 8. Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) 9. UTC hopping technology for improved EMI. 10. Typical 74% Duty Cycle. 	OB2269
UC3830	AC To DC Up To 65W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR/Set-top Box/Business Machines/Open Frame Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> 1. I/P V=30V(Max.) 2. Totem Pole High Speed Design for MOSFET. $I_o > 300\text{mA}$. 3. OVP, OLP, OTP, UVLO.OCP cycle by cycle. 4. Standby Mode with Burst Mode at 10% below. 5. Programmable PFM Frequency. (Load at 10% -25% variable). 6. Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) 7. UTC hopping technology for improved EMI. 8. Typical 74% Duty Cycle. 	LD7530
UC3863	AC To DC Up To 65W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR/Set-top Box/Business Machines/Open Frame Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> 1. I/P V=30V(Max.) 2. Totem Pole High Speed Design for MOSFET. $I_o > 200\text{mA}$. 3. Soft start, OVP, OLP, OTP, UVLO.OCP cycle by cycle. 4. Standby Mode with Burst Mode at 10% below. 5. Programmable PFM Frequency. (Load at 10% -25% variable). 6. Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) 7. UTC hopping technology for improved EMI. 8. Typical 74% Duty Cycle. 	OB2263 LD7535/LD7535A R7731 G8830/G8836 SF1531



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A/D Green Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (Green Mode)

UC3863 PWM Comparable Table

Vendor	UTC	Lead Trend	On Bright	RICHTEK	GREENERGY	賽威														
Function	UC3863	LD7535 LD7535A	OB2263	R7731	GR8830 GR8836	SF1531														
PIN Assignment		<table border="1"> <thead> <tr> <th>PIN NO.</th> <th>PIN NAME</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> </tr> <tr> <td>2</td> <td>FB</td> </tr> <tr> <td>3</td> <td>RI</td> </tr> <tr> <td>4</td> <td>SENSE</td> </tr> <tr> <td>5</td> <td>V_{DD}</td> </tr> <tr> <td>6</td> <td>GATE</td> </tr> </tbody> </table>	PIN NO.	PIN NAME	1	GND	2	FB	3	RI	4	SENSE	5	V _{DD}	6	GATE				
PIN NO.	PIN NAME																			
1	GND																			
2	FB																			
3	RI																			
4	SENSE																			
5	V _{DD}																			
6	GATE																			
Package	SOT-26 (DIP-8, SOP-8)	SOT-26 DIP-8	SOT-26 DIP-8, SOP-8	SOT-26 DIP-8	SOT-26 DIP-8	SOT-26 DIP-8														
Start Up Voltage	V _{THD(ON)} =14V-17V V _{DD(MIN)} =9V-11V	V _{THD(ON)} =15V-17V V _{DD(MIN)} =9V-11V	V _{THD(ON)} =13V-15V V _{DD(MIN)} =7.8V-9.8V	V _{THD(ON)} =13V-15V V _{DD(MIN)} ≈ 11V	V _{THD(ON)} =13.3V-17V V _{DD(MIN)} =8V-10V	V _{THD(ON)} =13.5V-15.5V V _{DD(MIN)} =8V-9.8V														
Protection Function (Build in)	OTP , OVP, OLP, SCP, LEB, UVLO, SS VDD Clamp for high security	OVP, OLP, SCP, LEB, UVLO, VDD Clamp for 32V	OLP, LEB, SCP, UVLO, VDD Clamp for 30V	OTP , OVP, LEB, UVLO, SS VDD Clamp for high security	OTP , OLP, OVP, SCP, LEB, UVLO, SS	OVP, OLP, SCP, LEB, UVLO, VDD Clamp for 35V														
Power Saving	Burst → PFM → PWM	Build in Burst → PWM	Build in Burst → PWM	Build in Burst → PWM	Build in Burst → PWM	Burst → PFM → PWM														
EMI	Hopping Technology UTC Patent	Jitter	Jitter	Jitter	Jitter	Hopping Technology UTC Patent														
OTP	135°C	NON	NON	140°C	NON	NON														
OVP (TYPICAL)	V _{CC} = 26.0V	LD7535=28.0V LD7535A=21.0V	NON	V _{CC} = 27.0V	8830=V _{CC} = 27.0V 8836=V _{CC} = 28V	V _{CC} = 28.5V														
OLP (TYPICAL)	FB ≈ 4.8V	FB ≈ 5.0V	FB ≈ 3.7V	By CS Pin (Not True)	8830=FB ≈ 3.5V 8836=FB ≈ 3.7V	FB ≈ 3.6V														
LEB Cs (TYPICAL)	0.65V	0.85V	0.75V	0.7V	0.9V	0.75V														
UVLO (TYPICAL)	10V	10V	8.8V	11.0V	8830=10.8V 8836=9.0V	9.0V														



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A/D Green Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (**Green Mode**)

UTC Electrical Characteristics Excellence

Vendor	UTC	Lead Trend	On Bright	RICHTEK	GREENERGY	賽威
Function	UC3863	LD7535 LD7535A	OB2263	R7731	GR8830 GR8836	SF1531

Function Compare Instruction

OTP	Yes	X	X	Yes	Yes	X
OVP	Yes	Yes	X	Yes	Yes	Yes
OLP	Yes	Yes	Yes	Yes	Yes	Yes
SCP	Yes	Yes	Yes	Danger	Yes	Yes
LEB	Yes	Yes	Yes	Yes	Yes	Yes
UVLO	Yes	Yes	Yes	Yes	Yes	Yes
SS	Yes	X	X	Yes	Yes	Yes
VDD Clamp	Yes	Yes	Yes	Yes	X	Yes

Electrical Characteristics Function Compare Instruction

Efficiency	Best	Generally	Generally	Generally	Generally	Best
Power Saving	Burst →PFM → PWM	Build in Burst →PWM	Build in Burst →PWM	Build in Burst →PWM	Build in Burst →PWM	Burst →PFM → PWM
EMI	Hopping Technology UTC Patent	Jitter	Jitter	Jitter	Jitter	Hopping Technology UTC Patent
Start Up Istr	< 20uA	< 20uA	< 20uA	< 30uA	< 15uA	< 20uA

Design Capability Compare Instruction

O/P Watts	Up to 65W	Up to 65W	36W	Up to 65W	36W	36W
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A/D Green Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (Green Mode)

UC3873 PWM Comparable Table

Vendor	UTC	On Bright	Lead Trend	RICHTEK	Fairchild	NEOENERGY	HOTCHOP	Power-Rail														
Function	UC3873	OB2273	LD7536	R7735	FAN6863	NE1102E	HT2273	PR6865														
PIN Assignment			<table border="1"> <thead> <tr> <th>PIN NO.</th> <th>PIN NAME</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>GND</td> </tr> <tr> <td>2</td> <td>FB</td> </tr> <tr> <td>3</td> <td>RT</td> </tr> <tr> <td>4</td> <td>SENSE</td> </tr> <tr> <td>5</td> <td>V_{DD}</td> </tr> <tr> <td>6</td> <td>GATE</td> </tr> </tbody> </table>						PIN NO.	PIN NAME	1	GND	2	FB	3	RT	4	SENSE	5	V _{DD}	6	GATE
	PIN NO.	PIN NAME																				
1	GND																					
2	FB																					
3	RT																					
4	SENSE																					
5	V _{DD}																					
6	GATE																					
Package	SOT-26	SOT-26	SOT-26 , DIP-8	SOT-26 , DIP-8	SOT-26	SOT-26	SOT-26	SOT-26														
Start Up Voltage	V _{THD(ON)} = 12V-14.5V V _{DD(MIN)} = 7.5V-9.5V	V _{THD(ON)} = 13V-15V V _{DD(MIN)} = 7.8V-9.8V	V _{THD(ON)} = 15V-17V V _{DD(MIN)} = 9V-11V	V _{THD(ON)} = 13.0V-15.0V V _{DD(MIN)} = 8.5V-9.5V	V _{THD(ON)} = 15.0V-17.0V V _{DD(MIN)} = 6.5V-7.5V	V _{THD(ON)} = 13.0V-15.0V V _{DD(MIN)} = 9.0V-11.0V	V _{THD(ON)} = 12.5V-14.5V V _{DD(MIN)} = 6.0V-8.0V	V _{THD(ON)} = 14.0V-16.0V V _{DD(MIN)} = 8.2V-10.2V														
Protection Function	OTP,OVP, OCP,OLP, SCP,LEB, UVLO,SS VDD Clamp for high security	OTP, OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Clamp for 30V	OTP, OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Clamp for 29V	OTP,OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Clamp for 29V	OTP,OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Not Clamp	OTP,OVP, OCP,OLP, SCP,LEB, UVLO,SS VDD Not Clamp	OTP,OVP, OCP,OLP, SCP,LEB, UVLO,SS VDD Clamp for 34V	OTP,OVP, OCP,OLP, SCP,LEB, UVLO,SS VDD Clamp for 31V														
Power Saving	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM														
EMI	Hopping Technology UTC Patent	Jitter	Jitter	Jitter	Jitter	Jitter	Jitter	Jitter														
OTP	125°C	150°C	140°C	125°C	135°C	150°C	85°C	85°C														
OVP (TYPICAL)	V _{CC} =25.0V	V _{CC} =26.0V	V _{CC} =26.0V	V _{CC} =27.0V	V _{CC} =22.5V	V _{CC} =25.0V	V _{CC} =28.0V	V _{CC} =27.0V														
OLP (TYPICAL)	FB ≈ 5.0V	FB ≈ 3.7V	FB ≈ 4.5V	FB ≈ 2.9V	FB ≈ 4.6V	FB ≈ 4.0V	FB ≈ 3.7V	FB ≈ 3.5V														
LEB Cs (TYPICAL)	0.70V	0.75V	0.85V	0.70V	0.60V	0.85V	0.75V	0.90V														
UVLO (TYPICAL)	8.5V	7.0V	10.0V	9.0V	7.0V	10.0V	7V	9.2V														



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A/D Green Mode PWM IC Controller Introduce

AC To DC PWM IC Controller (**Green Mode**)

UTC Electrical Characteristics Excellence

Vendor	UTC	On Bright	Lead Trend	RICHTEK	Fairchild	NeoEnergy	Hotchip	Power-Rail
Function	UC3873	OB2273	LD7536	R7735	FAN6863	NE1102E	HT2273	PR6865

Electrical Characteristics Function Compare Instruction

Efficiency	Best	Generally	Generally	Generally	Best	Generally	Generally	Generally
Power Saving	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM	Burst →PFM → PWM
EMI	Hopping Technology UTC Patent	Jitter	Jitter	Jitter	Jitter	Jitter	Jitter	Jitter
Start Up Istr	< 20uA	<20uA	<20uA	< 15uA	< 15uA	<20uA	<20uA	< 20uA
Protection Function	OTP,OVP, OCP,OLP, SCP, LEB, UVLO, SS VDD Clamp for high security	OTP, OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Clamp for 30V	OTP, OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Clamp for 29V	OTP,OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Clamp for 29V	OTP,OVP, OCP, OLP, SCP, LEB, UVLO, SS VDD Not Clamp	OTP,OVP, OCP,OLP, SCP, LEB, UVLO, SS VDD Not Clamp	OTP,OVP, OCP,OLP, SCP, LEB, UVLO, SS VDD Clamp for 34V	OTP,OVP, OCP,OLP, SCP, LEB, UVLO, SS VDD Clamp for 31V

Design Capability Compare Instruction

O/P Watts	Up to 65W	40W	Up to 65W	30W	40W	60W	40W	45W
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Support. Service. Solution.

A/D Green Mode PWM IC Controller Introduce

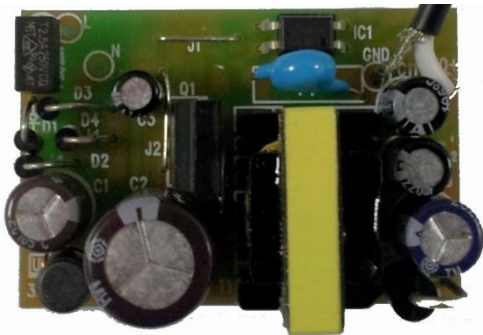
AC To DC PWM IC Controller (Green Mode)

Model No.	Application	Marketing	Description	General Design Function	Compatible
UC3842G	AC To DC 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc. *To replace original design 3842 Type.	<ol style="list-style-type: none"> 1. I/P: 110VAC/230VAC 2. O/P: 5V~UP 3. I start up < 40uA. 4. Frequency: RT=10KΩ,CT=3.3nF 49KHz-55KHz. 5. Totem Pole design for MOSFET. 6. Duty Cycle up to 100%. 7. UVLO: VTH(st)=16V. Vopr(min.)=10V. 8. OCP: Current Sense pin CS (1.0V Typical) 9. SCP, OLP Build in. 10. T(OP)= -40~+125°C 	
UC3843G	AC To DC 500W (PWM)	PC/TV Game/Industrial	Desk Top Etc. *To replace original design 3843 Type.	<ol style="list-style-type: none"> 1. I/P: 110VAC/230VAC 2. O/P: 5V~UP 3. I start up < 40uA. 4. Frequency: RT=10KΩ,CT=3.3nF 49KHz-55KHz. 5. Totem Pole design for MOSFET. 6. Duty Cycle up to 100%. 7. UVLO: VTH(st)=8.4V. Vopr(min.)=7.6V. 8. OCP: Current Sense pin CS (1.0V Typical) 9. SCP, OLP Build in. 10. T(OP)= -40~+125°C 	

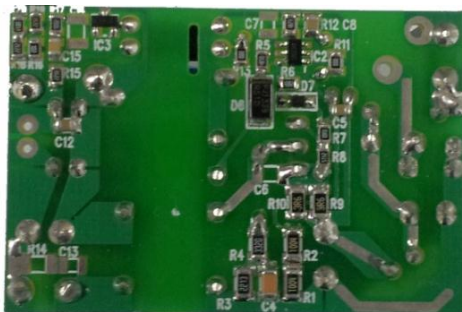
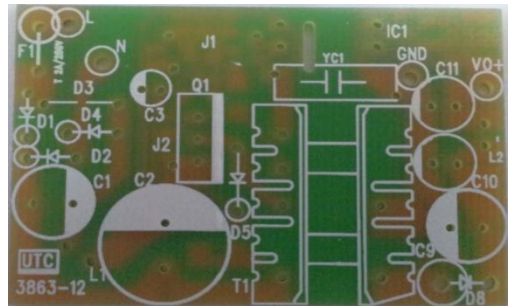
Support. Service. Solution.

Green Mode UC3863 10W 5V/2A Demo Board Performance

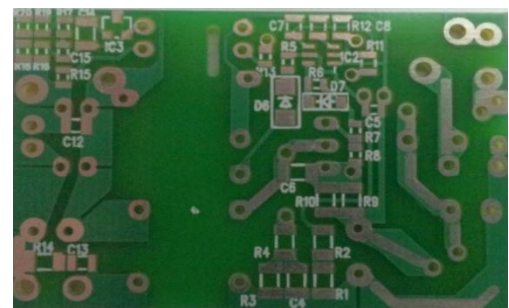
PCB LAYOUT



34mm



50mm



50mm



Support. Service. Solution.

Green Mode UC3863 10W 5V/2A Demo Board Performance

Power Consumption

AC-DC, Low-Voltage External Power Supply		
Nameplate Output Power (P_{out})	Minimum Average Efficiency in Active Mode (expressed as a decimal)	Maximum Power in No-Load Mode [W]
0 to ≤ 1 watt	$\geq 0.517 * P_{out} + 0.087$	≤ 0.100
> 1 to ≤ 49 watts	$\geq 0.0834 * \ln(P_{out}) - 0.0014 * P_{out} + 0.609$	≤ 0.100

☆ DoE Level 6 for O/P at no load power consumption.

☆ AC Input : From 115VAC/60Hz to 230VAC/50Hz.

☆ Output: At no load (0.0A)

☆ Input power $\leq 0.1W$

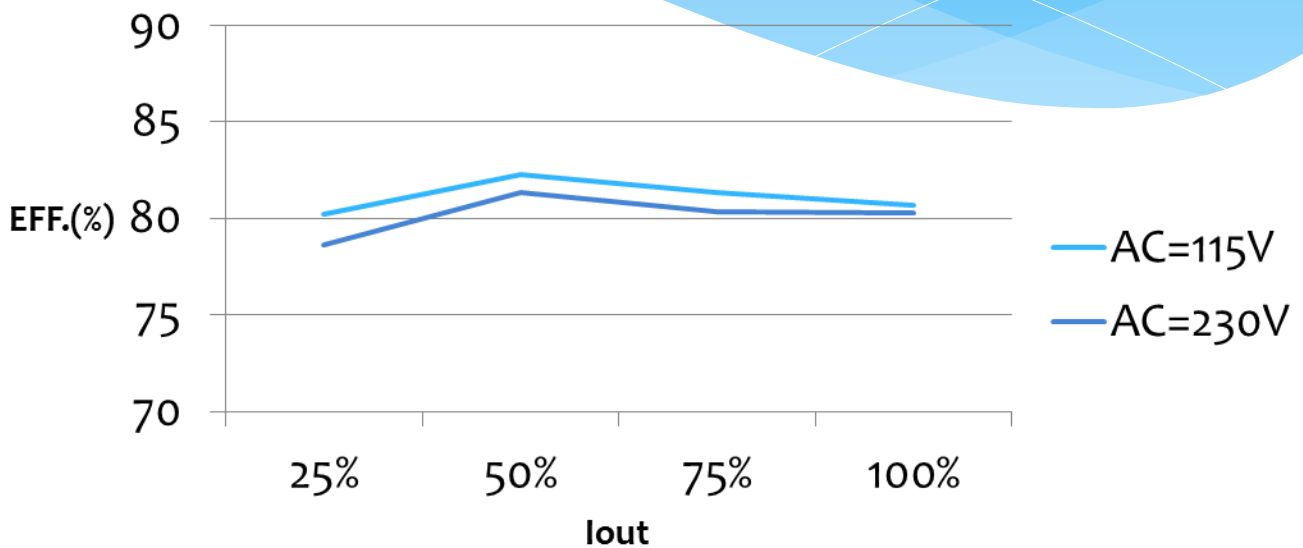
AC Input	DC Output Current	Specification	Result
		I/P W	I/P W
115.0VAC/60Hz	0.0A	≤ 0.1	0.0046W
230.0VAC/50Hz	0.0A	≤ 0.1	0.0191W



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Green Mode UC3863 10W 5V/2A Demo Board Performance

Efficiency



☆ Low voltage model (Po=10W).

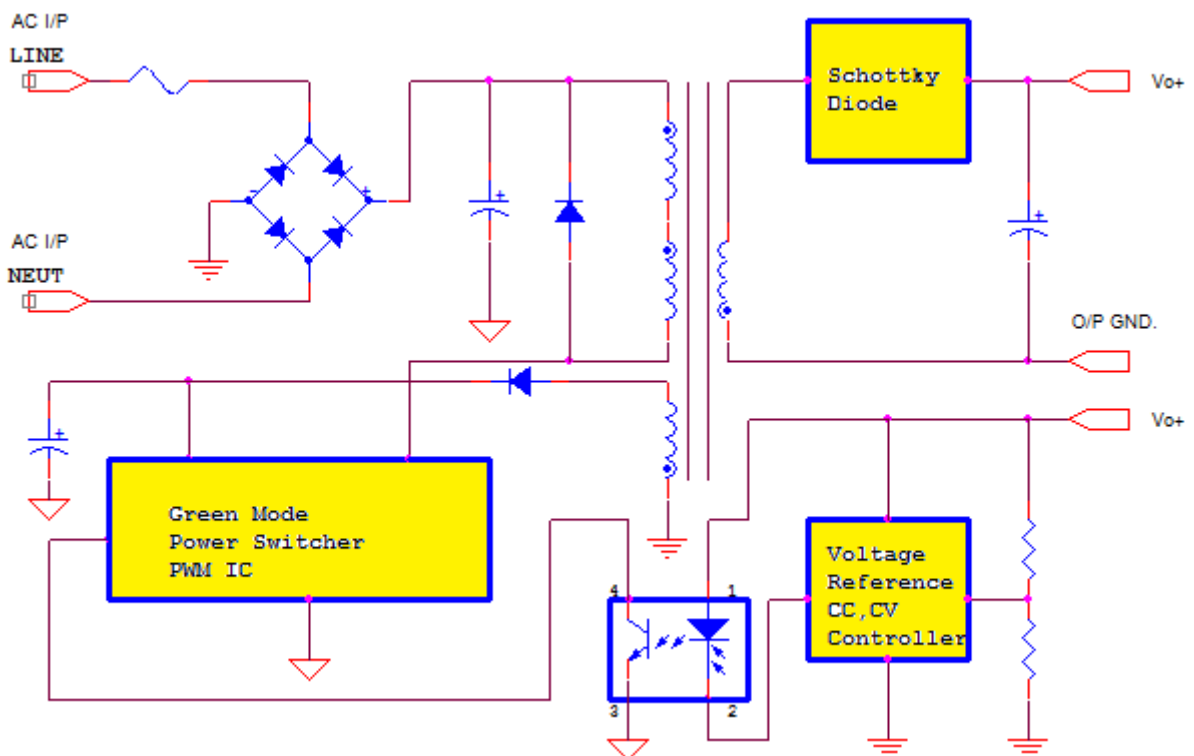
☆ Measure at end of cable, 18AWG/1.8m.

AC Input VAC/Hz	Iout(2A)	Rule AV-EFF (DoE Level 6)	Result			
			Pin (W)	Pout (W)	EFF. (%)	AV-EFF. (%)
115.0/60	25%	78.704%	3.213	2.578	80.236	81.133
	50%		6.207	5.108	82.294	
	75%		9.330	7.590	81.350	
	100%		12.426	10.022	80.653	
230.0/50	25%	78.704%	3.280	2.578	78.597	80.150
	50%		6.281	5.108	81.324	
	75%		9.442	7.589	80.375	
	100%		12.480	10.022	80.304	

A/D PWM Power Switcher Design Reference

Comparable Block Diagram

Green Mode PWM Power Switcher Design





Support. Service. Solution.

A/D PWM Power Switcher Introduce

AC To DC PWM Power Switcher (Green Mode)

Model No.	Application	Marketing	Description	General Design Function
UPS601 UPS701	AC To DC Up To 7.5W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR Camera/ADSL Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> Design for $V_{in}=90\sim 264VAC$ SMPS. Design for Output Power Up to 7.5W <ul style="list-style-type: none"> * O/P=3.3V 1.0A 3.3W. * O/P=5.0V 1.0A 5.0W. * O/P=9.0V 0.83A 7.5W * O/P=12V 0.625A 7.5W. Build in High Voltage MOSFET <ul style="list-style-type: none"> * UPS601=600V * UPS701=700V OVP, OLP, OTP, UVLO., SCP, OCP cycle by cycle. External Soft-Start Pin. Constant output power limit control pin V_{in}. Low Start up Current $< 22\mu A$. Standby Mode with Burst Mode at 10% below Programmable PFM Frequency. (Load at 10% -25% variable). Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) UTC hopping technology for improved EMI. Typical 74% Duty Cycle.
UPS602 UPS702	AC To DC Up To 12W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR Camera/ADSL Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> Design for $V_{in}=90\sim 264VAC$ SMPS. Design for Output Power Up to 12W <ul style="list-style-type: none"> * O/P=3.3V 2.0A 6.6W. * O/P=5.0V 2.0A 10W. * O/P=9.0V 1.33A 12W * O/P=12V 1.0A 12W. Build in High Voltage MOSFET <ul style="list-style-type: none"> * UPS602=600V * UPS702=700V OVP, OLP, OTP, UVLO., SCP, OCP cycle by cycle. External Soft-Start Pin. Constant output power limit control pin V_{in}. Low Start up Current $< 22\mu A$. Standby Mode with Burst Mode at 10% below Programmable PFM Frequency. (Load at 10% -25% variable). Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) UTC hopping technology for improved EMI. Typical 74% Duty Cycle.



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A/D PWM Power Switcher Introduce

AC To DC PWM Power Switcher (Green Mode) UPSXXX2 Series Power Switcher Comparable Table

Model				SL SD484X	OB2354	ST Viper22
Function	UPS602	UPS1602	UPS2602	UPS3602	UPS4602	UPS1622
PIN Assignment						
MOSFET	Vdss=600V MIN Rds(on)=5Ω MAX	Vdss=600V MIN Rds(on)=5Ω MAX	Vdss=650V MIN Rds(on)=5Ω MAX	Vdss=650V MIN Rds(on)=5Ω MAX	Vdss=650V MIN Rds(on)=5Ω MAX	Vdss=650V MIN Rds(on)=5Ω MAX
Start Up Pin	Vcc (3) Pin connect resistor to high voltage and Bias circuit.	Vcc (3) Pin connect resistor to high voltage and Bias circuit.	Vcc (2) Pin connect resistor to high voltage and Bias circuit.		Vcc (2) Pin connect resistor to high voltage and Bias circuit.	Vcc (4) Pin connect to Bias circuit. (HV Start)
Soft Start Pin	SS Pin connect a capacitor to GND.	SS Pin connect a capacitor to GND.	Build in Soft Start		Build in Soft Start	Non.
Constant Power Limit	Connect Resistor at Vin(2 pin) and High Voltage.	Build in	Build in		Build in	Build in
OCP	Current sense pin 7(CS) and Cycle by Cycle.	Current sense pin 2(CS) and Cycle by Cycle.	Current sense pin 7(CS) and Cycle by Cycle.		Current sense pin 4(CS) and Cycle by Cycle.	Build in Sense MOS Cycle by Cycle.
OLP	Build in	Build in	Build in		Build in	Build in
OVP	Primary Side Build in	Primary Side Build in	Primary Side Build in		Primary Side Build in	Primary Side Build in
UVLO	Build in VTHD(on)=14.2V Vcc(min)=8.2V	Build in VTHD(on)=14.2V Vcc(min)=8.2V	Build in VTHD(on)=14.2V Vcc(min)=8.2V		Build in VTHD(on)=14.2V Vcc(min)=8.2V	Build in VTHD(on)=14.2V Vcc(min)=8.2V
OTP	Build in 135°C	Build in 135°C	Build in 135°C		Build in 135°C	Build in 150°C
SCP	Build in	Build in	Build in		Build in	Build in
Gate Driver Capability	Build in Fix	Build in Fix	Build in Fix		Programming Vcc-G (Pin 1)	Build in Fix
ZCD	Non	Non	Build in(QR Mode)		Non	Non
Design O/P	* O/P=3.3V 2.0A 6.6W. * O/P=5.0V 2.0A 10W. * O/P=9.0V 1.33A 12W * O/P=12V 1.0A 12W.					
Frequency Mode	* Standby Mode with Burst Mode at 10% below * Programmable PFM Frequency. (Load at 10% -25% variable). * Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.)					
EMI	UTC hopping technology for improved EMI. (±3KHz)					
Start Up Istr	< 22uA.					



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A/D PWM Power Switcher Introduce

AC To DC PWM Power Switcher (Green Mode)

Model No.	Application	Marketing	Description	General Design Function
UPS603 UPS703	AC To DC Up To 15W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR Camera/ADSL Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> Design for $V_{in}=90\sim 264VAC$ SMPS. Design for Output Power Up to 15W <ul style="list-style-type: none"> * O/P=3.3V 2.4A 8W. * O/P=5.0V 2.4A 12W. * O/P=9.0V 1.67A 15W * O/P=12V 1.25A 15W. Build in High Voltage MOSFET <ul style="list-style-type: none"> * UPS603=600V * UPS703=700V OVP, OLP, OTP,UVLO., SCP, OCP cycle by cycle. External Soft-Start Pin. Constant output power limit control pin V_{in}. Low Start up Current < 22uA. Standby Mode with Burst Mode at 10% below Programmable PFM Frequency. (Load at 10% -25% variable). Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) UTC hopping technology for improved EMI. Typical 74% Duty Cycle.
UPS604 UPS704	AC To DC Up To 24W (Burst/PFM/PWM)	Battery Charger Indoor appliance	PC/DVR Camera/ADSL Meet DoE Level 6 , Etc	<ol style="list-style-type: none"> Design for $V_{in}=90\sim 264VAC$ SMPS. Design for Output Power Up to 24W <ul style="list-style-type: none"> * O/P=3.3V 3.0A 10W. * O/P=5.0V 3.0A 15W. * O/P=9.0V 2.5A 22.5W * O/P=12V 2.0A 24W. Build in High Voltage MOSFET <ul style="list-style-type: none"> * UPS604=600V * UPS704=700V OVP, OLP, OTP,UVLO., SCP, OCP cycle by cycle. External Soft-Start Pin. Constant output power limit control pin V_{in}. Low Start up Current < 22uA. Standby Mode with Burst Mode at 10% below Programmable PFM Frequency. (Load at 10% -25% variable). Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.) UTC hopping technology for improved EMI. Typical 74% Duty Cycle.



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A/D PWM Power Switcher Introduce

AC To DC PWM Power Switcher (**Green Mode**)

UPSXXX4 Series Power Switcher Comparable Table

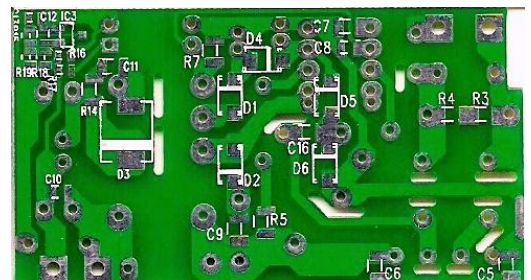
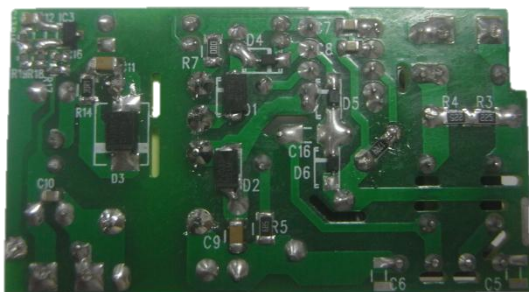
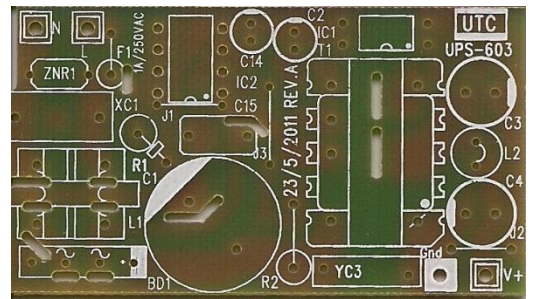
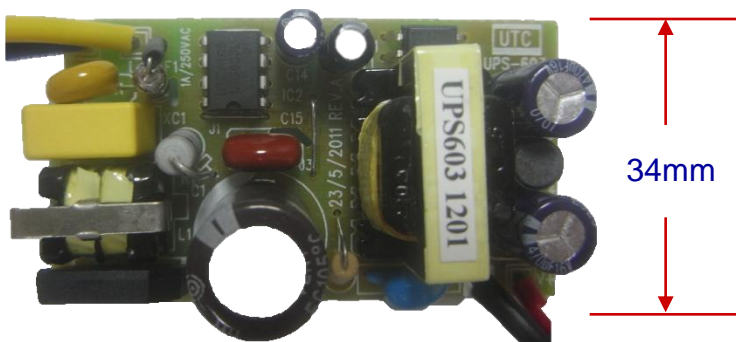
Model	Description			
	UPS604	UPS1604		
Function				
PIN Assignment				
MOSFET	Vdss=600V MIN Rds(on)=2.5Ω MAX	Vdss=600V MIN Rds(on)=2.5Ω MAX		
Start Up Pin	Vcc (3) Pin connect resistor to high voltage and Bias circuit.	Vcc (3) Pin connect resistor to high voltage and Bias circuit.		
Soft Start Pin	SS Pin connect a capacitor to GND.	SS Pin connect a capacitor to GND.		
Constant Power Limit	Connect Resistor at Vin(2 pin) and High Voltage.	Build in		
OCP	Current sense pin 7(CS) and Cycle by Cycle.	Current sense pin 2(CS) and Cycle by Cycle.		
OLP	Build in	Build in		
OVP	Primary Side Build in	Primary Side Build in		
UVLO	Build in VTHD(on)=14.2V Vcc(min)=8.2V	Build in VTHD(on)=14.2V Vcc(min)=8.2V		
OTP	Build in 135°C	Build in 135°C		
SCP	Build in	Build in		
Gate Driver Capability	Build in Fix	Build in Fix		
ZCD	Non	Non		
Design O/P	* O/P=3.3V 3.0A 10W. * O/P=5.0V 3.0A 15W. * O/P=9.0V 2.66A 24W * O/P=12V 2.0A 24W.			
Frequency Mode	* Standby Mode with Burst Mode at 10% below * Programmable PFM Frequency. (Load at 10% -25% variable). * Fix Frequency by RI pin (PWM) (over 25% fix on set frequency.)			
EMI	UTC hopping technology for improved EMI. (±3KHz)			
Start Up Istr	<22uA.			



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Green Mode UPS603 12W 12V/1A Demo Board Performance

PCB LAYOUT





Support. Service. Solution.

Green Mode UPS603 12W 12V/1A Demo Board Performance

Power Consumption

AC-DC, Low-Voltage External Power Supply		
Nameplate Output Power (P_{out})	Minimum Average Efficiency in Active Mode (expressed as a decimal)	Maximum Power in No-Load Mode [W]
0 to ≤ 1 watt	$\geq 0.517 * P_{out} + 0.087$	≤ 0.100
> 1 to ≤ 49 watts	$\geq 0.0834 * \ln(P_{out}) - 0.0014 * P_{out} + 0.609$	≤ 0.100

☆ DoE Level 6 for O/P at no load power consumption.

☆ AC Input : From 115VAC/60Hz to 230VAC/50Hz.

☆ Output: At no load (0.0A)

☆ Input power $\leq 0.1W$

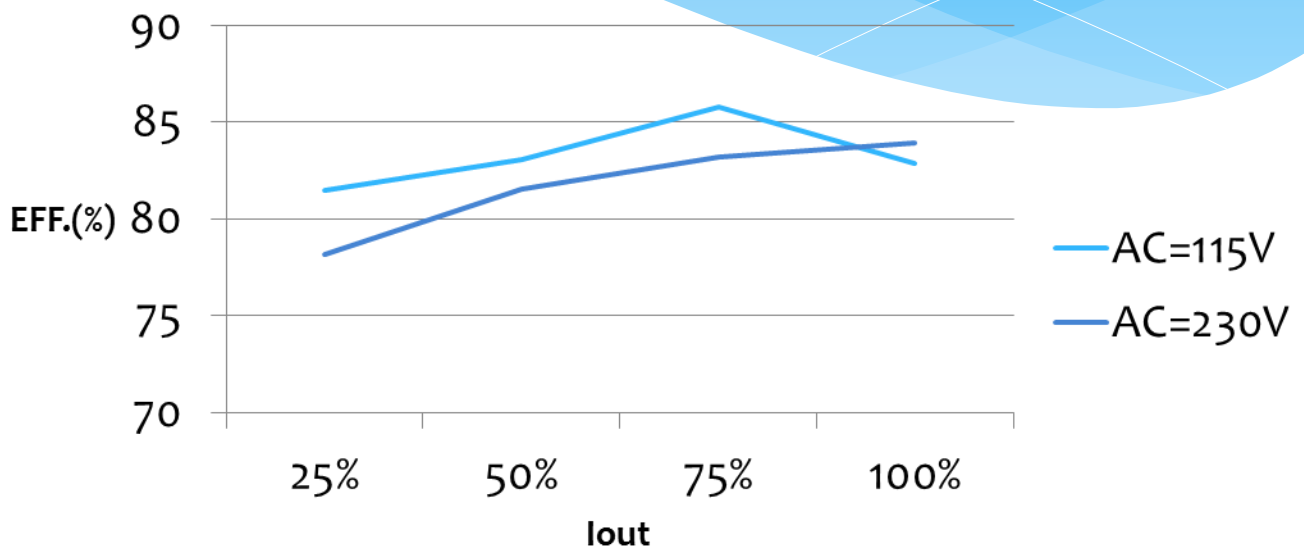
AC Input	DC Output Current	Specification	Result
		I/P W	I/P W
115.0VAC/60Hz	0.0A	$\leq 0.1W$	0.0684W
230.0VAC/50Hz	0.0A	$\leq 0.1W$	0.0933W



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UPS603 12W 12V/1A Demo Board Performance

Efficiency



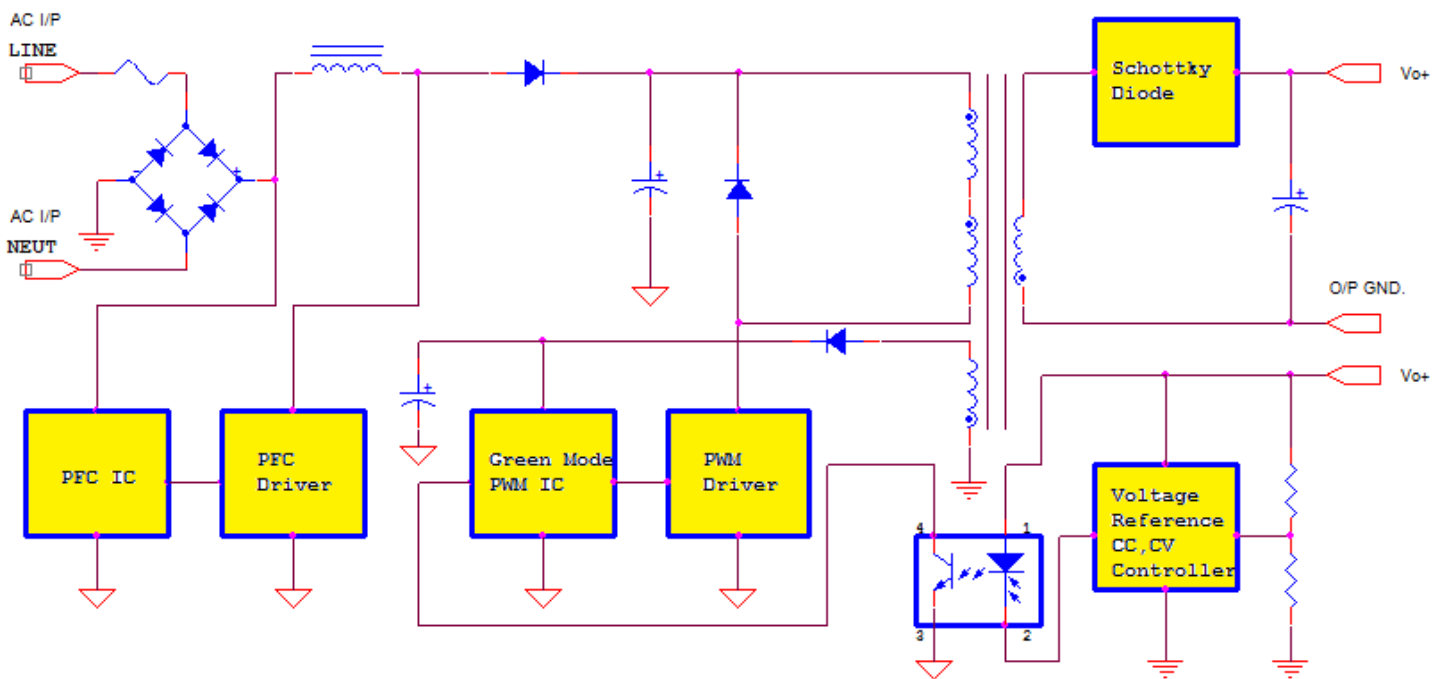
☆ Measure at end of cable, 22AWG/1.5m.

AC Input VAC/Hz	Iout(1A)	Rule AV-EFF (DoE Level 6)	Result			
			Pin (W)	Pout (W)	EFF. (%)	AV-EFF. (%)
115.0/60	25%	79.944%	3.710	3.023	81.478	83.296
	50%		7.269	6.040	83.090	
	75%		10.854	9.308	85.756	
	100%		14.505	12.019	82.861	
230.0/50	25%	79.944%	3.866	3.023	78.190	81.707
	50%		7.410	6.040	81.508	
	75%		10.862	9.037	83.198	
	100%		14.324	12.022	83.929	

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Power Factor Controller Design Reference

Comparable Block Diagram





Support. Service. Solution.

PFC Controller Introduce

PFC Controller IC Comparable Table

Model Function	Description				
	UA7527	UA7524	L8561	L8562	8565
PIN Assignment					
Working Mode	Critical Conduction Mode	Critical Conduction Mode	Critical Conduction Mode	Critical Conduction Mode	Continuous/ Discontinuous Conduction Mode
Start Up Pin	Vcc (8) Pin connect resistor to high voltage and Bias circuit.	V _{CC} (8) Pin connect resistor to high voltage and Bias circuit.	V _{CC} (8) Pin connect resistor to high voltage and Bias circuit.	Vcc (8) Pin connect resistor to high voltage and Bias circuit.	Vcc (8) Pin connect to PWM D/D Bias circuit.
Start up timer	Build in	Build in	Build in	Build in	Build in Soft Start
Zero Current Sense Detector	Idet (5) pin connect to current transformer.	Idet (5) pin connect to current transformer.	Idet (5) pin connect to current transformer.	Idet (5) pin connect to current transformer.	X
OCP/OLP/ SCP	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 5(Isense) and Cycle by Cycle.
Voltage Protection	O/P with Soft, Dynamic, Static Type (Build in)	O/P with Soft, Dynamic, Static Type (Build in)	O/P with Triggering, Static Type (Build in)	O/P with Triggering, Static Type (Build in)	Output Under Voltage. Output Over Voltage. Open Loop. I/P Under Voltage.
V _{CC} (MAX.)	30V	20V	Self Limited	Self Limited	22V
V _{CC} Zener	X	17V	18V – 24V	18V – 24V	X
UVLO V _{CC} Operating Voltage	V _{THD(on)} =10.5 – 12.5V V _{CC} (min)=2.0 – 4.0V	V _{THD(on)} =9.2 – 10.8V V _{CC} (min)=1.8 – 2.2V	V _{THD(on)} =14.0 – 16.5V V _{CC} (min)=7.2 – 8.7V	V _{THD(on)} =14.0 – 16.5V V _{CC} (min)=7.2 – 8.7V	V _{THD(on)} =10.5 – 11.9V V _{CC} (min)=9.4 – 10.8V
Hysteresis	2.0 – 4.0V	1.8 – 2.2V	6.5 – 8.3V	6.5 – 8.3V	0.8 – 1.3V
V _{REF}	2.5V	2.5V	2.5V	2.5V	Multiple
Gate Driver	I _o =500mA	I _o =500mA	I _o =400mA	I _o =400mA	I _o =1.5A
I _{str}	60uA (Typical)	250uA (Typical)	30uA (Typical)	30uA (Typical)	100uA (Typical)
Frequency	X	X	X	X	Pin 4 connect resistor adjust frequency from 50KHz to 250KHz.
Application	Ballast, SMPS, LED	Ballast, SMPS, LED	Ballast, SMPS, LED	Ballast, SMPS, LED	SMPS High Power
Design O/P	≤ 150W	≤ 150W	≤ 150W	≤ 150W	≥ 150W



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PFC Controller Introduce

PFC Controller IC Comparable Table

Model Function	Description				
	FAN6961	(ST) L6561	(ST) L6562	(ON) NCP1606 (ON) NCP1607(HG)	(OB)SN03A
PIN Assignment					
Working Mode	Boundary Mode	Critical Conduction Mode	Critical Conduction Mode	Critical Conduction Mode	Critical Conduction Mode
Start Up Pin	Vcc (8) Pin connect resistor to high voltage and Bias circuit.	V _{CC} (8) Pin connect resistor to high voltage and Bias circuit.	V _{CC} (8) Pin connect resistor to high voltage and Bias circuit.	Vcc (8) Pin connect resistor to high voltage and Bias circuit.	Vcc (8) Pin connect resistor to high voltage and Bias circuit.
Start up Timer	Build in	Build in	Build in	Build in	Build in
Zero Current Sense Detector	I _{det} (5) pin connect to current transformer.	I _{det} (5) pin connect to current transformer.	I _{det} (5) pin connect to current transformer.	I _{det} (5) pin connect to current transformer.	I _{det} (5) pin connect to current transformer.
OCP/OLP/SCP	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.	Current sense pin 4(CS) and Cycle by Cycle.
Voltage Protection	O/P with Soft, Dynamic, Static Type (Build in)	O/P with Soft, Dynamic, Static Type (Build in)	O/P with Triggering, Static Type (Build in)	O/P with Triggering, Static Type (Build in)	O/P with Triggering, Static Type (Build in)
V _{CC} (MAX.)	30V	20V	Self Limited	20V	32V
V _{CC} Zener	26.8V – 28.8V	18V – 22V	22V – 28V	X	38V
UVLO V _{CC} Operating Voltage	V _{THD(on)} =11.5 – 13.5V V _{CC} (min)=8.5-10.5V	V _{THD(on)} =11.0–13.0V V _{CC} (min)=8.7 – 10.3V	V _{THD(on)} =11.0 – 13.0V V _{CC} (min)=8.7-10.3V	V _{THD(on)} =11.0 – 13.0V V _{CC} (min)=8.7 – 10.3V	V _{THD(on)} =15.5 – 17.5V V _{CC} (min)=8.0 – 9.6V
Hysteresis	X	2.2– 2.8V	2.2– 2.8V	2.2 – 2.8V	7.7V
V _{REF}	2.5V	2.5V	2.5V	2.5V	2.5V
Gate Driver	I _o =?mA	I _o =400mA	I _o (source)=600mA, I _o (sink)=800mA	I _o (source)=500mA, I _o (sink)=800mA	I _o (source)=?, I _o (sink)=?
I _{str}	10uA (Typical)	50uA (Typical)	40uA (Typical)	20uA (Typical)	15uA (Typical)
Frequency	X	X	X	X	X
Application for	Ballast, SMPS, LED	Ballast, SMPS, LED	Ballast, SMPS, LED	Ballast, SMPS, LED	Ballast, SMPS, LED
Design O/P	≤ 150W	≤ 150W	≤ 150W	≤ 150W	≤ 150W



Support. Service. Solution.

PFC Controller Introduce

PFC Controller IC Comparable Table

Model Function	Description			
	(LS)SA7527			
PIN Assignment				
Working Mode	Critical Conduction Mode			
Start Up Pin	Vcc (8) Pin connect resistor to high voltage and Bias circuit.			
Start up Timer	Build in			
Zero Current Sense Detector	Idet (5) pin connect to current transformer.			
OCP/OLP/ SCP	Current sense pin 4(CS) and Cycle by Cycle.			
Voltage Protection	O/P with Soft, Dynamic, Static Type (Build in)			
VCC (MAX.)	30V			
V _{CC} Zener V	X			
UVLO V _{CC} Operating Voltage	V _{THD(on)} =10.5 - 12.5V V _{CC} (min)=2.0-4.0V			
Hysteresis	2.0 - 4.0V			
V _{REF}	2.5V			
Gate Driver	I _o =500mA			
I _{str}	60uA (Typical)			
Frequency	X			
Application	Ballast, SMPS, LED			
Design O/P	≤ 150W			



Support. Service. Solution.

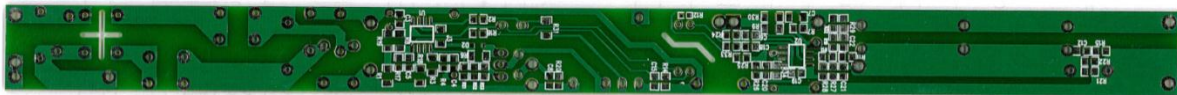
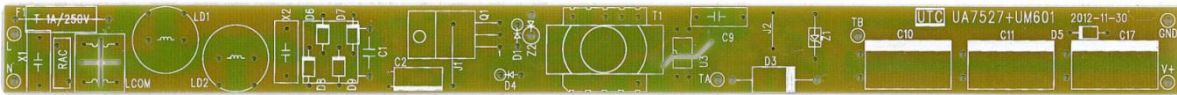
UA7527 20W 27V/0.75A Demo Board Performance

PCB LAYOUT



18mm

250mm





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UA7527 20W 27V/0.75A Demo Board Performance

Efficiency

☆ AC Input : From 110VAC/60Hz to 220VAC/50Hz.

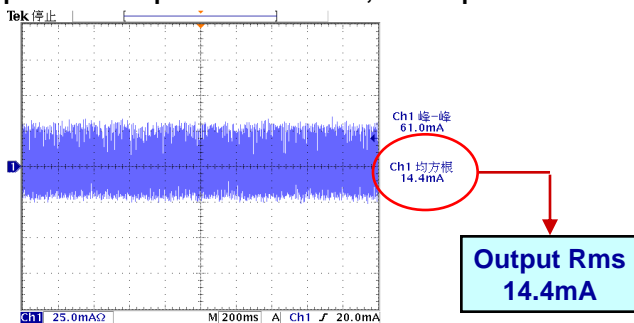
☆ Output: At full load (0.75A)

☆ Efficiency is over 85.00% at full range.

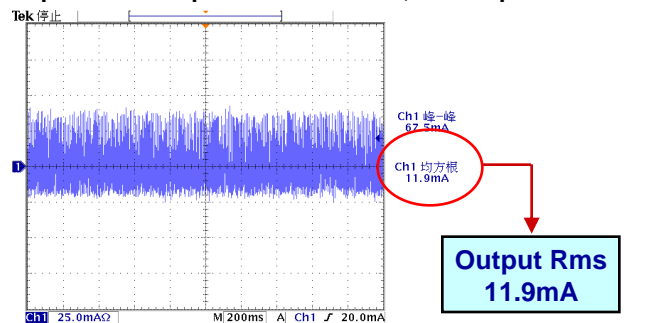
AC Input	DC Output Current	Specification	Result				
		Eff. %	I/P W	O/P W	Eff. %	PF	Graphic
110.0VAC/60Hz	0.75A	-	21.478	18.900	87.997	0.972	A
220.0VAC/50Hz	0.75A	-	23.841	20.730	86.951	0.927	B

Output Current Graphic:

Graphic A: AC Input: 110VAC/60Hz , DC Output: At 0.75A



Graphic B: AC Input: 220VAC/50Hz , DC Output: At 0.75A





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PFC and PWM Combo Controller Introduce

Comparable Table

Model	Description		
Function	7842-1	7842-2	TDA16888
PIN Assignment	<p>Pinout for 7842-1: 1 IEAO, 2 IAC, 3 ISENSE, 4 VRMS, 5 SS, 6 VDC, 7 RAMP 1, 8 RAMP 2, 9 DC ILIMIT, 10 GND, 11 PWM OUT, 12 PFC OUT, 13 Vcc, 14 VREF, 15 VFB, 16 VEAO.</p>	<p>Pinout for 7842-2: 1 IEAO, 2 IAC, 3 ISENSE, 4 VRMS, 5 SS, 6 VDC, 7 RAMP 1, 8 RAMP 2, 9 DC ILIMIT, 10 GND, 11 PWM OUT, 12 PFC OUT, 13 Vcc, 14 VREF, 15 VFB, 16 VEAO.</p>	<p>Pinout for TDA16888: 1 PFC IAC, 2 Vref, 3 PFC CC, 4 PFC CS, 5 GND S, 6 PFC CL, 7 GND, 8 PFC OUT, 9 Vcc, 10 PWM OUT, 11 PWM CS, 12 SYNC, 13 PWM SS, 14 PWM IN, 15 PWM RMP, 16 ROISC, 17 PFC FB, 18 PFC VC, 19 PFC VS, 20 AUX VS.</p>
Working Mode	PFC with PWM Combo PFC=Continuous Conduction Mode	PFC with PWM Combo PFC=Continuous Conduction Mode	PFC with PWM Combo PFC=Continuous/discontinuous Mode
Frequency	PFC Frequency = PWM Frequency, and adjustment by RAMP 1 (PIN 7) (RtCt)	PFC Frequency*2 = PWM Frequency and adjustment by RAMP 1 (PIN 7) (RtCt)	PFC Frequency = PWM Frequency
Start Up Pin	Vcc (13) Pin connect resistor to high voltage and Bias circuit.	Vcc (13) Pin connect resistor to high voltage and Bias circuit.	Vcc (9) Pin connect resistor to high voltage and Bias circuit.
Soft Start	Adjustment by SS Pin (5)	Adjustment by SS Pin (5)	Adjustment by SS Pin (13)
OCP/OLP/ SCP	PFC: Current sense pin 3(Isense Pin) and Cycle by Cycle. PWM: Current sense pin 3(DC Ilim Pin) and Cycle by Cycle.	PFC: Current sense pin 3(Isense Pin) and Cycle by Cycle. PWM: Current sense pin 3(DC Ilim Pin) and Cycle by Cycle.	PFC: Current sense pin 4 and Cycle by Cycle. PWM: Current sense pin 11 and Cycle by Cycle.
Over Voltage Protection	PFC: OVP Build in.	PFC: OVP Build in.	PFC: OVP Build in
UVLO	PFC and PWM : Build in VTHD(on)=13.0V Vcc(min)=3.0V	PFC and PWM : Build in VTHD(on)=13.0V Vcc(min)=3.0V	PFC and PWM : Build in VTHD(on)=14.0V Vcc(min)=3.0V
Brown-out Protection	Build in	Build in	No
Gate Driver Capability	PFC and PWM: Io=500mA	PFC and PWM: Io=500mA	PFC and PWM: Io=200mA
Istr	700uA (Typical)	700uA (Typical)	23uA(Typical)
Application for	SMPS	SMPS	SMPS
Design O/P	70W ~ 500W	70W ~ 500W	70W ~ 500W



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