



# UTC 產品介紹交流會

UTC



福顺半导体公众号



UTC

「友誠創共贏  
順芯展夢想」

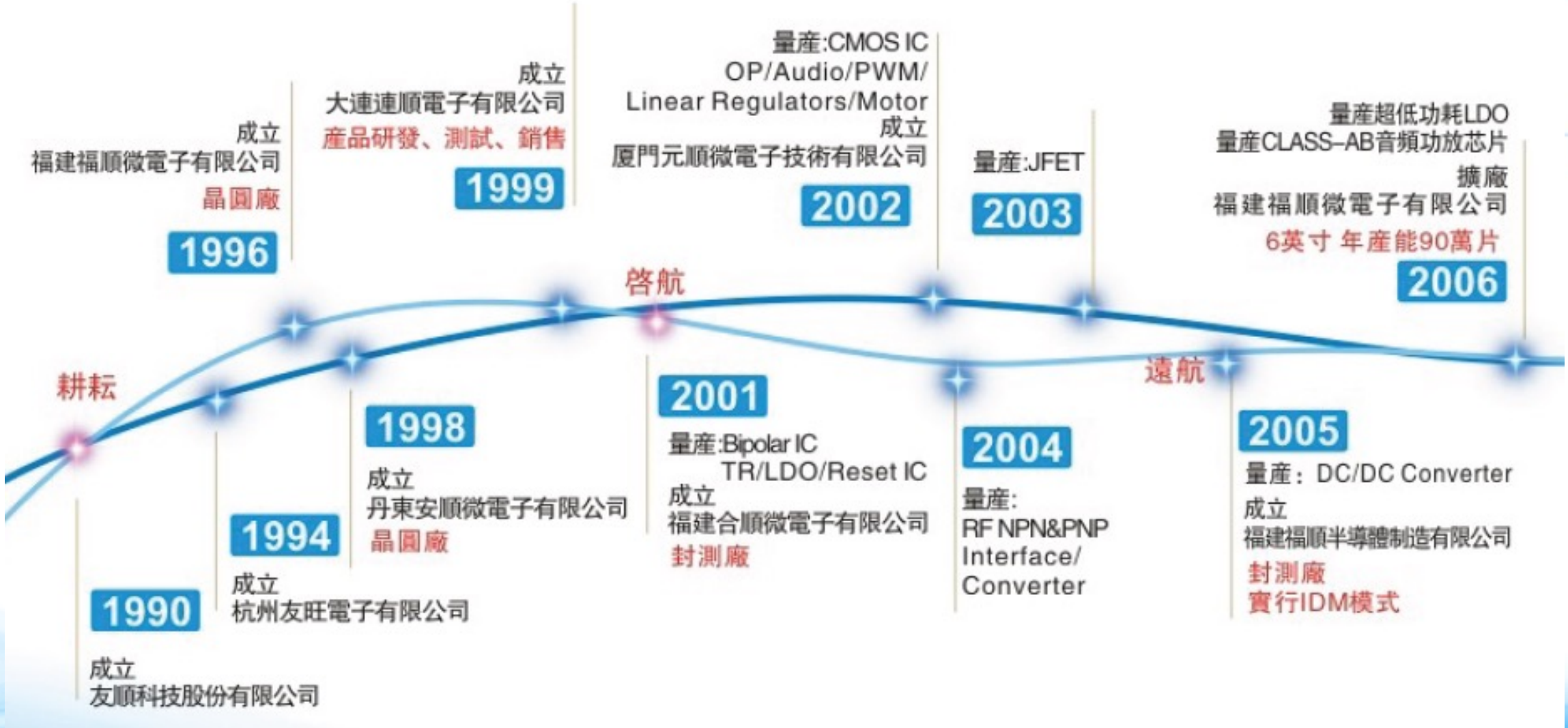
友順科技股份有限公司成立於1990年，是全球領先的集成電路與功率半導體廠商，集團總部位於台北，生產基地位於福州、廈門。

全球擁有逾2300位員工，專注致力於模擬IC及分立器件Discrete 的研發、設計、晶圓製造、封裝、測試及行銷業務。

公司經營策略採取IDM整合元件製造模式深耕多年，擁有豐富的電源、類比元件產品線來提供客戶完整的解決方案。並擁有專精的設計開發能力，品質認證的芯片與封測廠，強大的服務支援，期許以IDM資源垂直整合的優勢，提供客戶最佳產品競爭力，並創造客戶最大之經濟效益。



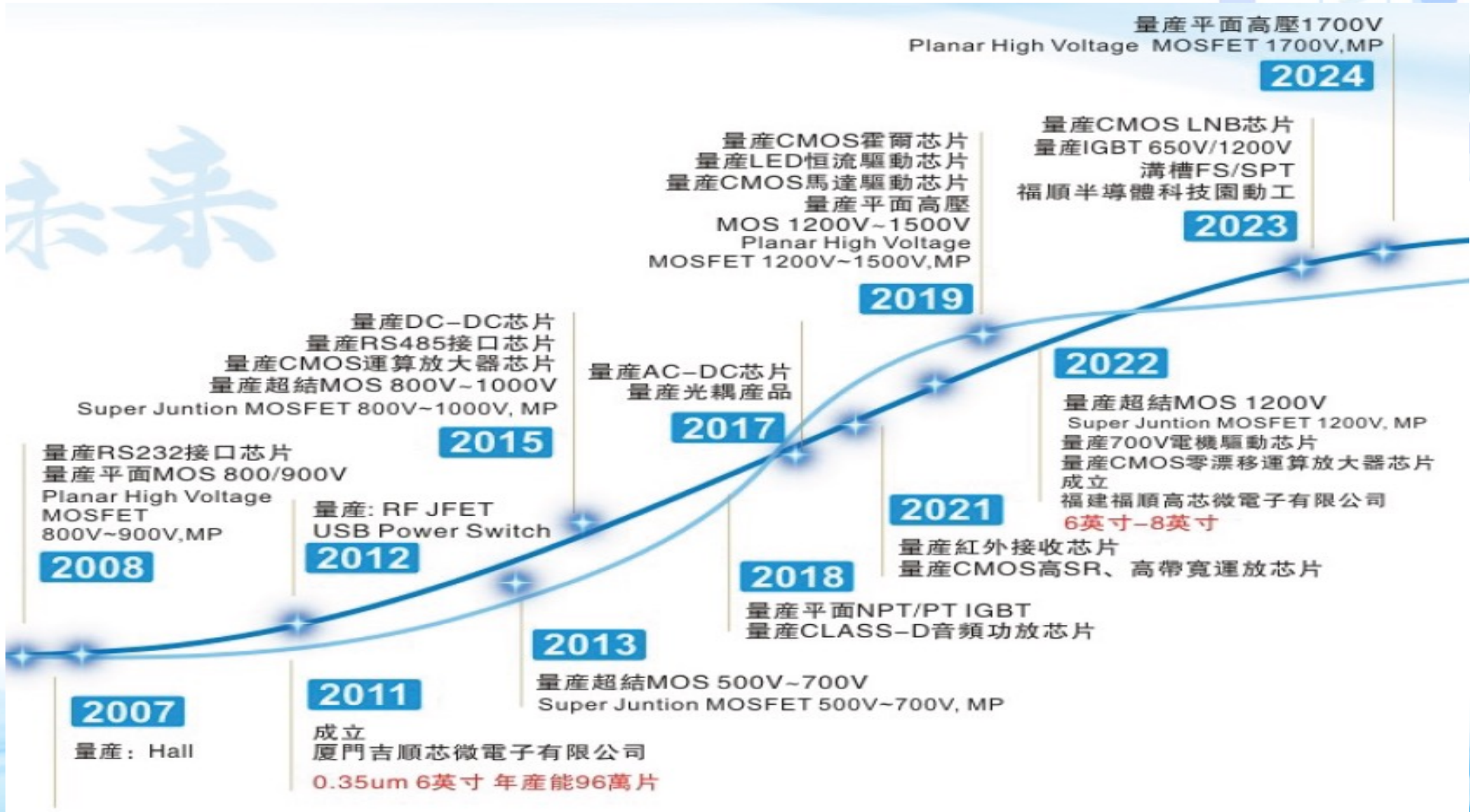
# 發展歷程





# 發展歷程

順



未來

# 生產據點



福建福順微電子有限公司  
Wafer Fab

福建福順微電子有限公司成立於1996年，公司註冊資本1.41億元，是一家以6英寸集成電路芯片加工高科技企業，月產能10萬片。  
福建福順高芯微電子有限公司成立於2022年，註冊資本2億元，項目總投資10億，一期投資5億元，6英寸芯片月產能9萬片，二期投體5億元擴建生產線，適時導入8英寸試驗線。



品質 優異 客戶 滿意



福建福順半導體制造有限公司  
Assembly & Final Test

福建福順半導體制造有限公司成立於2005年1月，公司註冊資金為2.02千萬美金。現有廠區佔地面積為5.5萬<sup>2</sup>，配置有先進的封裝與測試設備，封裝品種齊全，600KK/月產能，目前已通過ISO9001、ISO14001、TS16949等質量管理體系認證，為顧客提供專業的芯片封裝&測試服務。



專業 速度 品質 創新



# 生產據點



## 廈門吉順芯微電子有限公司

Wafer Fab

廈門吉順芯微電子有限公司成立於2011年，註冊資本8002.88萬美元，是一家工藝能力最高為0.35um 6英的集成電路晶圓加工高科技企業，占地面積75050平方米，月產能8萬片。為優質IC設計公司提供合封IC中的器件芯片，被評為“國家高新技術企業”、“廈門市未來骨幹企業”，公司秉承以“技術取勝質量創優以人為本與顧客同發展為社會創造價值”的經營理念，努力為客戶提供優質的服務。



精益 高效 協同 進取





# 產品應用廣泛



## 工业电子



光伏储能逆变



伺服驱动器



变频器



PLC 控制器



UPS

## 新能源车



充电桩



OBC



汽车 ABS



车窗控制



车载功放

## 消费电子



智慧生活/AI/家电



电源/PD快充



PC M/B / 打印机



电表



电动工具

# UTC

# 封装多样化



HZIP系列

SOD系列

SMD系列

SIP系列

DFN系列

To(贴片)

DIP系列

SSOP系列

SOP系列

SOT系列

TO系列



# UTC

順友

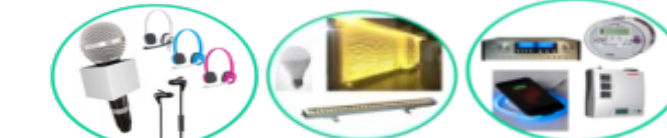


# UTC產品介紹-Discrete



**TRANSISTOR**  
(音響放大器、衛星通訊、導航系統)

**SCR**  
(點火器、電熱水器、電子斷路器)



**JFET**  
(麥克風、LED照明、智能電錶、音響放大器、無線充電、光伏逆變器)

**Schottky (MGBR/TGBR)**  
(電源供應器、UPS不斷電系統、TV電源)



**MOSFET**  
12V~1500V  
(充電樁、適配器、充電器、空調設備、白色家電)

**DIODE**  
(太陽能逆變器、適配器、充電器、智能電錶)



**Super Junction**  
500V~1200V  
(手機充電器、資料中心電源、家電電源、汽車電子)

**Photocoupler**  
(充電樁、適配器、充電器、空調設備、白色家電)



**IGBT**  
(汽車、充電樁、電磁爐)

**TVS**  
(STB機頂盒、多媒體產品、3D印表機、網通設備、攜帶式裝置)



**TRIAC**  
(熱水壺、電鍋、IH微波爐、分離式空調、洗衣機、吸塵器、電風扇、免治馬桶座)



# UTC產品介紹-IC



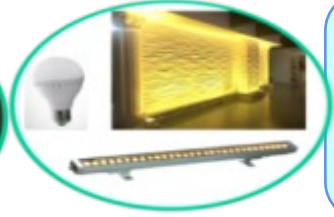
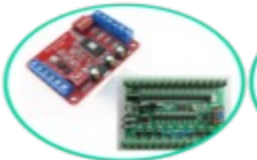
**AC-DC Power Management**  
 (適配器、PD快充充電器、家電電源、ATX電源、UPS、資料中心、電源)

**Amplifier / Comparator**  
 (藍芽音箱、自動控制機器手臂、血壓血氧心跳監視器、智慧電錶、Mother Board、車載機)



**DC – DC Power Management**  
 (Car charger、機頂盒、無人機、TV、桌上電腦、智慧手機、PAD)

**Logic IC**  
 (電機控制板、邏輯控制板)



**LED Lighting**  
 (球泡燈、蠟燭燈、T5/T8燈管、路燈、走道燈、LED車燈、洗牆燈、LED手電筒、礦燈)

**Interface and Driver Circuit**  
 (冰箱、洗衣機、機頂盒、Mother Board、Router、工業控制板)



**Motor Fan. Step Motor Hall IC**  
 (印表機、機殼散熱風扇、直流節能風扇、電動按摩椅、冷氣機、除濕機、掃描機)

**Automotive IC**  
 (汽車點火裝置、汽車車燈組、汽車除霧裝置、汽車雨刷裝置)



**Li-Battery Protection**  
 (移動電源、筆記型電腦、智慧型手機、PAD、電動手工具)

**Special Application**  
 (對講機、電話機、警報器、遙控器、Mouse/Keyboard、聖誕燈、收音機)





# 小信号产品线

完整多元的小信号产品线：三极管，TVS，稳压二极管，JFET，阵列式达林顿管等系列，适用于工业类，消费类，光伏逆变器，充电桩，储能，新能源车等各种应用。

Small Signal Transistor

(小信号三极管)

## 数位型晶体管 (三极管)

DTA系列PNP三极管100mA  $R1\&R2=1k\Omega\sim 100k\Omega$   
DTB系列PNP三极管500mA  $R1\&R2=1k\Omega\sim 10k\Omega$   
DTC系列NPN三极管100mA  $R1\&R2=1k\Omega\sim 100k\Omega$   
DTD系列NPN三极管500mA  $R1\&R2=1k\Omega\sim 10k\Omega$

## 组合型双晶体管 (三极管)

DTA114、DTA123、DTA143

## 射频晶体管

NPN 6V~30V Up to 12GHz  
PNP -6V~-30V Up to 8GHz



UTC



# 小信号产品线



Zener Diode (齐纳二极管)

1.8V~200V 高精度  
UMMSZ5234B、UMMSZ5232B、BZT52C5V1S

JFET (场效应晶体管)

通用N-CH &P-CH  
电容式麦克风应用JFET  
射频应用JFET  
TF2123、K1109、2SK3666、2SK508、2SK3557

Darlington Transistor Array (达林顿晶体管)

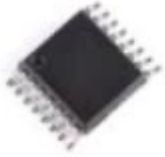
3CH/4CH/7CH/8CH  
继电器、小型步进马达、LED电源  
ULN2003、ULN2803、ULN2001



SOT-23S



SOT-523



TSOP-16



SOP-16





# 电源管理IC



完整的电源管理IC方案：包含LDO，AC/DC，PWM IC，DDR termination Regulator，Shunt Reference Regulator，Reset IC，CC/CV Combo IC，广泛应用于工业控制、光伏逆变器、储能、充电桩、新能源、LED照明及消费电子等。

LDO  
(低压差电压稳压器)

固定式及可调式稳压器  
输入电压 3V~40V 输出电流 0.1A~3.0A  
输入电压 -7V~-40V 输出电流 -0.1A~-1.5A 稳压器及带反向保护功能  
带开光控制功能的稳压器  
通用低压差稳压器  
极低静态电流 LDO，输入电压 < 36V，静态电流 < 2 uA 低噪、快速回应、高电源抑制比(PSRR) LDO

LD1117、LD2117、LM2937、UR71XX...

DDR  
(双倍速率稳压器)

支持DDR2 DDR3 DDR4  
输入电压 3V~6V 输出负载电流 1.5A~3A  
UR5512、UR5516、UR5595



DFN1010-4



DFN1616-6



DFN3030-8



DFN3030-10



# 电源管理IC

电源管理IC (合封MOS) 栅极驱动

标准电压或电流模式PWM控制器  
节能模式PWM控制器  
准谐振控制器和合封MOS的转换器  
非隔离降压型控制器  
全桥或半桥驱动器  
PWM: UC38系列、UC28系列...

DC-DC电源

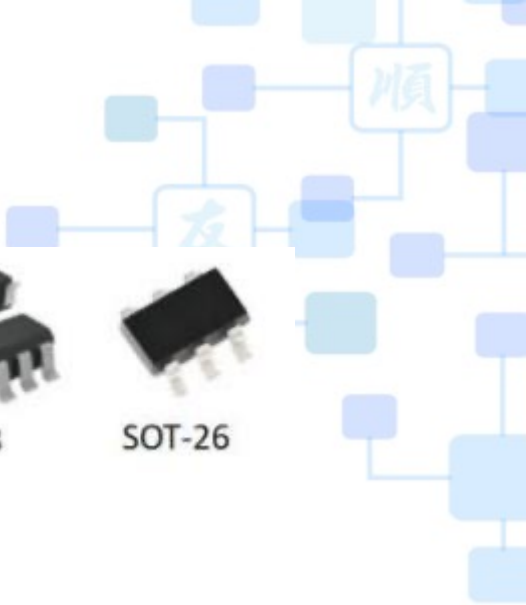
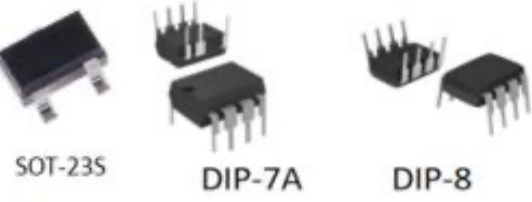
降压/升压/反相  
P1785、MC34063A、UD32121

LED Driver

照明LED驱动器 L16B\*\*、  
背光LED驱动器 UD8971、UD8973  
LED显示屏驱动器 L16B45A、USL3533

关联调节器/组合IC

参考电压0.8V、1.24V、2.5V  
低I<sub>K</sub>A(Min)0.1mA、0.5mA、1mA  
电压电流控制器 (CC/CV)  
参考电压\*1+运算放大器\*2  
参考电压\*1+运算放大器\*2+比较器\*2  
UM601A、UM604A、UM609A...





# 逻辑 IC



标准逻辑器件和低功耗逻辑产品，通用逻辑产品种类齐全，具有多个系列超500个以上型号，客户覆盖：储能、光伏逆变、充电桩、网络通讯、NB/MB、VGA显卡、医疗器械、工控、家电、新能源车、AI、消费类电子等。

**U74 Tiny Logic & Standard Logics**  
缓冲器、驱动器、收发器、触发器、锁存器、寄存器、逻辑闩

**U74 Logic family HC/HCT、AC/ACT、AHC/AHCT、LV/LVC/LCX/LVX、AUP、AUC、AVC、CBT/CBTLV/7SH、UCD40\*\*/UTC40\*\*/CD/TC**

**Analog Switch模拟开关**

**单通道或多通道模拟开关、多路复用器、解复用器、总线开关**  
US5C33\*\*、UTAS4157、U74CB3Q3245、UCA82C25\*

**Voltage Translators(level-shifters)**  
电压转换器、电平转换器

**UTXS Family、UTXB Family、ULSF Family**  
UTXB010\*、UTXS010\*、ULSF010\*





# 运放/比较器/接口IC



**Operational Amplifier**  
通用运算放大器、高性能和小封装运算放大器

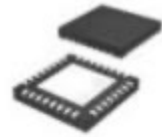
**Rail to Rail I/O, High bandwidth, Low offset, High slew rate, Low Power**  
LM358、LM324、ULV6001、ULV8542

**Voltage Comparator**  
通用比较器、高性能和特殊用途比较器

**Rail to Rail I/O, Low Voltage & Low Power, Open-drain / Push-pull output**  
LM393、LM2903、LM339

**接口IC**

**RS-232 ; RS-485 系列多通道多用途收发器LIN和CAN总线收发器, 音频线路驱动器**  
UT3232、UTRS485、UT3243



QFN-32(5x5)



SOT-353



SOT-25



MSOP-8



SOP-8



TSSOP-14





# 特殊功能IC



霍尔传感器/电机驱动器/座机电信电路IC/锂电池保护及充电IC/漏电流检测器/音频放大器。  
UTC具备优异的开发设计能力,能为不同特定应用市场的客户需求开发,设计并持续推出各种新的解决方案,满足客户和市场需求。

霍尔传感器

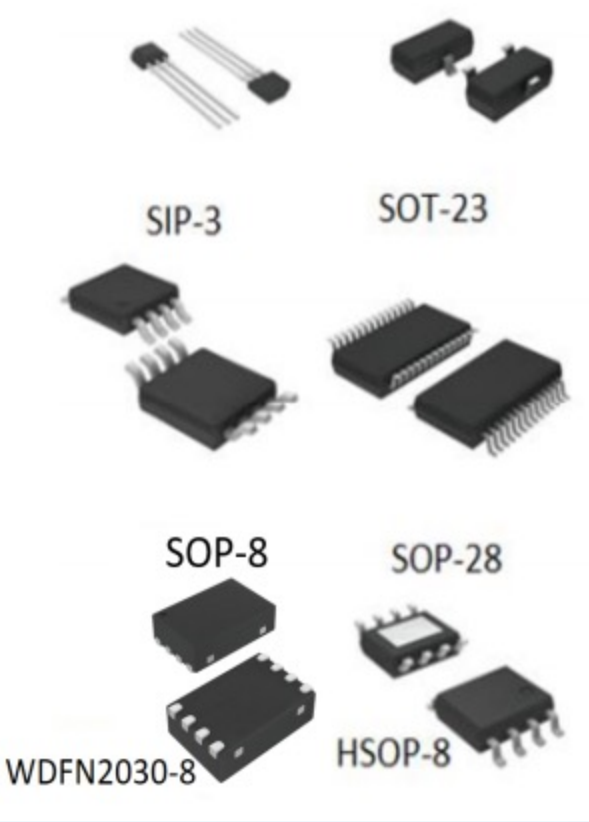
工作电压: 2.5V~28V  
极性检测: 单极/双极/全极/线性  
UH8104、UH8102A

电机驱动器

无刷直流电机  
VCC:1.8V~7V,VM: 2.3V~18V,工作电流: 0.2~2A  
有刷直流电机  
VCC: 3.8V~16.8V,工作电流: 0.5A~2A  
BA6220、UMD9114

锂电池保护及充电IC

锂电池保护IC UB2\*\*, UB242\*, UB3860  
高精度且丰富的电压检测, 1颗~4颗电池  
锂电池充电IC UB20\*\*, UC34363  
设计电路简单且不需要外部电感  
UB242、UB261





# 特殊功能IC

座机电信电路IC

应用范围包括家庭和办公室、免提电话、对讲机、免提套件或其他相关产品

TEA1098A、TA3100\*、TEA1062N/AN

漏电流检测器

用于检测A和AC信号

M54133、M54223

音频放大器

单通道音频功率放大器  
双通道音频功率放大器  
多通道大功率音频放大器  
带直流音量控制的立体声音频功率放大器 立体声耳机驱动放大器  
音频相关放大器(音频线路驱动器)

LM4862、2206、LM4811



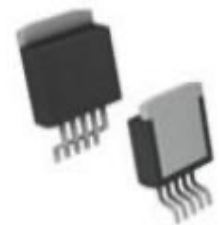
MSOP-8



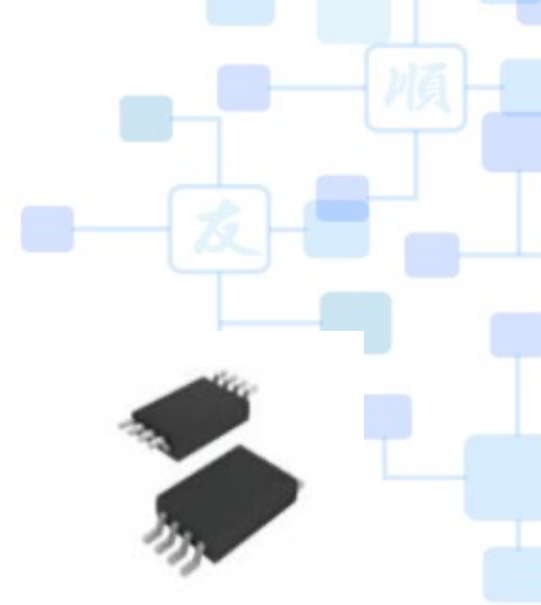
TSSOP-8



HTSSOP-20



TO-263-5



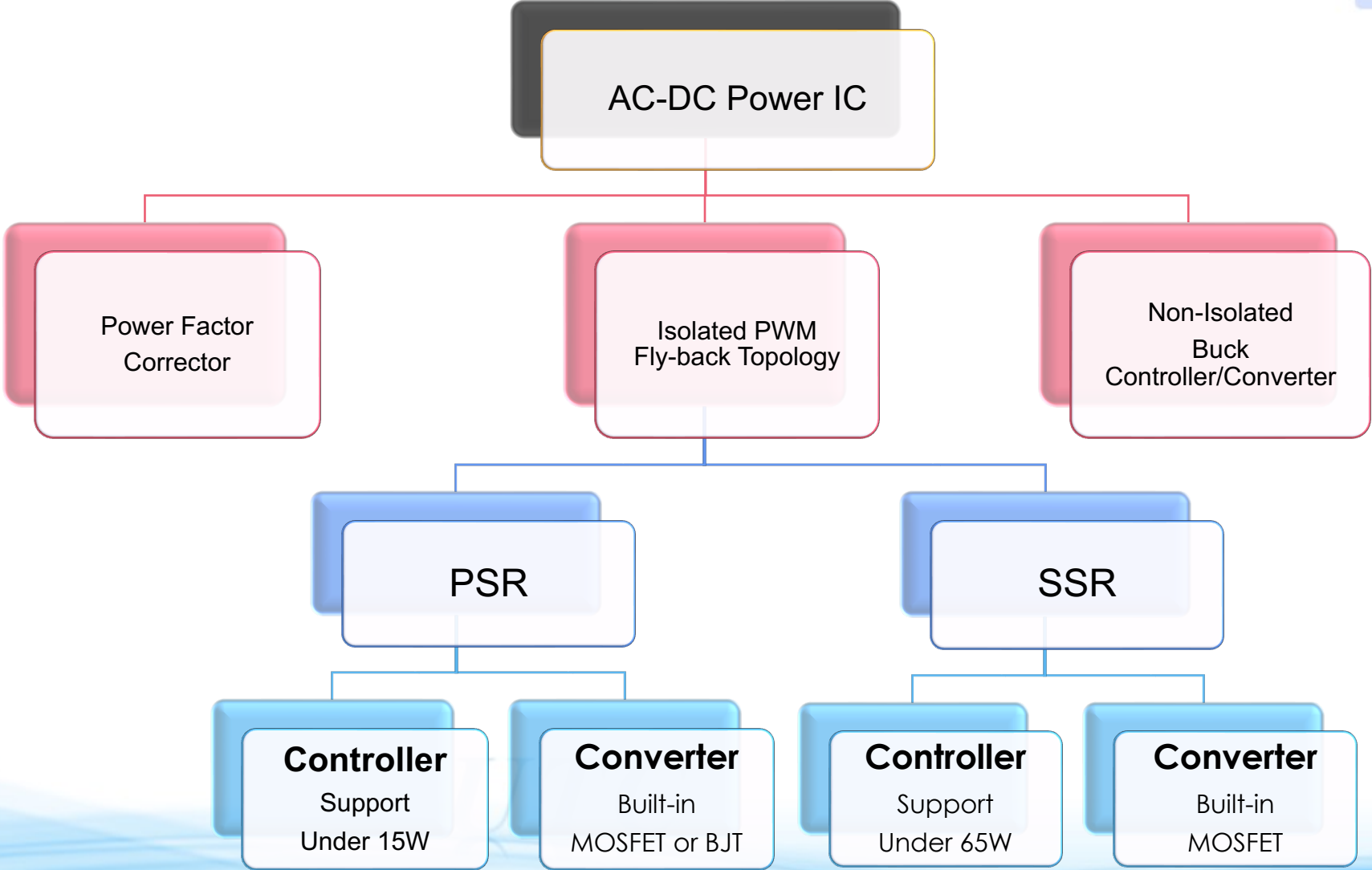


# AC/DC產品介紹

*UTC*



# Power IC List





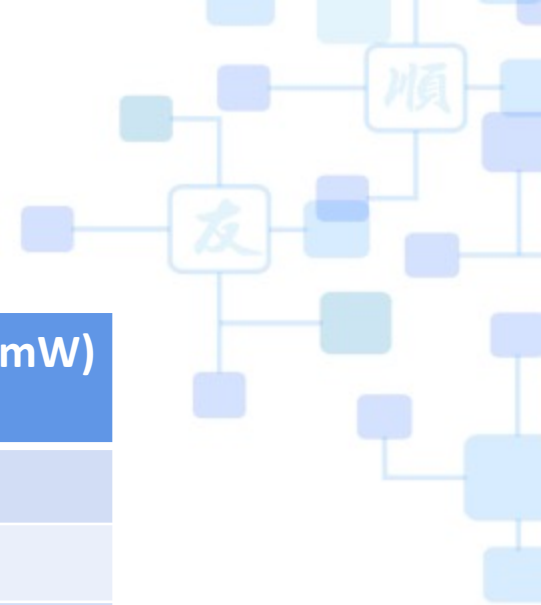
## AC-DC 系列

- UC3826(QR Flyback)
- UCSR365XS(PSR comb IC, 內含SJ MOSFET 650V , 並自帶高壓啟動電路)
- US365X (PSR comb IC, 內含平面型 MOSFET 600V)
- UPSR104(PSR controller)
- UCS165XS(SSR comb IC, 內含SJ MOSFET 650V , 並自帶高壓啟動電路)





# EVB List



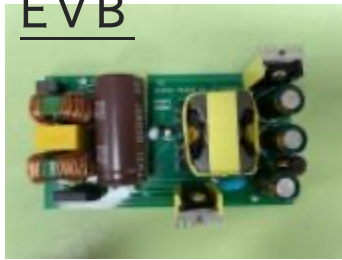
	Po(W)	Vo(V)	平均效率(%) @230Vac	待機功耗(mW) @230Vac
UC3826	60	12	91.64	55
UCS165XS	24	12	89.58	46.8
UCSR365XS	12	5	81.46	70
UPSR104	10	5	78.36	73

UTC



# UC3826 60W

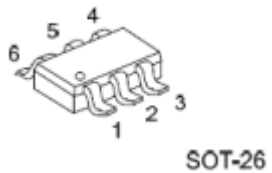
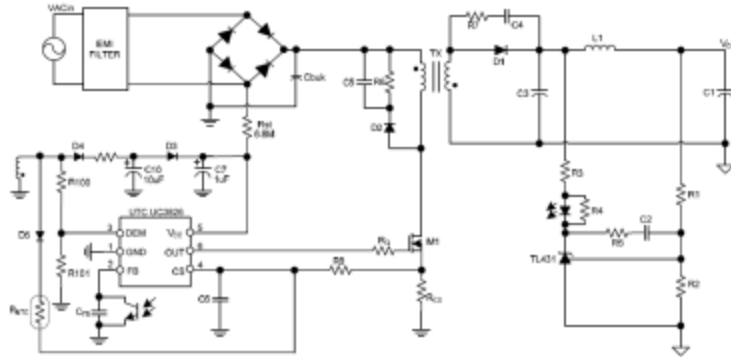
## EVB



### FEATURES

- \* Proprietary frequency hopping for Improved EMI performance
- \* Cycle-by-cycle current limiting
- \* CCM/Valley Switching Operation
- \* Fixed switch frequency 60~70kHz
- \* Dynamic peak current limiting for constant output power
- \* Built-in synchronized slope compensation
- \* Gate output voltage clamped at 16V
- \* Adjustable DC output OVP/UVP/OTP
- \* OLP/VCC OVP/OTP/BNO/LNO (automatic recovery)
- \* Internal Soft Start

### TYPICAL APPLICATION CIRCUIT



BOM	
PMIC	UC3826
MOSFET	10N65
Diode	TGBR40U100C
Voltage Reference	TL431

### DESCRIPTION

The UTC UC3826 provides a CCM/valley switching mixed mode operation for better efficiency performance. The operation mode stays at CCM at heavy load, and switch to valley switching at light load.

The UTC UC3826 is a high performance current mode PWM controller ideally suited for low standby power. Low VCC startup current make the power reliable on startup design and a large value resistor could be used in the startup circuit to minimize the standby power. At no load condition, the IC operates in power-saving mode for lower standby power, decreasing frequency for Higher conversion efficiency at light load condition. Excellent EMI performance is achieved with UTC proprietary frequency hopping technique (ZL201020615247.1) together with soft driver control. UTC UC3826 is packaged by using tiny SOT-26 package. It has such applications as: battery charger, power adaptor, set-top box power supplies, ink jet printers, open-frame SMPS.

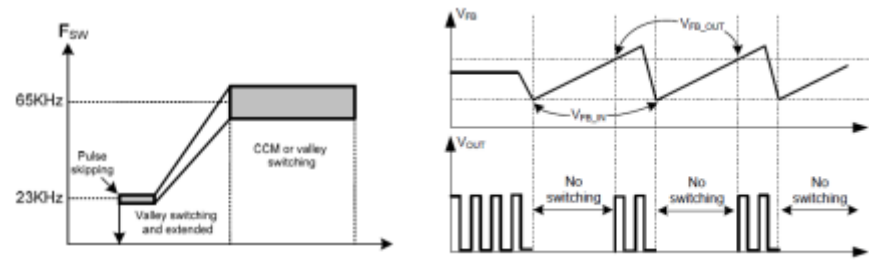
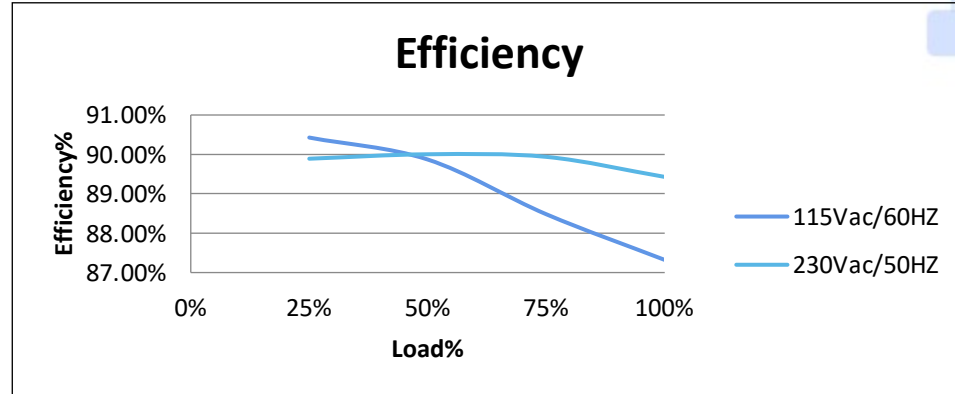


Fig. 3 Burst Mode Operation



UC3826 Standby Power		
Vin(AC)(V)	Pin(mW)	Vout(V)
90V/60Hz	27	12.19
115V/60Hz	31	12.19
230V/50Hz	61	12.19
264V/50Hz	85	12.19

Protection	Statement
UVLO	Yes
OVP	Yes
OCP	Yes
OTP	Yes
Vo_OVP	Yes
Vi_OVP	Yes
BNI/BNO	Yes



# UCSR3654S 12W EVB



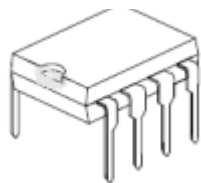
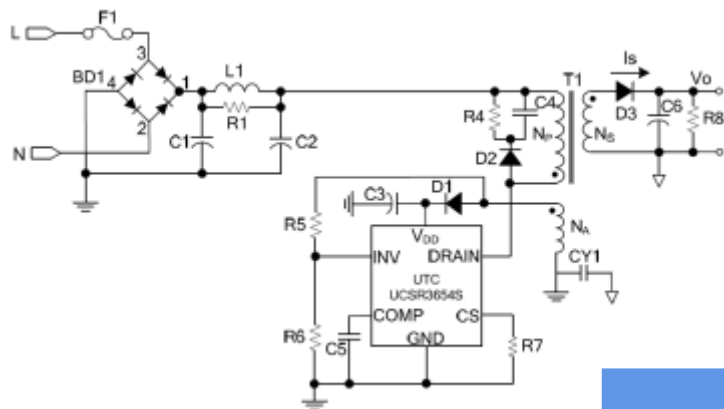
**DESCRIPTION**  
 The UTC UCSR3654S is a primary control switch mode charger and adapter applications. The controlled variable is transferred by an auxiliary winding from the secondary to the primary side. The device integrates PWM controller to enhance the performance of discontinuous conduction mode (DCM) flyback converters.

The UTC UCSR3654S operates in primary-side sensing and regulation. Opto-coupler and TL431 could be eliminated. It also provides off-time modulation to linearly decrease PWM frequency under light-load conditions so that low standby power can be achieved.

The UTC UCSR3654S achieves high precision CV/CC regulation and high power efficiency.

### FEATURES

- \* High Voltage startup circuit
- \* Built-in 650V Power MOSFET
- \*  $\pm 5\%$  constant voltage regulation at universal AC input
- \* High precision constant current regulation at universal AC input
- \* Primary side control without TL431 and opto-coupler
- \* Programmable CV and CC regulation
- \* Programmable cable compensation in CV mode
- \* Flyback topology in DCM operation
- \* Frequency hopping to reduce system EMI
- \* Built-in leading edge blanking
- \* Built-in primary winding inductance compensation
- \* Power on soft start
- \* Gate Output Maximum Voltage Clamped at 15V
- \* Cycle-by-cycle current limiting
- \* Over voltage protection
- \* VDD under-voltage lockout



DIP-7A, DIP-8

BOM	
PMIC	UCSR3654S
MOSFET (Internal)	650V, 4A
Schottky	TGBR20U45C

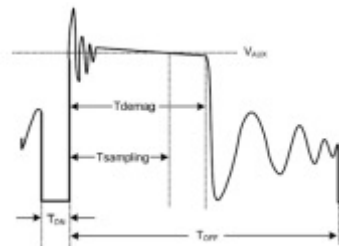


Figure 2. Auxiliary voltage waveform

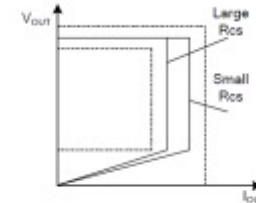
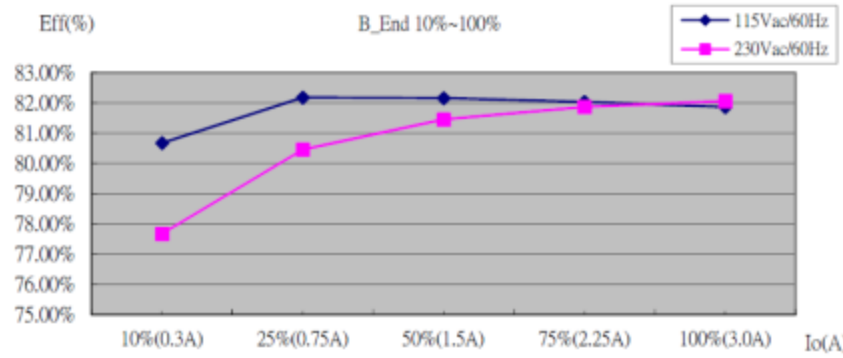


Figure 3. Adjustable output power by changing Rcs

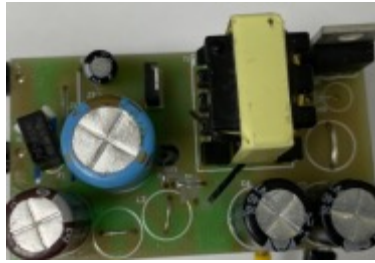


Input Voltage	Stand by power			Result
	Pin(mW)	Vo(V)	SPEC	
90Vac/60Hz	62	5.161	< 100 mW	PASS
115Vac/60Hz	63	5.140		PASS
230Vac/50Hz	69	5.140		PASS
240Vac/50Hz	70	5.143		PASS
264Vac/50Hz	74	5.146		PASS

Protection	Statement
UVLO	Yes
OVP	Yes
OCP	Yes
OTP	Yes



# UPSR104 10W EVB



### FEATURES

- \* ±5% Constant Voltage Regulation at Universal AC input
- \* High Precision Constant Current Regulation at Universal AC input
- \* Primary-side Sensing and Regulation Without TL431 and Opto-coupler
- \* Programmable CV and CC Regulation
- \* Adjustable Constant Current and Output Power Setting
- \* Built-in Secondary Constant Current Control with Primary Side Feedback
- \* Built-in Adaptive Current Peak Regulation
- \* Built-in Primary winding inductance compensation
- \* Programmable Cable drop Compensation
- \* Power on Soft-start
- \* Built-in Leading Edge Blanking (LEB)
- \* Cycle-by-Cycle Current Limiting
- \* VDD Under Voltage Lockout with Hysteresis (UVLO)
- \* VDD OVP
- \* VDD Clamp

### DESCRIPTION

The UTC UPSR104 is a primary controller mode charger and adapter applications. The controlled variable is transferred by an auxiliary winding from the secondary to the primary side. The device integrates PWM controller to enhance the performance of discontinuous conduction mode (DCM) flyback converters.

The UTC UPSR104 operates in primary-side sensing and regulation. Opto-coupler and TL431 could be eliminated. It also provides off-time modulation to linearly decrease PWM frequency under light-load conditions so that low standby power can be achieved.

The UTC UPSR104 achieves high precision CV/CC regulation and high power efficiency.

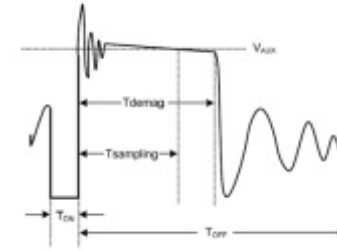


Figure 2. Auxiliary voltage waveform

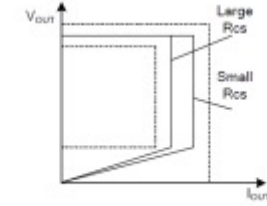
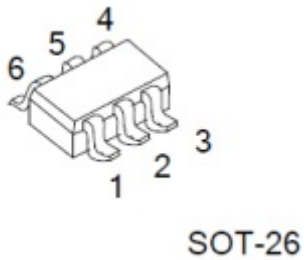
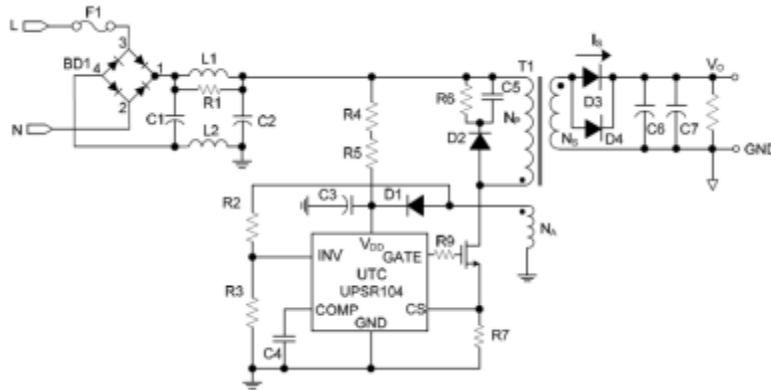
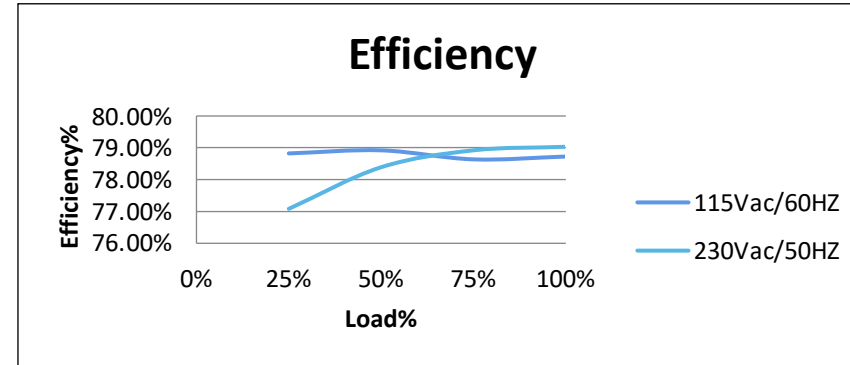


Figure 3. Adjustable output power by changing Rcs



BOM	
PMIC	UPSR104
MOSFET	2N60
Schottky	SB3100



UPSR104 Standby Power			
Vin(AC)	Pin(mW)	Vout(V)	SPEC
90V/60Hz	36	5.103	<100mW
115V/60Hz	40	5.064	
230V/50Hz	73	4.940	
264V/50Hz	88	4.870	

Protection	Statement
UVLO	Yes
OVP	Yes
OCP	Yes
OTP	Yes



# UCS1654S 24W EVB

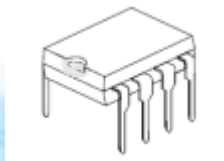
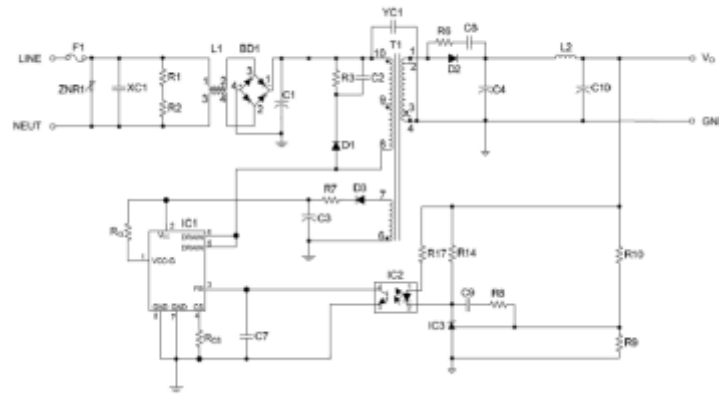


**DESCRIPTION**  
 The UTC UCS1654S is an integrated PWM controller and Power MOSFET specifically designed for switching operation with minimal external components. The UTC UCS1654S is designed to provide several special enhancements to satisfy the needs, for example, Power-Saving mode for low standby power, Frequency Hopping, Constant Output Power Limiting, Slope Compensation, Over Current Protection (OCP), Over Voltage Protection (OVP), Over Load Protection (OLP), Under Voltage Lock Out (UVLO), Over Temperature Protection (OTP), etc. IC will be shutdown or can auto-restart in situations.

**FEATURE**

- \* Internal Power MOSFET (650V)
- \* Programming Gate Driver Capability
- \* Frequency hopping for Improved EMI Performance.
- \* Lower than 30mW Standby Power Design
- \* Linearly decreasing frequency to 20~35KHz during light load
- \* Internal Soft start
- \* Internal Slope Compensation
- \* Constant Power Limiting for universal AC input Range
- \* Gate Output Maximum Voltage Clamp(16V)

■ **TYPICAL APPLICATION CIRCUIT**



DIP-7A, DIP-8

BOM	
PMIC	UCS1654S
MOSFET (Internal)	650V, 4A
Schottky	TGBR40U100C
Voltage Reference	TL431

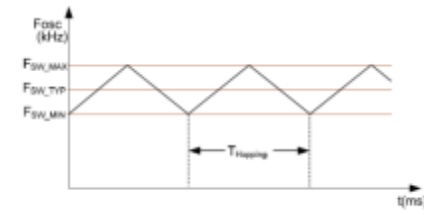
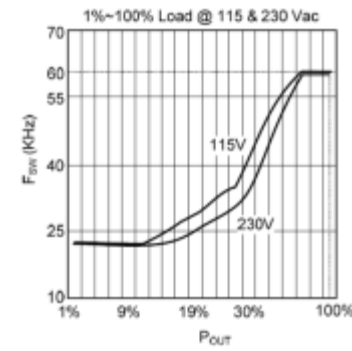
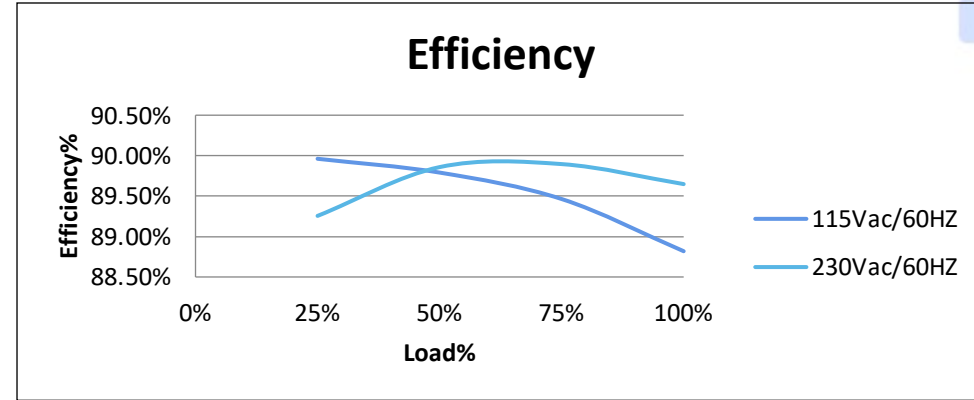


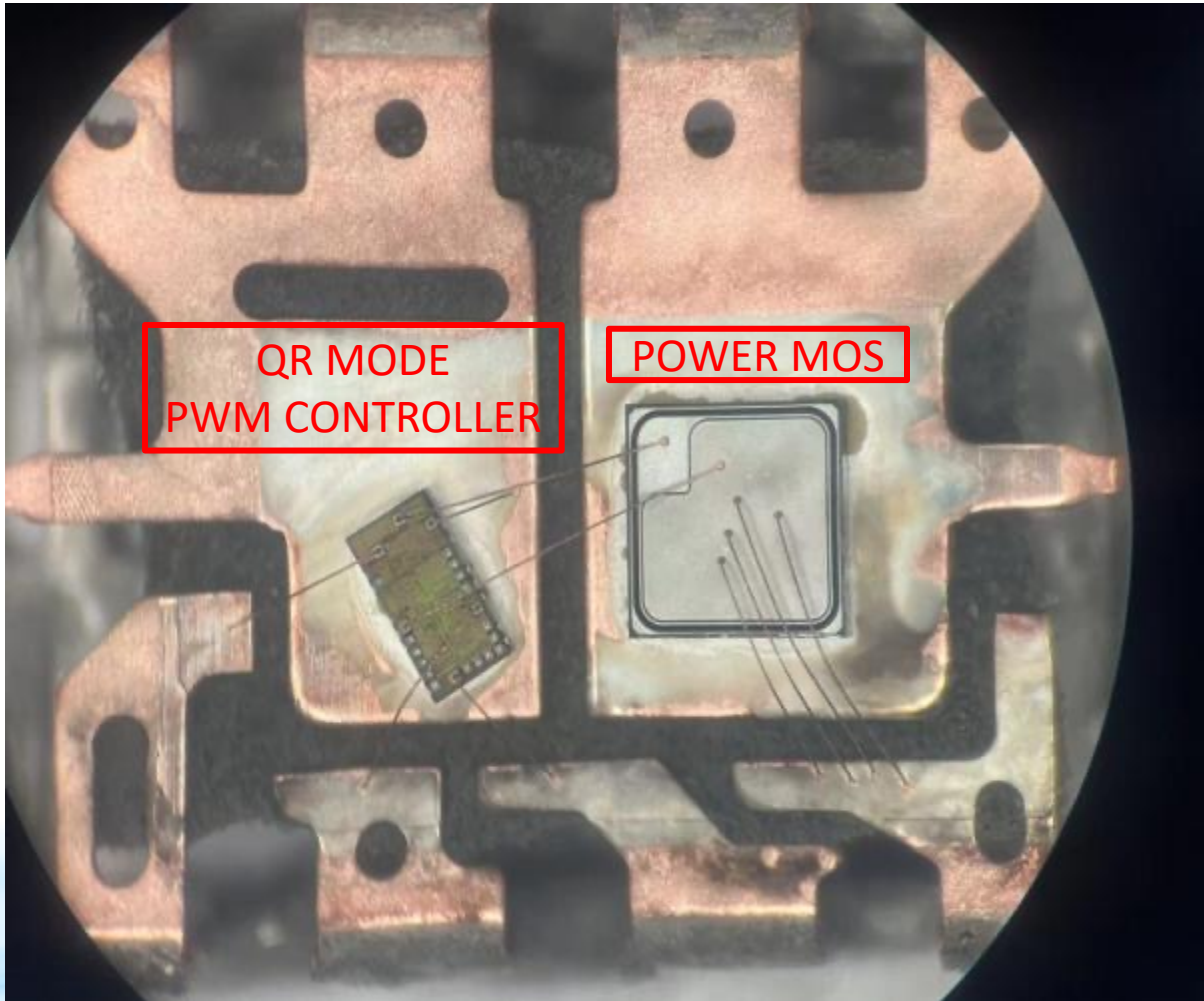
Fig.5 Frequency Hopping



UCS1654S Standby Power		
Vin(AC)	Pin(mW)	Vo(V)
90V/60Hz	27.5	12.06
115V/60Hz	29.8	12.06
230V/50Hz	46.8	12.06
264V/50Hz	63.6	12.06

Protection	Statement
UVLO	Yes
OVP	Yes
OCP	Yes
OTP	Yes

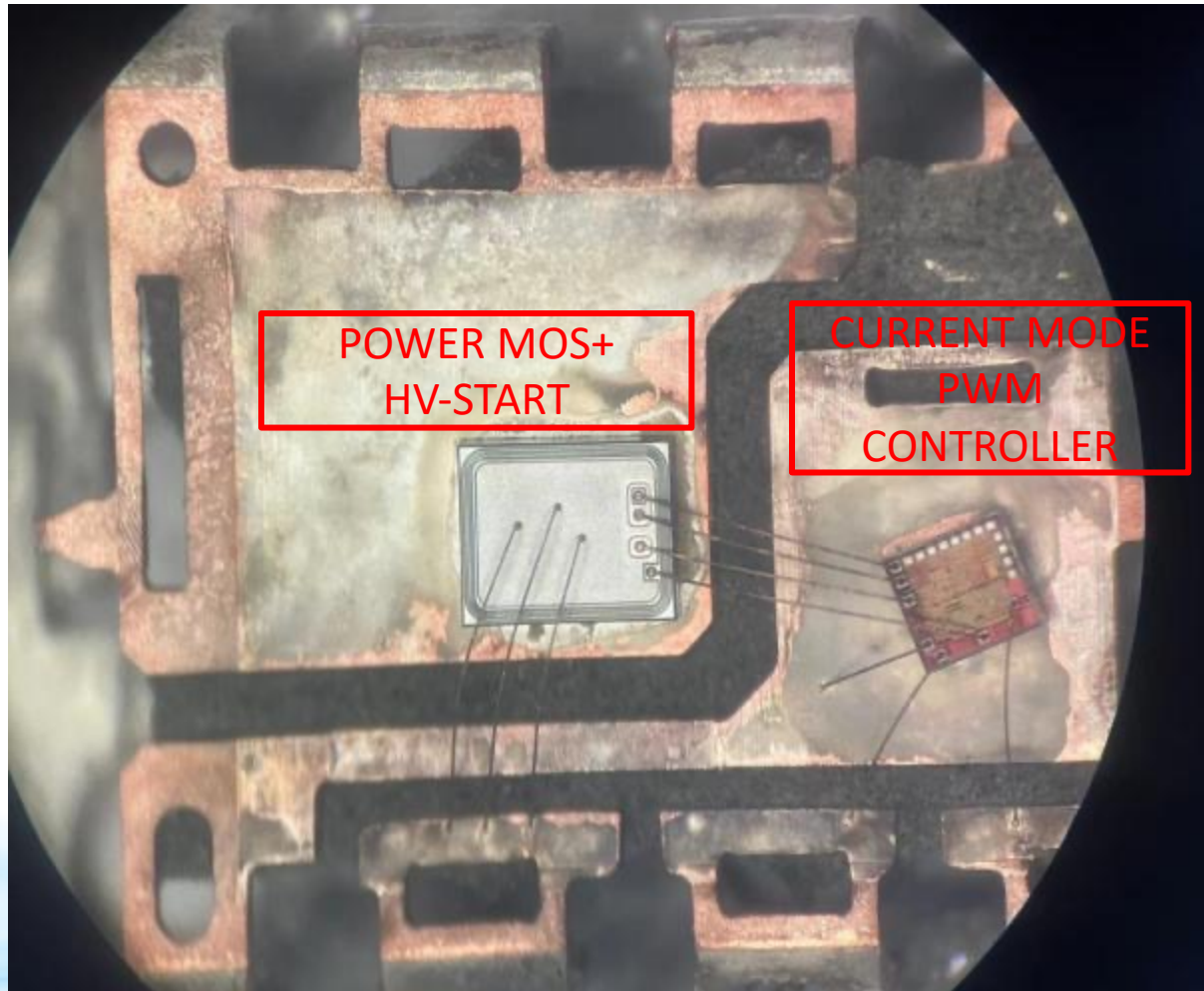
## Comb IC 開蓋圖 1.



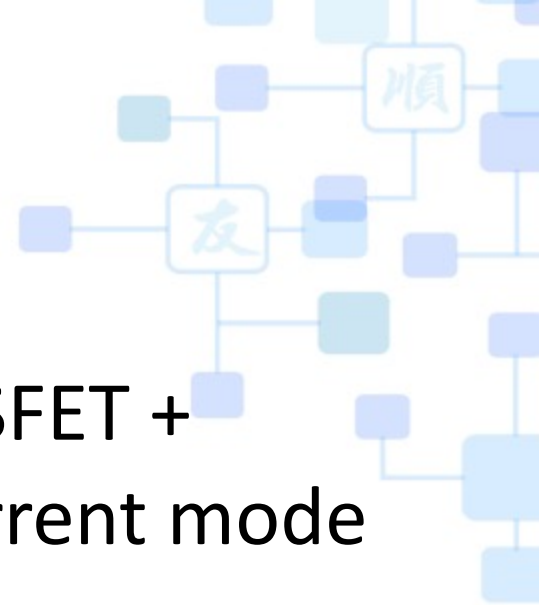
- QR mode Controller + MOSFET
- Controller合封MOSFET技術
- DIP-8



## Comb IC 開蓋圖 2.

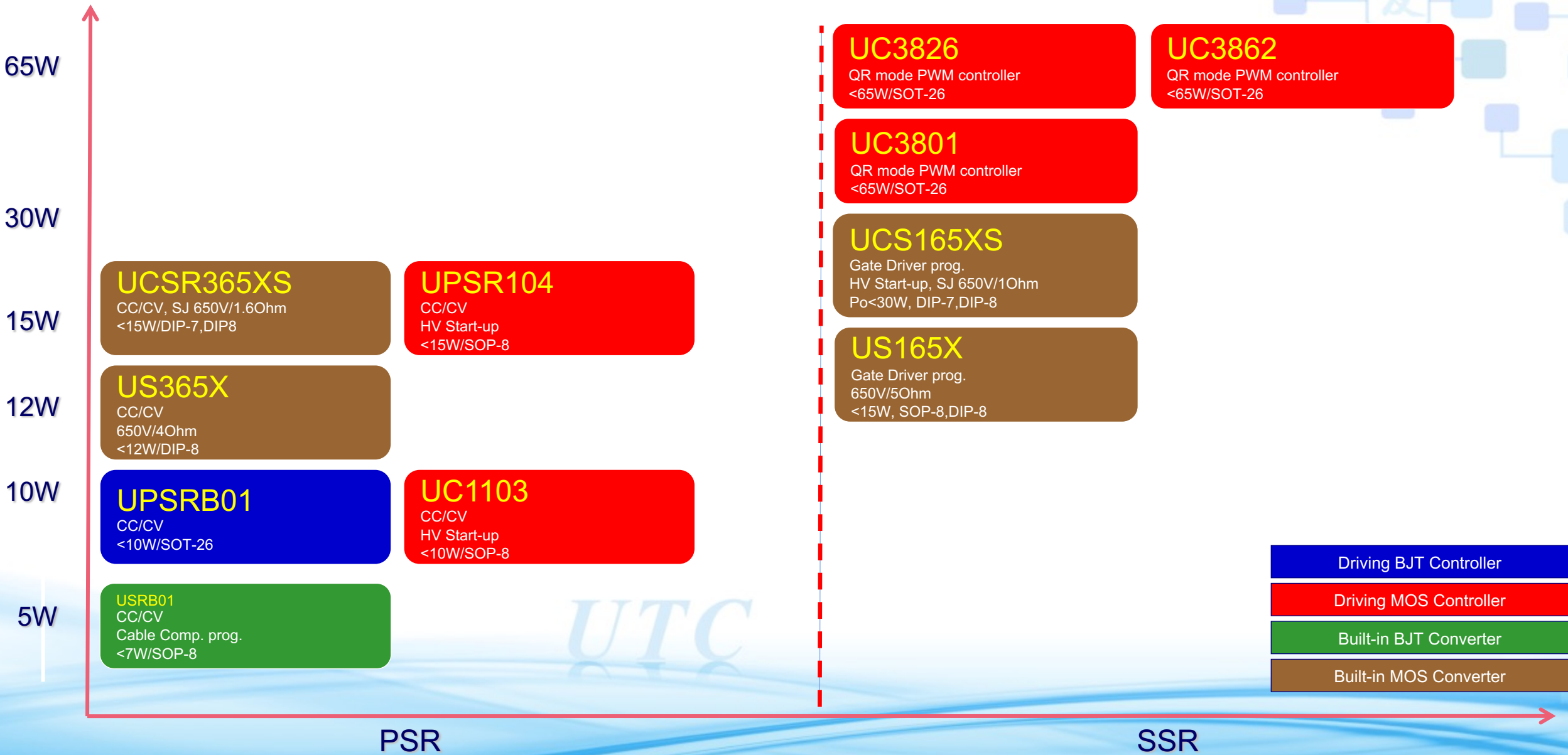


- 【POWER MOSFET + HV\_Start】 + Current mode Controller
- MOSFET集成高壓啟動電路技術
- DIP-8

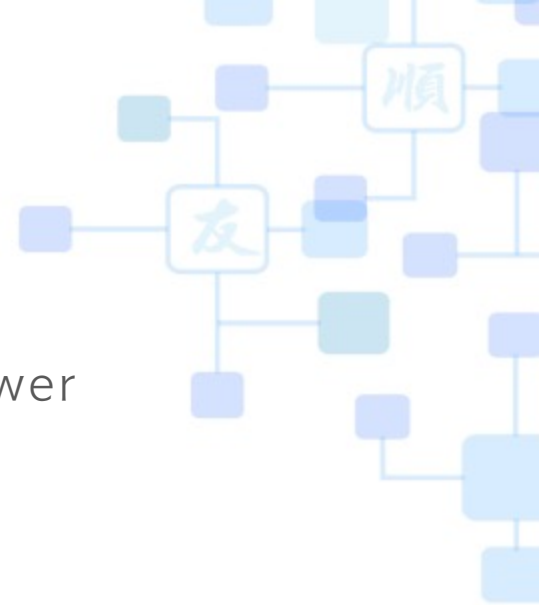




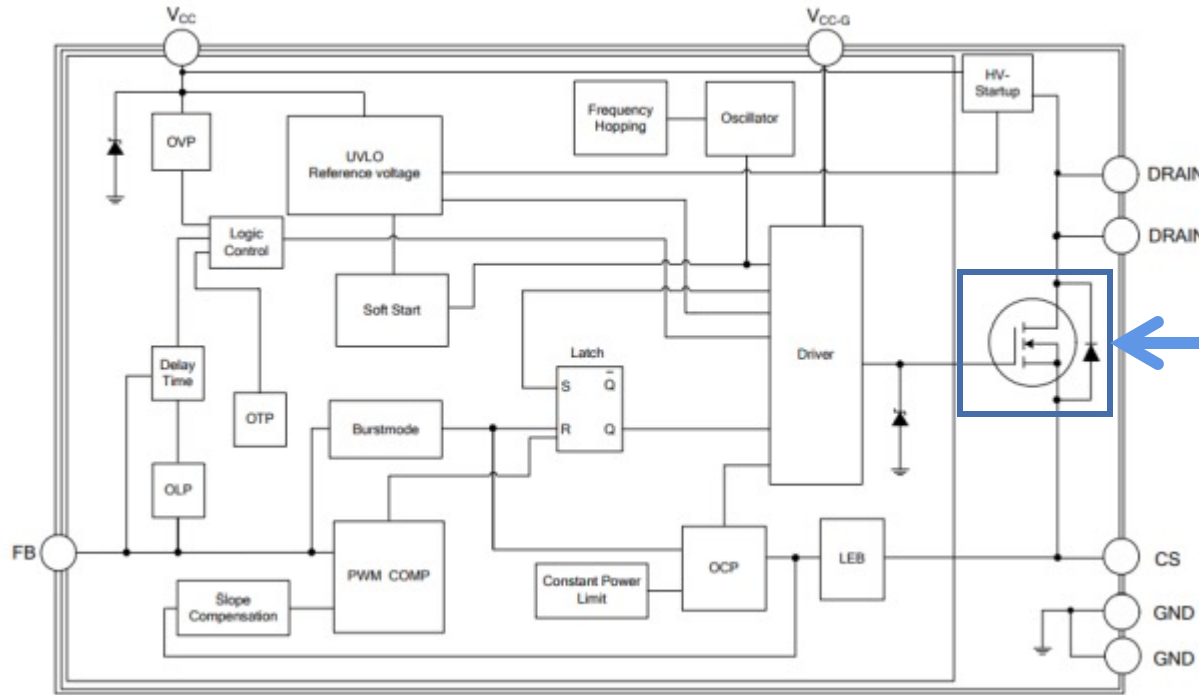
# AC-DC Road Map



# Future and trend



- QR mode Comb IC(內含650V, 700V, 800V, 900V, 1000V Power MOSFET)



- 650V
- 700V
- 800V
- 900V
- 1000V
- Power MOSFET



# DC/DC產品介紹

*UTC*



DC-DC Switching Regulator

**Step-up**  
**升壓**

Controller/Converter

FSW=100k~2.25MHz  
VIN=0.9V~60V  
Converter\_ISW(MAX)  
=1.6A

**Step-down**  
**降壓**

Controller/Converter

fsw=50kHz~3MHz  
VIN=2.0V~65V  
Converter\_IOOUT(MAX)  
=5.0A

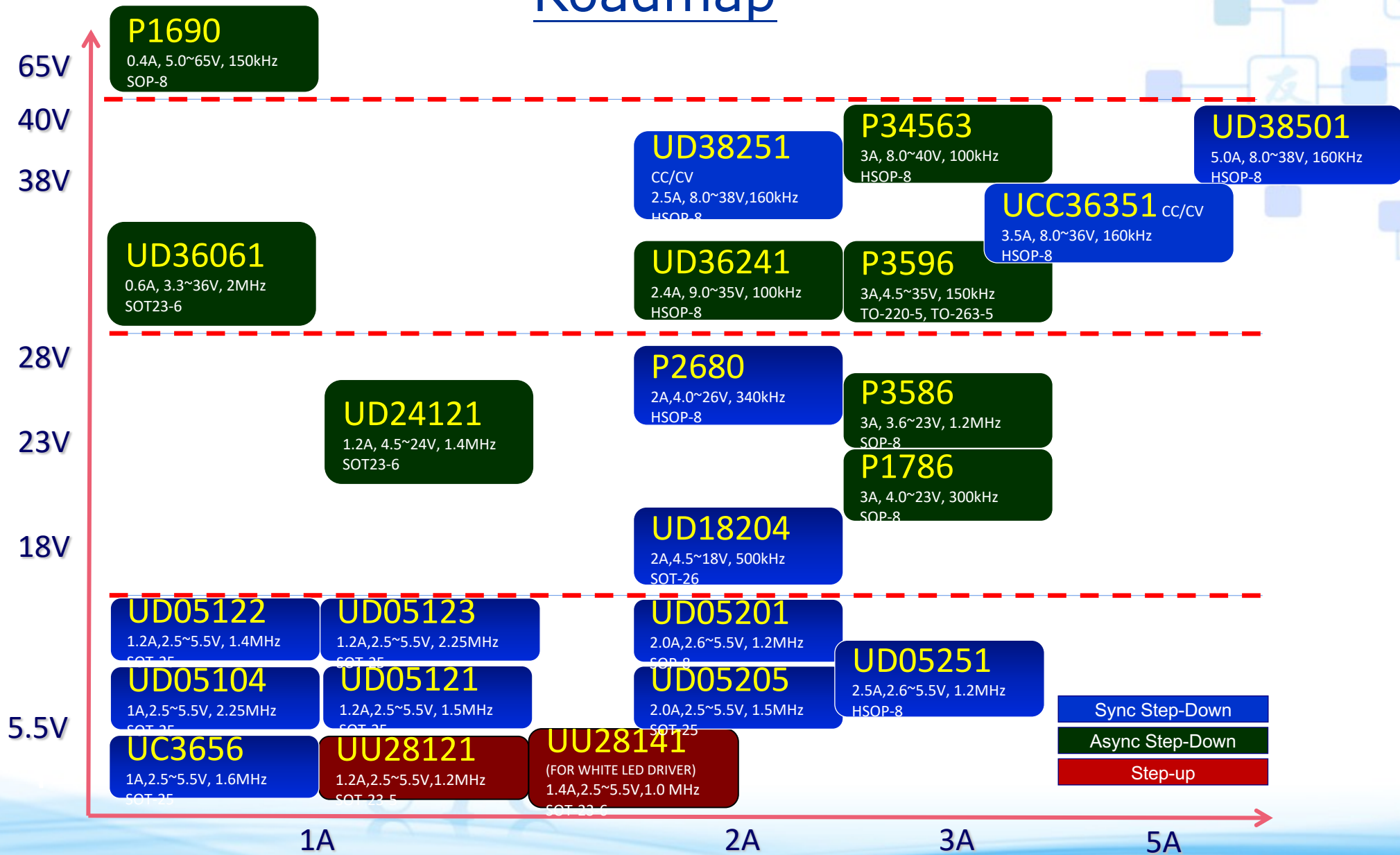


# Step-down List

UTC Model Name	Package	特徵
P3576B	TO-252-5	<b>高輸入電壓, 輸出電流@2A</b> Frequency 150KHz, 2A, Input Voltage Range: 5.5V~45V,
UD05122	SOT-25	<b>極小封裝, 輸出電流@1.2A</b> Frequency 1.4MHz, 1.2A, Input Voltage Range: 2.5V~5.5V, 1.2A效率比他牌高1~2%
UD05123	SOT-25	<b>極小封裝, 輸出高頻率, 輸出電流@1.2A, 低IQ</b> Frequency 2.25MHz, 1.2A, Input Voltage Range: 2.5V~5.5V, Quiescent Current: 50uA (input < 4.2V)
UD05251-ADJ-B	HSOP-8	<b>輸出電流@2.5A, 特優散熱特性</b> Frequency 1.2MHz, 2.5A, Input Voltage Range: 2.6V~5.5V, 2.5A效率比他牌高2~3%, Adjustable Output Voltages from 0.6V to VIN,
UD05306	HSOP-8	<b>輸出頻率可調整, 輸出電流@2A, 特優散熱特性</b> Programmable Frequency 300KHz~2MHz, 2.0A, Input Voltage Range: 2.8V~5.5V
UD36061	SOT-26	<b>Synchronous, 高輸入電壓</b> Frequency 2MHz, 0.6A, 24Vin · 5Vout at 0.6A效率約77.54%, Input Voltage Range: 3.3V~36V



# Roadmap

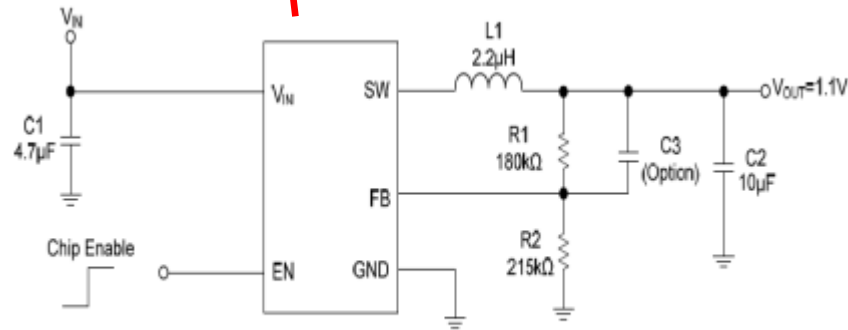
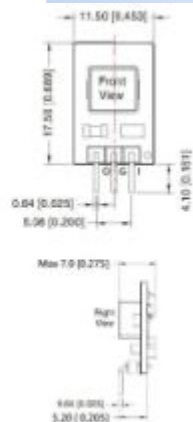
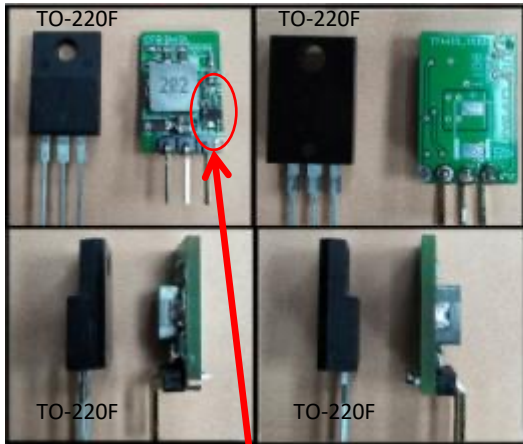




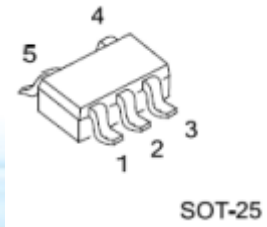
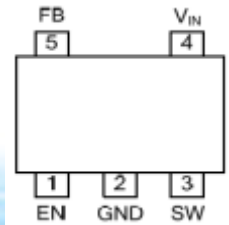
# UD05123

## 2.25MHz, 1.2A, VFB=0.6V SYNCHRONOUS STEP-DOWN CONVERTER

Pin-out compatible with LM78XX linear regulators



$$V_{out} = 0.6 \times (1 + R1/R2)$$



### DESCRIPTION

UTC UD05123 is a 2.25MHz constant frequency current mode PWM step-down converter.

It is ideal for portable equipment requiring very high current up to 1.8A from single-cell Lithium-ion batteries while still achieving over 90% efficiency during peak load conditions.

The 2.5V to 5.5V input voltage range makes UTC UD05123 ideally suited for single Li-Ion, two to four AA battery-powered applications.

100% duty cycle provides low dropout operation, extending battery life in portable systems.

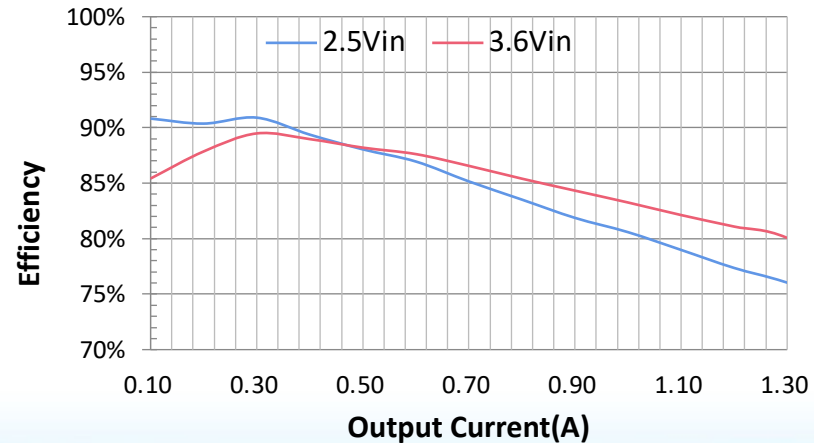
Pulse skipping mode operation provides very low output ripple voltage for noise sensitive applications.

Switching frequency is internally set at 2.25MHz, allowing the use of small surface mount inductors and capacitors.

The internal synchronous switch increases efficiency and decreases need of an external Schottky diode.

Low output voltages are easily supported with the 0.6V feedback reference voltage.

### Efficiency vs I<sub>out</sub> (1.1V<sub>out</sub>)



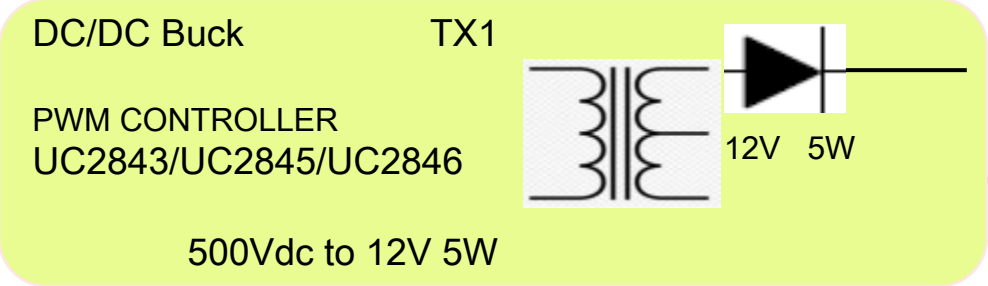
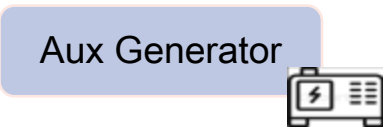
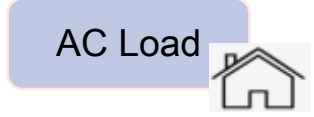
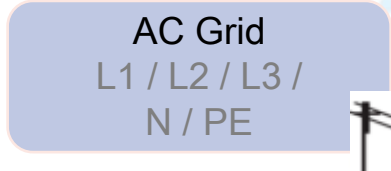
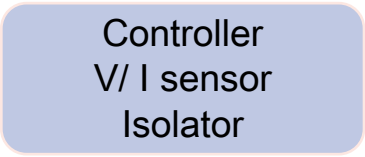
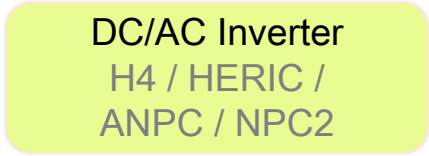
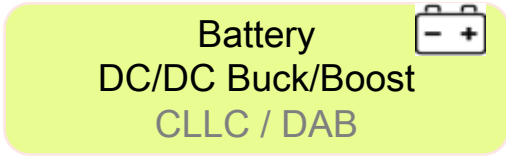
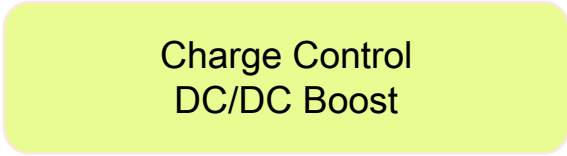
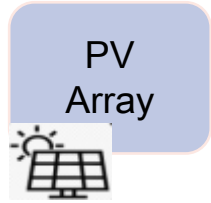


# 應用案例

UTC



# 太陽能

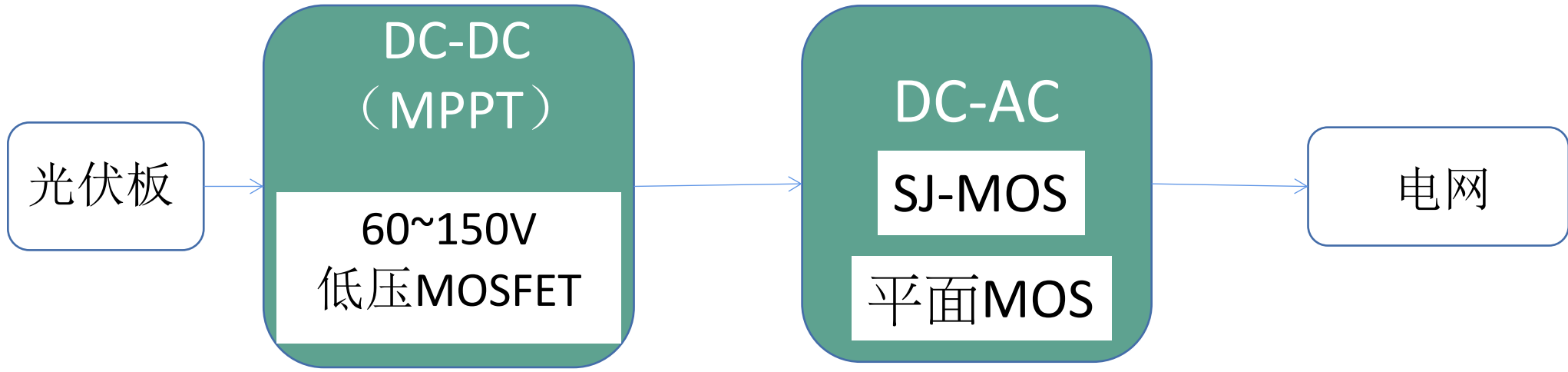


UTC Product	P/N
MOSFET	3N150-E3
IGBT	650V~1200V/25A~85A
FRD	200V~1200V/60A~75A
IC	UC28XX系列





# 微型逆变器



直流转直流阶段或升压电路将可变直流电压转换为固定直流电压（通常为 40 V 到 250 V）

微型逆变器选用COOLMOS参数：650V~1200V/10A~20A

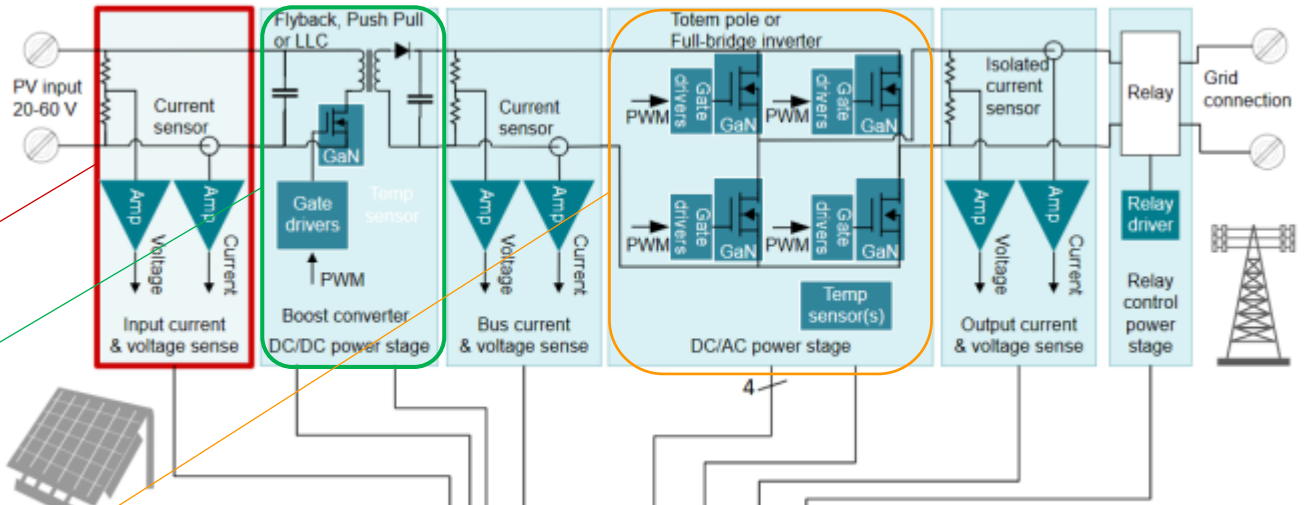
UTC型号:60NM65、60NM70、75NM70、24NM80

平面MOS（最大可达1500V）：2N150、3N150、8N150

单个光伏板或多个光伏板实现发电转换,额定功率从 600W~ 2500W不等



# 微型逆变器



霍尔效应电流传感器、  
3.6V-36V 1.2-10MHz 运放

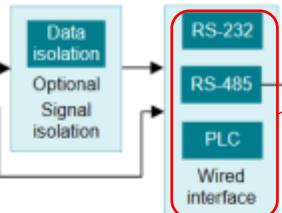
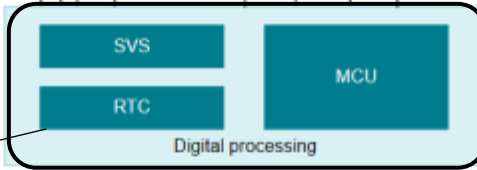
栅极驱动器: 0.5A-4A 120V-  
620V UTC:UTR2113

隔离式栅极驱动器: UVLO功能、  
栅极驱动器: 0.5A-4A 120V-620V

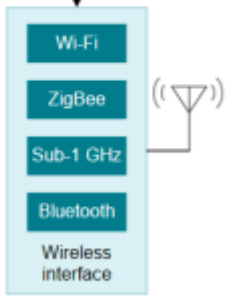
复位IC

(同步)DC-DC降压稳压器:6V-120V、  
3.8V-30V 600mA-3A.  
LDO: 150mA-1A 18V-40V

AC-DC反激式: UTC: UC3973、UC3800、UC3875、UC2846



隔离式 RS-485 收发器  
RS-485、RS-232 收发器

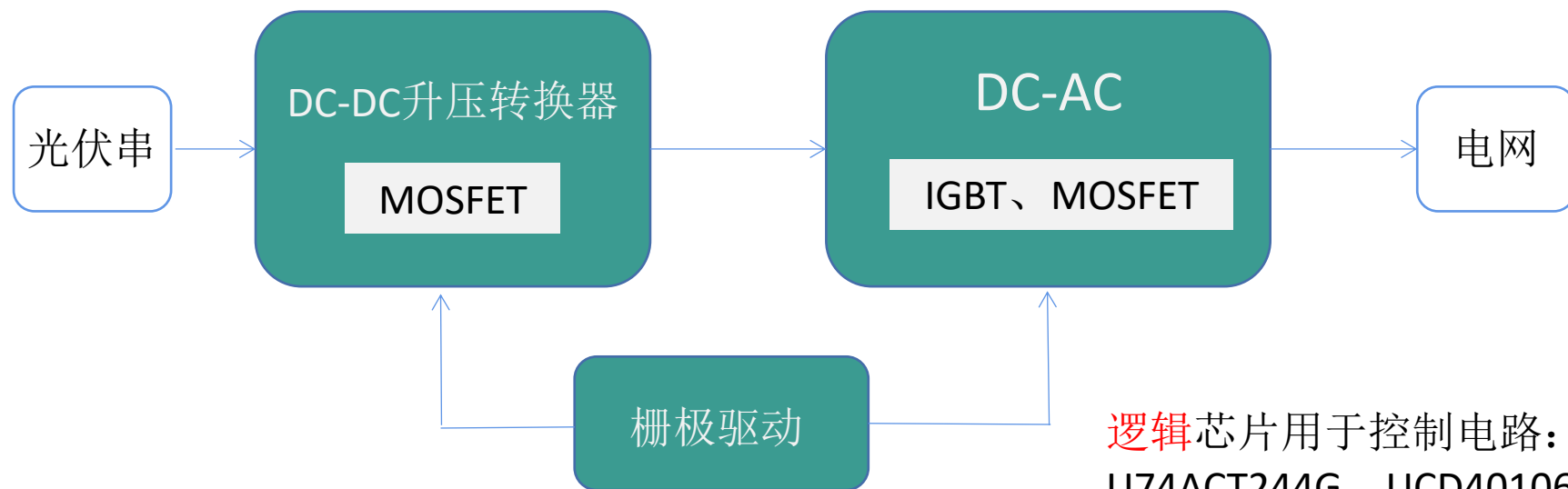


(同步)DC-DC降压稳压器:6V-120V、3.8V-30V 600mA-3A.  
PWM控制器: UTC: UC2842、UC2843、UC2844、UC2845



# 单相组串式逆变器

单相组串式逆变器额定功率**10KW~40KW**功率段



逻辑芯片用于控制电路：U74HC14G、U74ACT244G、UCD40106BG、U74AC14..

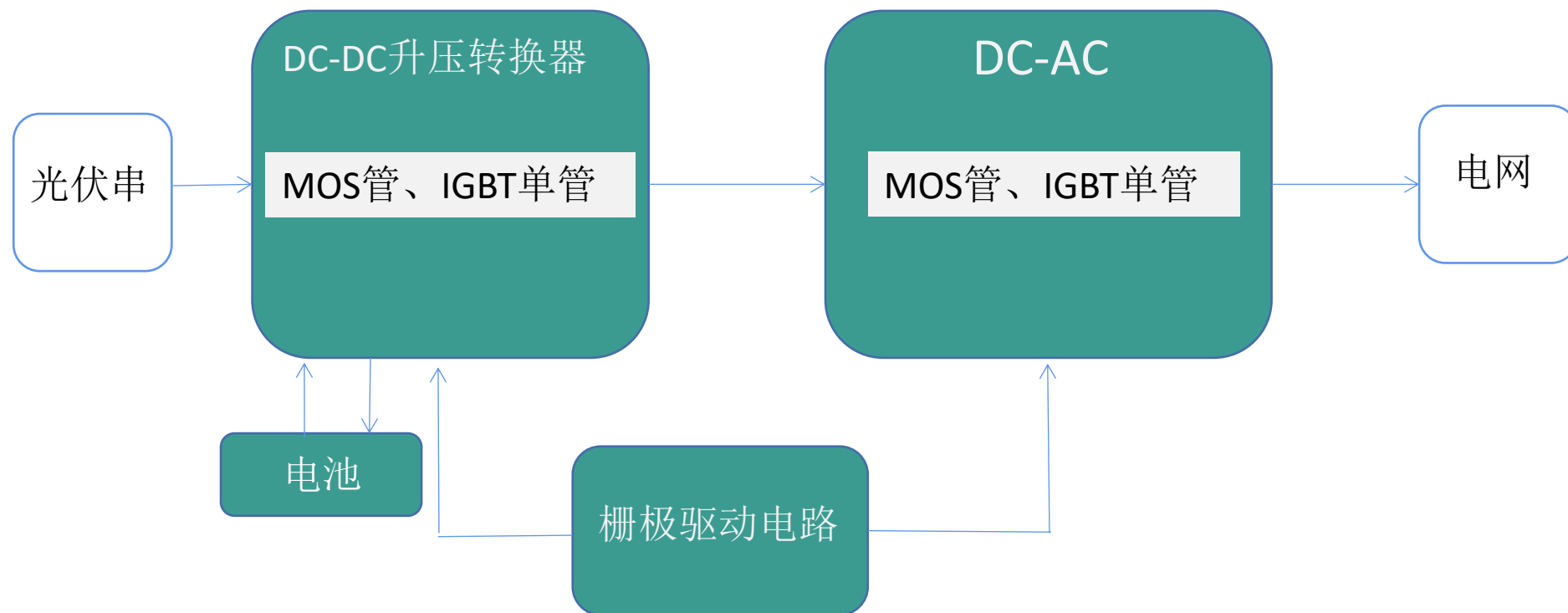
IGBT：650V/30A~80A，  
UTG80N65、UTG75N65-S、UTG60N65、UTG50N65、UTG40N65、UTG30N65..

MOSFET：100~200V/70A~200A，USGR026N10、USG170N10、UFB4321、UT70N15..



# 三相组串式逆变器

三相组串式逆变器额定功率10KW~40KW功率段



**IGBT单管：** 650V、1200V/40A~80A

**650V** : UTG80N65、UTG75N65-S、UTG60N65、UTG50N65、UTG40N65、UTG30N65

**1200V** : UTG25N120、UTG40N120、UTG50N120、UTG80N120



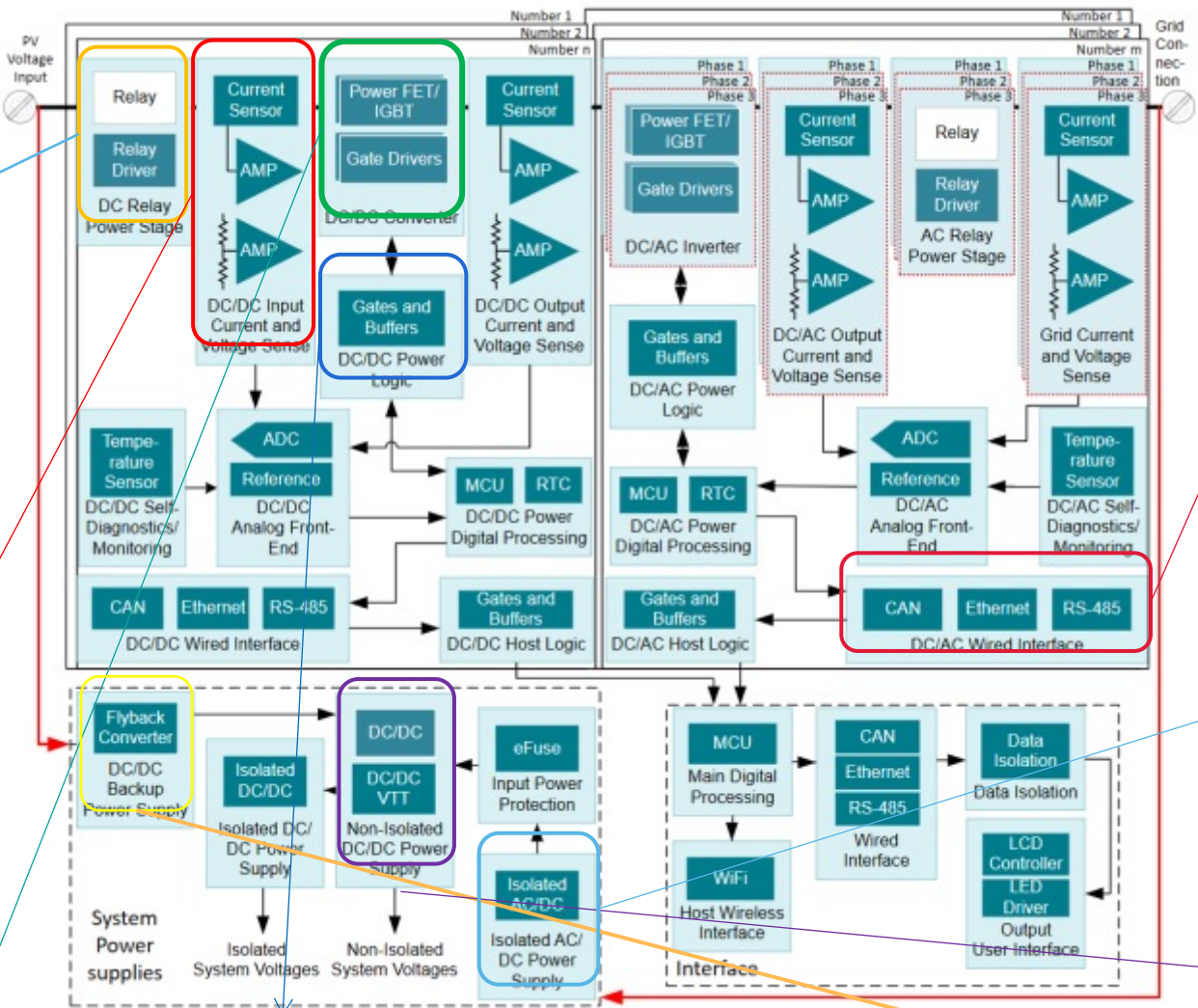


# 集中式储能逆变器

**N沟道MOSFET:** 30V-80V  
 1.2mΩ-20mΩ 7.6A-200A:  
**UT4446、UTM6016、**  
**UT4392...**

**通用运放:** 双通道轨对轨:  
 min1.8V-max5.5V : ULV8542...  
 四通道: min2.7V-max40/16V 3.5/4.5MHz:  
**MC34074、TL074...**  
**精密运放** (Vos<1mV): 轨对轨 min4V-  
 max36V ±2V±18V 10/25μV  
**比较器:** 推挽式双路、36V四路:  
**ULC3702、LM339、LM2901、LM239**

隔离式栅极驱动器,  
 低侧驱动器、半桥驱动器、  
 PWM控制器、反激式控制  
 器、隔离式DC-DC转换器、  
 mosfet



反相器: 有施密特触发输入:  
**U74HC14、U74AC14、U74AHC14**  
 逻辑与门;  
 缓冲器: 2V-5.5V 4、6、8通道

DC-DC (同步) 降压转换器2.5V~4.5V-6V~65V 1A-3A:**UD05122、UD05123..**  
 AC-DC: PSR/SSR:**UC38**系列, CC/CV: **UPSRB01、UCSR3652S、USR3651S...**

隔离式 RS-485 收发器、  
 隔离式 CAN 收发器、

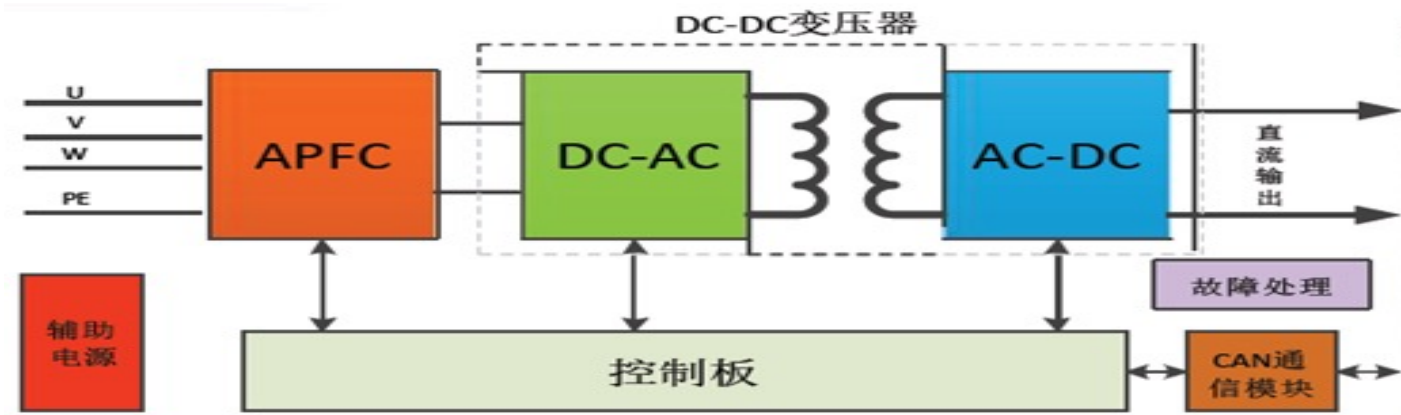
功率因数校正 (PFC) 控制器:  
 UTC: **L8561、L8562、L8565、**

LDO: 100mA-3A 16V-30V :LM317系列、  
 LM78系列..., 复位IC、电荷泵: 具有固定  
 250kHz 操作的 60mA 电荷泵电压反向器  
 UTC: **UTL7660**





# 直流充電樁應用



直流充電模块内部功能结构图

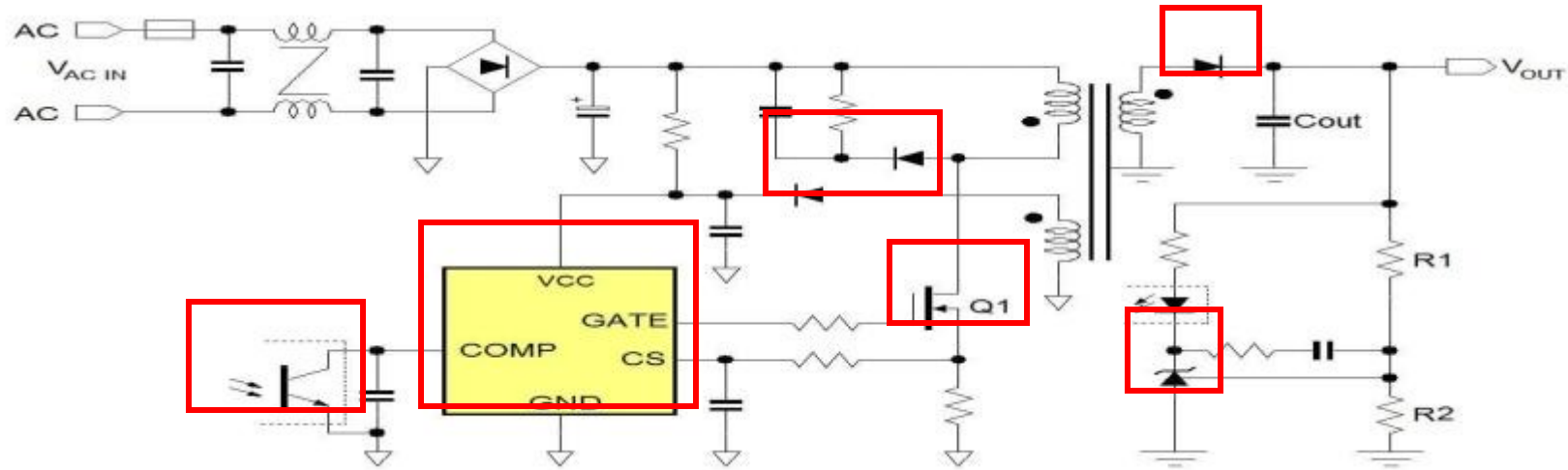
品名	型号	品名	型号
通讯接口IC	UTRS485G	比较器、运放	LM339G
	UTRS3088		LM393G
	UT3232G		TL072G、TL074G、TL082G
电源IC 稳压管	UC2845G UC2843BG	漏电检测IC	M54123
	78D05L、79L05G、LM7918L	复位IC	UIC809G-B-3
	LM317LG	逻辑IC	U74LVC244G
	LD1117系列		U74HC273G
辅助电源	4N90/6N90/9N90/3N150/9N150		U74LVC2G14G
	TL431、UPC816、UPC817		U74LVC2G34G
IGBT、MOS	60NM65、30NM65、24NM65	U74LVC245G	
	UTG80N65、UTG75N65、UTG60N65、UTG25N120、UTG40N120、UTG50N120	U74LVC08AG	



順友



# PD CHARGER



UTC Product	P1 for US Market	P2 for India Market	P3 for Harsh environment
MOSFET (for SJ MOSFET)	700V, Rds_on:0.07mΩ	800V, Rds_on:0.1Ω(Min.)	900~1200V, Rds_on:0.45Ω (Min.)
SCHOTTKY	TGBR series, Vrm:40~100V	TGBR series, Vrm:100V(Max.) MGBR series, Vrm:300V(Max.)	TGBR series, Vrm:100V(Max.) MGBR series, Vrm:300V(Max.)
IC	QR mode PWIC	QR mode PMIC	QR mode PMIC
Optical couple	UPC10XX(LSOP-4)	UPC10XX(LSOP-4)	UPC10XX(LSOP-4)
SHUNT REGULATOR	TL431(±0.5%)	TL431(±0.5%)	TL431(±0.5%)
Diode	RS1D, 1N4007...	RS1D, 1N4007...	RS1D, 1N4007...



# 多輸出適配器



**AC/DC PWM  
(Controller/Combo MOS)  
-SSR Mode (QR)**

低待機高性能PWM  
準諧振PWM  
(外掛MOS/內包MOS)  
UC3826, UCS1655S

**Diode  
-Bridge Diode**

橋式整流器  
ABS28, UYBS3010

**Diode  
-Rectifier  
-Fast Rectifier**

標準/快速 整流器  
1N4007G, RS1M

**HV MOS  
-Planar MOS  
-SJ MOS**

平面式 高壓600V~1500V MOS  
超結技術 高壓600V~950V MOS  
(SJ MOS RDS(ON) = 0.048Ω~19.2 Ω)

**LV MOS  
-Trench MOS  
-SGT MOS**

低壓200V以下MOS  
溝槽式/分離式閘極技術  
(SGT MOS RDS(ON) = 1.95mΩ~21mΩ)

**\*Diode  
(Low Vf Schottky)  
-TGBR Series  
-MGBR Series**

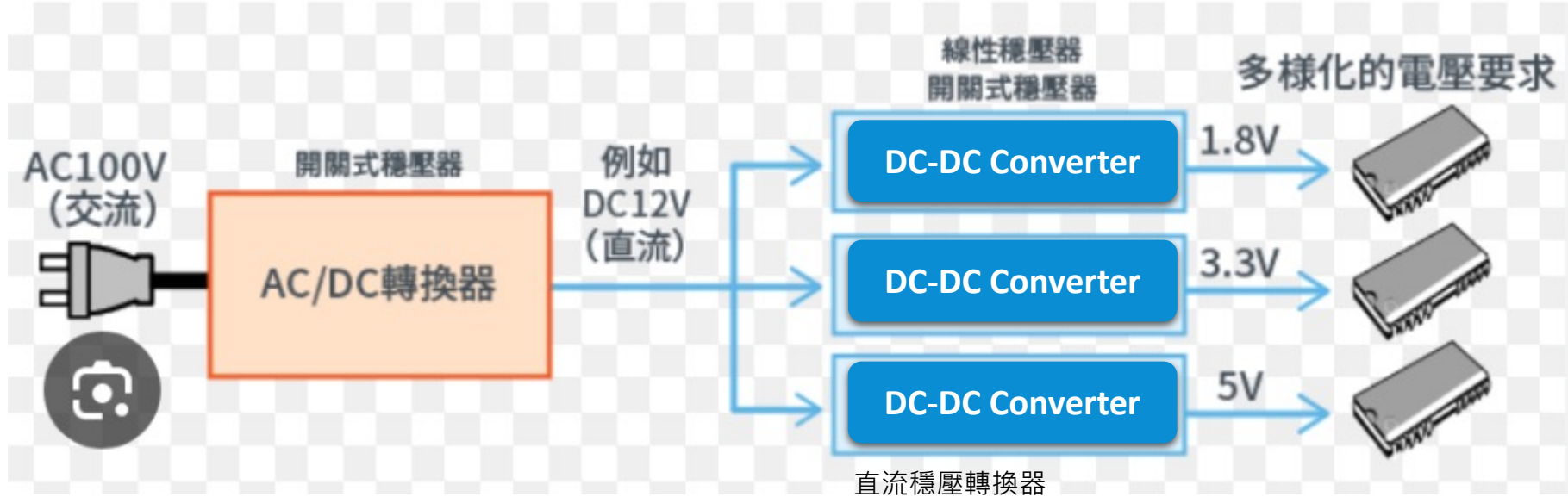
低Vf 蕭特基二極體  
100V  
VF=0.62V~0.85V

**Photocoupler**

光耦合器  
UPC817, UPC10XX

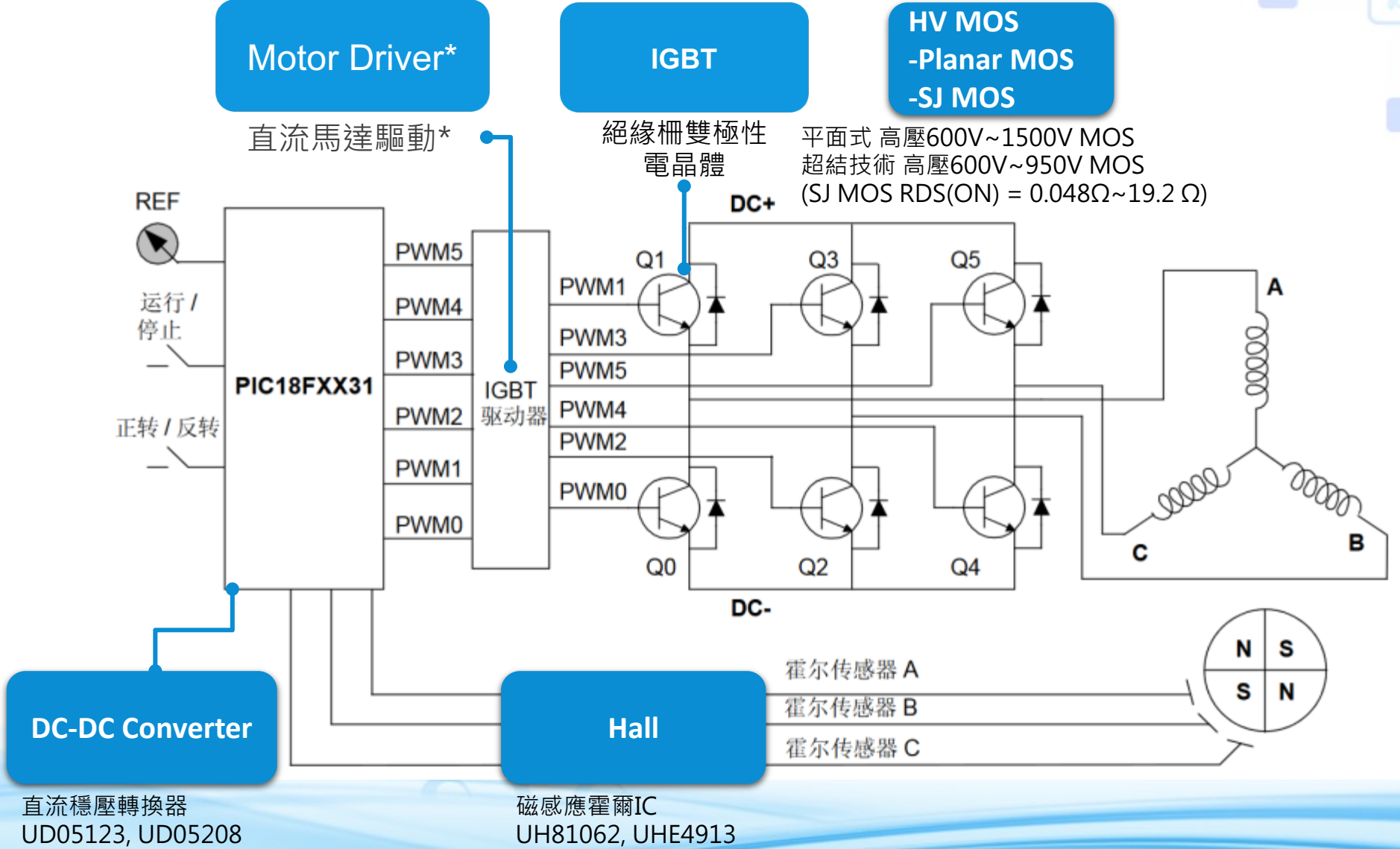
**Diode  
-Schottky Diode**

蕭特基二極體  
SB140, SK34



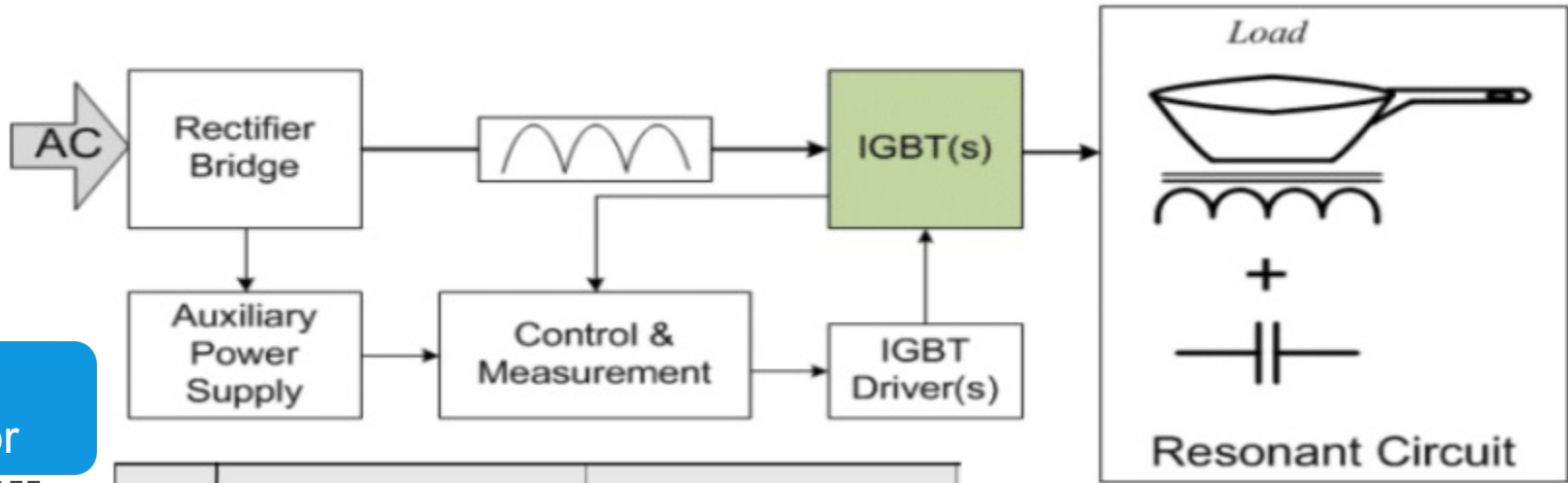


# 无刷直流 (BLDC)





# IH 爐



Voltage Regulator

電壓轉換穩壓器

Shunt Voltage Reference

電壓位準IC

Isolation Photo-coupler

隔離式光耦器件

AC-DC PWM Controller

AC-DC控制IC

	单头炉	多头炉
应用	电饭煲  变频微波炉 	
拓扑	单端逆变 <math><2.3kW</math> 	半桥逆变 <math><3.6kW</math> 

Logic Gates  
Bus Sw / Mux

邏輯閘 / 信號傳輸

Op amplifier  
Comparator

高精放大器/比較器

Relay Driver  
Darlington Array

達靈頓晶體管

Transistor /  
TRIAC / SCR

高效能功率器件

Display Driver

電壓轉換穩壓器



# 重點功率元件

UTC



# 功率MOSFET



齐全多样化的MOSFET产品线，涵盖小信号/超高压/高压/中压/低压/耗尽型/沟槽型/超结MOSFET等系列，满足各行业应用，如：储能控制板，SMPS，工业LED电源，工业电源，光伏逆变，工业控制、新能源车等众多领域的total设计解决方案。

## Super Junction MOSFET (超结MOS)

多层外延超结MOSFET  
N-CH 500V~1200V 1A~80A  
xxNMyy系列

内置ESD功能多层外延超结MOSFET  
N-CH 500V~1200V 1A~80A  
xxNMyyZ系列

内置快恢复二极管多层外延超结MOSFET  
N-CH 500V~1200V 1A~80A  
FxxNMyy系列



TO-220



TO-220F



TO-247



TO-3PN



# 功率MOSFET



Planar MOSFET  
(平面型)

**全系列平面MOSFET**  
N-CH 55V~1500V 0.02A~200A;  
P-CH -55V~-600V -0.1A~-50A

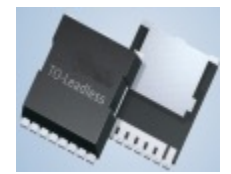
**内置ESD保护平面MOSFET**  
N-CH 800V~1000V 0.02A~50A

**双组合封装平面MOSFET**  
N-N,N-P,P-P,55V~700V 0.02A~10A

**内置快恢复二极管平面MOSFET**  
N-CH 500V~1500V 0.02A~50A

**UDF系列N-CH, 70V~1500V 2Ω~700Ω**

Depletion Mode  
MOSFET (耗尽型)





# 功率MOSFET



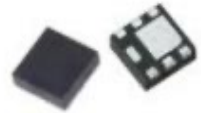
## Trench MOSFET (沟槽)

**全系列沟槽式MOSFET**  
N-CH 12V~250V 0.1A~220A  
P-CH -12V~250V -0.1A~-120A

**SGT 低压MOSFET**  
N-CH 30V~100V, 10A~200A, 1.0mΩ~160mΩ

**内置ESD功能沟槽式MOSFET**  
N-CH 12V~250V, 0.1A up

**双组合合封沟槽式MOSFET**  
N-N,P-P,N-P,20V~250V, 0.1A~20A



DFN2020-6B



PDFN3\*3



PDFN5\*6



DFN8080-4



SOT-26



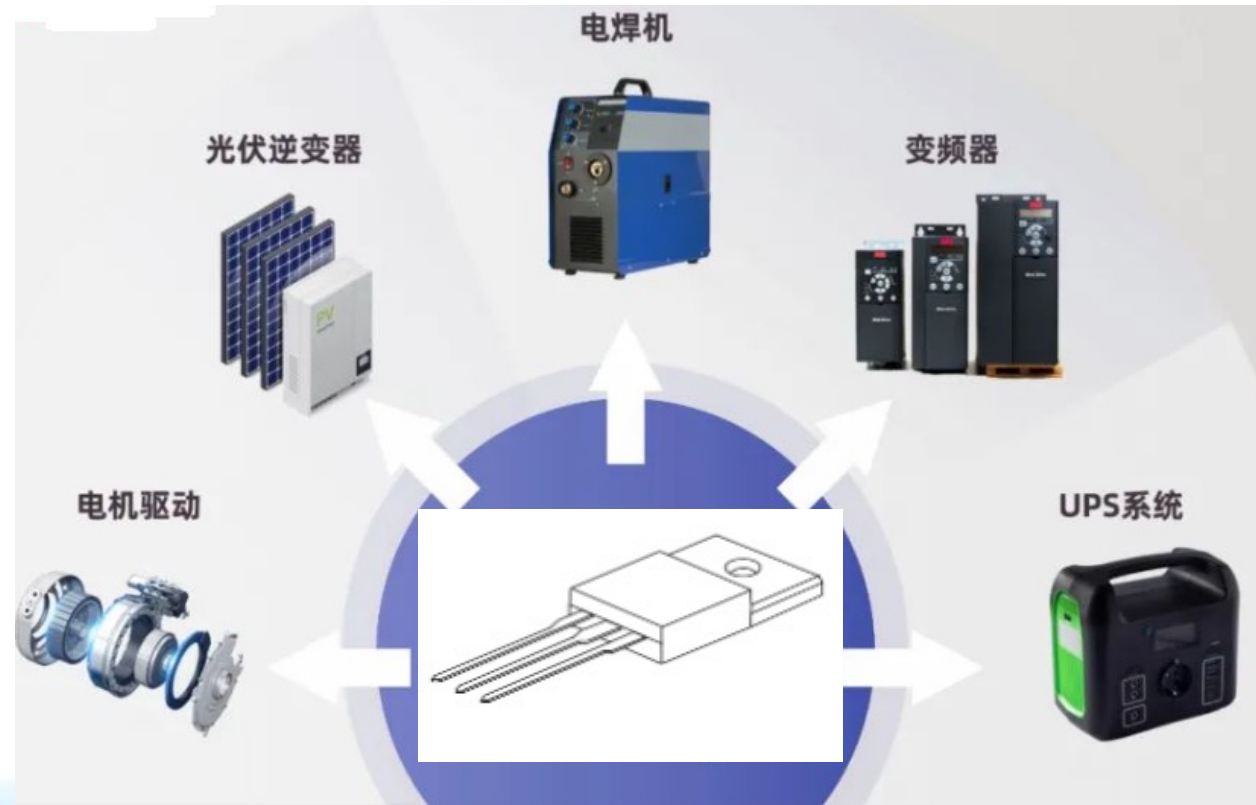
SOT-563





# 高壓MOS在輔助電源的應用

輔助電源是电机驱动、光伏逆变器、焊机、变频器和UPS系统等工业应用的重要组成部分。

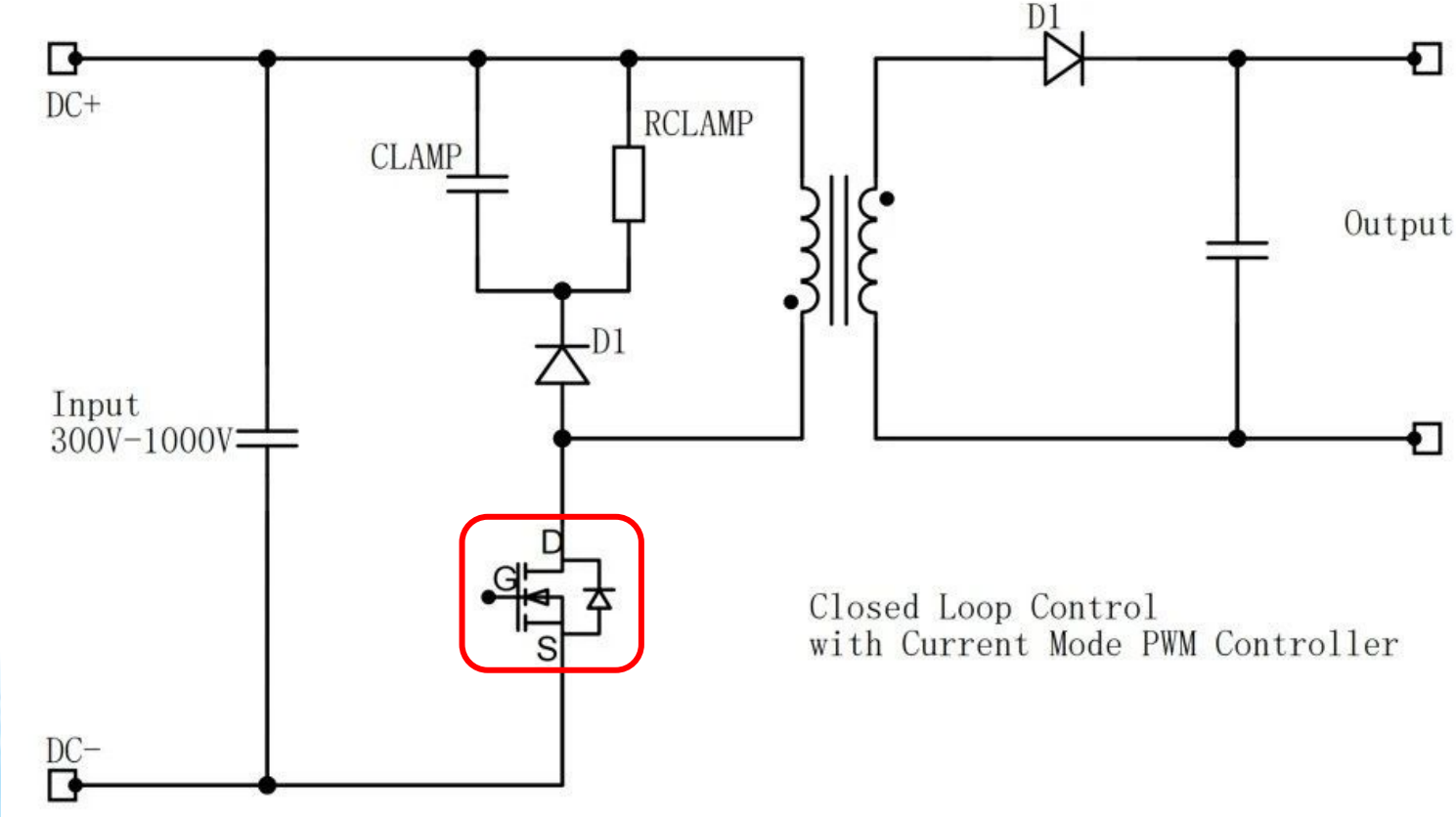


# 高壓MOS在輔助電源的應用



辅助电源一般会选用单开关反激式拓扑：结构简单、元件数量少、成本低；因为反激式设计中的MOS管在关断时，MOS管会承受700多伏的尖峰电压，因此该类拓扑应用中我们推荐超高电压的MOS管，以应对电压变化带来的冲击。

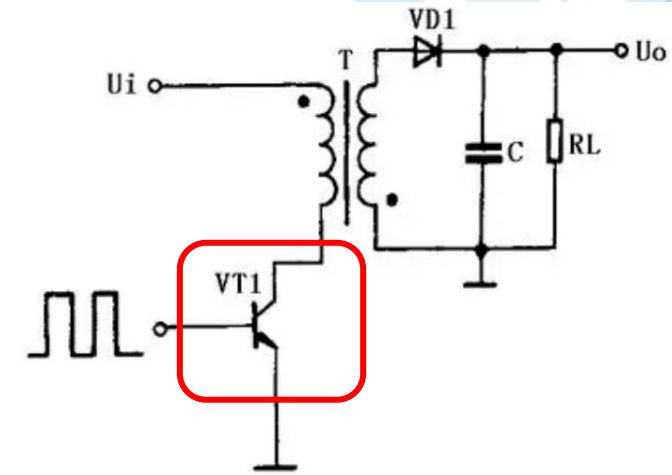
PWM（脉宽调制IC）UTC推荐：工业级UC2845G-S08-R，UC2844G-S08-R，UC2843BG-S08-R；民用级推荐UC38××系列。





# 高壓MOS在輔助電源的應用

辅助电源单开关反激式拓扑应用中我们推荐UTC高压超结MOS系列，超结MOS，电压在800--900V。



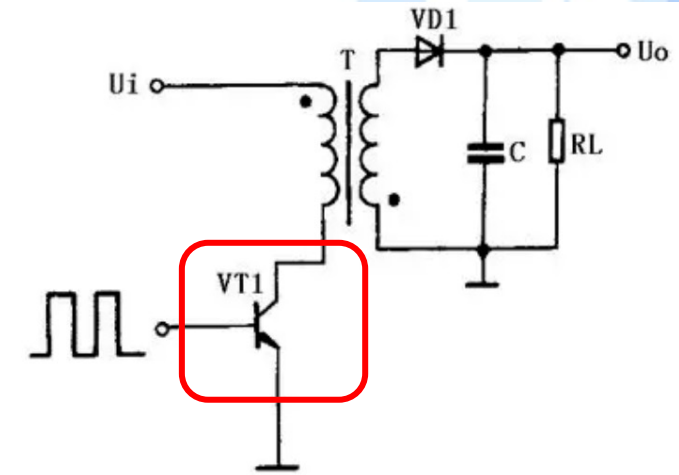
No.	PART No.	ID(A)	VDSS (V)	RDS (ON) MAX. (Ω) at VGS=10V	Package
1	2NM80-Q	2	800	3.8	TO-251 SOT-223-2
2	3NM80-Q	3	800	3	TO-251 SOT-223-2
3	4NM80-Q	4	800	2.3	TO-251 SOT-223-2
4	5NM80-Q	5	800	1.5	TO-251 SOT-223-2
5	6NM80-Q	6	800	1.25	TO-252 TO-220F TO-251NS2
6	7NM80-Q	7	800	1.1	TO-252 TO-220F1
7	<a href="#">8NM80-Q</a>	8	800	0.75	TO-252 TO-220F1 DFN8080-4
8	10NM80	10	800	0.6	TO-251 TO-251S TO-252 TO-220 TO-220F TO-220F1 TO-220F2 DFN8080-4

No.	PART No.	ID(A)	VDSS (V)	RDS (ON) MAX. (Ω) at VGS=10V	Package
9	2NM90	2	900	5.3	TO-251S2 TO-252 TO-251 TO-220 TO-220F1 TO-220F2 SOT-223-2 SOT-223
10	3NM90	3	900	4.9	SOT-223 TO-251S2 TO-252 TO-251 TO-220 TO-220F1 TO-220F2 SOT-223-2
11	4NM90	4	900	4.1	TO-251S2 TO-252 TO-251 TO-220 TO-220F1 TO-220F2 SOT-223-2 SOT-223
12	5NM90	5	900	2.5	TO-251S2 TO-252 TO-220 TO-220F1 TO-220F2 TO-251
13	6NM90	6	900	1.9	TO-251 TO-251S2 TO-251S4 TO-252 TO-251 TO-220 TO-220F1 TO-220F2 TO-251NS2
14	7NM90	7	900	1.4	TO-220F1 TO-220F2 TO-251 TO-251NS2 TO-251S4 TO-252
15	8NM90	8	900	1.2	TO-251S2 TO-251S4 TO-251NS2 TO-252 TO-220 TO-220F TO-220F1
16	10NM90	10	900	1	TO-251 TO-251S2 TO-251S4 TO-252 TO-220 TO-220F1 TO-220F2



# 高壓MOS在輔助電源的應用

在辅助电源应用中还可以推荐UTC的超高压平面MOS系列，单相电推荐1000--1200V系列，三相电推荐1500-1700V系列。



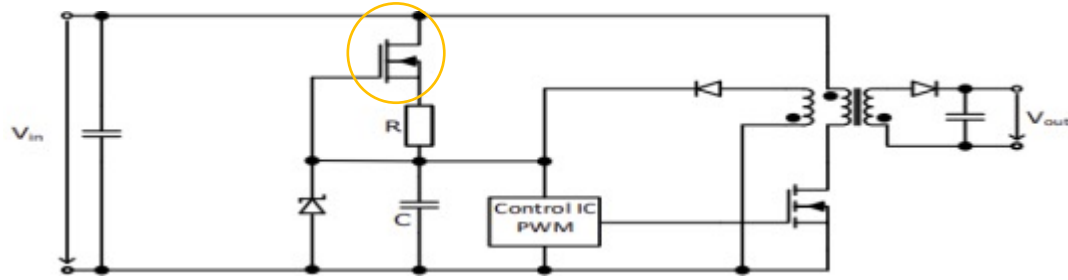
No.	PART No.	ID(A)	VDSS(V)	RDS(ON) MAX. (mΩ) at VGS=10V	Package
1	4N100-FCQ	4	1000	7500	TO-220F TO-220F1 TO-220F2 TO-251 TO-252
2	5N100-FCQ	5	1000	5400	TO-252 TO-220 TO-220F TO-220F1 TO-220F2
3	6N100-FC	6	1000	4000	TO-220F1
4	7N100-FC	7	1000	2400	TO-220F TO-220F1 TO-220F2
5	8N100-FCQ	8	1000	2900	TO-220 TO-220F TO-220F1
6	5N120	5	1200	3100	TO-247
7	6N120	6	1200	2500	TO-247

No.	PART No.	ID(A)	VDSS(V)	RDS(ON) MAX. (mΩ) at VGS=10V	Package
8	7N120-E2	7	1200	2400	TO-220F1 TO-247
9	8N120	8	1200	1800	TO-247
10	9N120	9	1200	1800	TO-247
11	4N150-P	4	1500	5000	TO-247
12	6N150-E2	6	1500	4000	TO-220F1 TO-220F2
13	8N150	8	1500	2400	TO-247 TO-3PF TO-3PN
14	9N150	9	1500	2300	TO-247

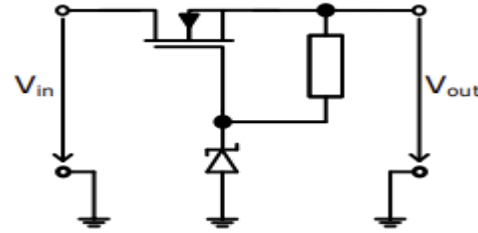




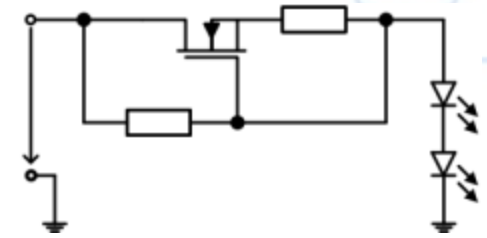
# MOSFET Depletion Mode



Flyback with depletion MOSFET.  
Adjusted drain current.



Linear Regulators



Linear LED driver

VDSS Range 70~1500V

Low RDS(ON)

Small Package

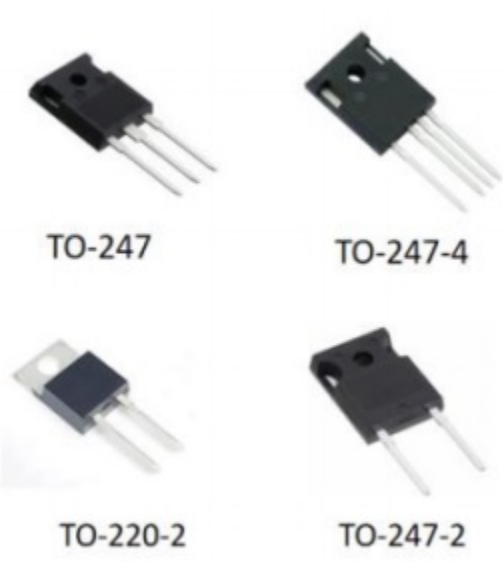
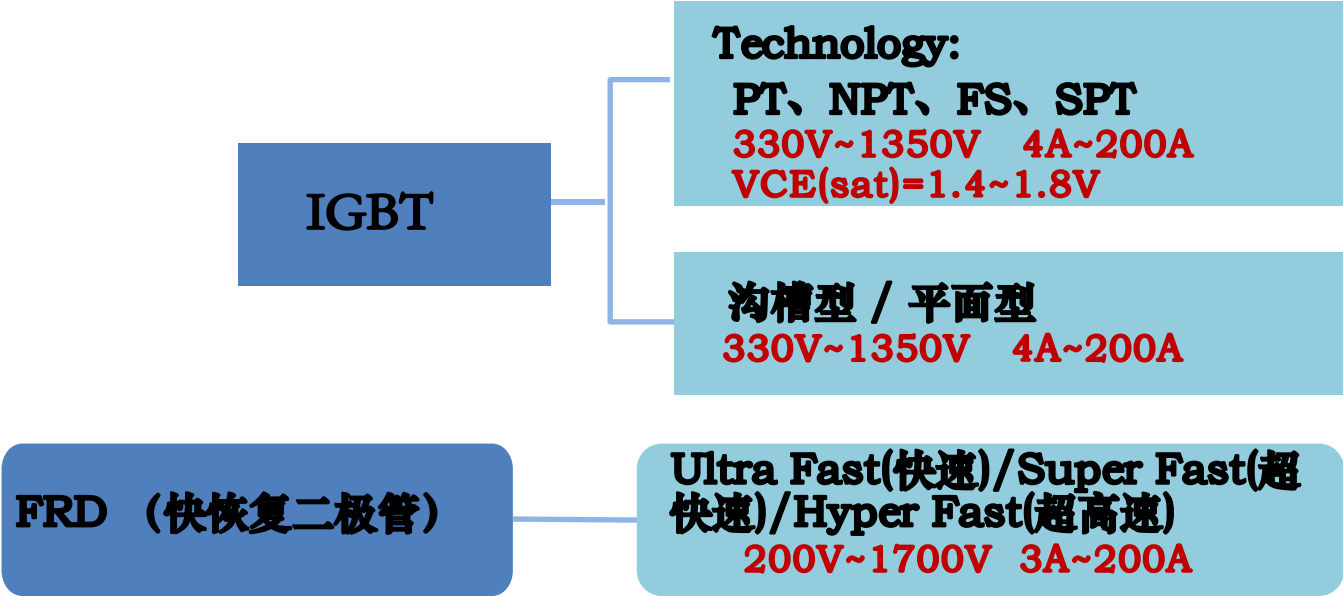
<b>UTC</b>	
BSS169	100V,20R, SOT-23
UF601	600V,120R, SOT-23
UDF015N150	1500V,700R, SOT-223

Applications	SMPS	Voltage regulator	Over-voltage protection
	Industrial	Power supply startup power	In-rush-current limiter
	Automotive	LED lighting	Off-line voltage reference

# IGBT/FRD



(IGBT/FRD/Schottky Diode /Thyristor/Transistor)涵盖功率器件多种产品线，如 IGBT/FRD/肖特基二极管/功率三极管/晶閘管可控硅等系列，广泛应用于储能电源，充电桩，光伏逆变,UPS电源，工业控制，SMPS，智能家电，新能源车等。



# 肖特基/可控硅



Schottky Diode  
(肖特基二极管)

平面式型肖特基二极管  
30V~200V 0.1A~100A

MOS肖特基二极管  
30V~300V 0.2A~40A

沟槽型肖特基二极管  
40V~100V 0.2A~100A

Thyristor (晶闸管)

SCR 单向可控硅  
标准型SCR 400V~1200V 0.15A~100A  
敏感型SCR 200V~1000V 0.3A~100A

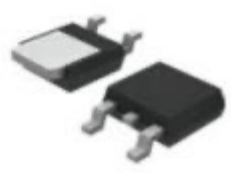
TRIAC 双向可控硅  
3象限 400V~1200V 0.3A~25A  
4象限 400V~1200V 0.3A~40A



TO-220



TO-3PN



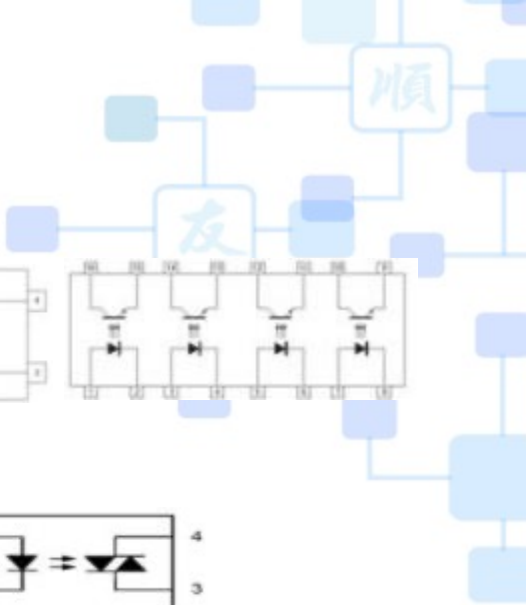
TO-252



TO-220F



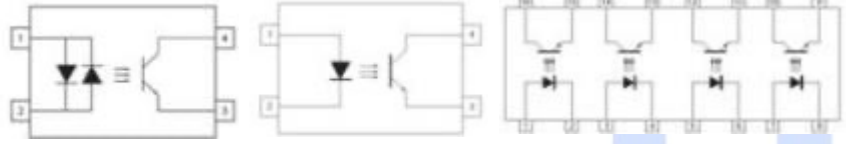
# 光 耦



General Purpose  
Phototransistor  
Photocoupler

(光耦)

UPC10XX/UTC10XX:1001~1019  
; UPC816/817



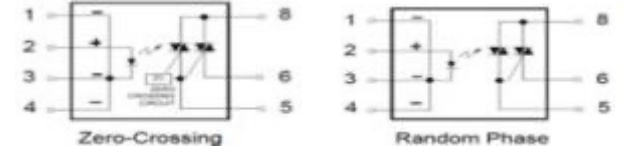
Triac Output Photocoupler  
(可控硅输出光耦)

Zero Crossing(零交叉)/Random Phase(随机相位) 400V/600V/800V  
IPT30XX、UOC3020S、UOC3021S



Solid State Relay Photocoupler  
(固态继电器光耦合器)

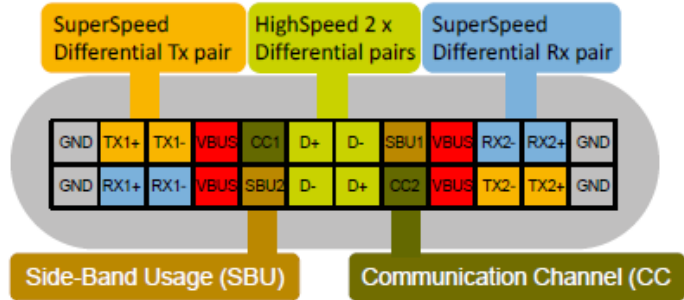
Zero Crossing(零交叉)/Random Phase(随机相位) 600V  
UPT0133、UPT3223、UPT2223、UPT1223





# TVS

## Type-C連接器應用



UTC Parts	Package	Cin(pF)	ESD(Con/Air)	Surge(IPP_8/20uS)	type	VRWM	VBV_1mA
UESD5V0U1B-L	DFN0603-2	0.4/0.5	30KV	4.5A	Bi-directional	5V	6/8.5/10
UESD5V0U1B-L	DFN1006-2	0.4/0.5	30KV	4.5A	Bi-directional	5V	6/8.5/10
UESD5V0U1U	DFN0603-2	0.8/1.0	30KV	4.5A	Uni-directional	5V	6/7.8/10
UESD5V0U1U	DFN1006-2	0.8/1.0	30KV	4.5A	Uni-directional	5V	6/7.8/10

## CC/SBU/Vbus方案 (PTVS)

UTC Parts	Package	Cin(pF)	ESD(Con/Air)	Surge(IPP_8/20uS)	type	VRWM	VBV_1mA
UESD5V0U1B-L	DFN1006-2	0.85/0.95	15KV	4.5A	Bi-directional	5V	6/8.5/10



SOT-363



SOT-563



DFN0603-2



DFN2510-10



SOD-123



SOD-323





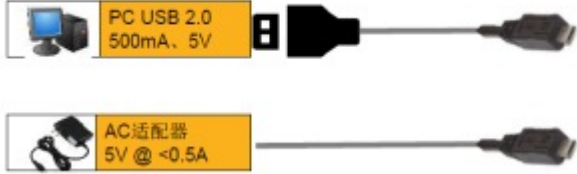
# TVS

## 平板电脑和手机的 Vbus和Vbat

UTC Parts	Package	Cin(pF)	ESD(Con/Air)	Surge(IPP_8/20uS)	type	VRWM	VBV_1mA
UPTVS7V5U1UKAJ	DFN2020-3	NA	30KV	178A	Uni-directional*1	7.5V	8.33/8.77/9.21
UPTVS10VU1UKAJ	DFN2020-3	NA	30KV	148A	Uni-directional*1	10V	11.1/11.7/12.3
UPTVS12VU1UKAJ	DFN2020-3	NA	30KV	131A	Uni-directional*1	12V	13.3/14/14.7
UPTVS15VU1UKAJ	DFN2020-3	NA	30KV	111A	Uni-directional*1	15V	16.7/17.6/18.5
UPTVS18VU1UKAJ	DFN2020-3	NA	30KV	97A	Uni-directional*1	18V	20/21/22.1
UPTVS28VU1UKAJ	DFN2020-3	NA	30KV	69A	Uni-directional*1	26V	28.9/30.4/31.9

## 智能手机充电器路 径中的TVS

UTC Parts	Package	Cin(pF)	ESD(Con/Air)	Surge(IPP_8/20uS)	type	VRWM	VBV_1mA
UPTVS5V0Z1UKAU	DFN1608-2	1200	30KV	80A	Uni-directional*1	5V	6.4/7/7.8(10mA)
UPTVS7V5Z1UKAU	DFN1608-2	710	30KV	100A	Uni-directional*1	7.5V	8.33/9/9.65(10mA)
UPTVS10VZ1UKAU	DFN1608-2	500	30KV	75A	Uni-directional*1	10V	11.1/12/12.9(10mA)
UPTVS12VZ1UKAU	DFN1608-2	430	30KV	65A	Uni-directional*1	12V	13.3/14.4/15.4(10mA)
UPTVS15VZ1UKAU	DFN1608-2	340	30KV	52A	Uni-directional*1	15V	16.7/18/19.4(10mA)
UPTVS18VZ1UKAU	DFN1608-2	290	30KV	41A	Uni-directional*1	18V	20/21.6/23.2(10mA)
UPTVS26VZ1UKAU	DFN1608-2	215	30KV	32A	Uni-directional*1	26V	28.9/31.1/33.4(10mA)
UPTVS5V0Z1UKAA	DFN1006-2		30KV	80A	Uni-directional*1	5V	6.4/7/7.8(10mA)
UPTVS7V5Z1UKAA	DFN1006-2		30KV	100A	Uni-directional*1	7.5V	8.33/9/9.65(10mA)
UPTVS10VZ1UKAA	DFN1006-2		30KV	75A	Uni-directional*1	10V	11.1/12/12.9(10mA)
UPTVS12VZ1UKAA	DFN1006-2		30KV	65A	Uni-directional*1	12V	13.3/14.4/15.4(10mA)
UPTVS12VZ1UKAA	DFN1006-2		30KV	65A	Uni-directional*1	12V	13.3/14.4/15.4(10mA)
UPTVS15VZ1UKAA	DFN1006-2		30KV	52A	Uni-directional*1	15V	16.7/18/19.4(10mA)
UPTVS18VZ1UKAA	DFN1006-2		30KV	41A	Uni-directional*1	18V	20/21.6/23.2(10mA)
UPTVS26VZ1UKAA	DFN1006-2		30KV	32A	Uni-directional*1	26V	28.9/31.1/33.4(10mA)



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