

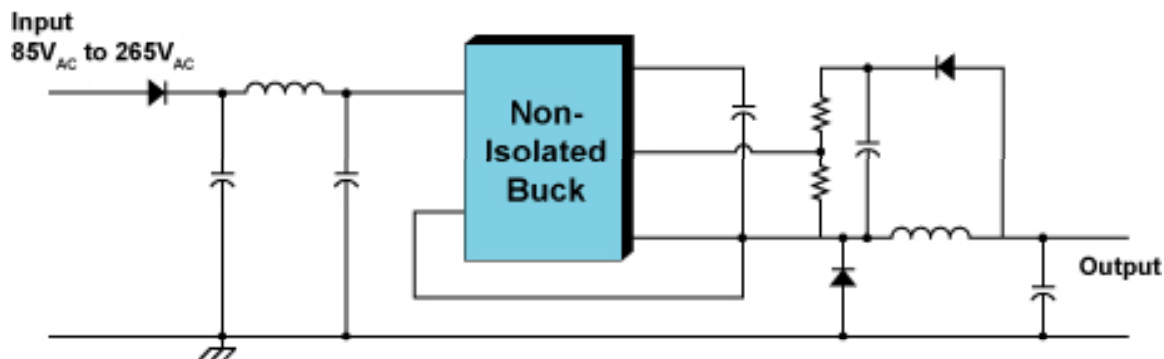
MPS[®]

Monolithic Power Systems

AC-DC Devices

EasyPower™

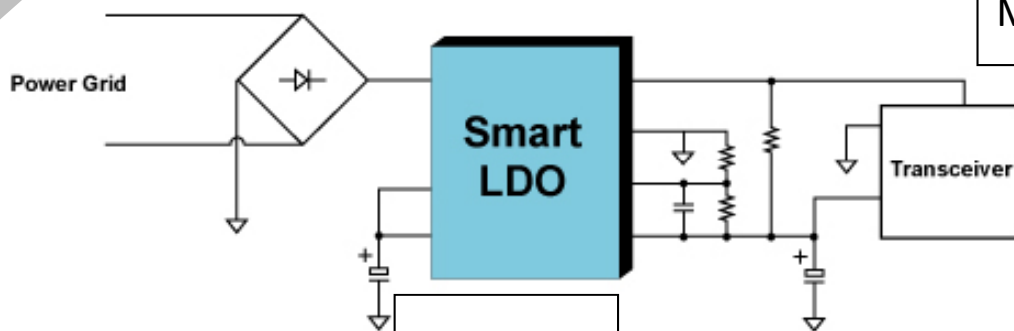
Power (100mW → 6W)



MP150
MP155
MP156
MP157



TSOT23-5
& SOIC8
Packages!



MP100
MP100L
MP103



8mm

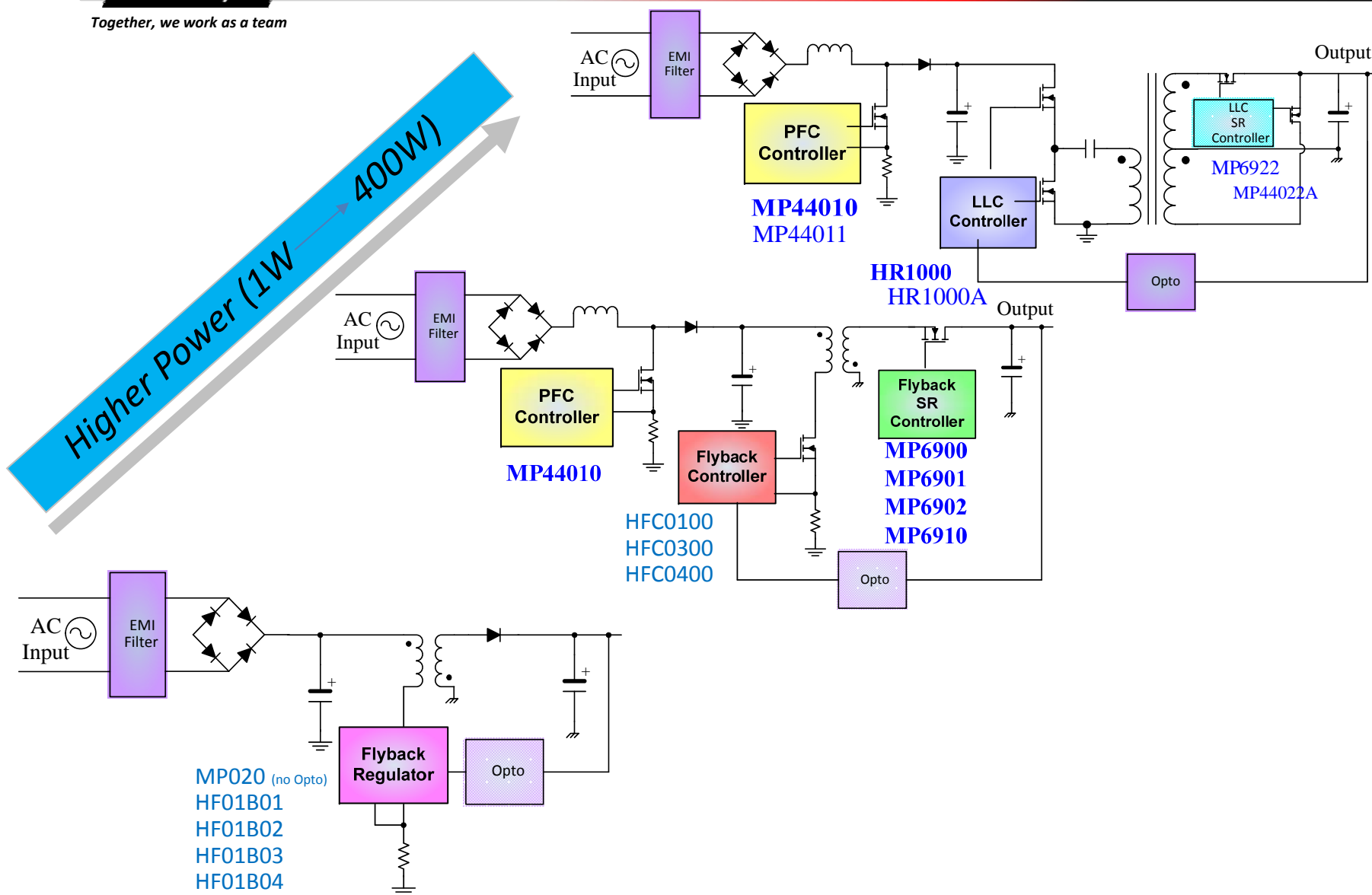
8mm

15mm



15mm

Product Portfolio 1W to 400W





Together, we work as a team

Non-Isolated 100mW to 6W → EasyPower™

AC/DC Easy Power Solutions

- Released
- Sampling
- Development

Isolated
Flyback
Internal 700V FET

MP020-5: 700V/10Ω, <30mW
CC/CV, up to 7W



Non-isolated
Buck
Internal
500V FET

MP170 (Buck), <30mW, 700V/150hm

MP157: 10Ω, <30mW No Load

MP150: 30Ω, <150mW No Load
MP155: 20Ω, <100mW No Load
MP156: 20Ω, <30mW No Load



Linear
Internal
700V FET &
Controller

MP100: Inductor-less
MP103: Controller



150mW

600mW

3W

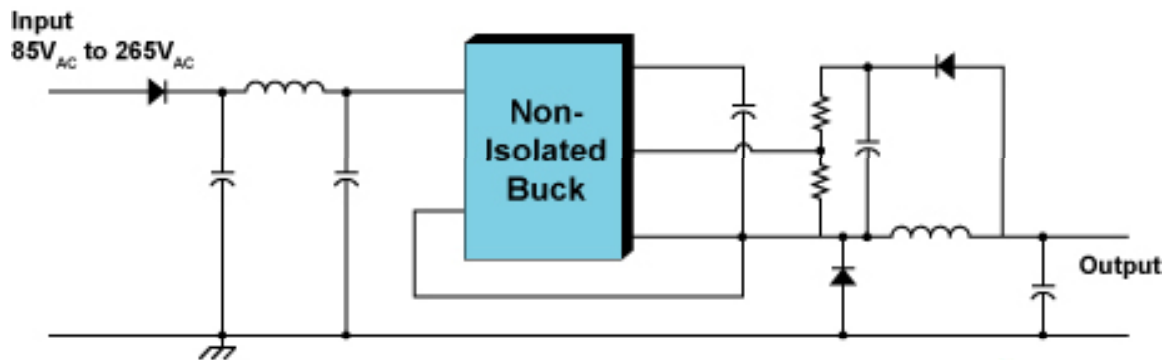
5W

7W

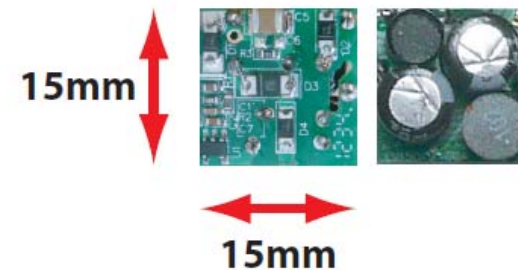
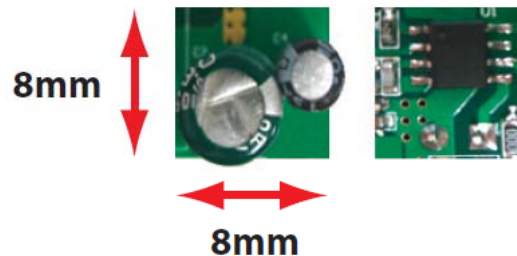
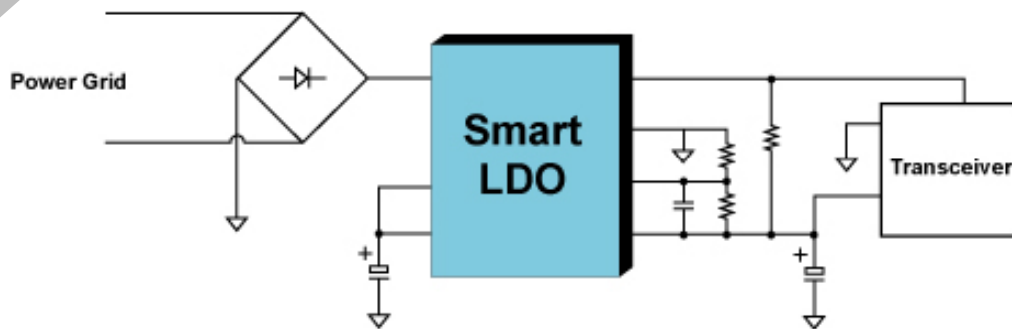
15W

EasyPower™

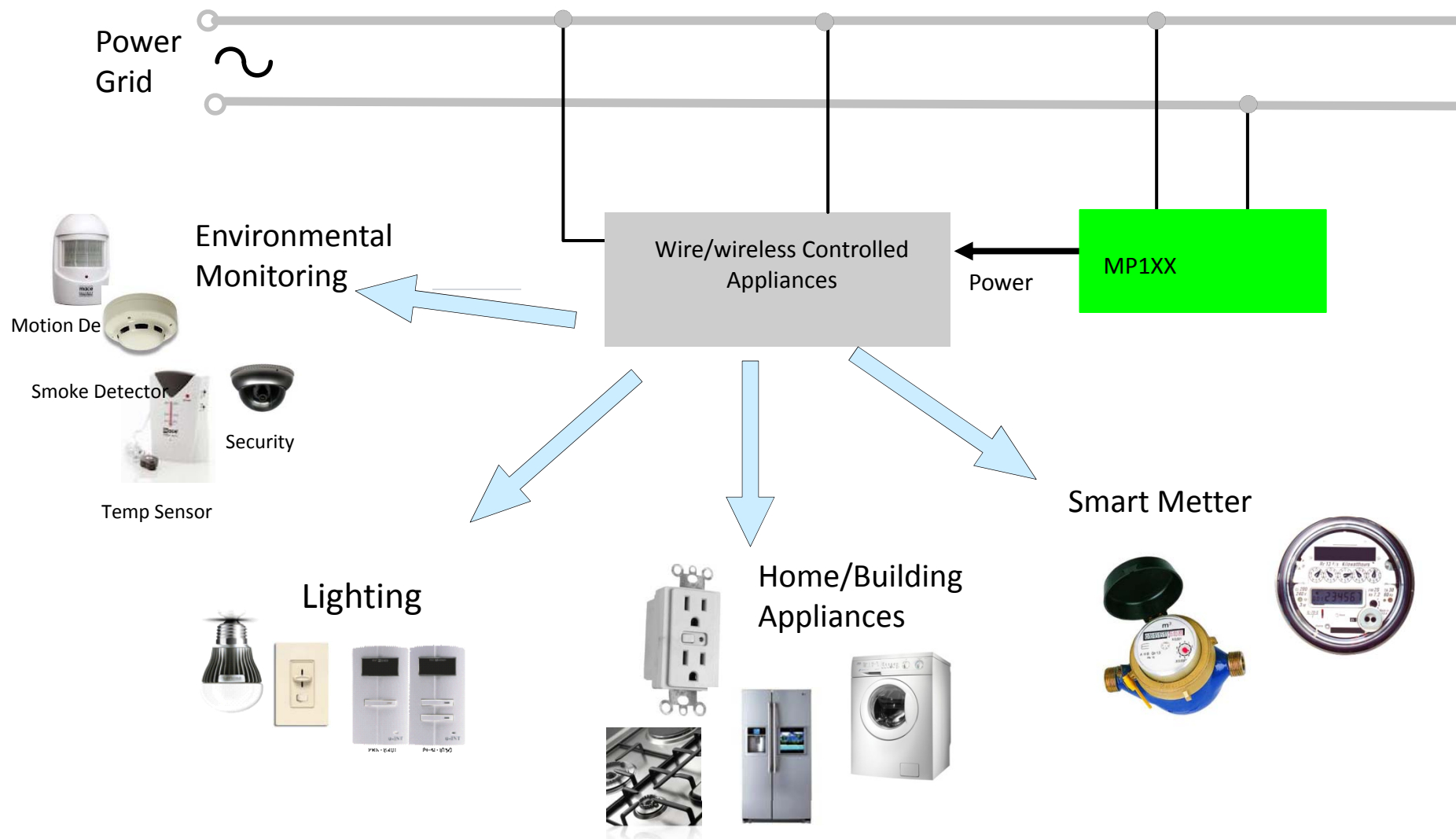
Power (100mW) → 6W



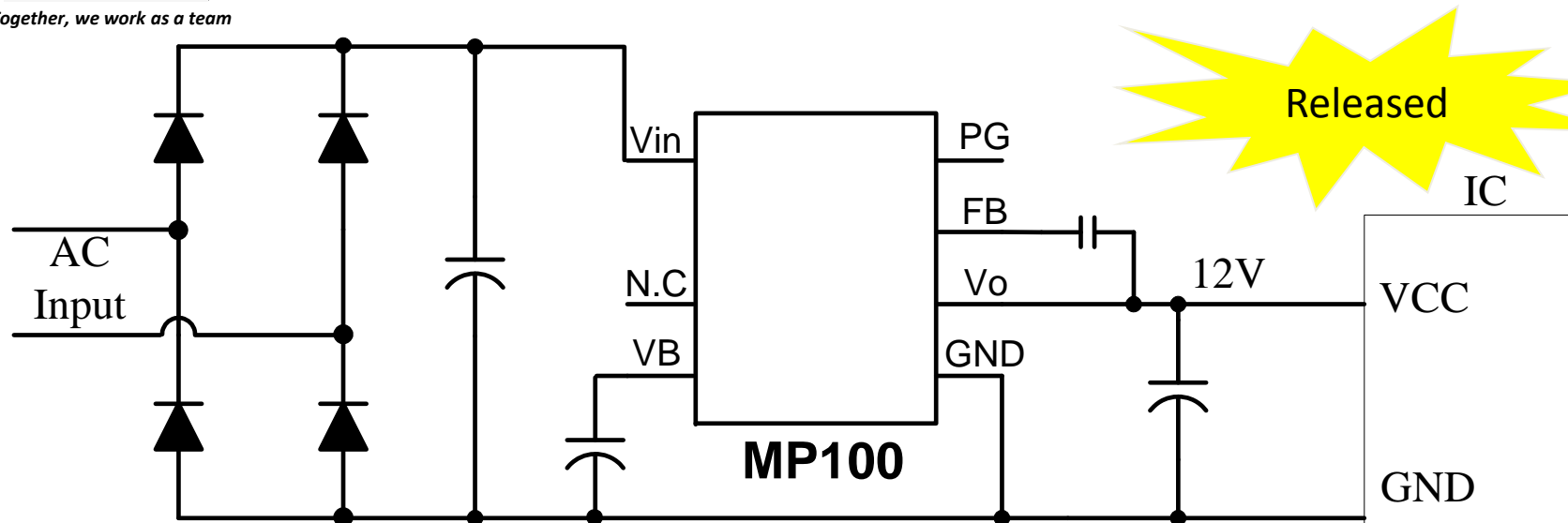
TSOT23-5
& SOIC8
Packages!



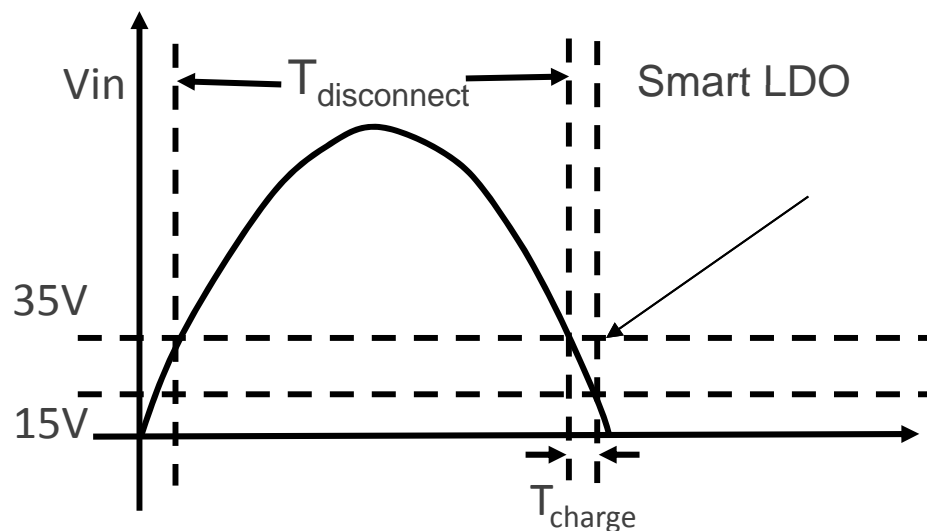
EasyPower™ Applications



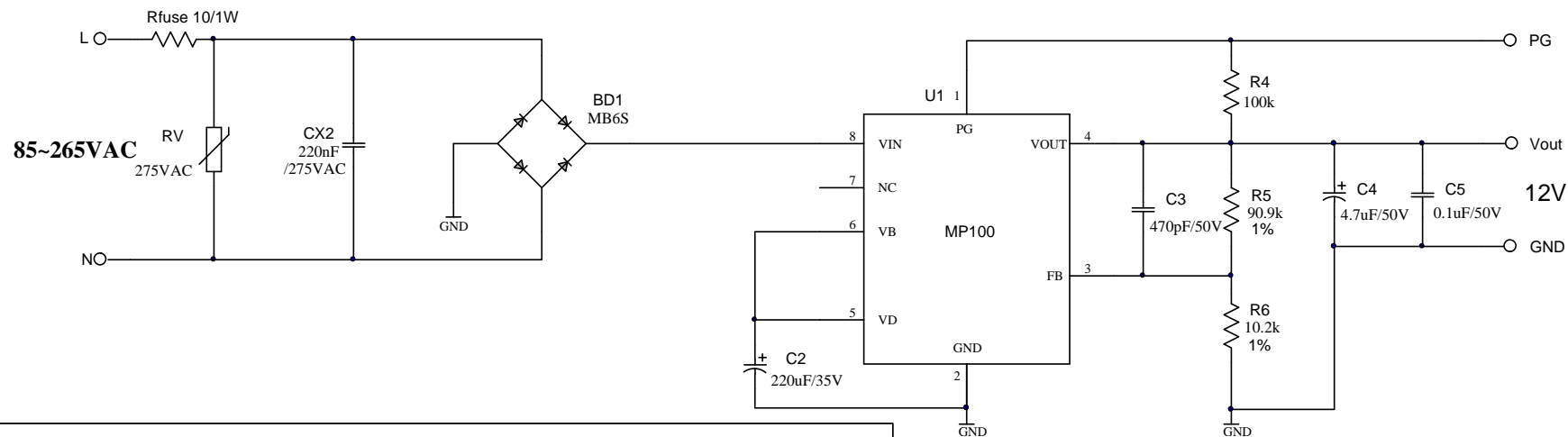
Smart LDO Solutions—MP100 Family



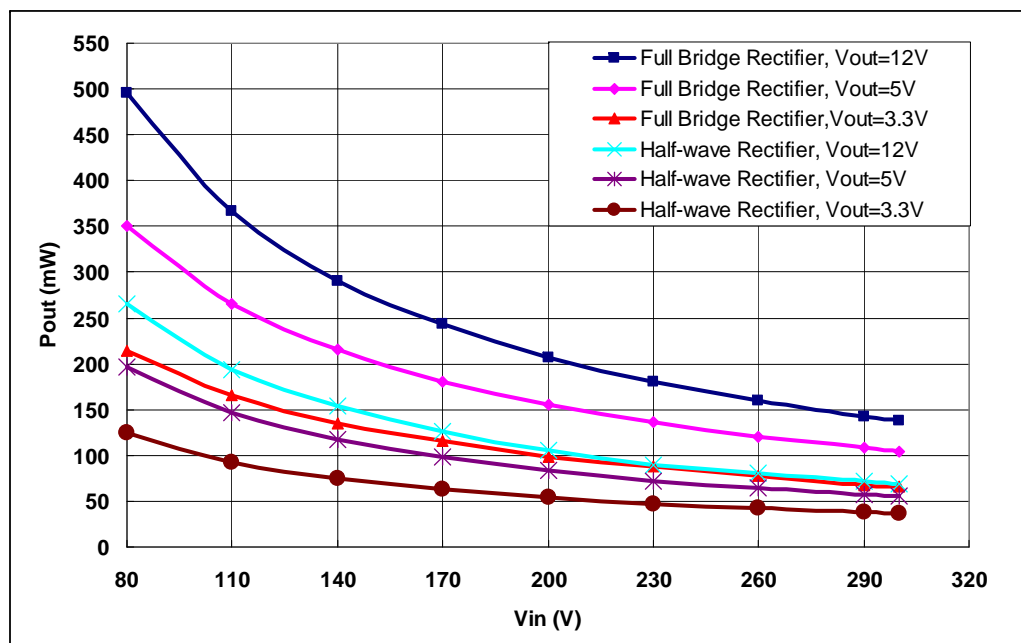
- Steps down the AC line voltage to a regulated programmable DC.
- Inductorless
- Extremely small size



Typical Application Circuit --- MP100

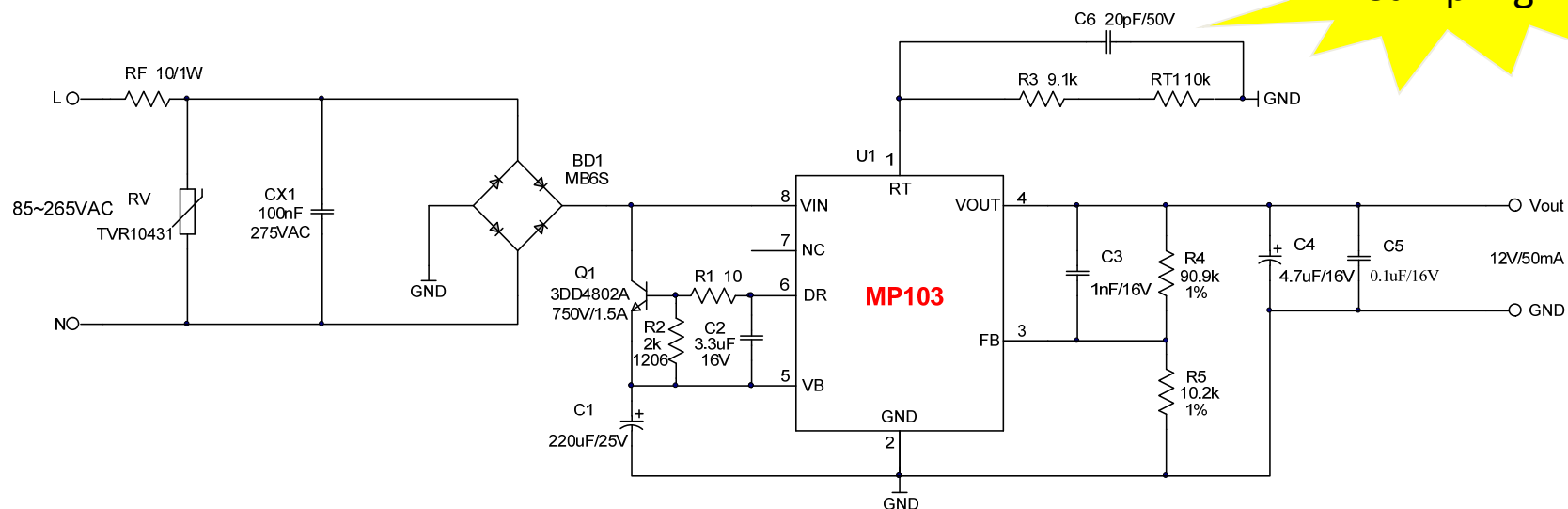


For 5V output, R5=30.9k, R6=10.2k



Application Circuit

Sampling



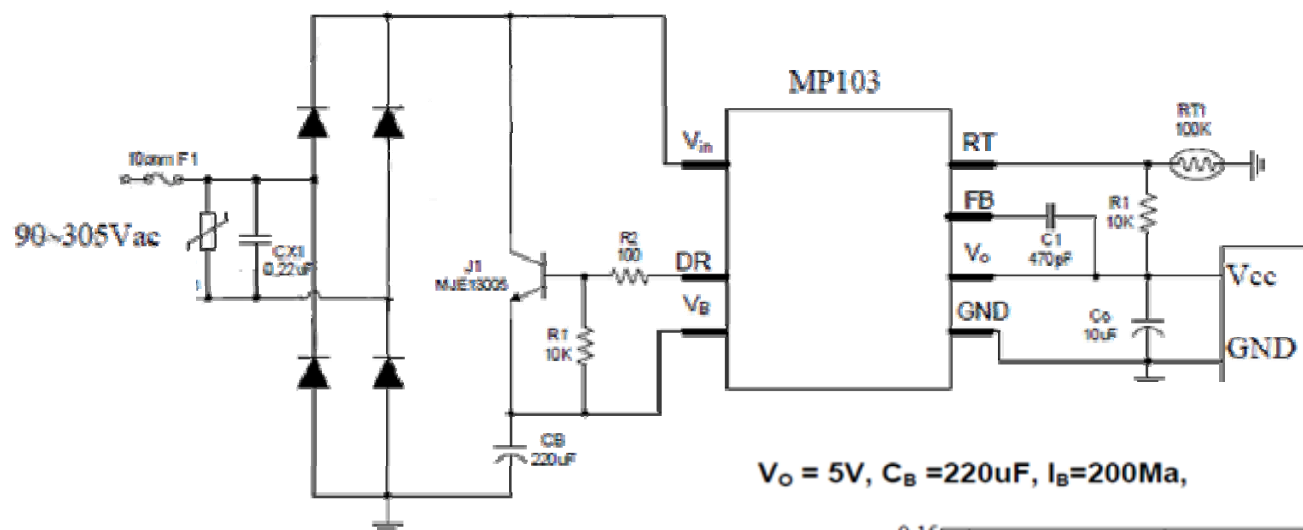
Features

- Being able to drive BJT
- Good EMI Performance
- No Bulky Inductor
- Available in SOIC8E and DIP8-7

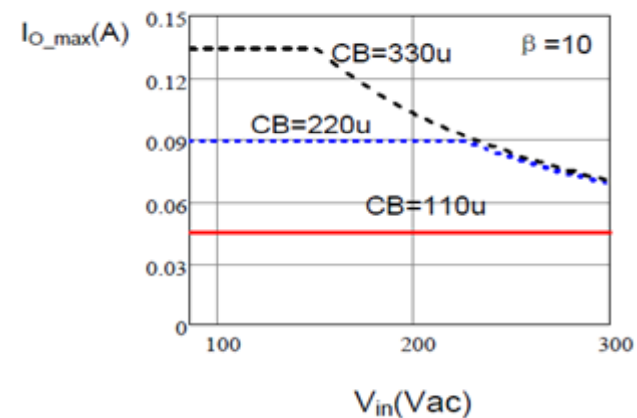
MP103 Operation

Adds BJT to increase power handling

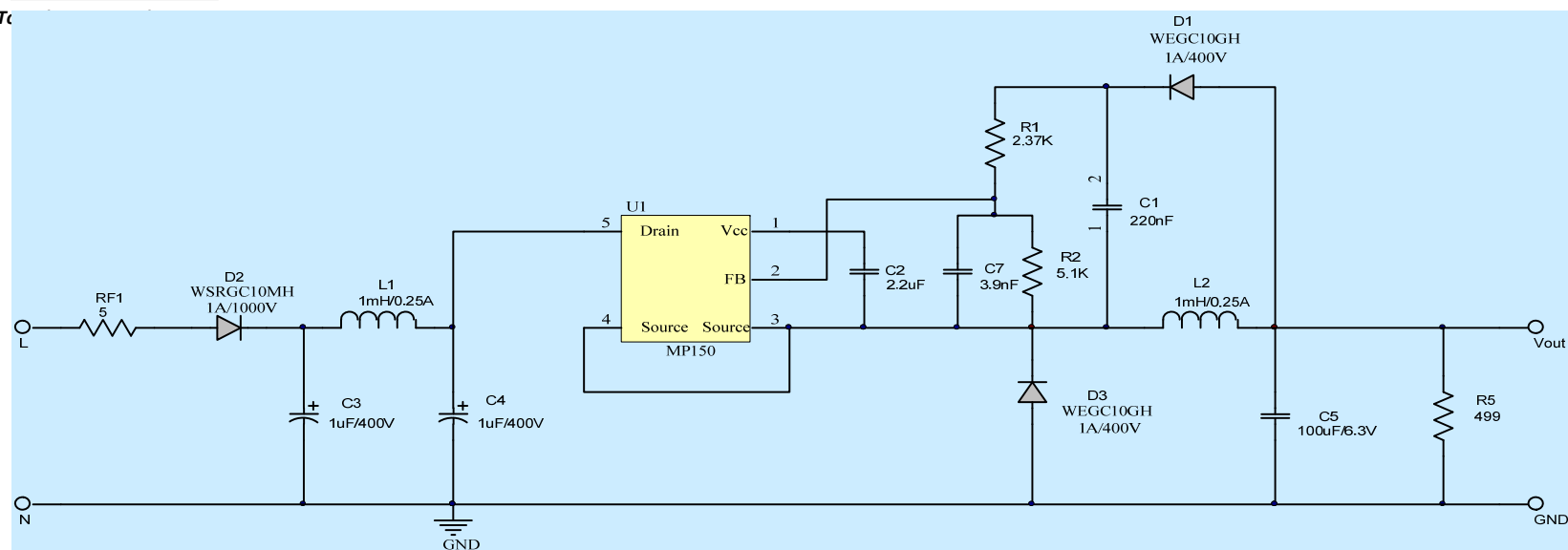
TYPICAL APPLICATION



$V_O = 5V$, $C_B = 220\mu F$, $I_B = 200\text{Ma}$,



MP15X Family

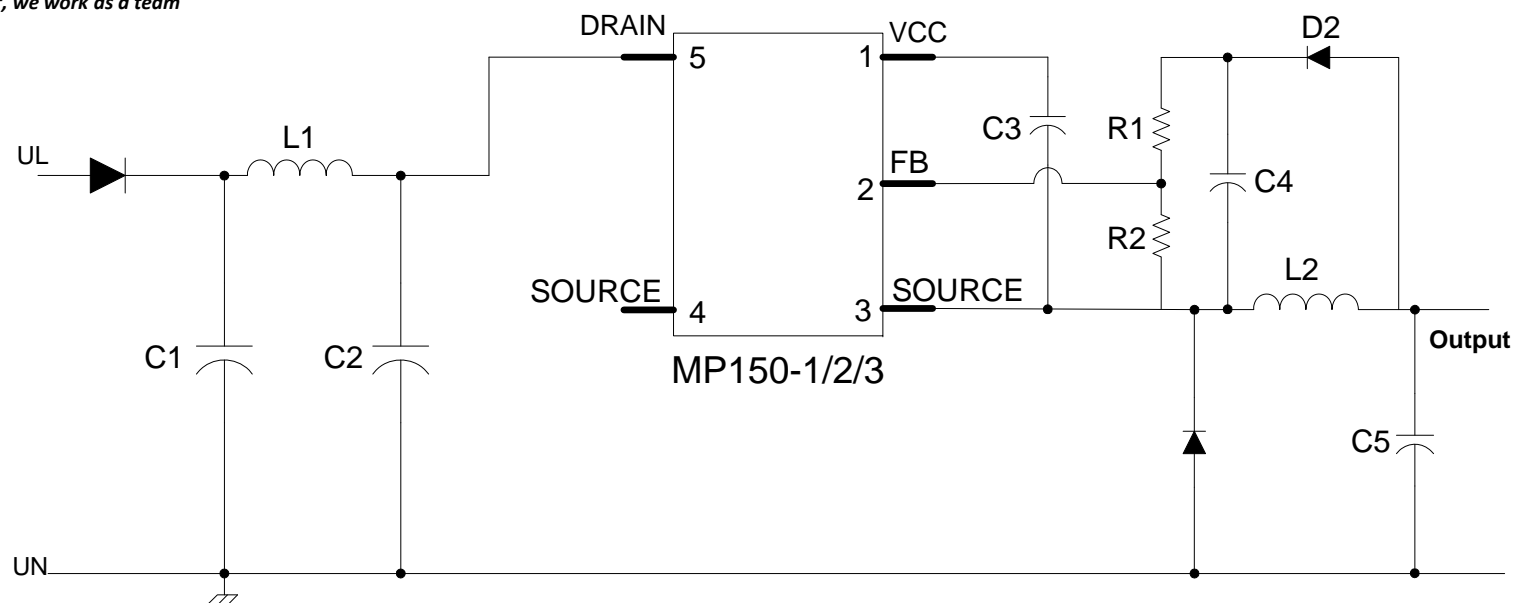


Advantages

1. Lower no-load power consumption
2. Better regulation
3. SOT23-5 package

	MP157	MP156	MP155	MP150	LNK304	VIPer12(1)
Rdson / Power	10 / 6W	22 / 3W	22 / 3W	30 / 2W	24 / 2W	27 / 2W
No Load Consumption	<30mW	<30mW	<100mW	<150mW	<150mW	<200mW
Efficiency	>75%	>75%	>75%	>70%	>70%	>65%
Load regulation	±5%	±5%	±5%	±5%	±5%	±10%

Non-Isolated Buck Solutions—MP150 Family



Key FEATURES:

- TSOT23-5 package
- +-5% Output regulation
- low standby power

P/N	R_{DS_ON} (Ω)	Pout (W)	Standby Power (mW)
MP150	30	2	<150
MP155	22	3	<100
MP156	22	3	<30
MP157	10	5	<30

11.11.2017, 11:11

The diagram illustrates a voltage-mode controlled buck converter. The input is 85-265VAC, which is rectified and filtered. The primary of a transformer (T1) is connected to the output of the filter. The secondary of T1 is connected to a diode and a capacitor, forming an output filter. The transformer has primary inductance L_m and primary turns N_p . The secondary has turns N_s and is connected to a diode and a capacitor, forming an output filter. The output voltage is V_D and the output current is I_s . The transformer is labeled T1. The primary inductance is L_m and the primary turns are N_p . The secondary turns are N_s . The output voltage is V_D and the output current is I_s . The transformer is labeled T1. The primary inductance is L_m and the primary turns are N_p . The secondary turns are N_s . The output voltage is V_D and the output current is I_s .

The MP020-X controller is shown with its internal components: VCC, CP, GND, Drain, FB, and a feedback network consisting of a resistor and a capacitor. The controller is connected to the transformer's primary winding. The primary winding has inductance L_m and turns N_p . The secondary winding has turns N_s and is connected to a diode and a capacitor, forming an output filter. The output voltage is V_D and the output current is I_s . The transformer is labeled T1. The primary inductance is L_m and the primary turns are N_p . The secondary turns are N_s . The output voltage is V_D and the output current is I_s .

The output voltage waveform is shown on the right, with a peak-to-peak ripple of V_{aux} and a period of T_{ons} . The ripple voltage is V_{aux} and the period is T_{ons} . The ripple voltage is V_{aux} and the period is T_{ons} .

$$V_{aux} = \frac{N_{aux}}{N_s} (V_o + V_D)$$

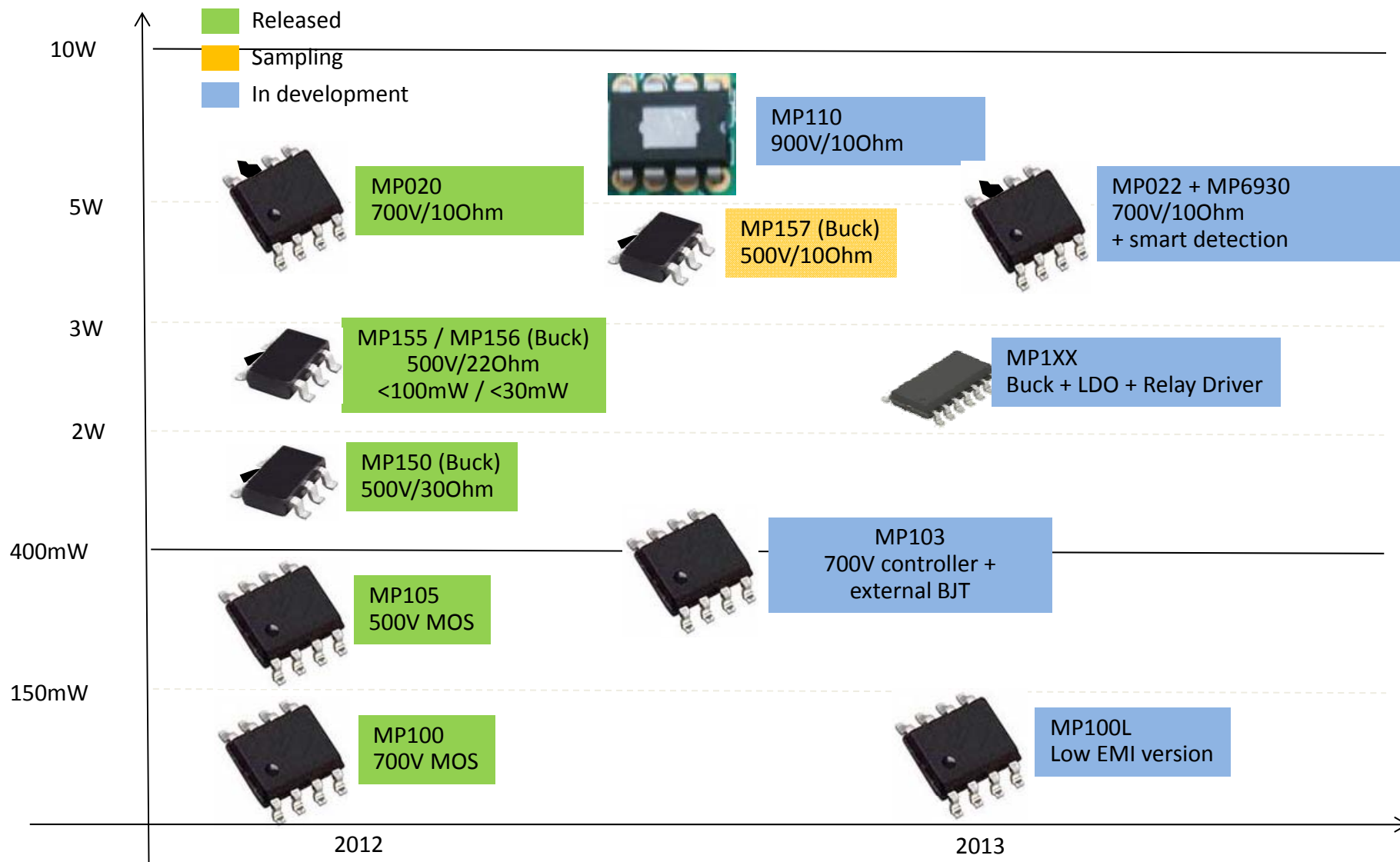
MP020 No Load Performance < 30mW

2.2 No Load Input Power

Ta=28°C, (2.2k Ω dummy load, keep the output voltage in the 4.75V to 5.25V range)

Input Voltage (Vac)	115	230
Input Power (mW)	23.0	24.3

AC/DC EasyPower™ Roadmap





Together, we work as a team

New 900V Flyback Regulator

MP110 Features and Typical Application

KEY FEATURES & BENEFITS:

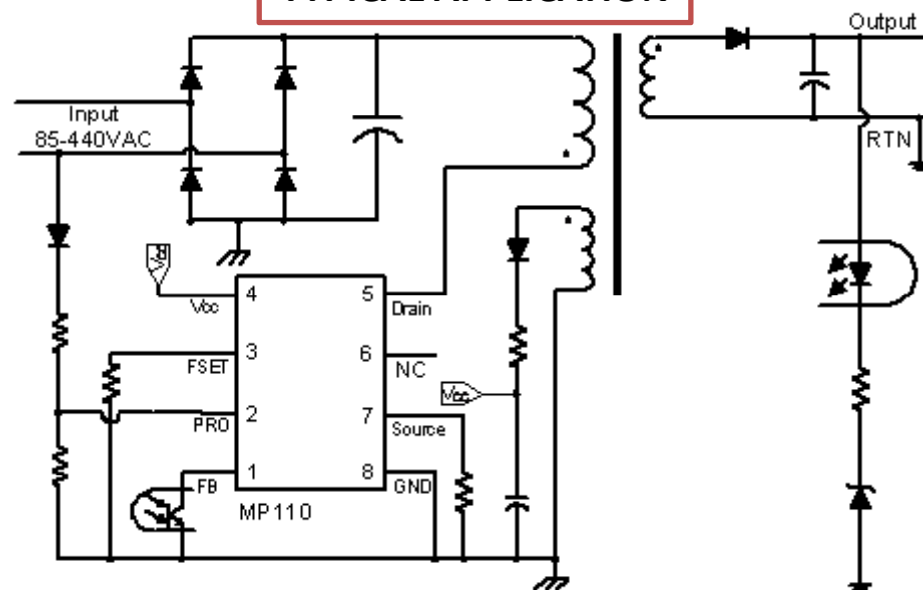
- Internal integrated 900V MOSFET
 - ➔ *Few extra components*
- Programmable switching frequency
 - ➔ *Easily set, can be higher than 100kHz*
- Frequency Jittering
 - ➔ *Better EMI*
- Input OVP protection
 - ➔ *Useful protection*
- PDIP8 with exposed pad
 - ➔ *Good thermal*



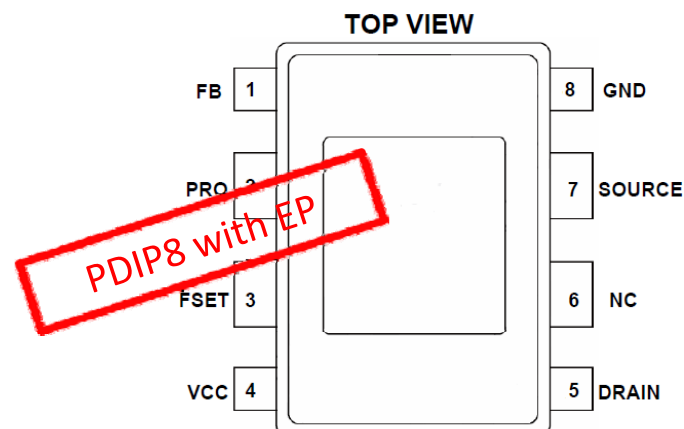
APPLICATIONS:

- Power meter
- Low-power PSU for industrial system
- AC-DC adapter

TYPICAL APPLICATION



PACKAGE REFERENCE



Executive Summary

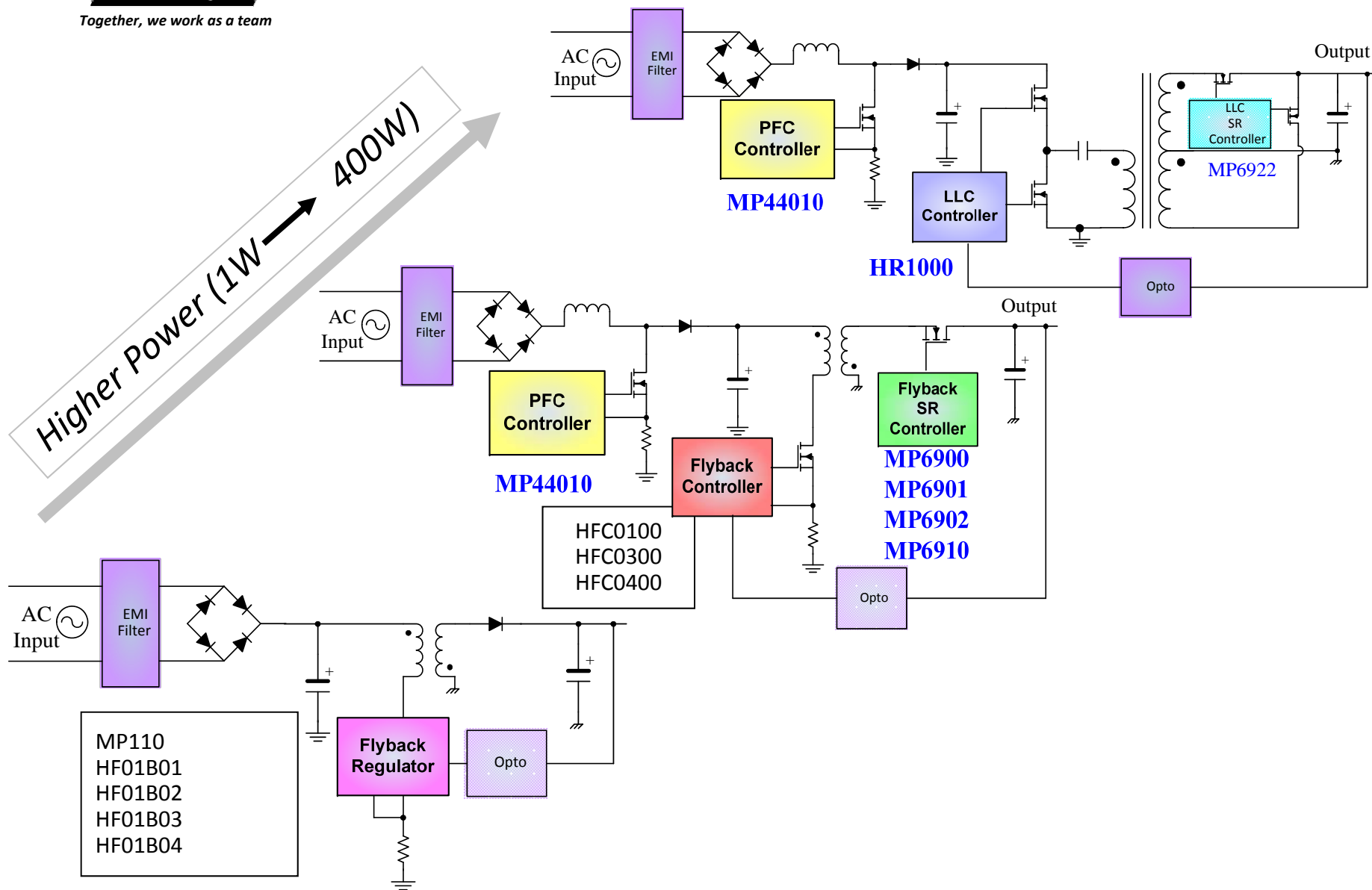
Part Number	MPS-MP110	Specification
Package	PDIP8-EP	-
Frequency	Programmable	<300kHz
Frequency Jittering	YES	+/-4%
Burst Mode	YES	FB=0.7V
Internal Current Source	YES	2mA (Start)
OLP –Auto Recovery	YES	FB=3.8V (82ms)
SCP – Auto Recovery	YES	1.5V
OVP –Auto Recovery	YES	24V (VCC)
OTP – Auto Recovery	YES	150C
Input OVP – Auto Recovery	YES	PRO=3.2V
Internal Slope Compensation	YES	-
Soft Start	YES	3ms
VCC ON/OFF	YES	11.7V / 8V
Integrated HV MOS/BJT	900V/MOS	13ohms/5W



Together, we work as a team

Isolated 1W- 400W Power Products

MPS Offers 1W-400W AC-DC Solutions





2013 ACDC Offline Solutions

Together, we work as a team

Isolated,
Two-stage,
HV Integrated
Drivers

PFC+LLC Half bridge
MP44010 + HR1000A

Synchronous Rectifiers (LLCs)
Single: MP6903 Dual: MP6922/2A

Isolated
Flyback
Controller

HFC0100: Quasi-Resonant Operation
HFC0300: High Light Load Efficiency
HFC0310: Fixed Frequency
HFC0400: Integrated X-CAP discharge
HFC0500: Full Features*

70W -
120W
Add PFC
MP44010

Isolated
Flyback
Internal FET

MP020-5: 700V/10Ω, <30mW No Load,
CC/CV

Synchronous Rectifiers
MP6900/1/2 (Flybacks)

EasyPower Family

Non-isolated
Buck
Internal
500V FET

MP157*: 10Ω, <100mW No Load

MP150: 30Ω, <150mW No Load
MP155: 20Ω, <100mW No Load
MP156: 20Ω, <30mW No Load

Linear
Internal
700V FET &
Controller

MP100: Inductor-less
*MP103**: Controller

* Available Q2 2013

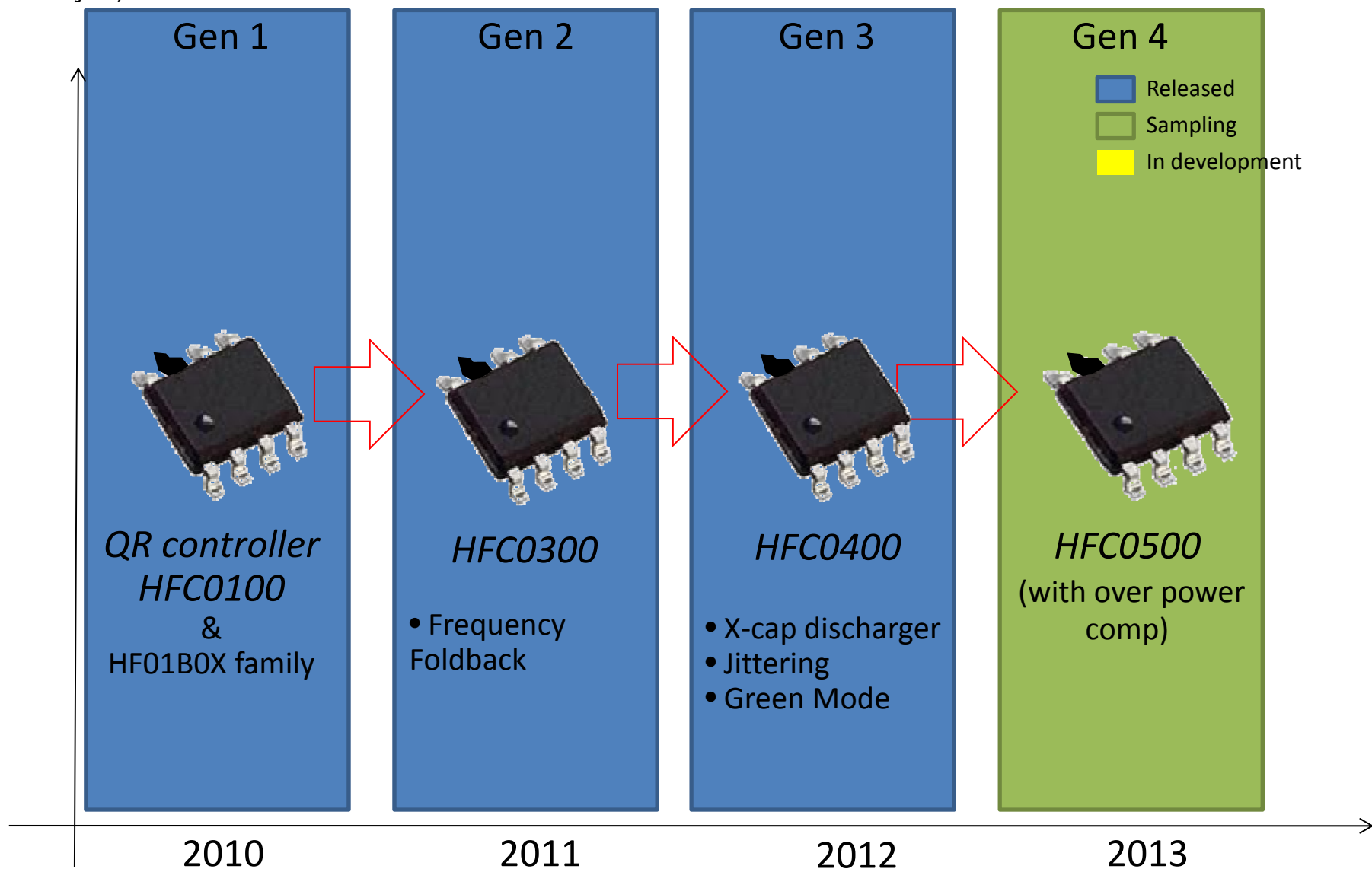
150mW 400mW 1W 3W 5W 10W 100W 400W



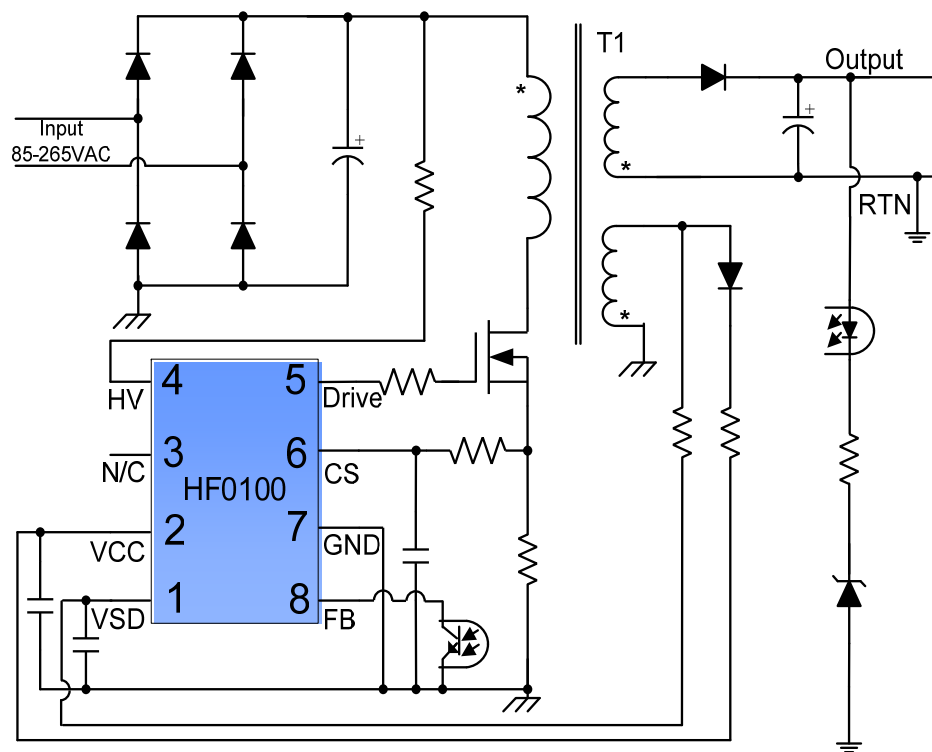
Together, we work as a team

Flyback and Non-Isolated Solutions

AC/DC Flyback Controller Roadmap

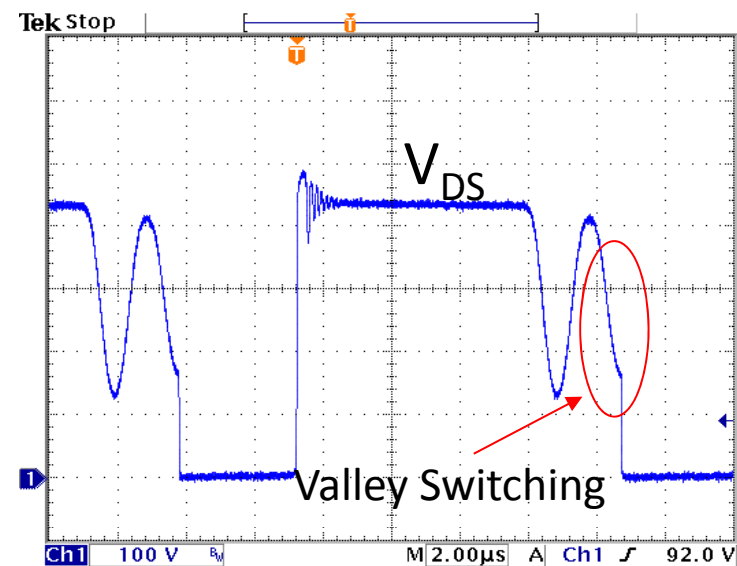


HFC0100 --- QR controller



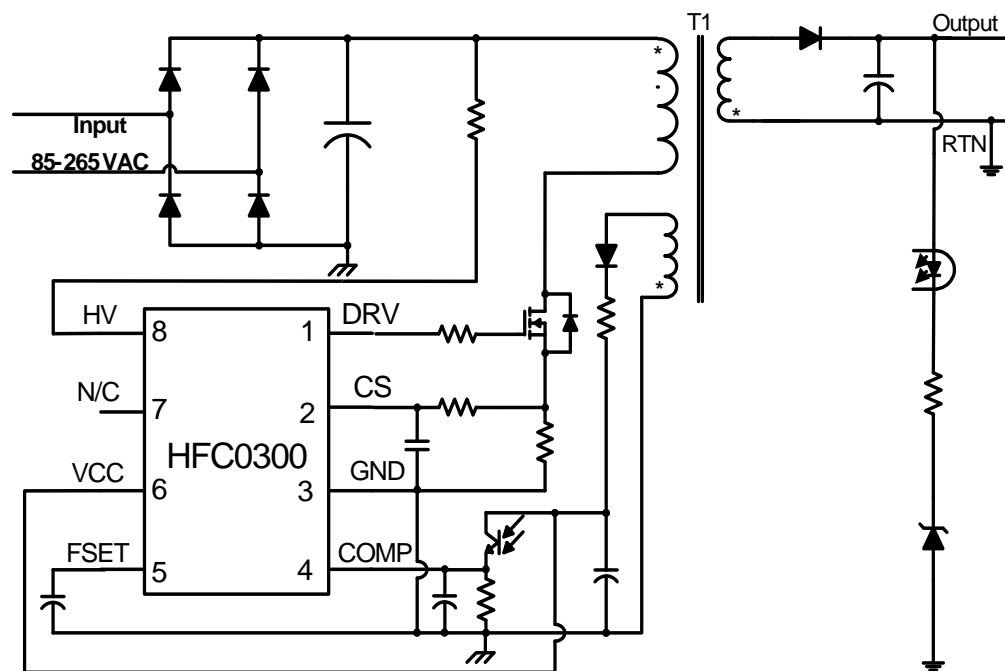
FEATURES

- Quasi-Resonant Operation for High Efficiency and Better EMI Performance
- Active Burst Mode for Energy Star
- Internal High Voltage Current Source
- Thermal Shutdown (Auto Restart with Hysteresis)
- Vcc Under Voltage Lockout (UVLO)
- OVP, SCP and OLP



Released

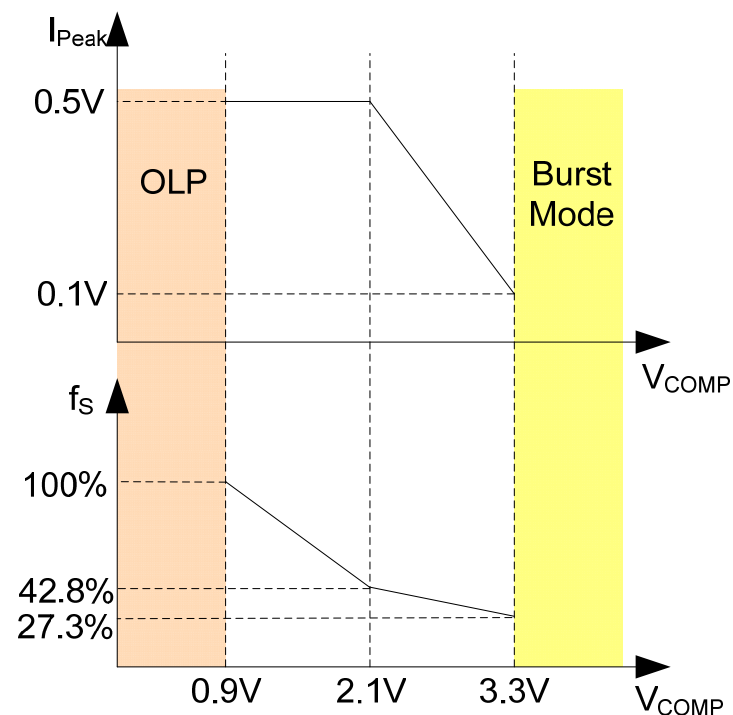
Variable Off-Time Controller—HFC0300



Released

Key Features:

- ✓ Frequency foldback when the load becomes lighter



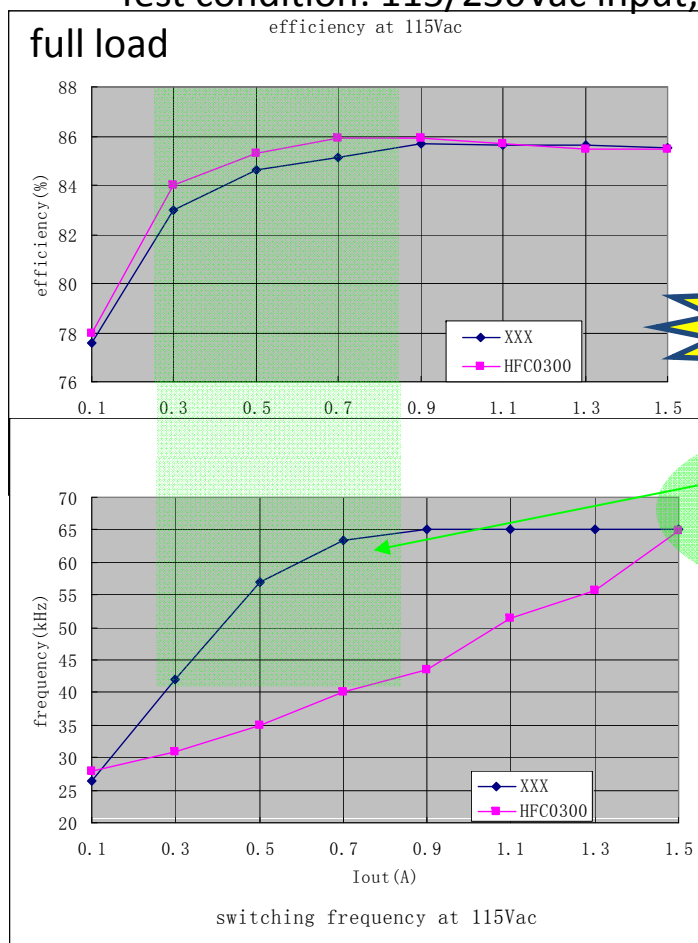
- ✓ Precise Over Load Protection

HFC0300 --- High Efficiency

Key advantage over the competition: Higher Efficiency

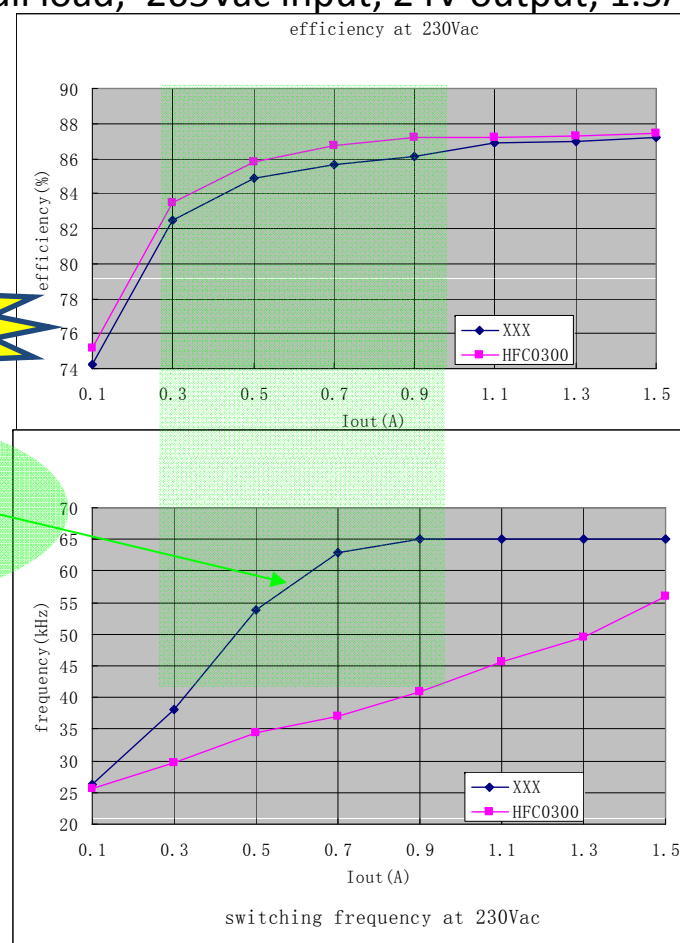
Test board condition: 85~Efficiency comparison between HFC0300 and XXX (fixed frequency controller with green mode)

Test condition: 115/230Vac input; 24V output; 1.5A full load; 265Vac input; 24V output; 1.5A



Higher Efficiency

Lower frequency



HFC0300 – Precise OLP & Low No-load Power Consumption

Test board condition: 85~265Vac input; 24V output; 1.5A full load

Vin	115VAC	230VAC	265VAC
Over Load Current	2.07A	2.19A	2.26A

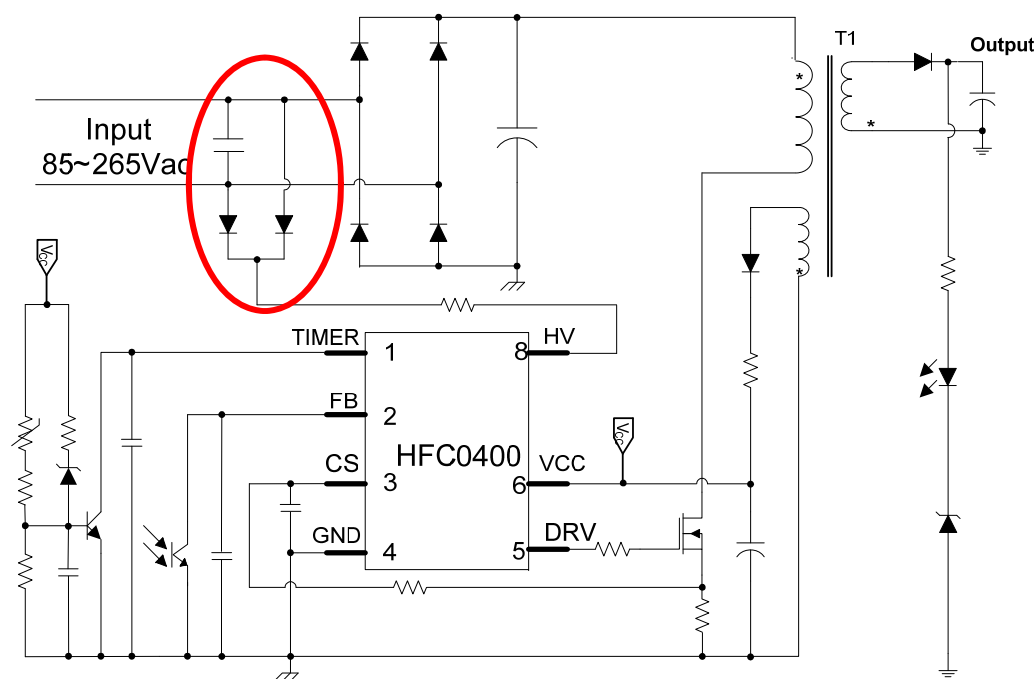
Precise OLP

Test board condition: 85~265Vac input; 16V/1.5A, 5V/3A

Vin	Pin @ no load	Pin @ 32mW load
265Vac	50.48mW	102.14mW

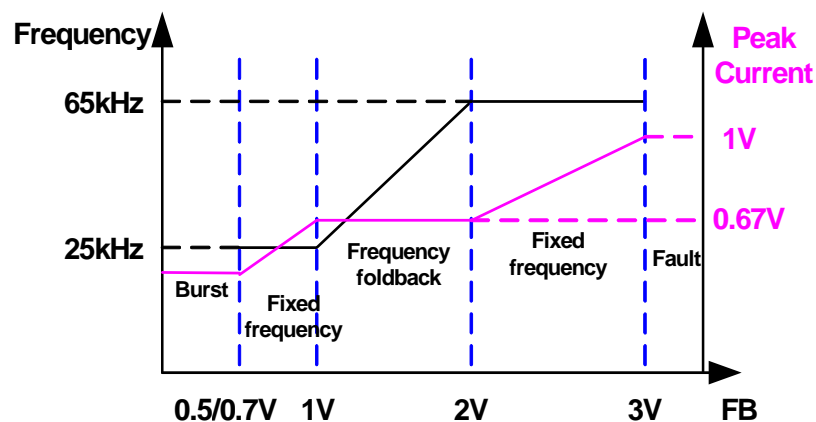
Low No Load
Consumption

Full Features Flyback Solution—HFC0400



Key Features:

- ✓ Frequency foldback when the load becomes lighter



- ✓ Brown-Out Function
- ✓ Frequency Jittering
- ✓ X-CAP discharging



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MPS AC-DC

If you need additional info, contact with our Sales team or directly with our technical department