



NE1101 Green Mode PWM Operation Description

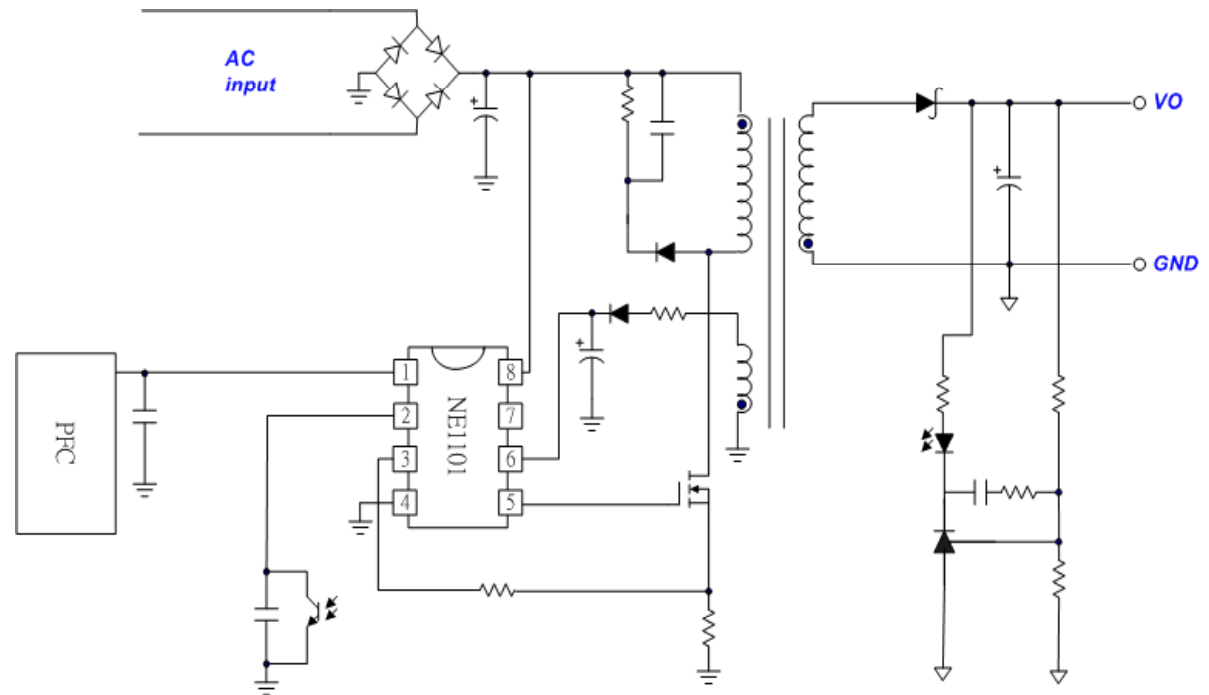
NE1101 Green Mode PWM Controller

• Features

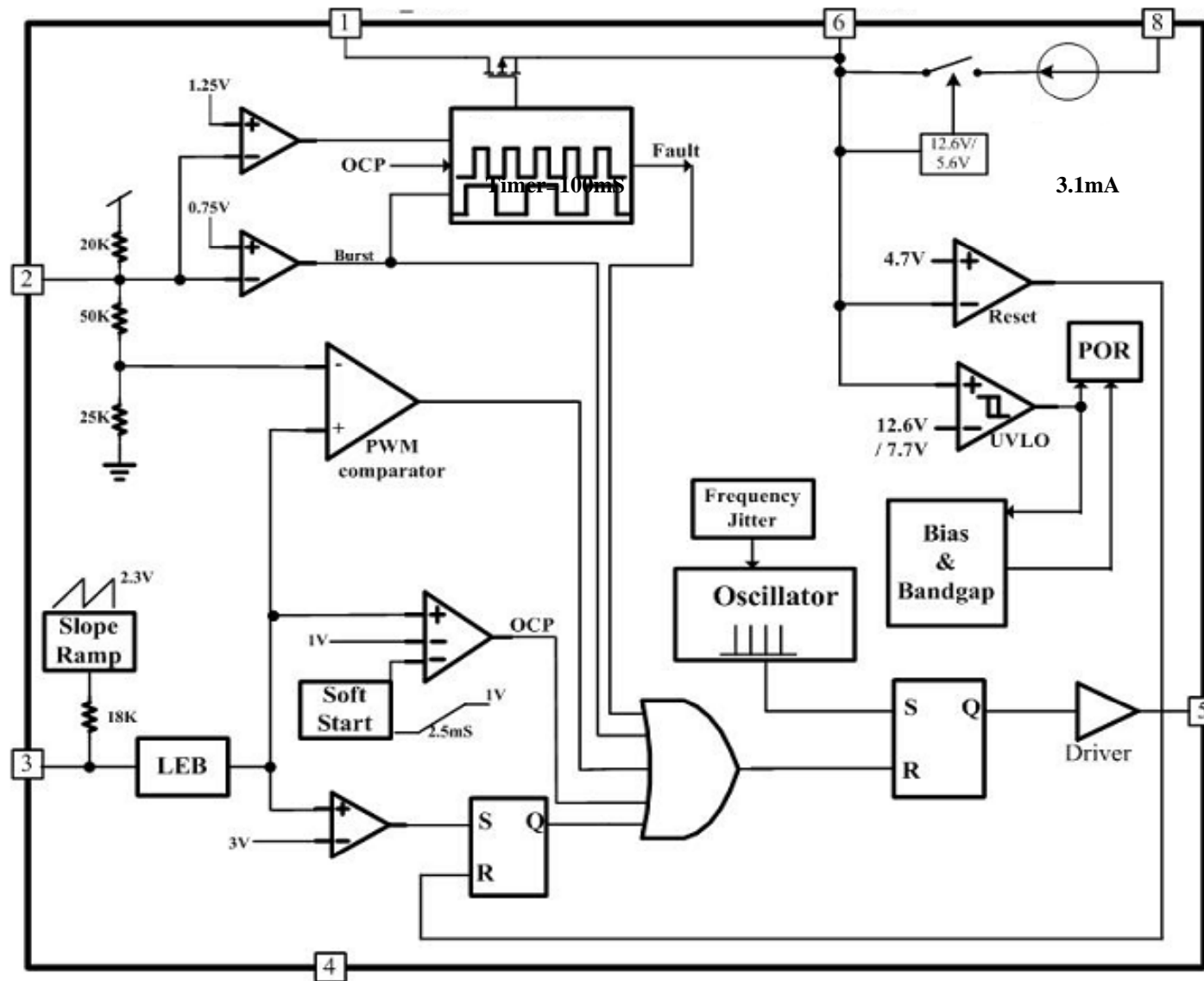
- Current mode control with Internal slope compensation
- High-Voltage startup current source
- Peak current limited Burst-Cycle for no audible noise
- Internal 2.5mS softstart
- Internal 200nS Leading Edge Blanking
- Cycle-by-Cycle current limit
- +500mA/-800mA gate drive capability
- Fixed 65KHz (NE1101B) or 100KHz (NE1101A) frequency
- Frequency Jittering for EMI reduction
- Latched protection
- Over Temperature, over load protections
- Automatic PFC bias supply output
- Drop in replacement for NCP1230
- Pin compatible with LD757X, LD7560 except pin 1

• Applications

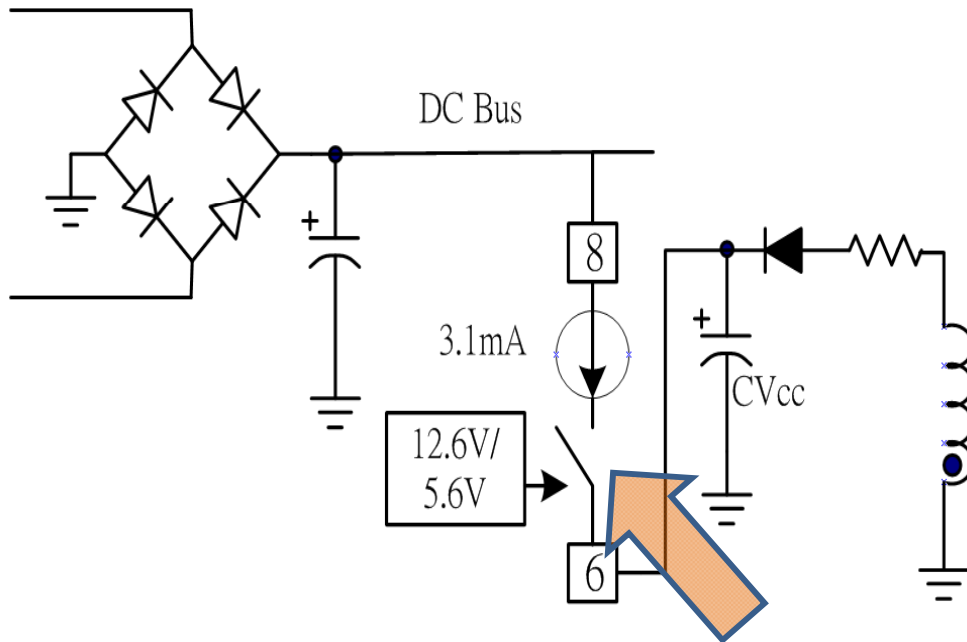
- AC adaptor
- LCD monitor, LCD TV
- Standby Power
- Settop Box, Networking pow
- Open frame power



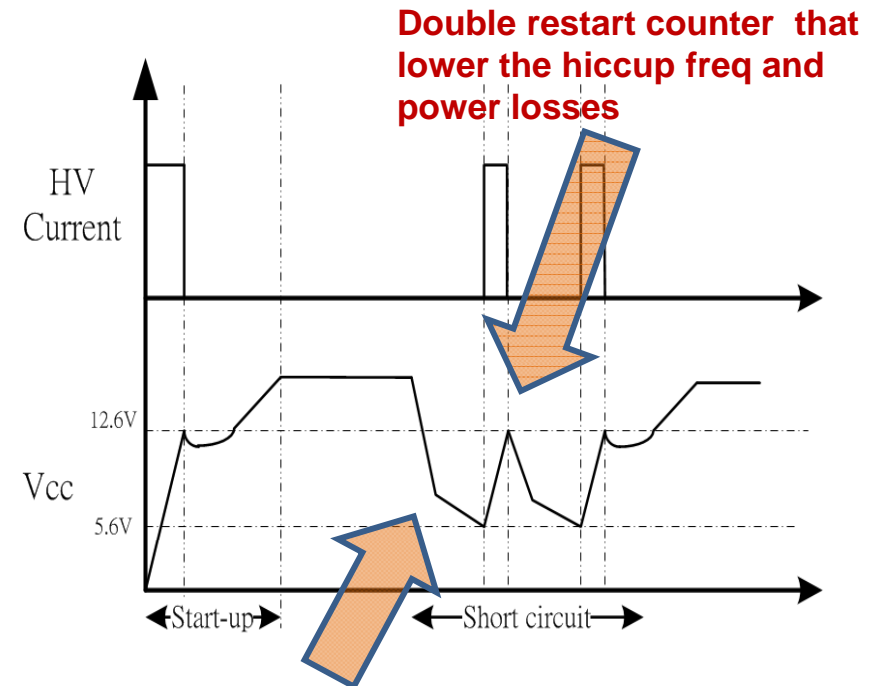
NE1101 Internal Block Diagram



HV Startup Circuit



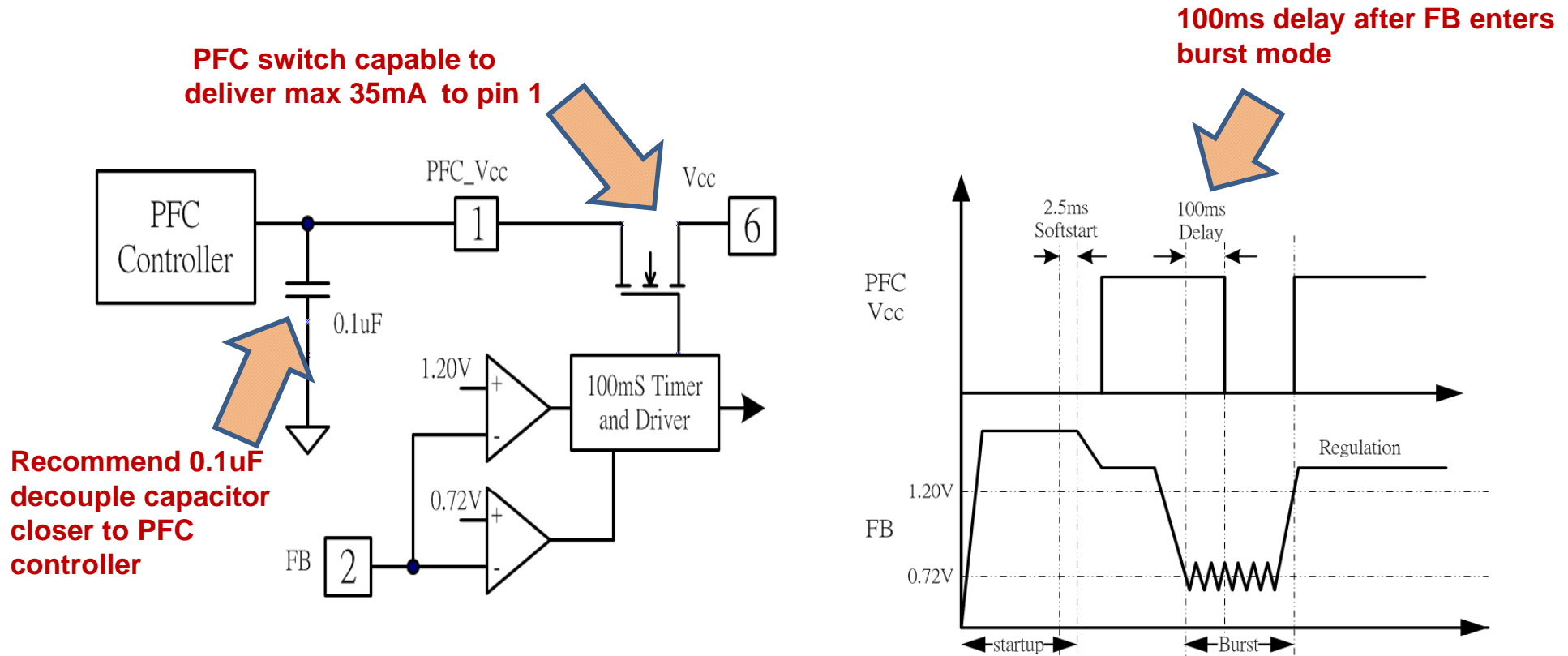
500V switch that reduces Power dissipation in startup circuit



Two stages Vcc discharge rate, for extended restart period

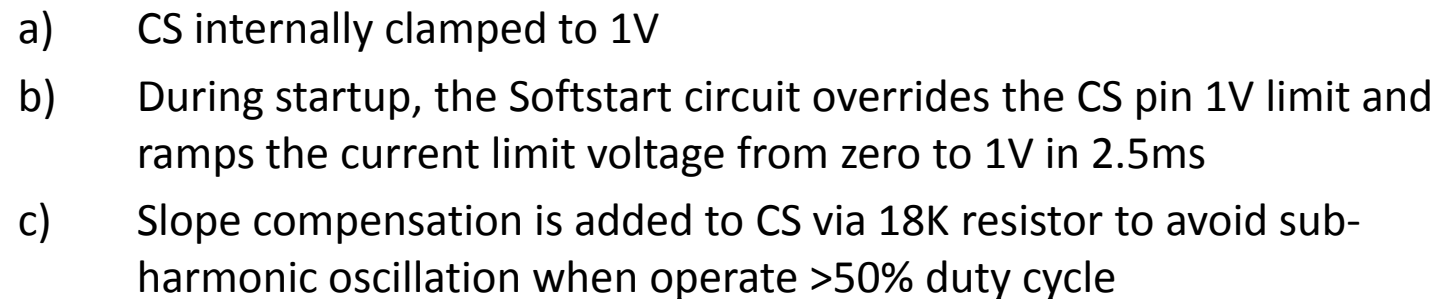
- When DC applied to HV, HV switch turns on, Vcc cap charged up by 3.1mA current source till Vcc reaches 12.5V UVLO
- Controller powers up and performs a 2.5mS softstart
- Power supply enters regulation
- Extended restart period due to two stages Vcc discharge rate and double restart counter

PFC_Vcc Output

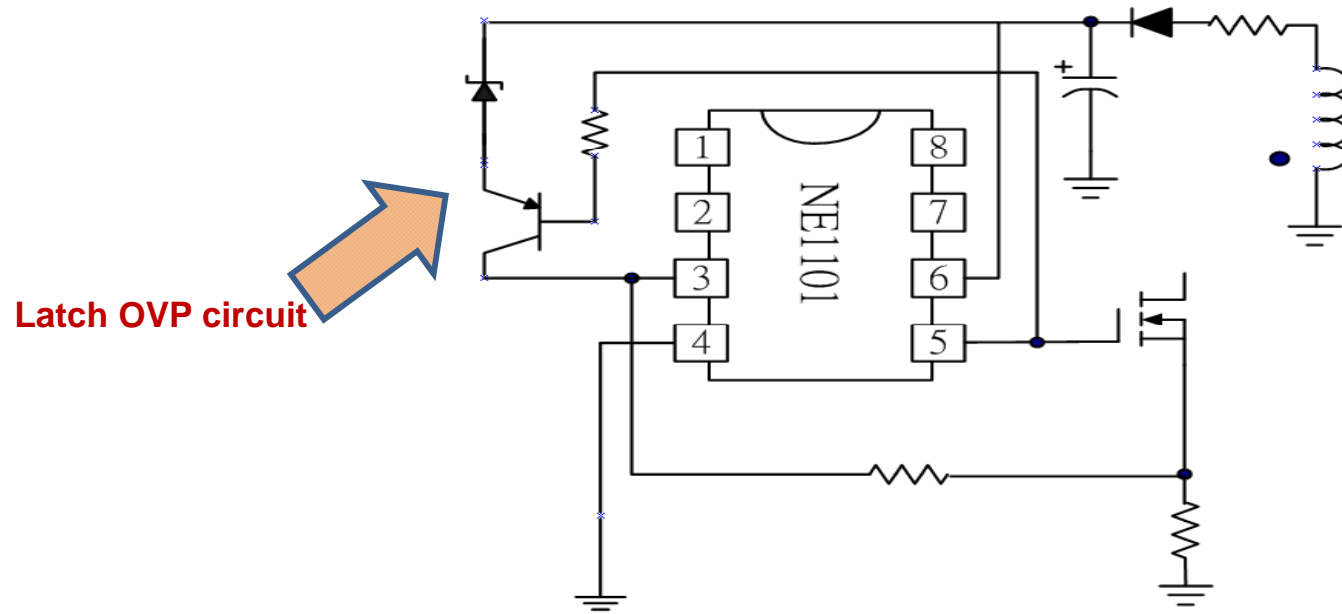


- a) Automatic PFC bias output that reduces component count and cost
- b) PFC bias is disable during softstart till output enter regulation
- c) When FB enters burst, PFC bias terminated after 100ms delay
- d) When Load resumes, PFC bias turns ON when FB exits burst mode at 1.20V
- e) PFC_Vcc pin can be left floating if not use

Leading Edge Blanking – saving of external filter and improve stability

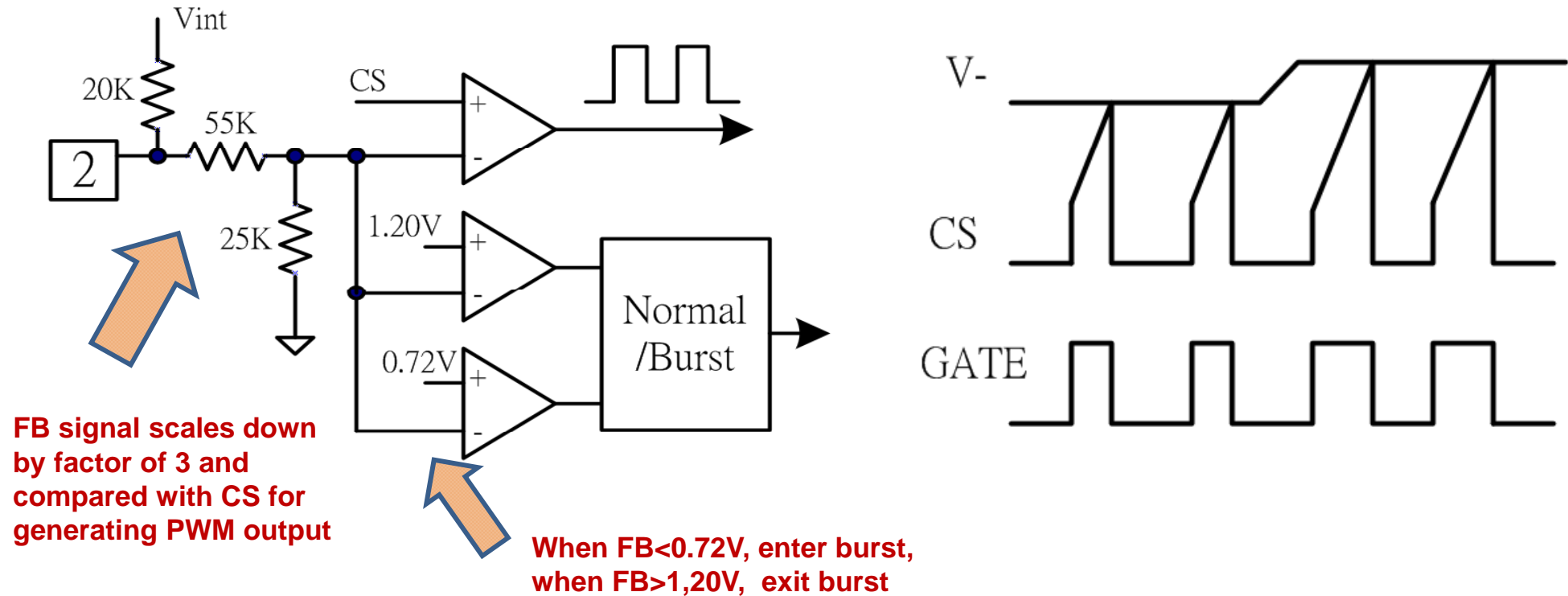


Latch Protection



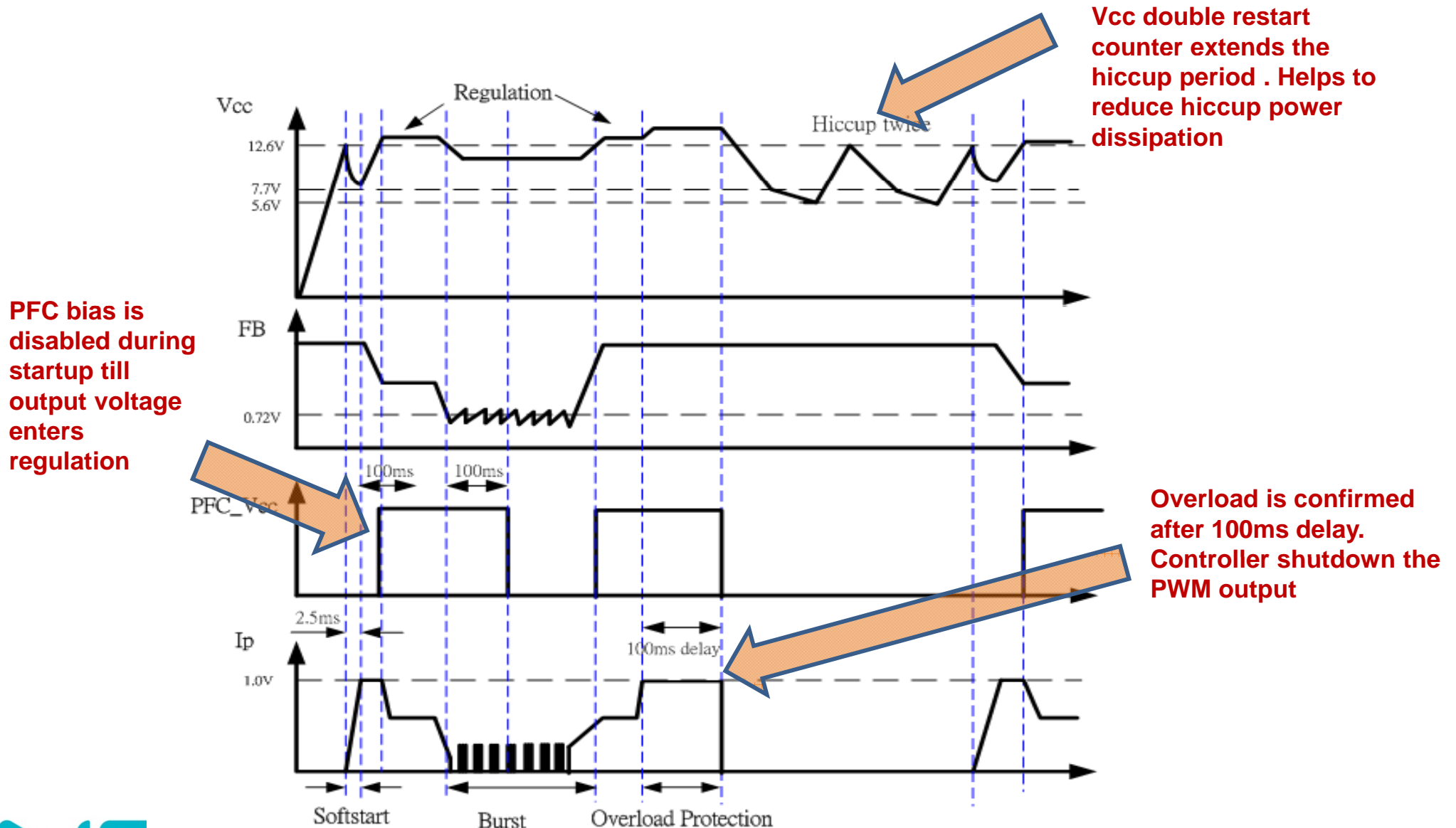
- a) Spreads EMI spectrum and lower the noise amplitudes
- b) Cost saving on EMI components and pcb space
- c) Jittering is disabled during Burst

Feedback FB

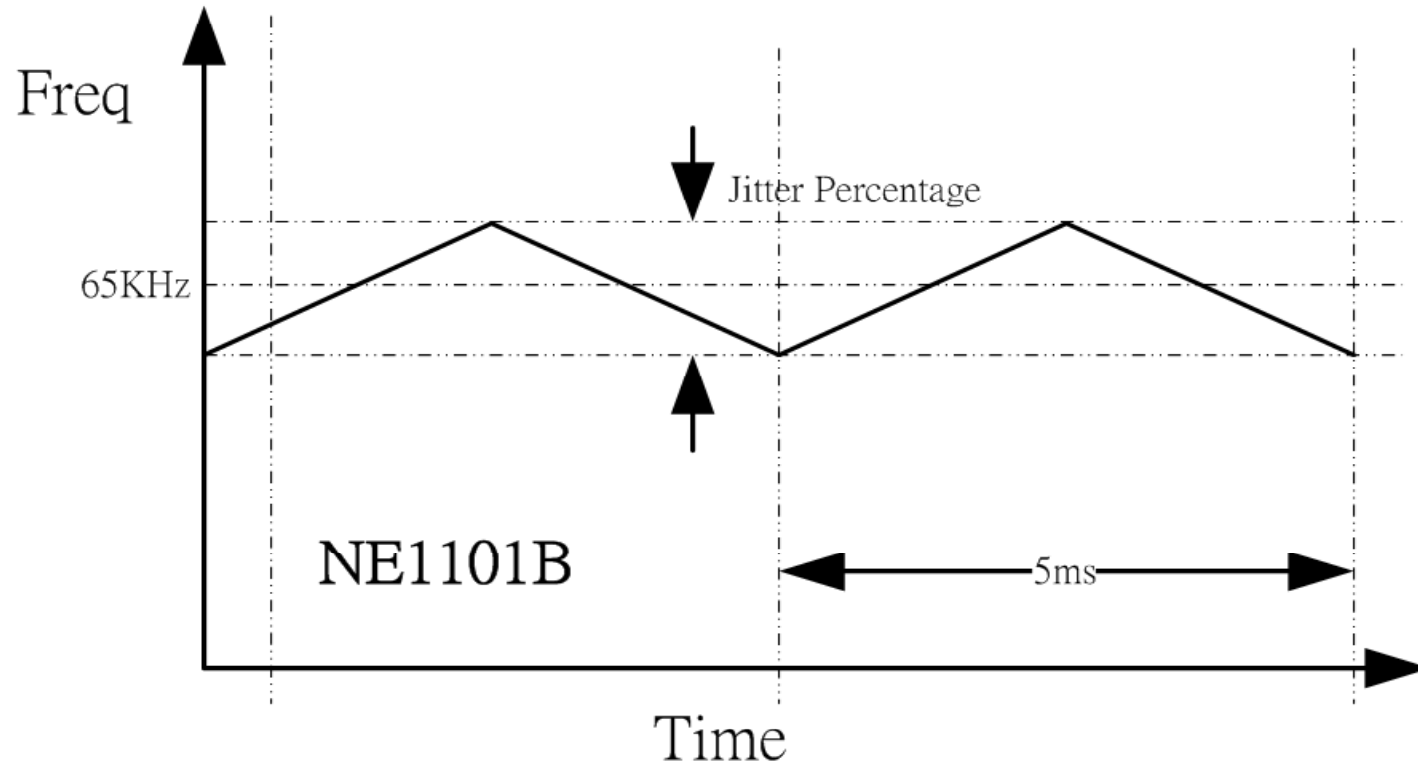


- a) NE1101A/B makes use of FB voltage to determine loading condition
- b) Controller enters burst when $FB < 0.72V$, PFC_Vcc turns off after 100ms delay
- c) Controller exits burst when $FB > 1.20V$, PFC_Vcc turns ON immediately

Over Current Protection



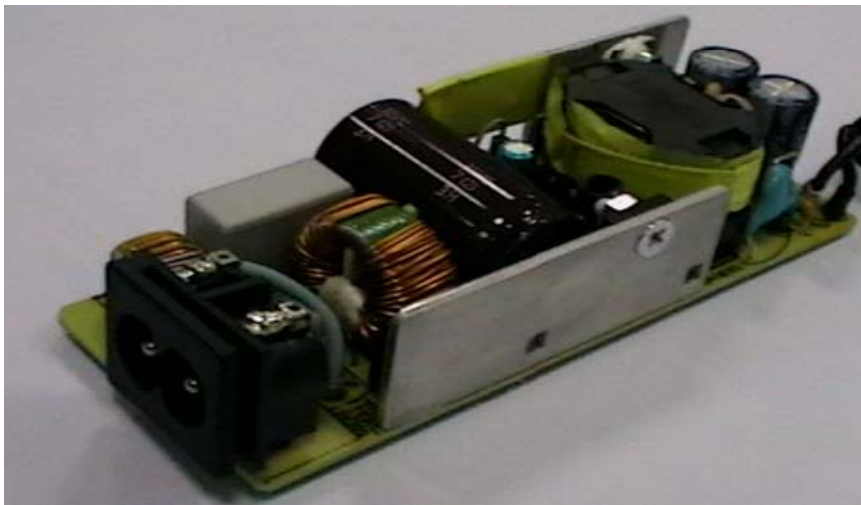
Frequency Jittering



- a) Spreads EMI spectrum and lower their noise amplitudes
- b) Cost saving on EMI components and pcb space
- c) Jittering is disabled during Burst

Reference Designs

NE1101 65W Adaptor Reference Design



Key Features

- AC input 90VAC-276VAC
- 65W output power
- Standby power < 0.3W
- No audible noise
- Efficiency >85%
- OCP, OVP, OTP protections
- Meets Energy star EPS V2
- Meets EN55022 Class B

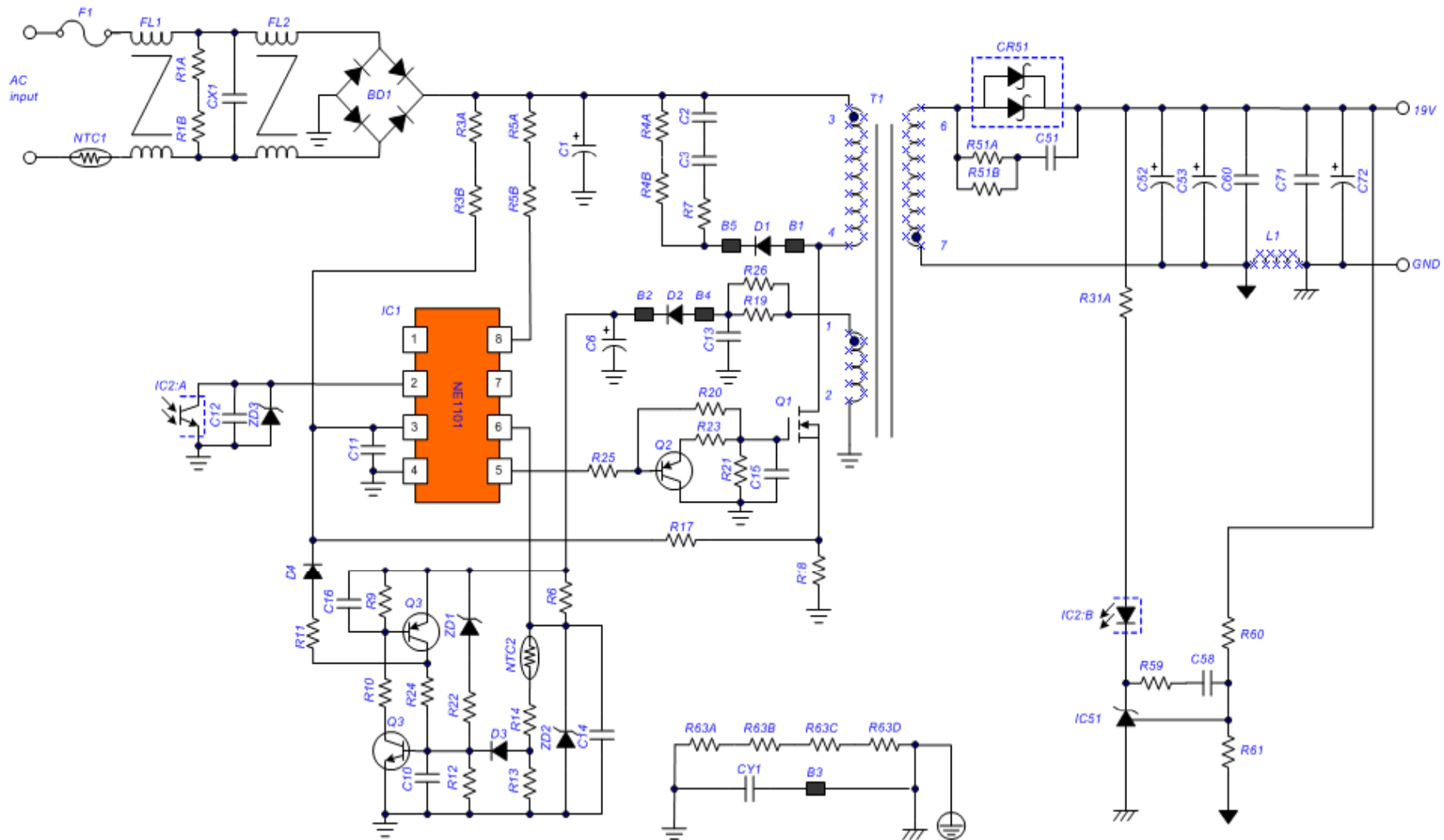
NEM



Summary on NE1101 Reference Designs

Part Number	Output Power	Output Volt	AC Input	SB Power	Avr Efficiency
NE1101EVM-65W	65W	19V	110V	140mW	87.92%
			230V	220mW	87.50%
NE1101EVM-40W	40W	12V	110V	70mW	87.20%
			230V	100mW	87.15%
NE1101EVM-20W	20W	5V	110V	18mW	81.40%
			230V	24mW	79.07%

Typical Application (12V/40W)



Sales and Technical Supports

- Design-in documents:
 - Reference design schematics
 - PCB layout Gerber files
 - BOM
 - Mathcad external component calculation tool
- Sales contact: max_hsieh@nem.com.tw
- FAE contacts: shonyu_yang@nem.com.tw
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