

NCP785A Family of Wide Input Voltage Range 10 mA Ultra-Low Iq, High PSRR Linear Regulators



- 45V to 450V recommended V_{IN} range allows to operate directly from rectified 120VAC/230VAC mains voltage.
- Ultra-Low Quiescent Current of Typ. $10\mu A$ helps to minimize system standby power consumption.
- Very-High PSRR of Typ. 80dB at 120Hz allows for effective filtration of mains AC ripple.
- Option with dedicated enable pin (NCP785B) simplifies output voltage ON/OFF control.
- Small size package options allow to shrink the PCB area when compared to Capacitive Dropper solution.

Package Offering:

SOT89-3



NCP785A vs. Capacitive Dropper Comparison

	NCP785A power supply		Capacitive dropper AC/DC power supply	
No load Power	$324V * 10\mu A = \underline{3.24mW}$		<u>~90mW (> 20 times ON Solution)</u>	
Solution Cost Estimation	NCP785A IC, SOT89-3 Capacitor 2.2uF/450V Alu $\pm 20\%$ Rectifier Diode, 1A, 1000V, DO-41 Capacitor 22uF/6.3V Cer. $\pm 20\%$ Total	80%	Capacitor X1 type, 275VAC, 0.22uF Zener Diode 5.1V, 0.5W, SOD123 Resistor 120Ohm, 0.5W, 1210 $\pm 5\%$ Rectifier Diode, 1A, 1000V, DO-41 (x2) Capacitor 220uF/6.3V Alu $\pm 20\%$ Total	100%
Output Accuracy	<u>$\pm 5\%$</u>		<u>$\geq \pm 5\%$</u> (AC mains ripple at the output)	
Solution Size	~50% smaller size		Needs series X1 capacitor occupying large PCB area	
Output Noise	PSRR = 80dB @ 100Hz, Noise = 240uVrms		Output ripple of 200mV to 300mV when loaded	
Protection	Thermal/Overcurrent		Overcurrent	

NCP785A vs. Capacitive Dropper Demo

This Demonstration Board showcases what are the PCB area savings using NCP785A vs. standard capacitive dropper power supply solution.

