NCP108x, NCP109x series

Integrated PoE PD interface and PWM controller

Complete family of PoE-PD devices with and without integrated PWM controllers compliant with IEEE802.3af, .3at and .3bt standards

PoE is a mature and growing technology used to conveniently deliver power through Ethernet cables to a load rather than adding additional power cords.

ON Semiconductor has released a complete product family offering a range of interface controllers for emerging PoE applications. The front-end PD IC is compliant with IEEE802.3af, IEEE802.3at and the new IEEE802.3bt standards and power is provided using two-pair and four-pair configurations to meets all requirements.

The product line includes ASSPs PD chips with (NCP108x) and without (NCP109x) integrated PWM controllers, which can be used in a compact way to convert PoE input power to one or more output voltages in a Powered Device.

Key Features:

- IEEE 802.3af, .3at and .3bt compliant devices, allowing support for both power hungry devices and existing PoE applications
- Integrated DC-DC converter in NCP108X series, providing power delivery and regulation to the application
- Non standard 40W capability with .3at devices and up to 100W for .3bt
- Operation current limit up to 1100 mA, for extended power ranges (NCP1081/83)
- Option for auxiliary supply support
- Open drain power good indicator
- Low on resistance hot swap switch

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PD-P_IN [W]

$PD\text{-}P_{IN}$ [W]

PoE Power over Ethernet

IEEE 802.3af
PoE-PD Controller
NCP1090 (25W)
NCP1091 (25W)
NCP1092 (25W+AUX)
PoE-PD Contr.+DC-DC Conv.
NCP1080 (25W)
NCP1082 (25W+AUX)

IEEE 802.3at
PoE-PD Controller
NCP1093 (40W)
NCP1094 (40W+AUX)
PoE-PD Contr.+DC-DC Conv.
NCP1081 (40W)
NCP1083 (40W+AUX)

NEW

IEEE 802.3bt
New High Power
PoE-PD Controller
NCP1095 (100W)
NCP1096 (100W+int FET)

Targeted Applications:

- Point of sales/retail
- Video Conferencing
- Hospitality
- IP Security Cameras
- Industrial (Motor Control Units)
- LED lighting

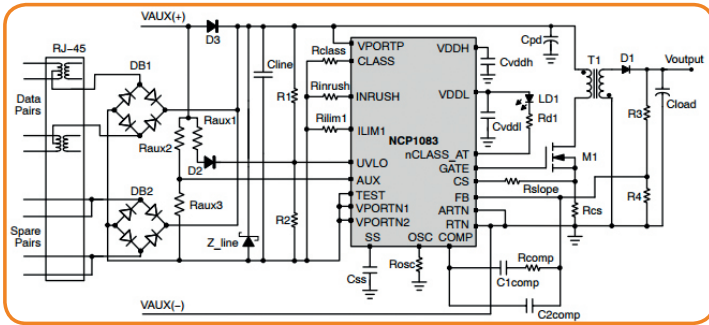**Next generation high power PoE devices enable wired connected lighting**

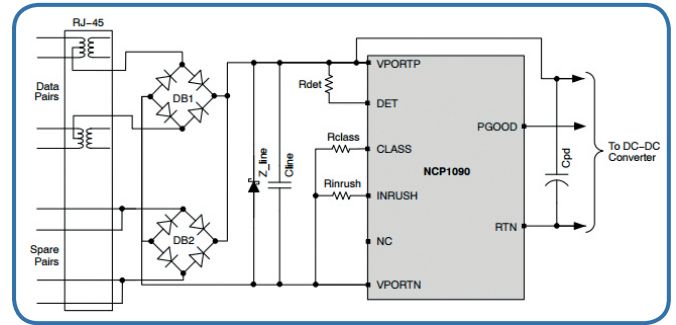Figure 1: integrated PoE–PD and DC–DC controller application diagram

Figure 2: PoE-PD Interface Controller application diagram

DEVICE	SUPPORTED STANDARD IEEE 802	INTEGRATED DC-DC CONV	AUX SUPPLY	OUTPUT POWER (W)	HOT SWAP RON (Ω)	INRUSH CURRENT LIMIT (mA)	OP. CURRENT LIMIT (mA)	THERMAL SHDN (°C)	PACKAGE
NCP1080	.3af	Yes	No	22	0.6	Adj. up to 310	500	150	TSSOP 20
NCP1082			Yes*						
NCP1081	.3af .3at		No	40			Ad. up to 1100		
NCP1083			Yes*						
NCP1090	.3af	No	No	22	0.5	120	500		TSSOP 8 SOIC 8
NCP1091									
NCP1092			Yes**				720		
NCP1093	.3af .3at		No	40					DFN 10
NCP1094			Yes**						
NCP1095	.3af .3at .3bt	Yes**	Yes**	100	N.A.	100	Yes		TSSOP16
NCP1096					0.07				

(*AUX is only to disable the IEEE ith and could be used in combination with a front aux)
(**AUX to disables the IEEE ith and the pass-switch; priority for rear aux)