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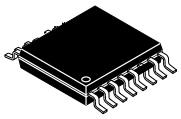

TSSOP 16 EP
CASE 948BV

MARKING DIAGRAM

Features

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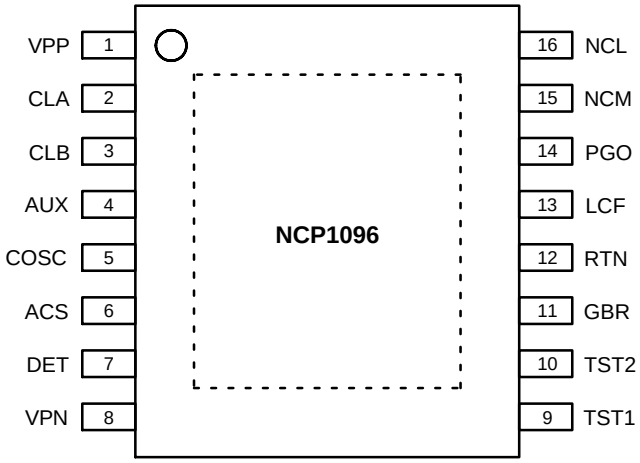

Figure 1. Pin-out NCP1096 in 16-pin TSSOP EP (Top View)

PIN DESCRIPTION

Signal Name	Pin No.	Type	Description
VPP	1	Power	Positive input power. Connect to the positive terminal of the rectifier bridge
CLA	2	Output	Connect a class signature programming resistor to VPN. See classification section for recommended values
CLB	3	Output	
AUX	4	Input	Auxiliary supply detection input. Referenced to VPN
COSC	5	Analog	Connect a 1 nF capacitor between COSC and VPN. This pin is pulled to VPP during the detection phase
ACS	6	Input	Autoclass enable/disable input. Pull to VPN to disable Autoclass; leave floating to enable Autoclass
DET	7	Output	Connect a 26.1 kΩ detection resistor between DET and COSC. This pin is pulled to VPN during the detection phase
VPN	8	Power, Ground	Negative input power. Connect to the negative terminal of the rectifier bridge
TST1	9	Input	Positive side of the internal sense resistor (and the source of the internal pass transistor). Leave floating
TST2	10	Output	Gate of the internal pass transistor. Leave floating
GBR	11	Output, Open Drain	Control output to disable the active rectifier bridge. This pin is referenced to VPN
RTN	12	Power	Return connection of the PGO, NCM, NCL and LCF outputs. Connect to the DC/DC controller power return.
	EP	Power	Exposed pad (thermal contact). Drain of the internal pass transistor. Connect to the DC/DC controller power return plane.
LCF	13	Output, Open Drain	Long Classification Finger Indicator. This pin is referenced to RTN. Connect with a pull-up resistor to the logic supply
PGO	14	Output, Open Drain	Power Good Indicator. This pin is left floating when the power good signal is active. Referenced to RTN. Must be used to enable/disable the main DC/DC converter adjacent to NCP1096.
NCM	15	Output, Open Drain	Class result MSB output. This pin is referenced to RTN. Connect with a pull-up resistor to the logic supply
NCL	16	Output, Open Drain	Class result LSB output. This pin is referenced to RTN. Connect with a pull-up resistor to the logic supply

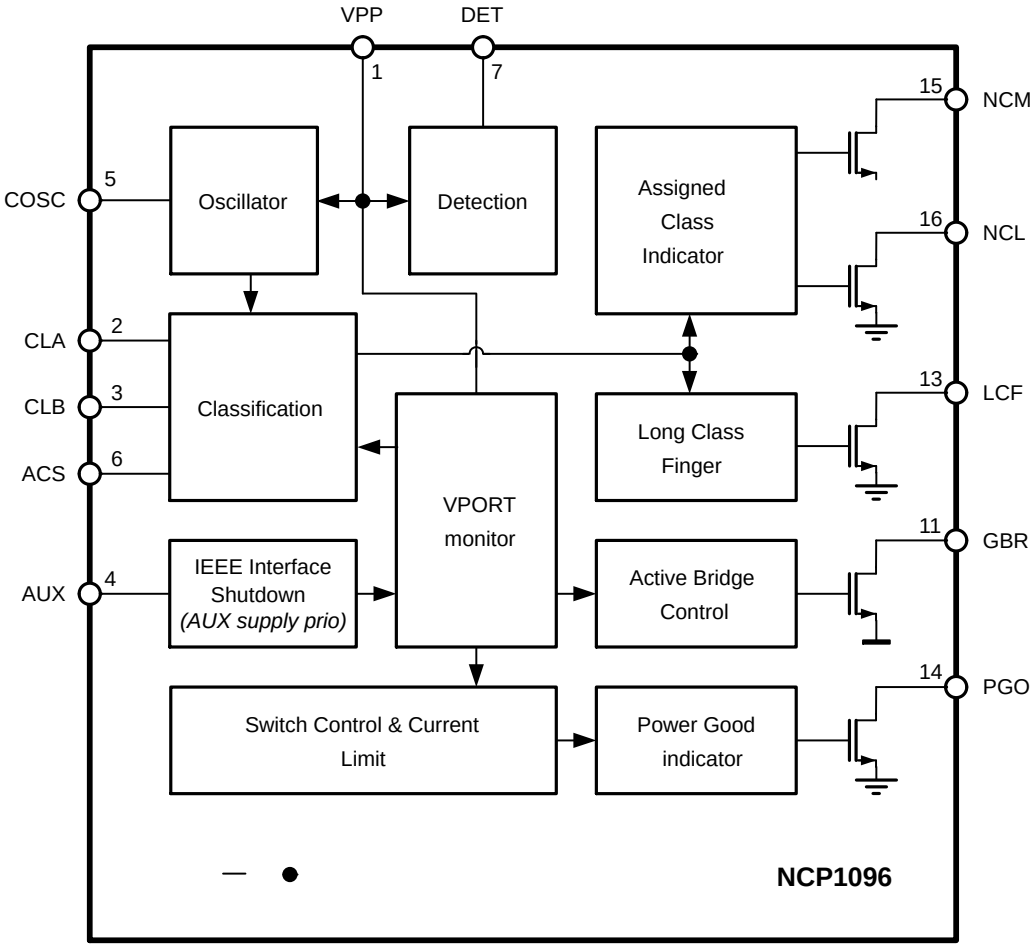

Figure 2. NCP1096 Block Diagram

ELECTRICAL CHARACTERISTICS

(All parameters are guaranteed for the recommended operating conditions unless otherwise noted)

Symbol	Parameter	Min	Typ	Max	Unit	Condition
DETECTION CHARACTERISTICS						
Rdetect	Equivalent detection resistance	23.7		26.3	kΩ	R_{DET} = 26.1 kΩ ±1%; 1 V ≤ V_{PORT} ≤ 10.1 V
VoffsetIC	Detection offset voltage (IC part)	0		0.2	V	
CLASISFICATION CHARACTERISTICS						
Vcl_th	Class/Mark current switchover threshold (Note 5)	10.1		12.5	V	V_{PORT} rising or falling
Vcldis	Classification current disable threshold (Note 5)	20.5		24.5	V	V_{PORT} rising or falling
Iclsigq	Quiescent current during classification	207	327	484	μA	V_{PORT} = 12.5 V
Vcsr						

ELECTRICAL CHARACTERISTICS (continued)
(All parameters are guaranteed for the recommended operating conditions unless otherwise noted)

Symbol	Parameter	Min	Typ	Max	Unit	Condition
RESET CHARACTERISTICS						
Vrst						

APPLICATION INFORMATION

NCM and NCL Indicators

Table 4. MPS CURRENT

Assigned Class	$I_{Port\_MPS,Min}$
≤ 4	10 mA
≥ 5	16 mA

μ

μ

Autoclass

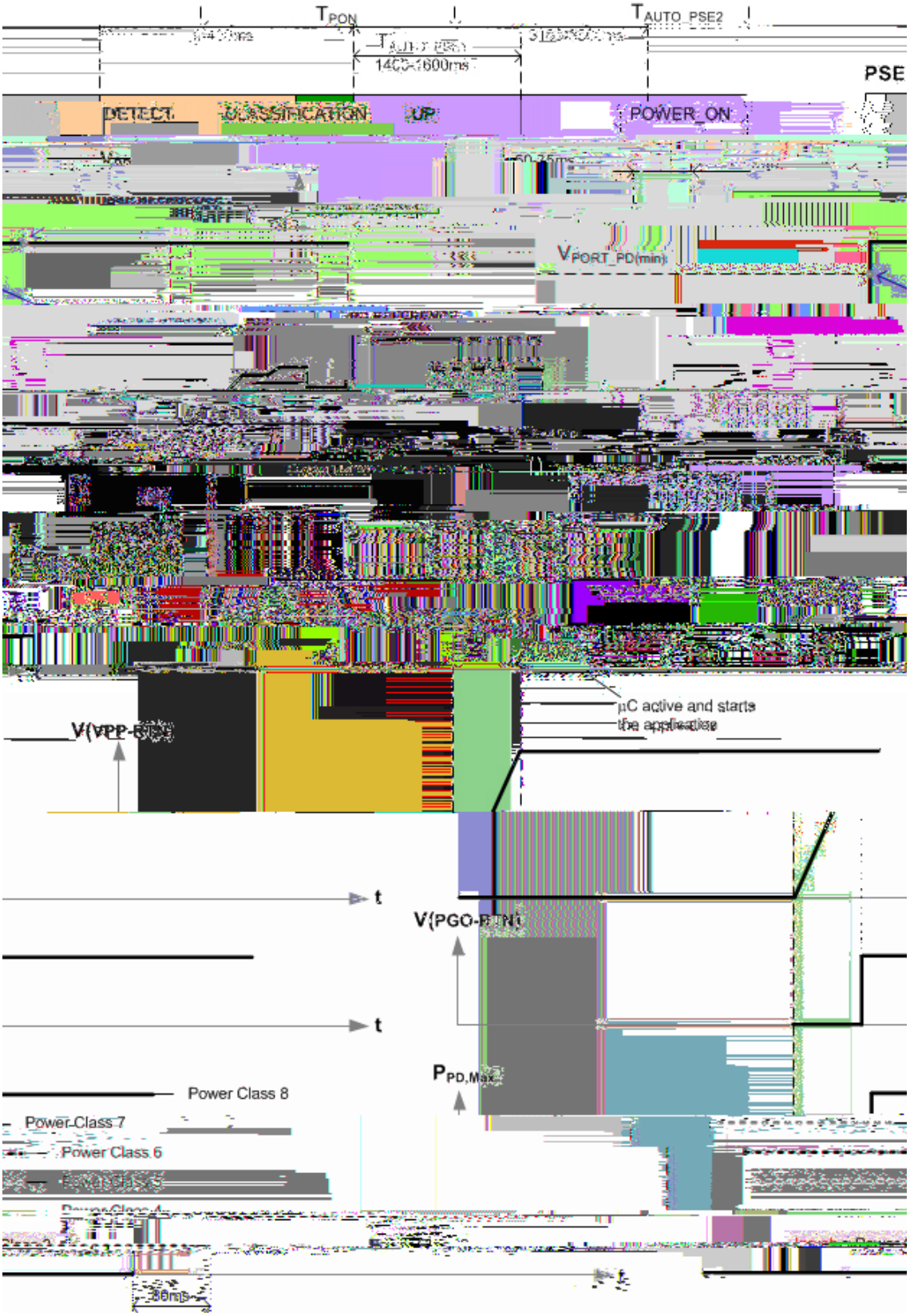

Figure 7. Complete Start-up Diagram of a Class 8 PD with Autoclass

PoE System Overview

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-
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Table 5. SYSTEM PARAMETERS OVERVIEW

Assigned Class	PSE Type	Minimum Cabling Type

Auxiliary Supply

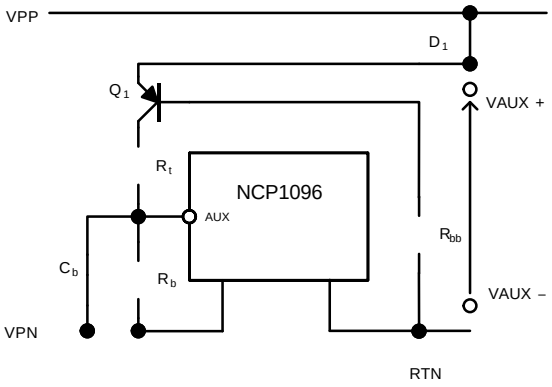

Figure 8. AUX Pin Interfacing

TSSOP16, 4.4x5 EXPOSED PAD
CASE 948BV
ISSUE O

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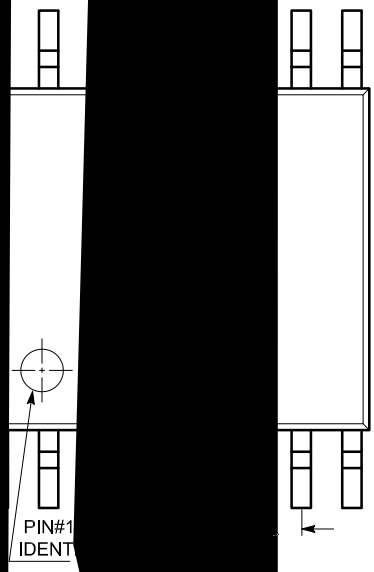

END VIEW

BOTTOM VIEW

S

MBOL	M		M	MAX
A				1.10
A1	0.0			0.15
A2	0.85			0.95
b	0.19			0.30
c	0.13			0.20
D	4.90			5.10
E	6.30			6.50
E1	4.30			4.50
e			SC	
L			EF	
L1	0.45			0.75
N	0.90			1.00
P	6.50			6.70
R	4.60			4.80
	0.37			0.47

LAND PATTERN