

**SERIES:** NDM2P-50H | **DESCRIPTION:** AUTO COMPENSATED, DIGITAL DC-DC POL CONVERTER

**GENERAL CHARACTERISTICS**

- 4.5~14 V input range
- 0.6~3.3 V programmable output
- voltage tracking
- voltage margining
- active current sharing
- real-time adaptive loop compensation
- voltage/current/temperature monitoring
- synchronization and phase spreading
- remote differential voltage sense
- programmable soft start and soft stop
- fault management

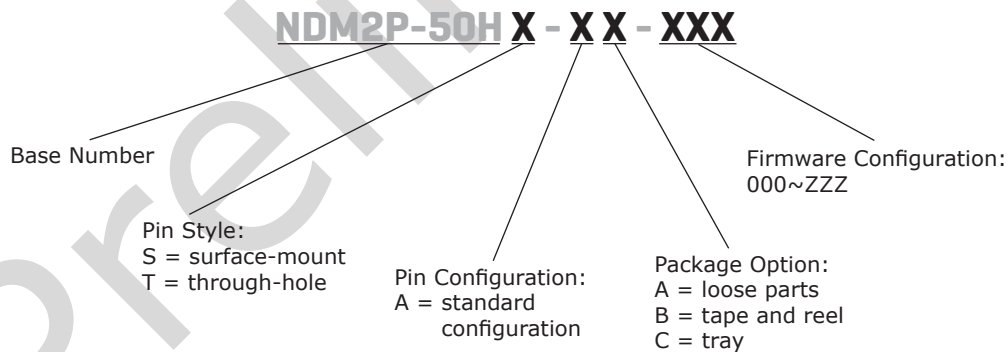
**FEATURES**

- compact package  
horizontal:  
30.85 x 20.0 x 11.2 mm  
(1.215 x 0.787 x 0.441 in)  
vertical (SIP):  
33.0 x 7.6 x 18.1 mm  
(1.30 x 0.30 x 0.713 in)
- 50 A output
- high efficiency
- auto compensation
- SMBus interface
- PMBus™ Compatible





MODEL	input voltage	output voltage	output current	output wattage
	(Vdc)	(Vdc)	max (A)	max (W)
NDM2P-50H	4.5~14	0.6~3.3	50	165

**PART NUMBER KEY**

 Example part number: **NDM2P-50HT-AA-002**

 horizontal module  
 through-hole pins  
 standard pin configuration  
 loose parts package option  
 firmware configuration 002

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## RECOMMENDED OPERATING CONDITIONS

$-30^{\circ}\text{C} < T_{P1} < +95^{\circ}\text{C}$ ,  $4.5\text{ V} < V_{in} < 14\text{ V}$ , typical measurements made at  $V_{in} = 12\text{ V}$ ,  $V_{out} = 1.0\text{ V}$ ,  $I_{out} = I_{MAX}$ ,  $T_{P1} = 25^{\circ}\text{C}$ ,  $C_{in} = 470\text{ }\mu\text{F}/10\text{ m}\Omega$ ,  $C_{out} = 470\text{ }\mu\text{F}/8\text{ m}\Omega$

## INPUT / OUTPUT

parameter	conditions/description	min	typ	max	units
$V_{in}$	input supply voltage	4.5		14	V
$I_{out}$	output current	0		50	A
$V_{out}$	adjustable via resistor or PMBus™ commands	0.6		3.3	V
$V_{out}$ margin	adjustable via PMBus commands	0.6		3.63	V
voltage accuracy	over line, load and temperature measured at +S and -S	-1		1	%
voltage set-point resolution	when $V_{out}$ set via PMBus commands		2.7		mV
voltage ripple and noise	$V_{out} = 0.6\text{ V}$		16		mVp-p
	$V_{out} = 1.0\text{ V}$		22		
	$V_{out} = 1.8\text{ V}$		26		
	$V_{out} = 3.3\text{ V}$		28		
ramp-up rate	adjustable via PMBus commands	0.04		10	V/ms
on time delay	adjustable via PMBus commands	10		1,000	ms
load transient voltage deviation	$I_{out}: 25\% \rightarrow 75\% \rightarrow 25\%$ of $I_{max}$ , $dI/dt=2\text{ A}/\mu\text{s}$				mV
	$V_{out} = 0.6\text{ V}$		80		
	$V_{out} = 1.0\text{ V}$		80		
	$V_{out} = 1.8\text{ V}$		85		
load transient recovery time <sup>1</sup>	$I_{out}: 25\% \rightarrow 75\% \rightarrow 25\%$ of $I_{max}$ , $dI/dt=2\text{ A}/\mu\text{s}$				$\mu\text{s}$
	$V_{out} = 0.6\text{ V}$		30		
	$V_{out} = 1.0\text{ V}$		25		
	$V_{out} = 1.8\text{ V}$		20		
	$V_{out} = 3.3\text{ V}$		20		

Notes: 1. settling to within 3% of  $V_{out}$

## POWER / EFFICIENCY

parameter	conditions/description	min	typ	max	units
output power	$V_{out} = 3.3\text{ V} + 10\%$ margin	0		181.5	W
efficiency	$I_{out} = 50\%$ of max	$V_{out} = 0.6\text{ V}$		86.5	%
		$V_{out} = 1.0\text{ V}$		90.7	
		$V_{out} = 1.8\text{ V}$		93.1	
		$V_{out} = 3.3\text{ V}$		94.5	
efficiency	$I_{out} = \text{max}$	$V_{out} = 0.6\text{ V}$		81.5	%
		$V_{out} = 1.0\text{ V}$		87.1	
		$V_{out} = 1.8\text{ V}$		90.1	
		$V_{out} = 3.3\text{ V}$		92.3	

**POWER CONNECTIONS**

symbol	pin	IO type	description
VOUT	1~3	Power	Output voltage
GND	4~7	Ground	Power ground
VIN	8~9	Power	Input voltage

**COMMUNICATION CONNECTIONS**

symbol	pin	IO type	description
SA1	10	Digital	SMBus address pinstrap 1
SA0	11	Digital	SMBus address pinstrap 0
DSS	12	Digital	Digital Stress Share
SYNC	13	Digital	Synchronization I/O
VTRK	14	Analog	Voltage tracking input
VSET	15	Digital	Output voltage pin-strap
CONFIG	16	Analog	Configuration table selector
-S	17	Analog	Output voltage negative sense input
+S	18	Analog	Output voltage positive sense input
PREF	19	Ground	Pin-strap ground
PG	20	Digital	Power Good
SYSG	21	Digital	System functioning properly
CTRL	22	Digital	Remote control or enable pin
SALERT	23	Digital	SMBus alert
SDA	24	Digital	SMBus data
SCL	25	Digital	SMBus clock

For more information and complete data sheets please contact a CUI representative.

## REVISION HISTORY

rev.	description	date
0.9	preliminary release	09/12/2012

The revision history provided is for informational purposes only and is believed to be accurate.

Preliminary



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