

DFN10, 3x3, 0.5P
CASE 506CL

The NCP51403 is a source/sink Double Data Rate (DDR) termination regulator specifically designed for low input voltage and low-noise systems where space is a key consideration.

The NCP51403 maintains a fast transient response and only requires a minimum output capacitance of 20 μ F. The NCP51403 supports a remote sensing function and all power requirements for DDR V_{TT} bus termination. The NCP51403 can also be used in low-power chipsets and graphics processor cores that require dynamically adjustable output voltages.

The NCP51403 is available in the thermally-efficient DFN10 Exposed Pad package, and is rated both Green and Pb-free.

Features

- Input Voltage Rails: Supports 2.5 V, 3.3 V and 5 V Rails
- PV_{CC} Voltage Range: 1.1 to 3.5 V
- Integrated Power MOSFETs
- Phase Margin $>45^\circ$ with Recommended 20 μ F V_{TT} Capacitance
- P_{GOOD} – Logic output pin to Monitor V_{TT} Regulation
- EN – Logic input pin for Shutdown mode
- V_{RI} – Reference Input Allows for Flexible Input Tracking Either Directly or Through Resistor Divider
- Remote Sensing (V_{TTS})
- Built-in Under Voltage Lockout and Over Current Limit
- Thermal Shutdown
- Small, Low-Profile 10-pin, 3x3 DFN Package
- These Devices are Pb-Free and are RoHS Compliant

Applications

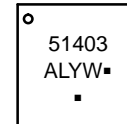
- DDR Memory Termination
- Desktop PC's, Notebooks, and Workstations
- Servers and Networking equipment
- Telecom/Datacom, GSM Base Station
- Graphics Processor Core Supplies
- Set Top Boxes, LCD-TV/PDP-TV, Copier/Printers
- Chipset/RAM Supplies as Low as 0.5 V
- Active Bus Termination

DDR3/DDR4 SELECTOR GUIDE



(see notes on page 7)

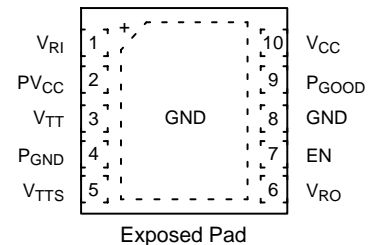
MARKING DIAGRAM



- 51403 = Specific Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb-Free Package

(Note: Microdot may be in either location)

PIN CONNECTION



Exposed Pad

ORDERING INFORMATION

Device	Package	Shipping†
NCP51403MNTXG	DFN10 (Pb-Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

NCP51403

PIN FUNCTION DESCRIPTION

Pin Number	Pin Name	Pin Function
1	V _{RI}	V _{TT} External Reference Input (set to V _{DDQ} / 2 thru resistor network).
2	PV _{CC}	Power input. Internally connected to the output source MOSFET.
3	V _{TT}	Power Output of the Linear Regulator.
4	P _{GND}	Power Ground. Internally connected to the output sink MOSFET.
5	V _{TTS}	V _{TT} Sense Input. The V _{TTS} pin provides accurate remote feedback sensing of V _{TT} . Connect V _{TTS} to the remote DDR termination bypass capacitors.
6	V _{RO}	Independent Buffered V _{TT} Reference Output. Sources and sinks over 5 mA. Connect to GND thru 0.1 μ F ceramic capacitor.
7	EN	Shutdown Control Input. CMOS compatible input. Logic high = enable, logic low = shutdown. Connect to V _{DDQ} for normal operation.
8	GND	Common Ground.
9		

NCP51403

ELECTRICAL CHARACTERISTICS

$-40^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$; $V_{CC} = 3.3\text{ V}$; $PV_{CC} = 1.8\text{ V}$; $V_{RI} = V_{TTS} = 0.9\text{ V}$; $EN = V_{CC}$; $C_{OUT} = 3 \times 10\ \mu\text{F}$ (Ceramic); unless otherwise noted.

Parameter	Conditions	Symbol	Min	Typ	Max	Units
-----------	------------	--------	-----	-----	-----	-------

SUPPLY CURRENT

V_{CC} Supply Current	$T_A = +25^{\circ}\text{C}$, $EN = 3.3\text{ V}$, No Load	I_{VCC}		0.7	1	mA
V_{CC} Shutdown Current	$T_A = +25^{\circ}$					

NCP51403

ELECTRICAL CHARACTERISTICS

$-40^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$; $V_{CC} = 3.3\text{ V}$; $PV_{CC} = 1.8\text{ V}$; $V_{RI} = V_{TTS} = 0.9\text{ V}$; $EN = V_{CC}$; $C_{OUT} = 3 \times 10\ \mu\text{F}$ (Ceramic); unless otherwise noted.

Parameter	Conditions	Symbol	Min	Typ	Max	Units
EN – ENABLE LOGIC						
Logic Input Threshold	EN Logic high	V_{IH}	1.7			V
	EN Logic low	V_{IL}			0.3	
Hysteresis Voltage	EN pin	V_{ENHYS}		0.5		V
Logic Leakage Current	EN pin, $T_A = +25^{\circ}\text{C}$					

NCP51403

General

The NCP51403 is a sink/source tracking termination regulator specifically designed for low input voltage and low external component count systems where space is a key application parameter. The NCP51403 integrates a high-performance, low-dropout (LDO) linear regulator that is capable of both sourcing and sinking current. The LDO regulator employs a fast feedback loop so that small ceramic capacitors can be used to support the fast load transient response. To achieve tight regulation with minimum effect of trace resistance, a remote sensing terminal, V_{TTS}

DDR3/DDR4 SELECTOR GUIDE

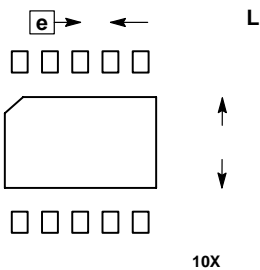
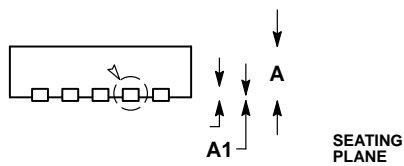
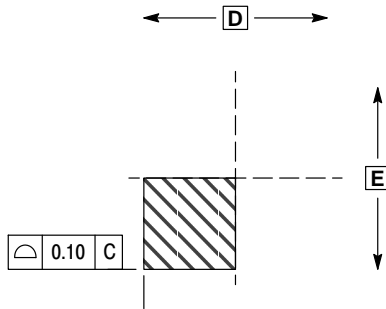


VTT Startup Time

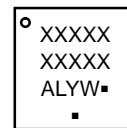
DFN10, 3x3, 0.5P
CASE 506CL
ISSUE O

DATE 02 APR 2013

SCALE 2:1



GENERIC MARKING DIAGRAM*



(Note: Microdot may be in either location
*This information is generic. Please refer to device data sheet for actual part marking.
Pb-Free indicator, "G" or microdot "▪", may or may not be present.

onsemi, **onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi**
