

# MN1280, MN12801

## CMOS LSIs for Supply Voltage Detection

### ■ Outline

The MN1280 and MN12801 generate a reset signal for initializing microcomputers and LSI systems at their power-on time, and a reset signal for preventing an abnormal system run at power fluctuation time.

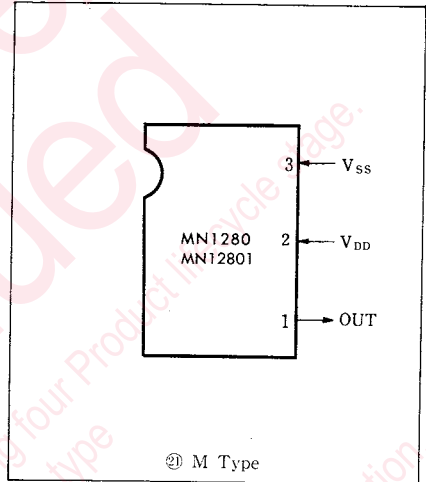
### ■ Features

- Generates a reset signal at power-on time until reaching a constant voltage.
- Generates a reset signal below a constant voltage at power-off time.
- Generates a reset signal when the supply voltage falls, and cancels it when the supply voltage is restored.
- Capable of detecting a battery service life.
- 3-pin adjustment-free device
- High-accuracy voltage detection
- Detected voltage value having hysteresis characteristic

Detected voltage at voltage rise time:  $V_{DH}$ , Detected voltage at voltage fall time:  $V_{DL}$   $V_{DH} - V_{DL} = 100$  to  $300\text{mV}$

- Low power consumption:  $10\mu\text{A}$  (typ.) at  $V_{DD} = 5\text{V}$
- Little detected voltage temperature change: Temperature coefficient  $1\text{mV}/^\circ\text{C}$  (typ.)
- Open drain output buffer for MN12801

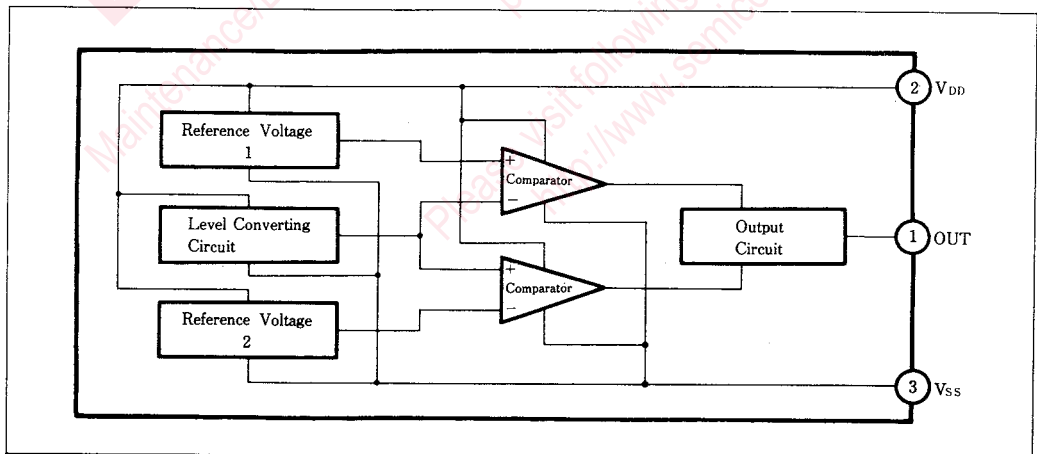
### ■ Pin Configuration



### ■ Pin Descriptions

Pin No.	Symbol	Description
2	$V_{DD}$	Supply voltage pin
3	$V_{SS}$	Ground pin
1	OUT	Reset signal output pin. Low level at reset time. The "H" level is outputted when reset is cancelled.

### ■ Block Diagram



■ V<sub>DL</sub> Classifications(Detected Voltage at Supply Voltage Fall Time: V<sub>DL</sub>)

Class	L	M	N	P	Q	R	S	T	U
V <sub>DL</sub> (V)	3.0~3.3	3.2~3.5	3.4~3.7	3.6~3.9	3.8~4.1	4.0~4.3	4.2~4.5	4.4~4.7	4.6~4.9

■ Absolute Maximum Ratings(V<sub>SS</sub>=0 V, T<sub>a</sub>=25°C)

Item	Symbol	Rating	Unit
Supply voltage	V <sub>DD</sub>	7.0	V
Output voltage	V <sub>O</sub>	-0.3~V <sub>DD</sub> +0.3	V
Operating ambient temperature	T <sub>opr</sub>	-20~+70	°C
Storage temperature	T <sub>stg</sub>	-55~+125	°C

■ Operating Range(V<sub>SS</sub>=0 V, T<sub>a</sub>=25°C)

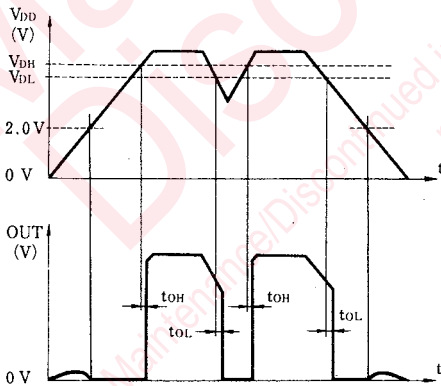
Item	Symbol	Condition	min.	typ.	max.	Unit
Supply voltage	V <sub>DD</sub>	See Fig.2 and Fig.2	2.0		6.0	V

■ DC Electrical Characteristics(V<sub>SS</sub>=0 V, T<sub>a</sub>=-20 to +70°C)

Item	Symbol	Condition	min.	typ.	max.	Unit
Supply current	I <sub>DD</sub>	V <sub>DD</sub> =5 V at no-load output		10	30	μA
Detected voltage hysteresis width	V <sub>DL</sub>	T <sub>a</sub> =25°C. See Fig.1 and Fig.2	3.0		4.9	V
Detected voltage at supply voltage fall	ΔV <sub>D</sub>	T <sub>a</sub> =25°C. See Fig.1 and Fig.2	100	200	300	mV
Output voltage high level	V <sub>OH</sub>	I <sub>OH</sub> =-40μA	0.8V <sub>DD</sub>		V <sub>DD</sub>	V
Output voltage low level	V <sub>OL</sub>	I <sub>OL</sub> =0.7mA V <sub>DD</sub> =3V.	V <sub>SS</sub>		0.4	V

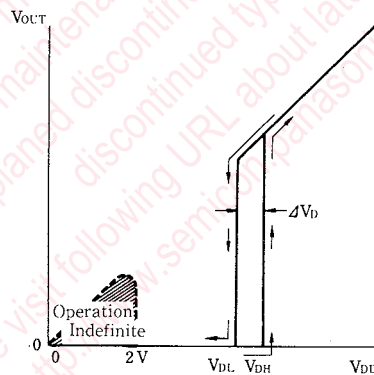
■ AC Electrical Characteristics

Item	Symbol	Condition	min.	typ.	max.	Unit
Reset cancel time	t <sub>OH</sub>	See Fig.3		5		μs
Reset time	t <sub>OL</sub>	See Fig.3		3		μs



- Note 1) When the supply voltage is less than 2 V, no output can be prescribed because operation is not assured.
- Note 2) V<sub>DL</sub>: Detected voltage at power fall time  
 V<sub>DH</sub>: Detected voltage at power rise time  
 t<sub>OH</sub>: Time for output(OUT) to reach the "H" level after the supply voltage rises to V<sub>DH</sub>.  
 t<sub>OL</sub>: Time for output(OUT) to reach the "L" level after the supply voltage falls to V<sub>DL</sub>.

Fig.1 Operation Chart



- Note 1) When the supply voltage is less than 2 V, no output can be prescribed because operation is not assured.
- Note 2) V<sub>DL</sub>: Detected voltage at power fall time  
 V<sub>DH</sub>: Detected voltage at power rise time

Fig.2 I/O Characteristic Chart

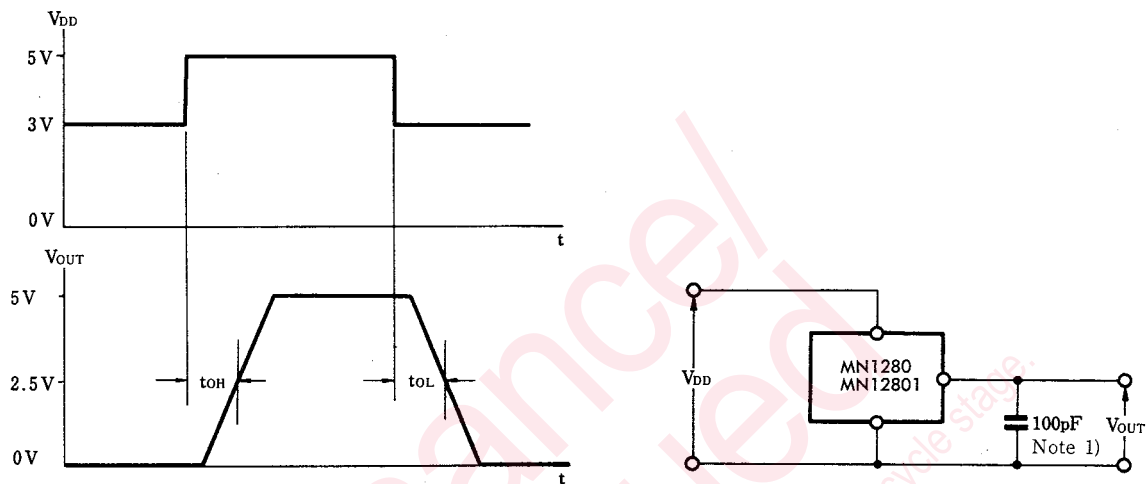


Fig.3 Output Characteristic Measurement Chart

Note 1) A capacitor capacitance of 100 pF is a value for measurement. In actual use, increase it in accordance with need for a delay time.

## Request for your special attention and precautions in using the technical information and semiconductors described in this book

- (1) If any of the products or technical information described in this book is to be exported or provided to non-residents, the laws and regulations of the exporting country, especially, those with regard to security export control, must be observed.
- (2) The technical information described in this book is intended only to show the main characteristics and application circuit examples of the products. No license is granted in and to any intellectual property right or other right owned by Panasonic Corporation or any other company. Therefore, no responsibility is assumed by our company as to the infringement upon any such right owned by any other company which may arise as a result of the use of technical information described in this book.
- (3) The products described in this book are intended to be used for standard applications or general electronic equipment (such as office equipment, communications equipment, measuring instruments and household appliances).  
Consult our sales staff in advance for information on the following applications:
  - Special applications (such as for airplanes, aerospace, automobiles, traffic control equipment, combustion equipment, life support systems and safety devices) in which exceptional quality and reliability are required, or if the failure or malfunction of the products may directly jeopardize life or harm the human body.
  - Any applications other than the standard applications intended.
- (4) The products and product specifications described in this book are subject to change without notice for modification and/or improvement. At the final stage of your design, purchasing, or use of the products, therefore, ask for the most up-to-date Product Standards in advance to make sure that the latest specifications satisfy your requirements.
- (5) When designing your equipment, comply with the range of absolute maximum rating and the guaranteed operating conditions (operating power supply voltage and operating environment etc.). Especially, please be careful not to exceed the range of absolute maximum rating on the transient state, such as power-on, power-off and mode-switching. Otherwise, we will not be liable for any defect which may arise later in your equipment.
  - Even when the products are used within the guaranteed values, take into the consideration of incidence of break down and failure mode, possible to occur to semiconductor products. Measures on the systems such as redundant design, arresting the spread of fire or preventing glitch are recommended in order to prevent physical injury, fire, social damages, for example, by using the products.
- (6) Comply with the instructions for use in order to prevent breakdown and characteristics change due to external factors (ESD, EOS, thermal stress and mechanical stress) at the time of handling, mounting or at customer's process. When using products for which damp-proof packing is required, satisfy the conditions, such as shelf life and the elapsed time since first opening the packages.
- (7) This book may be not reprinted or reproduced whether wholly or partially, without the prior written permission of our company.

This datasheet has been downloaded from:

[www.DatasheetCatalog.com](http://www.DatasheetCatalog.com)

Datasheets for electronic components.