

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.

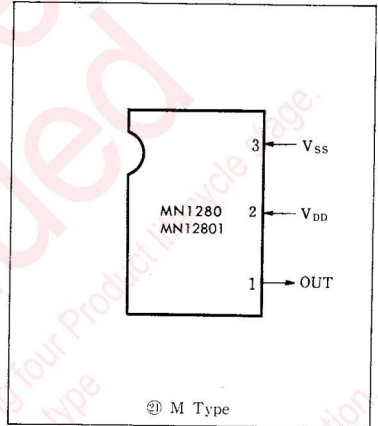
■ Features

- 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 $300mV$

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

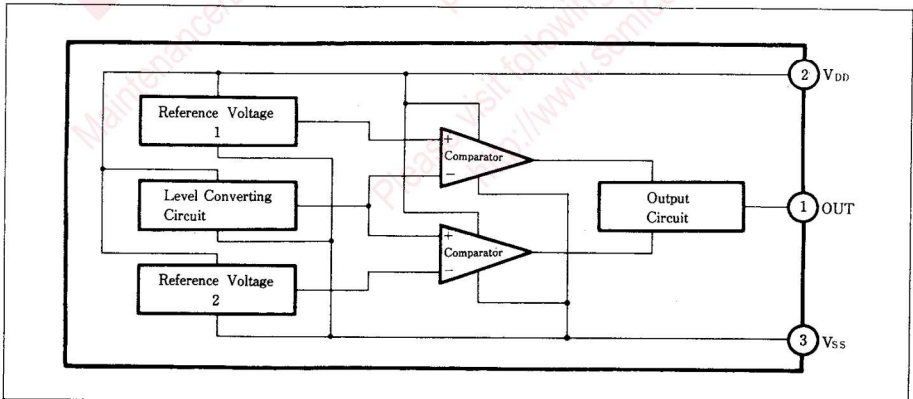
■ Pin Configuration



■ 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_{DL} Classifications(Detected Voltage at Supply Voltage Fall Time: V_{DL})

Class	L	M	N	P	Q	R	S	T	U
V_{DL} (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($V_{SS}=0$ V, $T_a=25^\circ\text{C}$)

Item	Symbol	Rating	Unit
Supply voltage	V_{DD}	7.0	V
Output voltage	V_O	$-0.3 \sim V_{DD} + 0.3$	V
Operating ambient temperature	T_{opr}	$-20 \sim +70$	$^\circ\text{C}$
Storage temperature	T_{stg}	$-55 \sim +125$	$^\circ\text{C}$

■ Operating Range($V_{SS}=0$ V, $T_a=25^\circ\text{C}$)

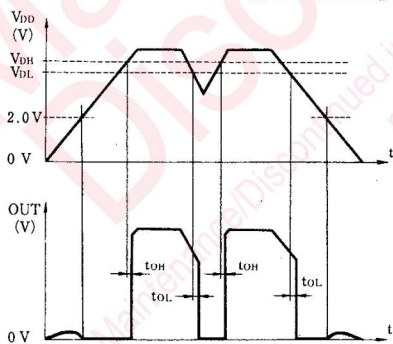
Item	Symbol	Condition	min.	typ.	max.	Unit
Supply voltage	V_{DD}	See Fig.2 and Fig.2	2.0		6.0	V

■ DC Electrical Characteristics($V_{SS}=0$ V, $T_a=-20$ to $+70^\circ\text{C}$)

Item	Symbol	Condition	min.	typ.	max.	Unit
Supply current	I_{DD}	$V_{DD}=5$ V at no-load output		10	30	μA
Detected voltage hysteresis width	V_{DL}	$T_a=25^\circ\text{C}$. See Fig.1 and Fig.2	3.0		4.9	V
Detected voltage at supply voltage fall	ΔV_D	$T_a=25^\circ\text{C}$. See Fig.1 and Fig.2	100	200	300	mV
Output voltage high level	V_{OH}	$I_{OH} = -40\mu\text{A}$	$0.8V_{DD}$		V_{DD}	V
Output voltage low level	V_{OL}	$I_{OL} = 0.7\text{mA}$ $V_{DD} = 3\text{V}$	V_{SS}		0.4	V

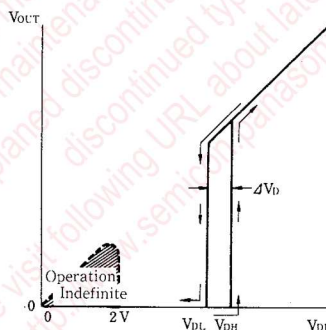
■ AC Electrical Characteristics

Item	Symbol	Condition	min.	typ.	max.	Unit
Reset cancel time	t_{OH}	See Fig.3		5		μs
Reset time	t_{OL}	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_{DL} : Detected voltage at power fall time
 V_{DH} : Detected voltage at power rise time
 t_{OH} : Time for output(OUT) to reach the "H" level after the supply voltage rises to V_{DH} .
 t_{OL} : Time for output(OUT) to reach the "L" level after the supply voltage falls to V_{DL} .

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_{DL} : Detected voltage at power fall time
 V_{DH} : Detected voltage at power rise time

Fig.2 I/O Characteristic Chart

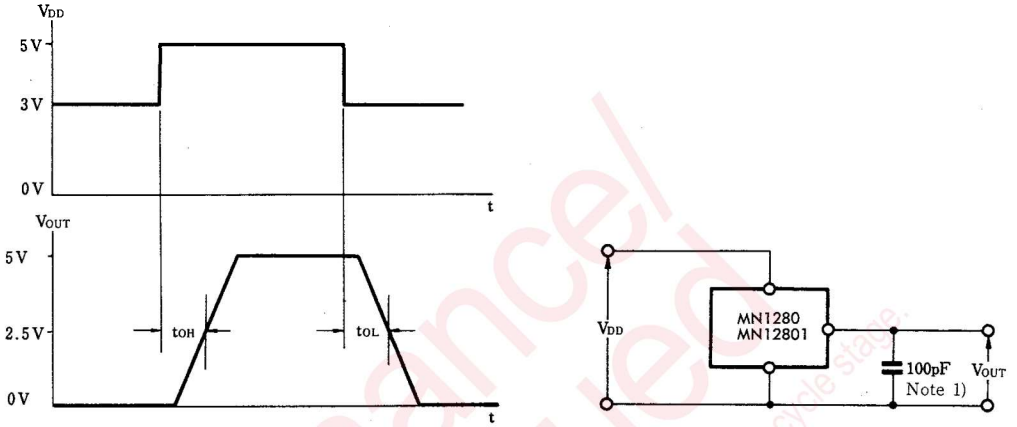


Fig.3 Output Characteristic Measurement Chart

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

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