

### Low Dropout Voltage Regulator with Reset

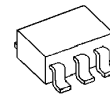
#### ■ GENERAL DISCRIPTION

The NJM2801 is a low dropout voltage regulator with reset function.

It provides up to 150mA of logic supply, and the reset function monitors either input or output voltage of the regulator with 2% accuracy.

It is suitable for local power supply and reset for small micro controller and other logic chips.

#### ■ PACKAGE OUTLINE



NJM2801F\*\*



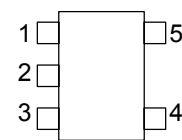
NJM2801U\*\*

#### ■ FEATURES

- Output Voltage Accuracy  $V_o = \pm 2.2\%$
- Reset Output Voltage  $V_{ORH} = 3.3V(\text{typ.})$
- Reset Hold Time  $t_d = 10\text{ms} \pm 2.5\text{ms}$
- Ripple Rejection  $RR = 60\text{dB}(\text{typ.})$
- Quiescent Current  $I_Q = 300\mu\text{A}(\text{max.})$
- Open Collector Output
- Bipolar Technology
- Output Voltage Monitor type
- Package Outline SOT89(5Pin)/MTP5
- Protection Circuit
  1. Current limit circuit
  2. Thermal overload protection circuit

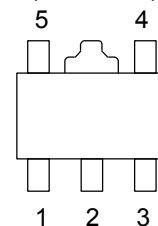
#### ■ PIN CONFIGURATION

( MTP-5 )



1.  $V_{IN}$
2. GND
3.  $V_{OR}$
4.  $C_d$
5.  $V_{OUT}$

( SOT-89 )

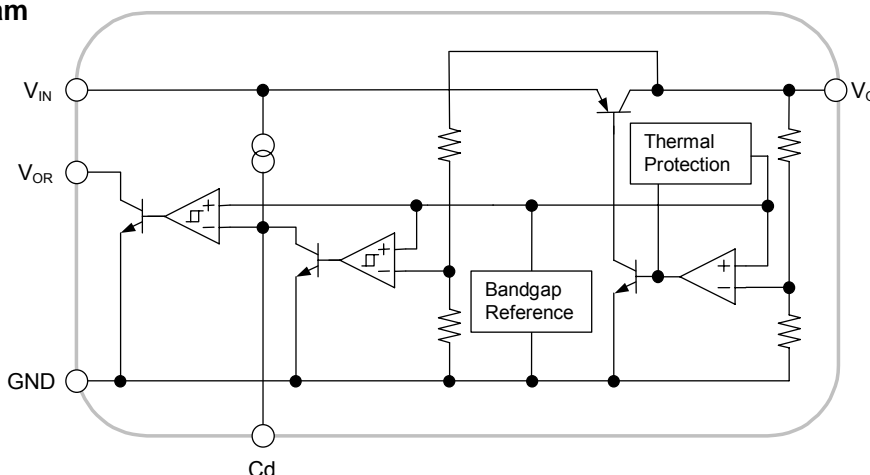


1.  $V_{OUT}$
2. GND
3.  $C_d$
4.  $V_{OR}$
5.  $V_{IN}$

#### ■ Output Voltage/Reset Validated Voltage

PART NO	Output Voltage	Reset Validated Voltage
NJM2801-0543	5.0V	4.3V

#### ■ Block Diagram



### ■ Absolute Maximum Ratings (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	$V_{IN}$	+14	V
Power Dissipation	$P_D$	200 (MTP5) 350 (SOT-89)	mW
Operating Temperature	$T_{opr}$	-40~+85	°C
Storage Temperature Range	$T_{stg}$	-40~+125	°C

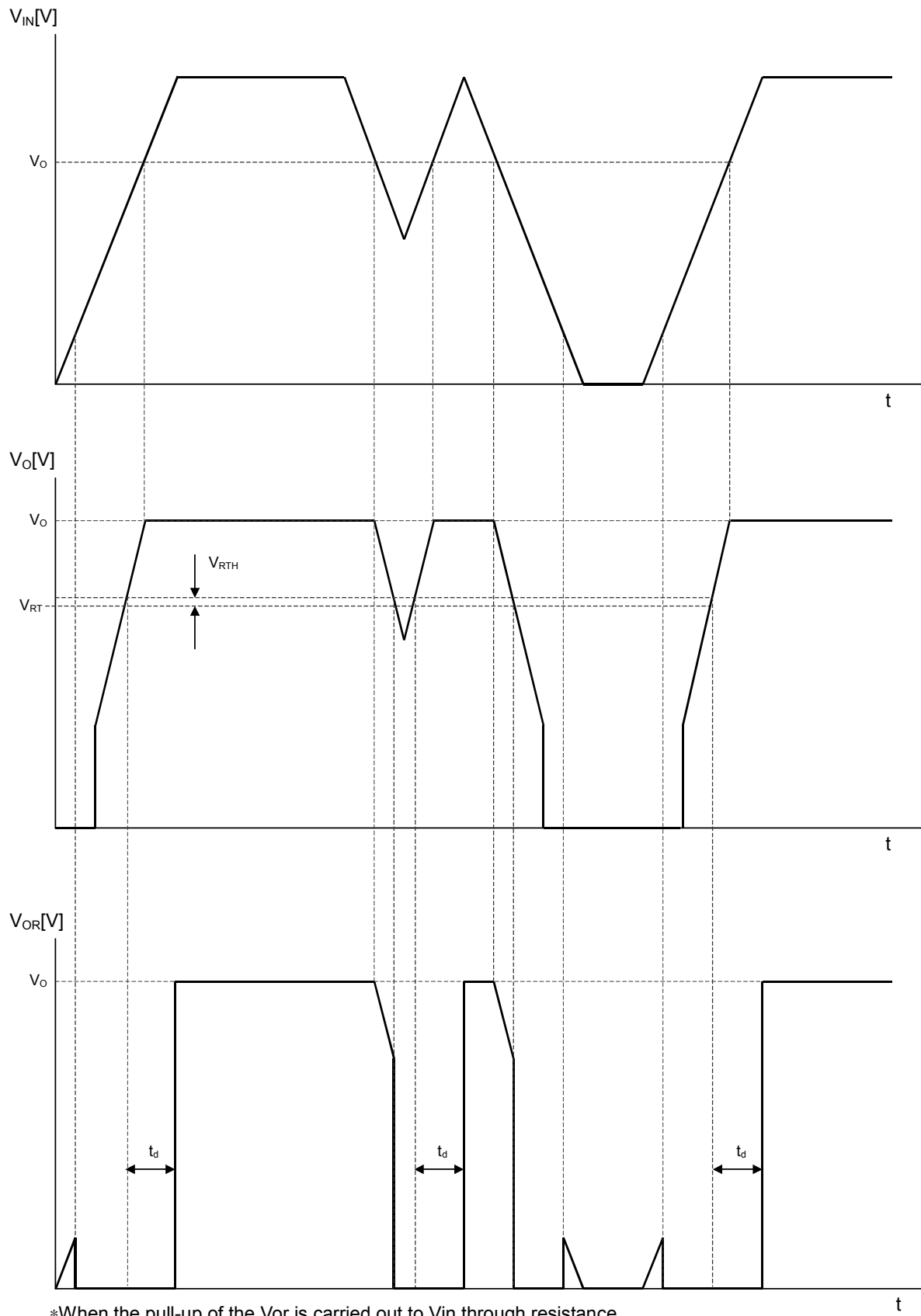
### ■ ELECTRICAL CHARACTERISTICS ( $V_{IN}=V_o+1V$ , $C_{IN}=0.1\mu F$ , $C_o=1\mu F$ ( $V_o\leq 2.6V$ : $C_o=2.2\mu F$ ) Ta=25°C )

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	$I_Q$	$I_o=0mA$	-	200	300	$\mu A$
Regulator Block						
Output Voltage	$V_o$	$I_o=30mA$	-2.2%	-	+2.2%	V
Output Current	$I_o$	$V_o=0.3V$	150	200	-	mA
Line Regulation	$\Delta V_o/\Delta V_{IN}$	$V_{IN}=V_o+1V\sim V_o+6V$ , $I_o=30mA$	-	-	0.10	%/V
Load Regulation	$\Delta V_o/\Delta I_o$	$I_o=0\sim 100mA$	-	-	0.03	%/mA
Dropout Voltage	$\Delta V_{L_O}$	$I_o=60mA$	-	0.10	0.18	V
Ripple Rejection	RR	$E_{in}=200mV_{rms}$ , $f=1kHz$ , $I_o=10mA$ , $V_o=3V$	-	60	-	dB
Output Voltage Temperature Coefficient	$\Delta V_o/\Delta T$	$T_a=0\sim 85^\circ C$ , $I_o=10mA$	-	$\pm 50$	-	ppm/°C
Output Noise Voltage	$V_{NO}$	$f=10Hz\sim 100kHz$ , $I_o=10mA$ , $V_o=3V$	-	45	-	$\mu V_{rms}$
Reset Block						
Voltage Detection	$V_{RT}$	$V_{IN}=H\rightarrow L$	-2%	-	+2%	V
Hysteresis Voltage	$V_{RTH}$	$V_{IN}=H\rightarrow L\rightarrow H$	$V_{RT}\times 3\%$	$V_{RT}\times 5\%$	$V_{RT}\times 8\%$	mV
Low Level Output	$R_{ORL}$	$V_{IN}=V_{RT}-0.5V$ , $R_L=100k\Omega$	-	100	300	mV
Output Leak Current	$I_{ORH}$	$V_{IN}=V_{RT}-0.5V$	-	-	0.1	$\mu A$
On time Output Current	$I_{ORL}$	$V_{IN}=V_{RT}-0.5V$ , $R_L=0\Omega$	5	-	-	mA
Reset Output Delay	$t_d$	$V_{IN}=(V_{RT}-0.5V)\rightarrow (V_{RT}+0.5V)$ , $C_d=0.1\mu F$	9	10	11	mS
Operation Voltage Limit	$V_{OPL}$	$V_{ORL}=0.4V$	-	0.9	-	V

The above specification is a common specification for all output voltages.

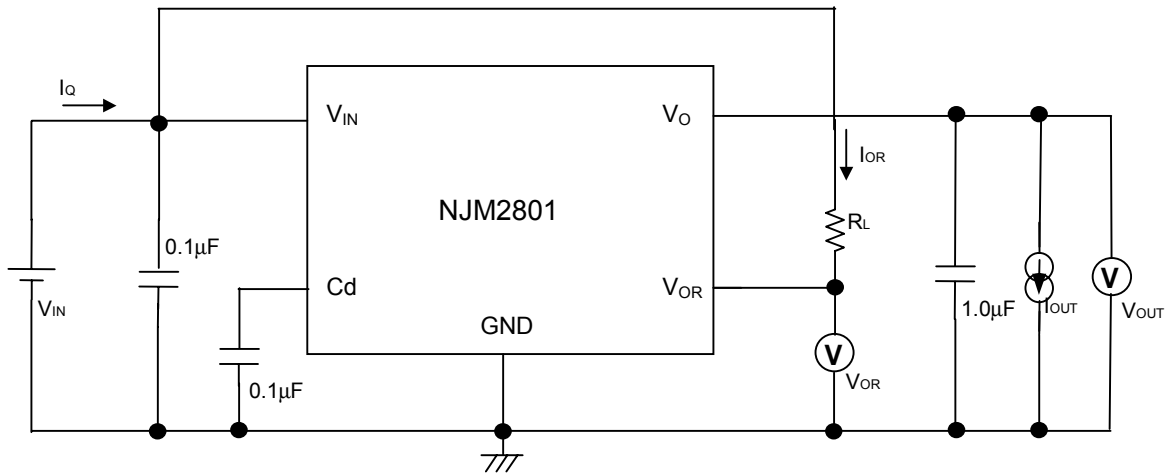
Therefore, it may be different from individual specification for a specific output voltage.

■ TIMING CHART

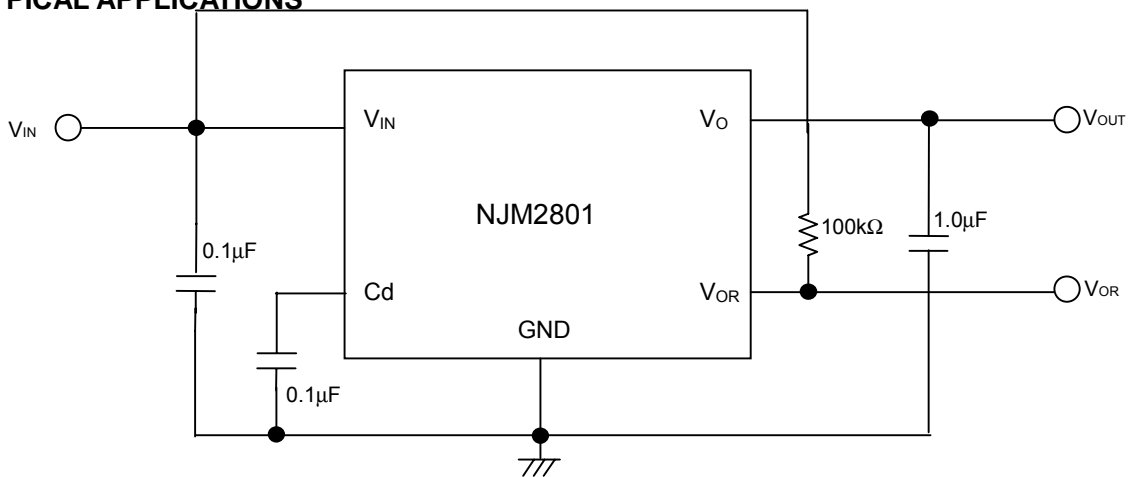


\*When the pull-up of the Vor is carried out to Vin through resistance.

■ TEST CIRCUIT



■ TYPICAL APPLICATIONS



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