

Low Dropout Voltage Regulator with Reset

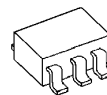
■ GENERAL DISCRIPTION

The NJM2800 is a low dropout voltage regulator with reset function.

It provides up to 150mA of logic supply, and the reset function monitors input voltage of the regulator with 1% accuracy.

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

■ PACKAGE OUTLINE



NJM2800F

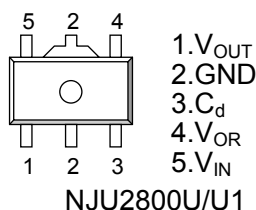
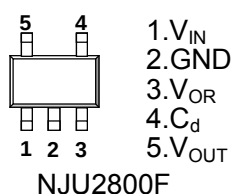


NJM2800U/U1

■ FEATURES

- Output Voltage Accuracy $V_o = \pm 1.0\%$
- Reset Voltage Accuracy $V_{RT} = \pm 1.0\%$
- Adjust reset delay time with external capacitor.
- Ripple Rejection 60dB typ. (f=1kHz)
- Input Voltage Monitor type
- Open Collector Output
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline SOT89-5 (NJM2800U/U1), SOT-23-5(NJU2800F)

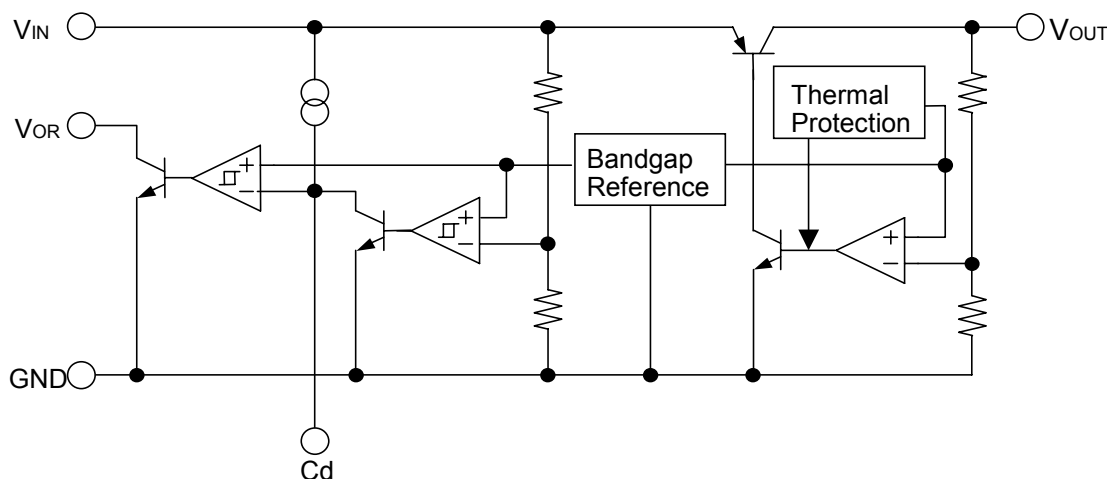
■ PIN CONFIGURATION



■ OUTPUT VOLTAGE/ DETECTION VOLTAGE

Device Name	Output Voltage	Detection Voltage
NJM2800U1-/U/F1803	1.8V	3.0V
NJM2800U1-/F2528	2.5V	2.8V
NJM2800U1-/U/F3342	3.3V	4.2V

■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+14	V
Power Dissipation	P_D	SOT-23-5	350(*1)
			200(*2)
		SOT89-5	350(*2)
Operating Temperature	T_{opr}	-40~+85	°C
Storage Temperature	T_{stg}	-40~+125	°C

(*1): Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

(*2): Device itself.

■ Operating voltage

 $V_{IN}=+2.3 \sim +14V$ (In case of $V_O < 2.1V$ version)

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_O+1V$, $C_{IN}=0.1\mu F$, $C_O=1\mu F$ (1.8< $V_O \leq 2.6V$: $C_O=2.2\mu F$, $V_O \leq 1.8V$: $C_O=4.7\mu F$), Ta=25°C)

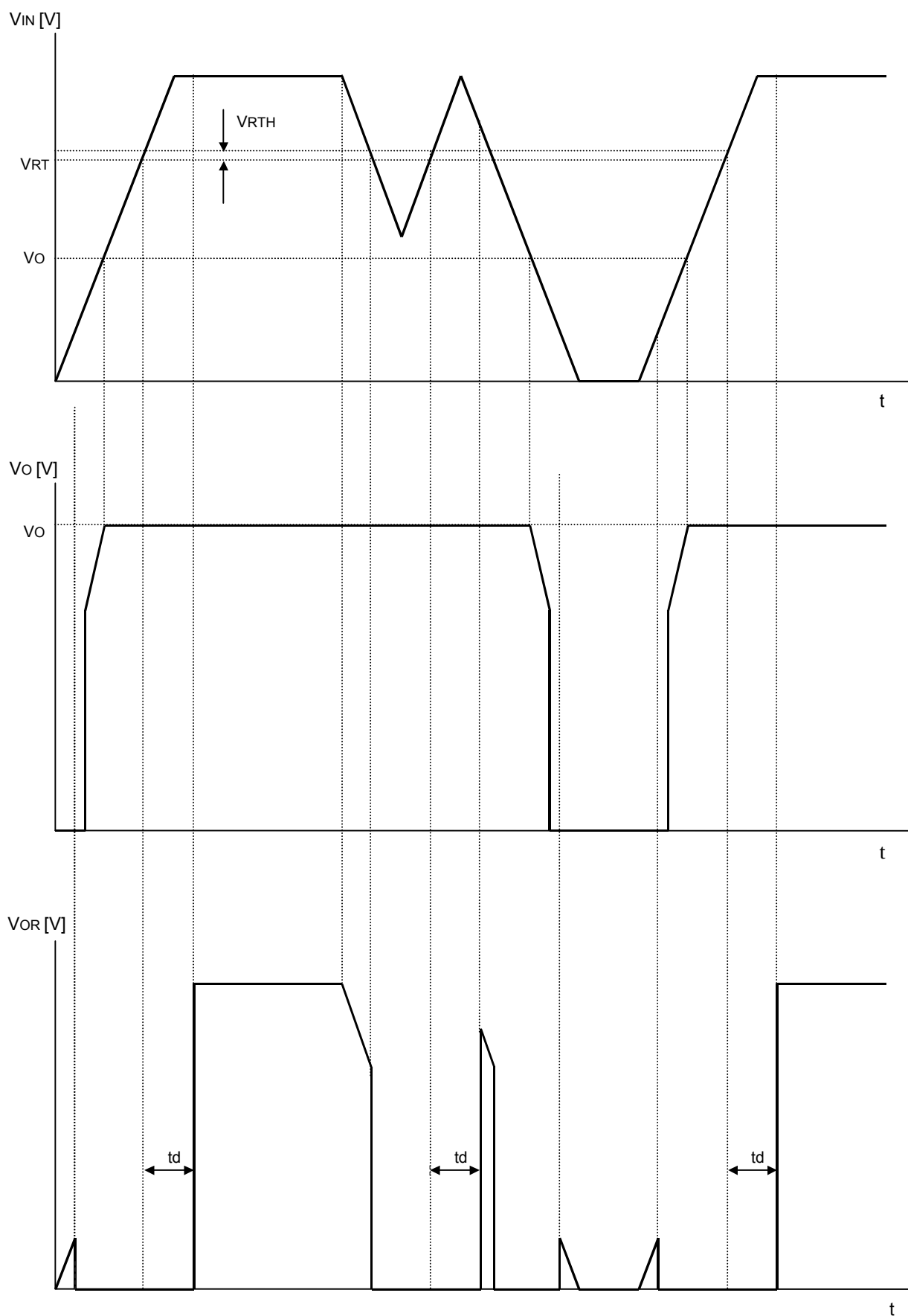
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_Q	$V_{IN}=V_O+2V$, $I_O=0mA$	—	250	350	μA
Regulator Block						
Output Voltage	V_O	$I_O=30mA$	-1.0%	—	+1.0%	V
Output Current	I_O	$V_O-0.3V$	150	200	—	mA
Line Regulation	$\Delta V_O / \Delta V_{IN}$	$V_{IN}=V_O+1V \sim V_O+6V$, $I_O=30mA$	—	—	0.10	%/V
Load Regulation	$\Delta V_O / \Delta I_O$	$I_O=0 \sim 100mA$	—	—	0.03	%/mA
Dropout Voltage(*3)	ΔV_{L_O}	$I_O=60mA$	—	0.10	0.18	V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_O=10mA$, $V_O=3V$ Version	—	60	—	dB
Output Voltage Temperature Coefficient	$\Delta V_O / \Delta T$	$T_a=0 \sim 85^\circ C$, $I_O=10mA$	—	± 50	—	ppm/°C
Output Noise Voltage	V_{NO}	$f=10Hz \sim 100kHz$, $I_O=10mA$, $V_O=3V$ Version	—	45	—	μV_{rms}
Reset Block						
Voltage Detection	V_{RT}	$V_{IN}=H \rightarrow L$	-1.0%	—	+1.0%	V
Hysteresis Voltage	V_{RTH}	$V_{IN}=H \rightarrow L \rightarrow H$	$V_{RT} \times 3\%$	$V_{RT} \times 5\%$	$V_{RT} \times 8\%$	V
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	μA
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

(*3): The output voltage excludes under 2.1V.

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

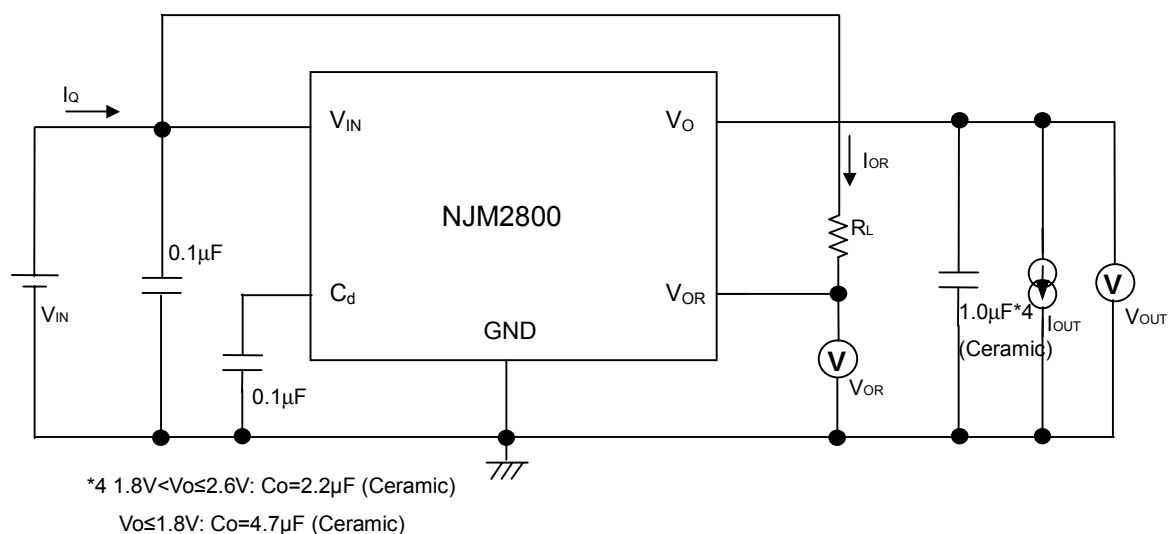
Therefore, it may be different from the individual specification for a specific output voltage.

■ TIMING CHART

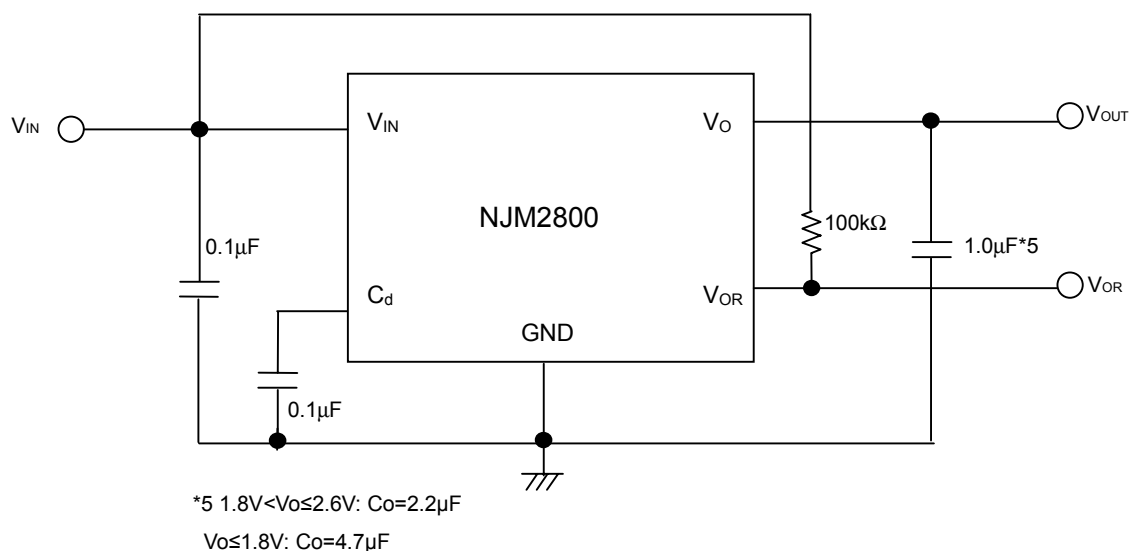


* V_{OR} is the case where a pull-up is carried out to V_{IN} through resistance.

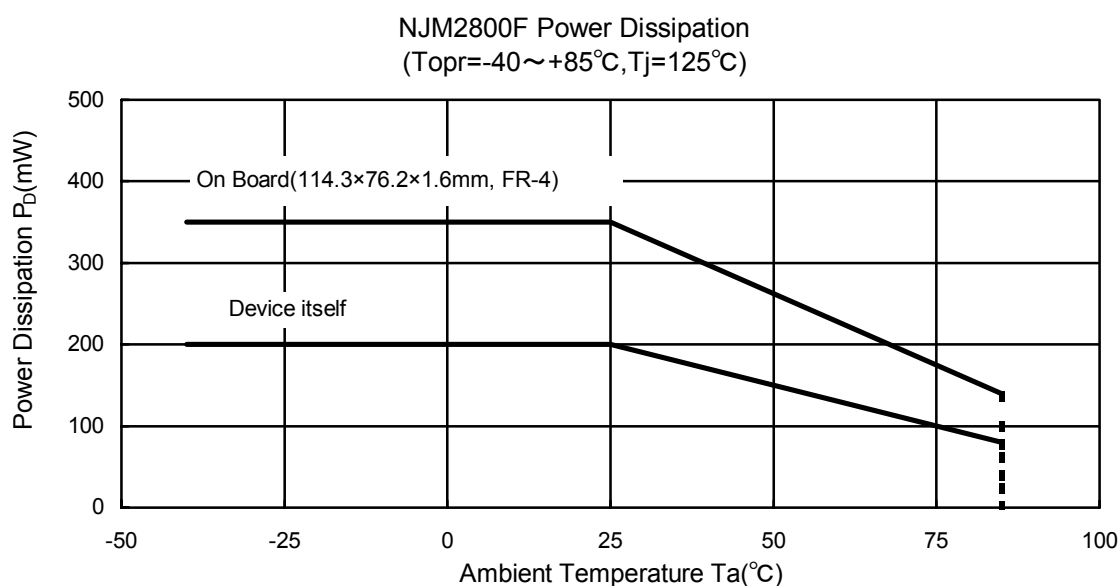
TEST CIRCUIT



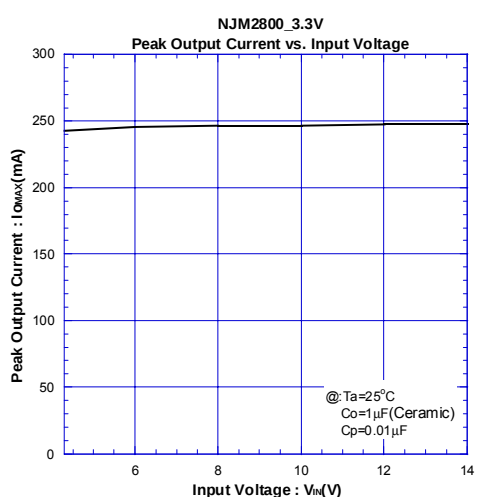
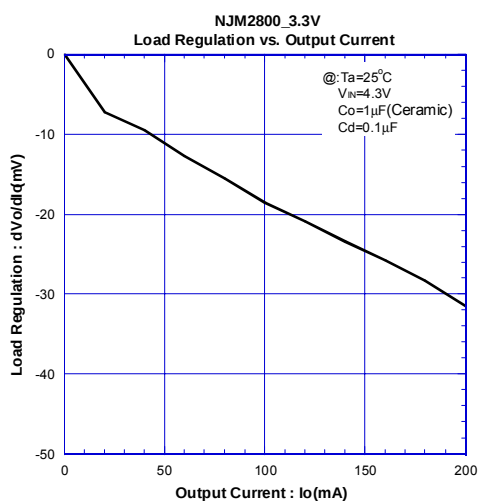
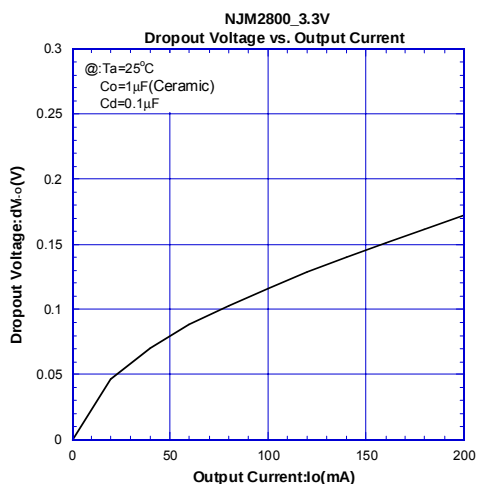
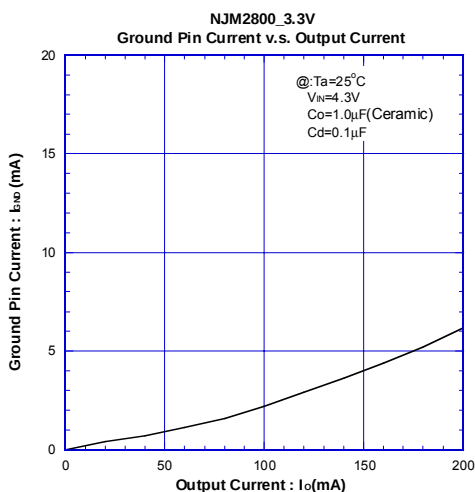
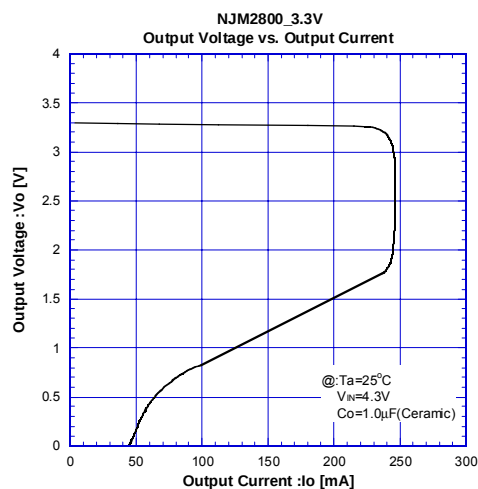
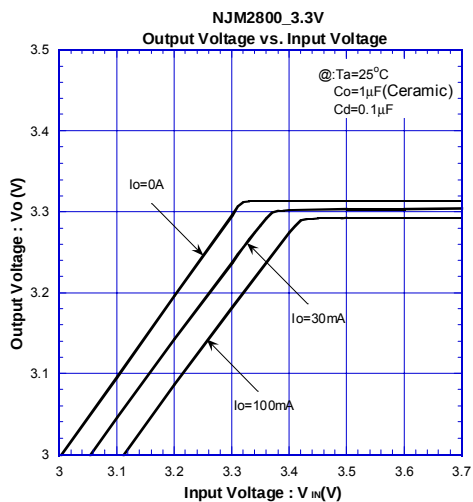
TYPICAL APPLICATIONS



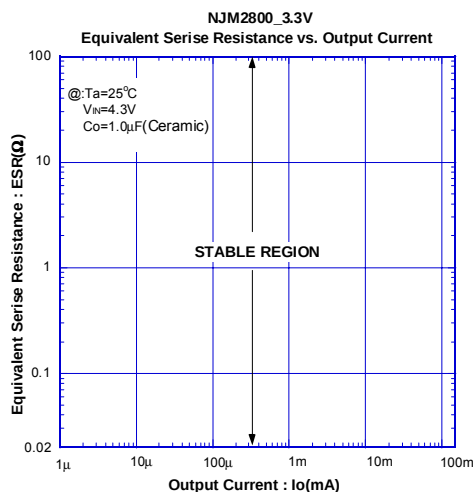
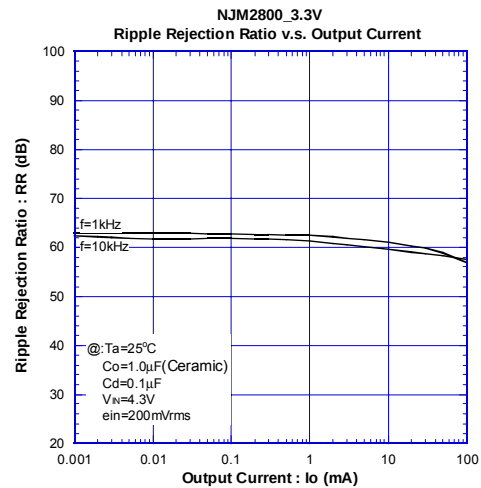
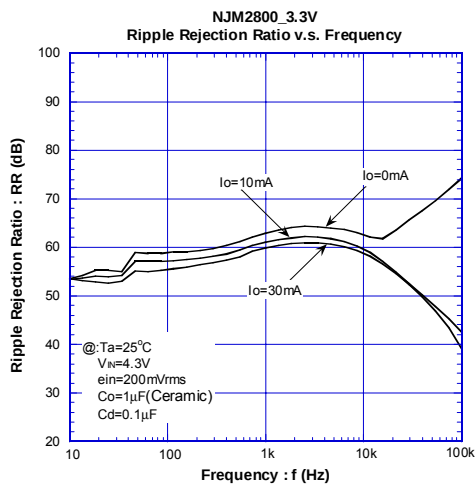
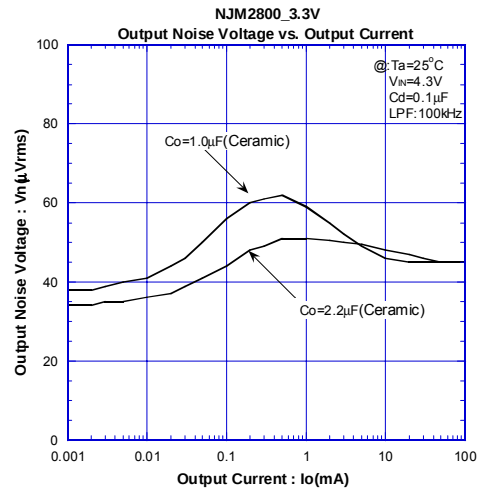
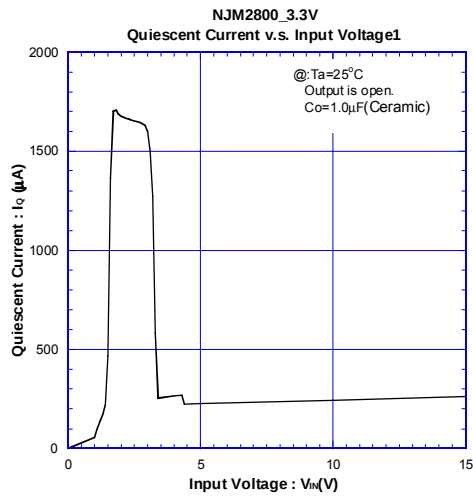
POWER DISSIPATION vs. AMBIENT TEMPERATURE



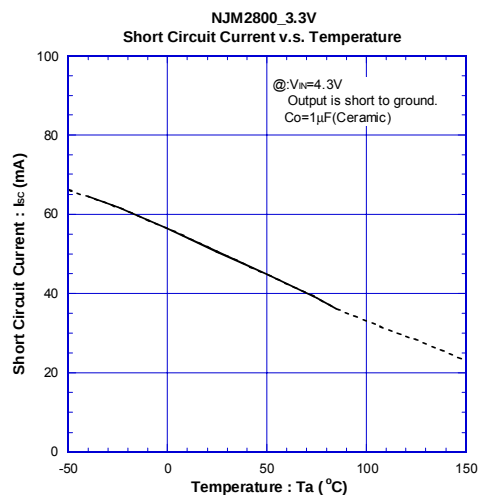
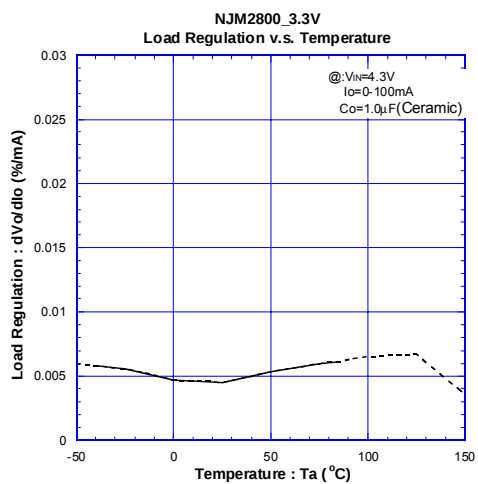
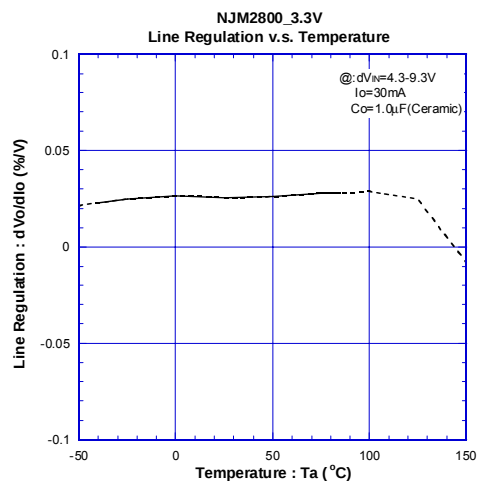
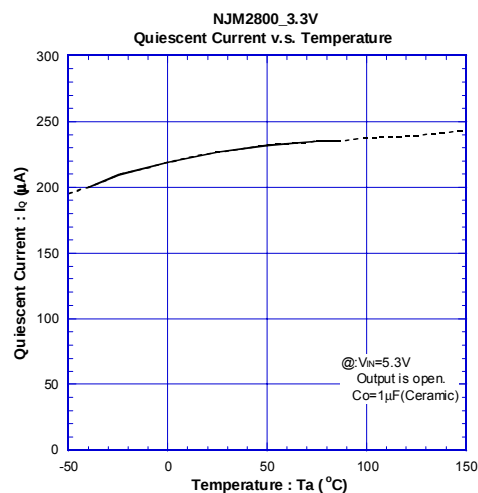
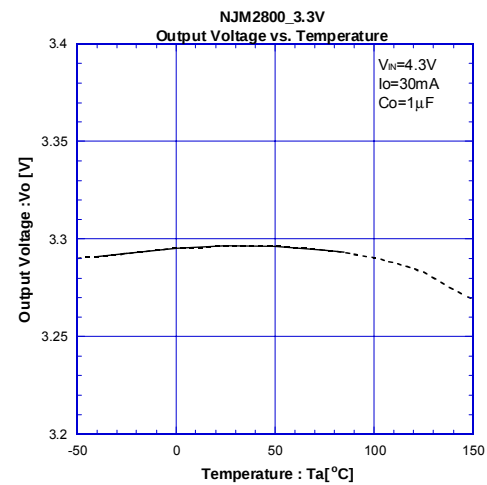
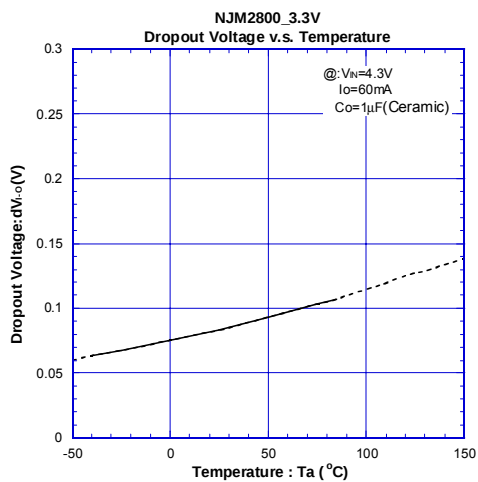
■ ELECTRICAL CHARACTERISTICS



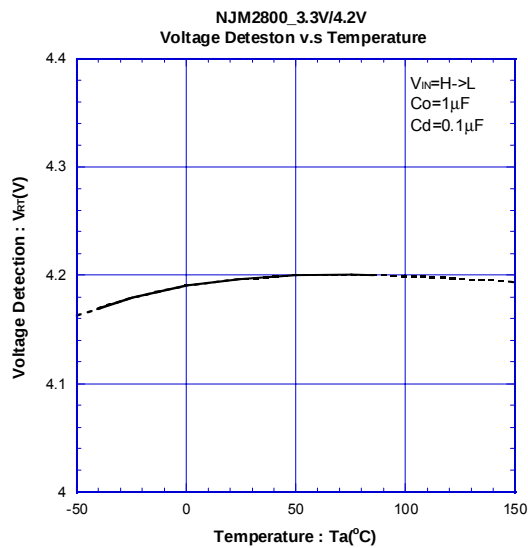
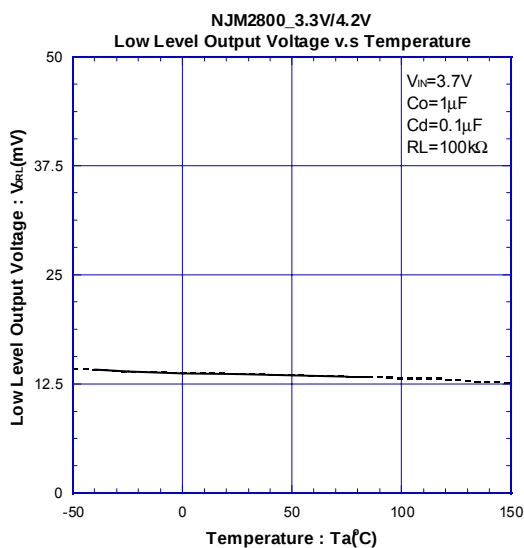
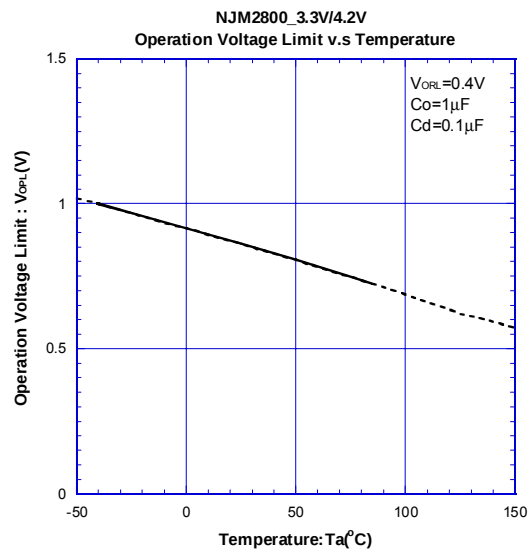
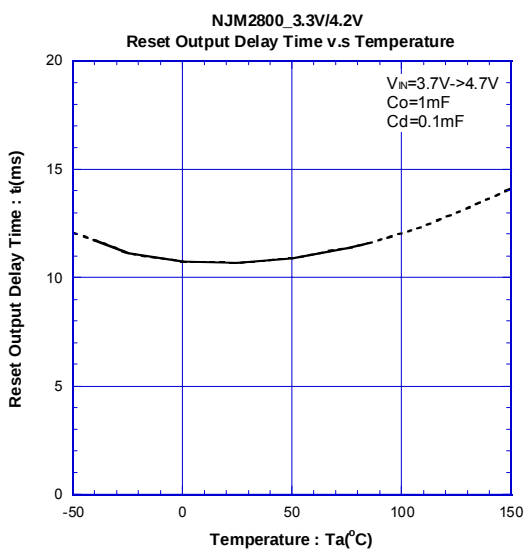
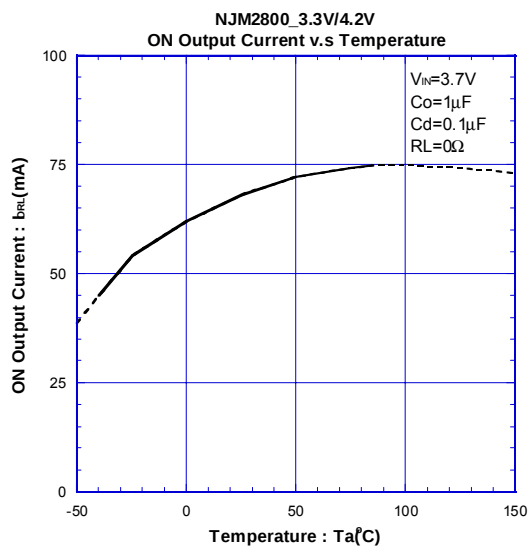
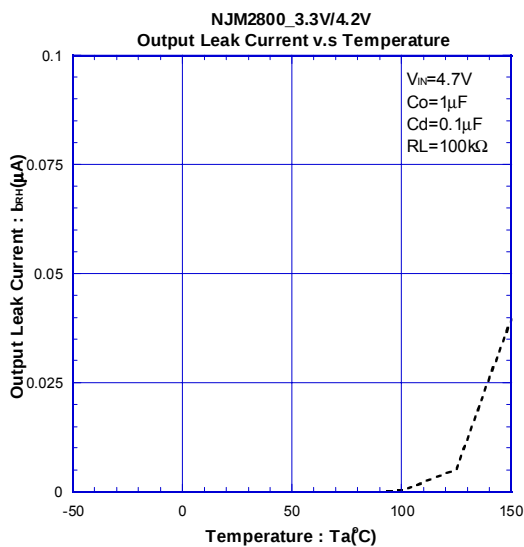
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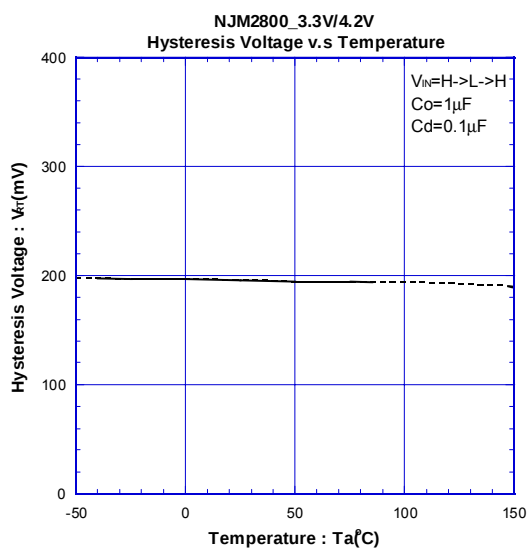
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