Low Dropout Voltage Regulator with Reset

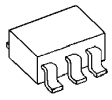
■ GENERAL DISCRIPTION

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



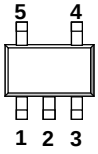
NJM2800F

NJM2800U/U1

■ FEATURES

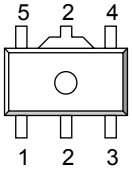
- Output Voltage Accuracy Vo = ±1.0%
- Reset Voltage Accuracy V_{RT} = ±1.0%
- Adjust reset delay time with external capacitor.
- Ripple Rejection 60dB typ. (f=1kHz)
- Input Voltage Monitor type
- Open Collector Output
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar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

■ PIN CONFIGURATION



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

NJU2800F



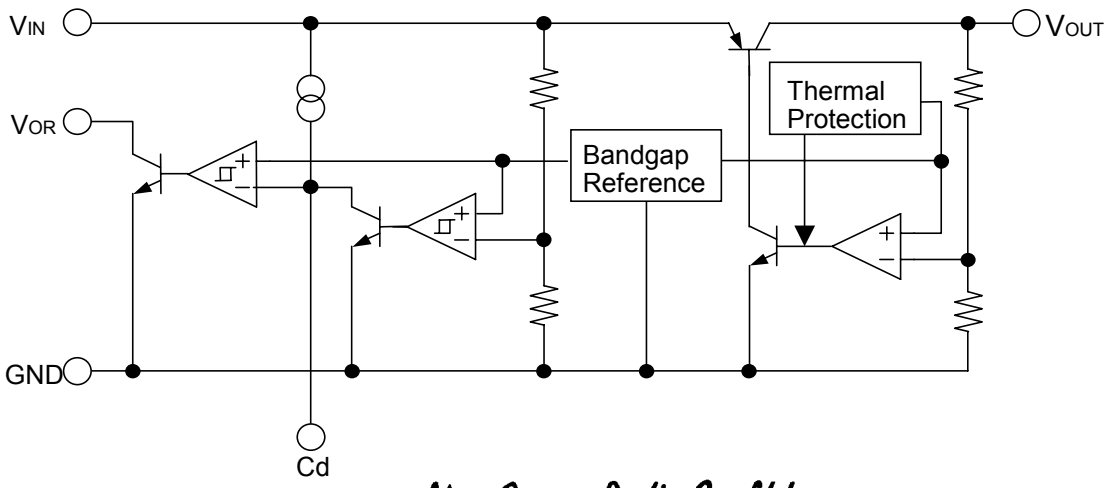
1.V_{OUT}
2.GND
3.C_d
4.V_{OR}
5.V_{IN}

NJU2800U/U1

■ 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)	mW
			200(*2)	
		SOT89-5	350(*2)	
Operating Temperature	Topr	−40~+85		°C
Storage Temperature	Tstg	−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 ~ +14V (In case of Vo<2.1V version)

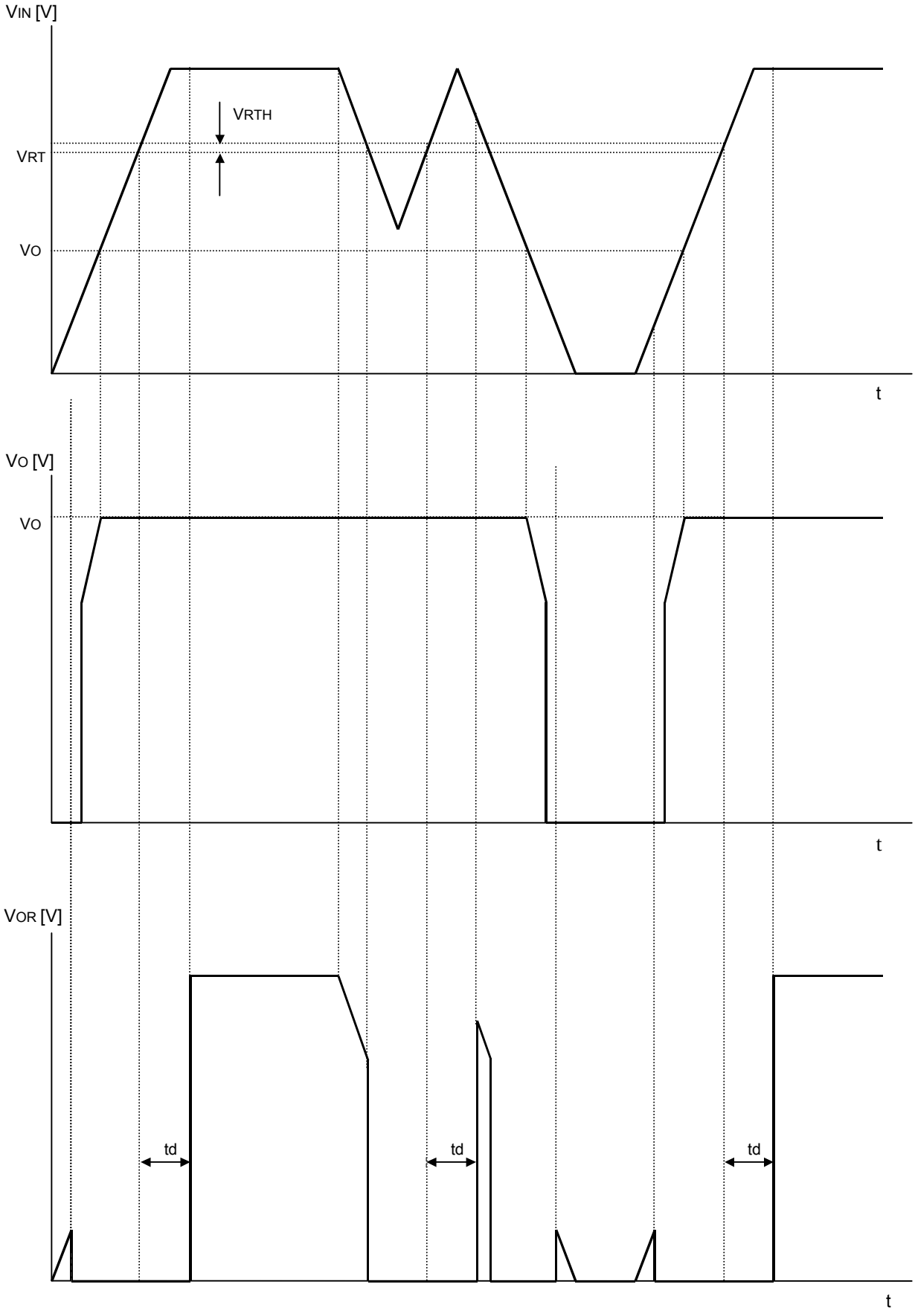
■ ELECTRICAL CHARACTERISTICS

(V_{IN}=Vo+1V, C_{IN}=0.1µF, Co=1µF (1.8<Vo≤2.6V: Co=2.2µF, Vo≤1.8V: Co=4.7µF) ,Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Quiescent Current	I_Q	V_{IN}=Vo+2V, Io=0mA	−	250	350	µA
Regulator Block						
Output Voltage	Vo	Io=30mA	−1.0%	−	+1.0%	V
Output Current	Io	Vo-0.3V	150	200	−	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V~Vo+6V, Io=30mA	−	−	0.10	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0~100mA	−	−	0.03	%/mA
Dropout Voltage(*3)	ΔV_{I_O}	Io=60mA	−	0.10	0.18	V
Ripple Rejection	RR	ein=200mVrms,f=1kHz,Io=10mA, Vo=3V Version	−	60	−	dB
Output Voltage Temperature Coefficient	$\Delta Vo/\Delta T$	Ta=0~85°C, Io=10mA	−	±50	−	ppm/°C
Output Noise Voltage	V_{NO}	f=10Hz~100kHz, Io=10mA, Vo=3V Version	−	45	−	µVrms
Reset Block						
Voltage Detection	V_{RT}	V_{IN}=H→L	−1.0%	−	+1.0%	V
Hysteresis Voltage	V_{RTH}	V_{IN}=H→L→H	V_{RT}×3 %	V_{RT}×5 %	V_{RT}×8 %	V
Low Level Output	R_{ORL}	V_{IN}=V_{RT}-0.5V, R_L=100kΩ	−	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=0Ω	5	−	−	mA
Reset Output Delay	t_d	V_{IN}=(V_{RT}-0.5V)→ (V_{RT}+0.5V), C_d=0.1µF	9	10	11	ms
Operation Voltage Limit	V_{OPL}	V_{ORL}=0.4V	−	0.9	−	V

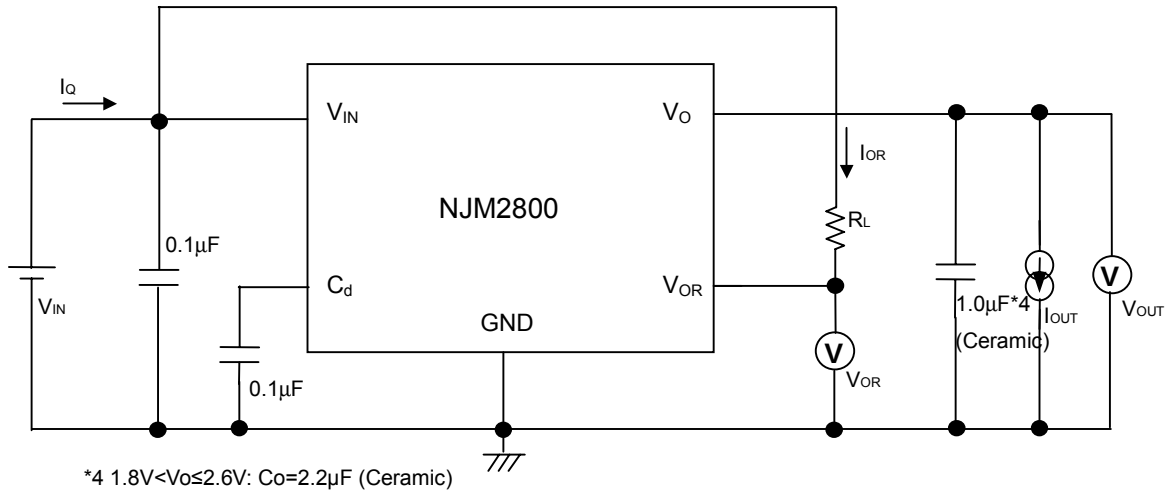
(*3): The output voltage excludes under 2.1V.
The above specification is a common specification for all output voltages.
Therefore, it may be different from the individual specification for a specific output voltage.

■ TIMING CHART



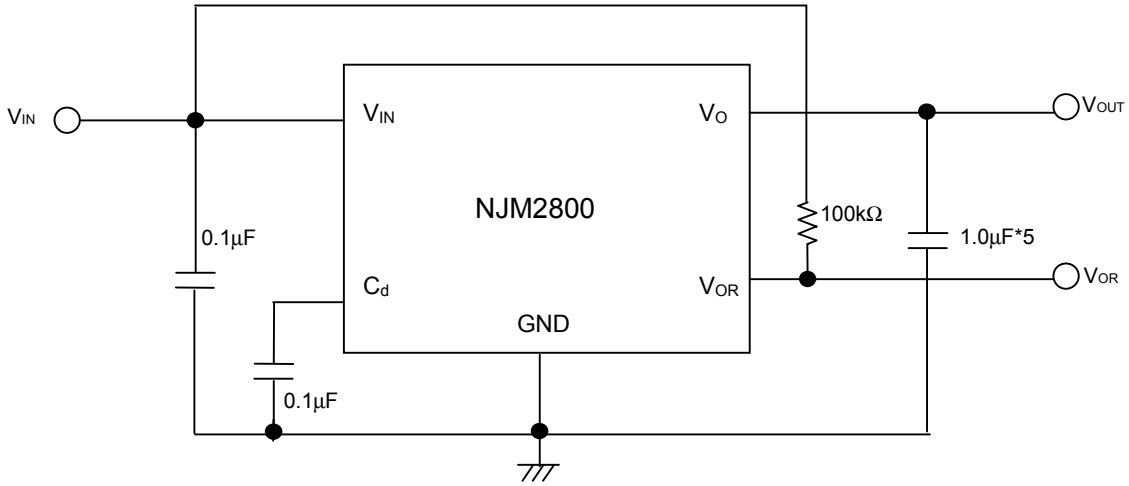
∗ V_{OR} is the case where a pull-up is carried out to V_{IN} through resistance.

■ TEST CIRCUIT



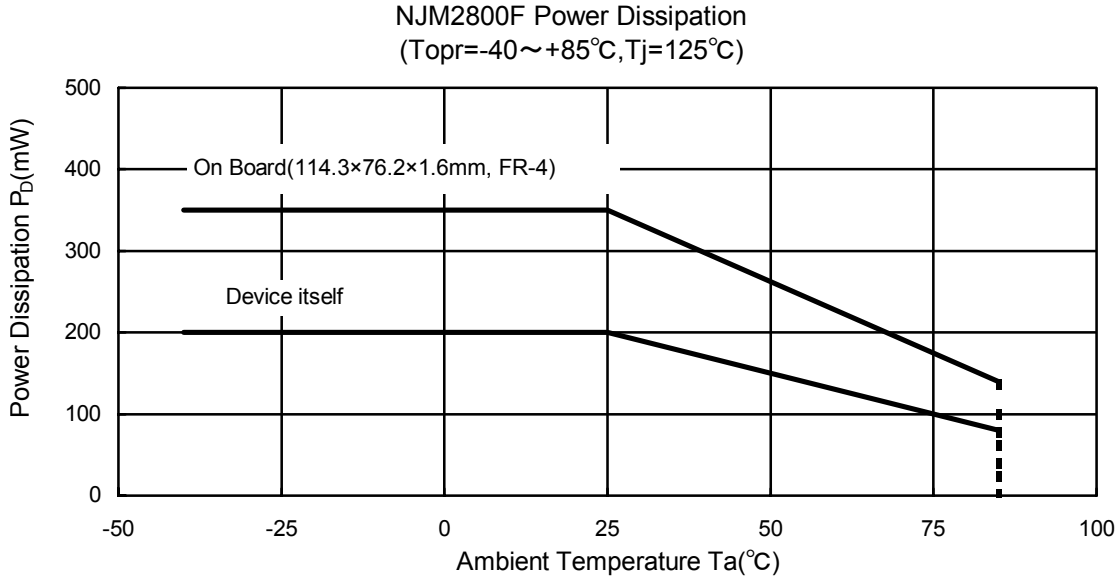
*4 1.8V<Vo≤2.6V: Co=2.2μF (Ceramic)
Vo≤1.8V: Co=4.7μF (Ceramic)

■ TYPICAL APPLICATIONS

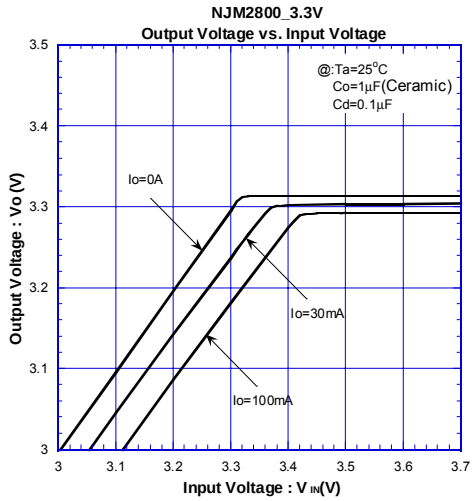


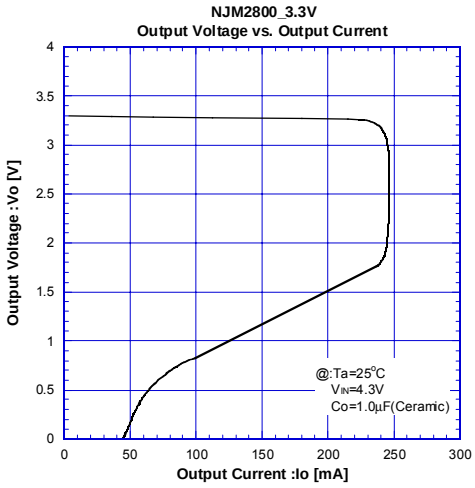
*5 1.8V<Vo≤2.6V: Co=2.2μF
Vo≤1.8V: Co=4.7μF

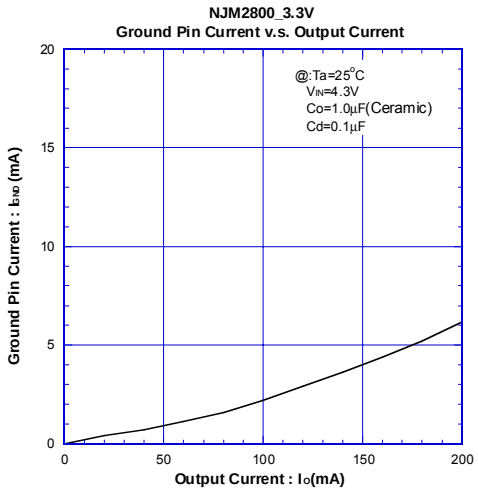
■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

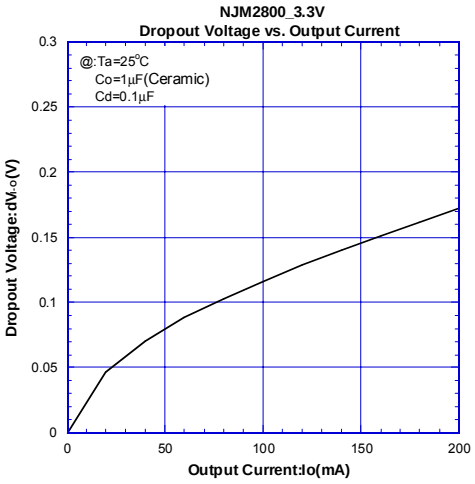


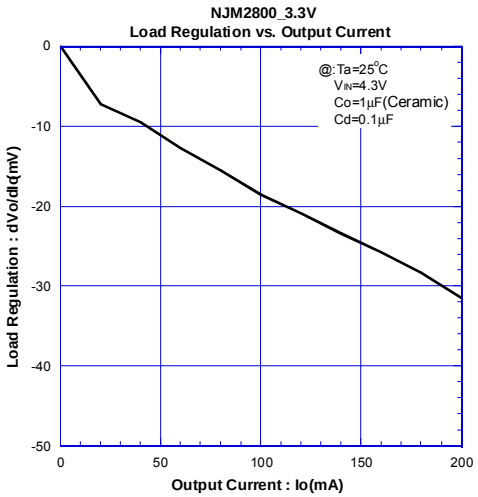
■ ELECTRICAL CHARACTERISTICS

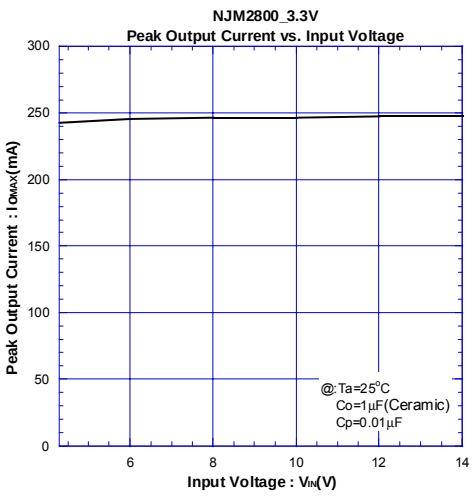




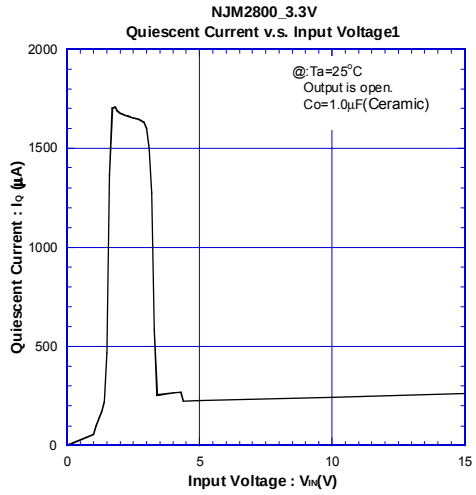


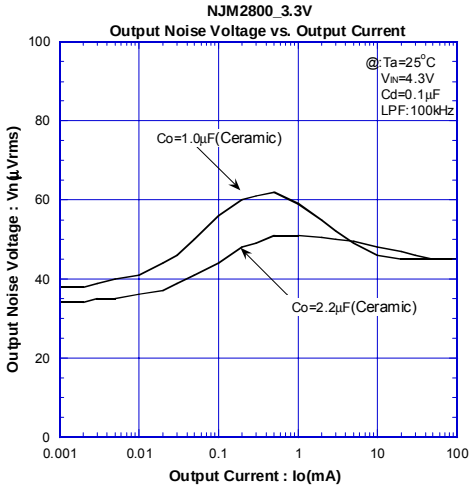


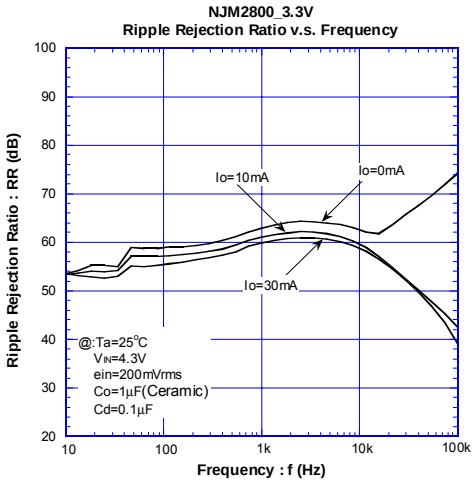


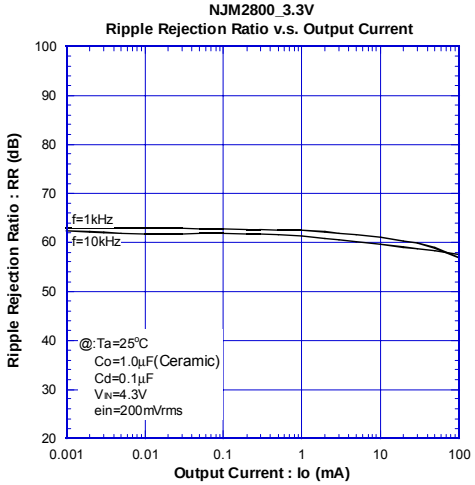


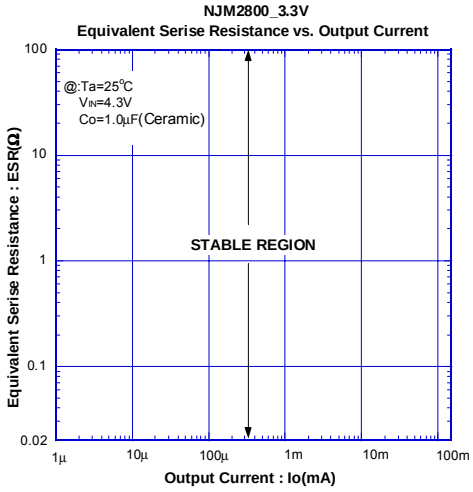
■ ELECTRICAL CHARACTERISTICS



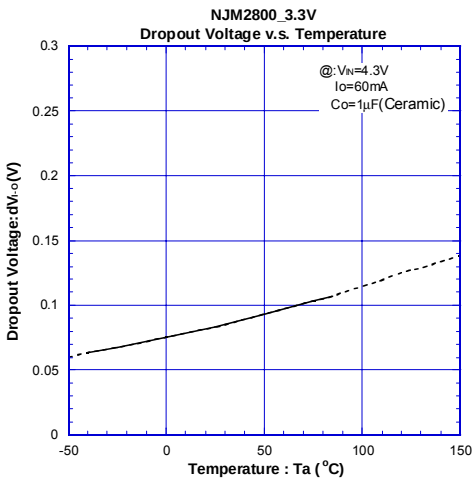


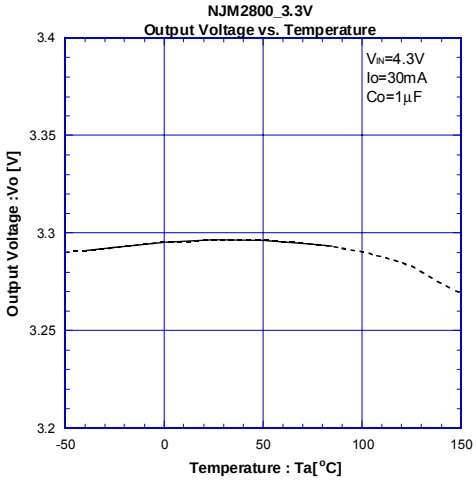


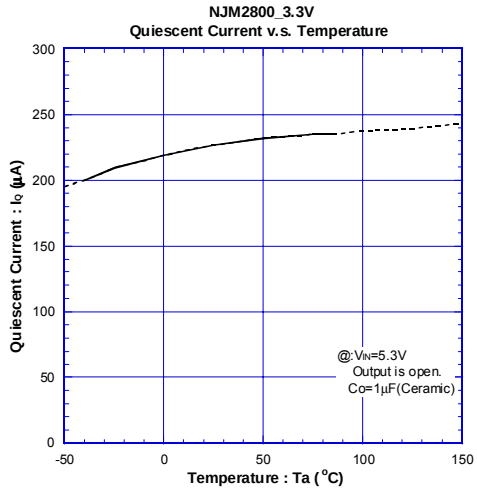


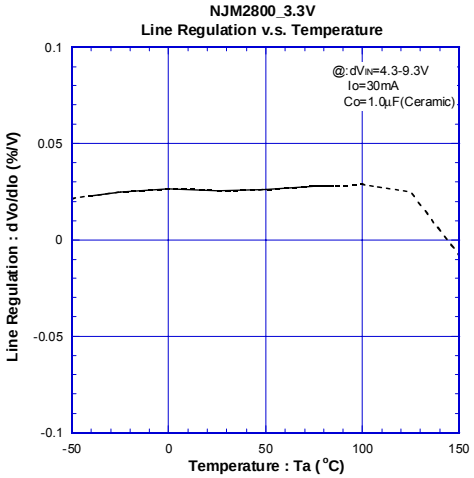


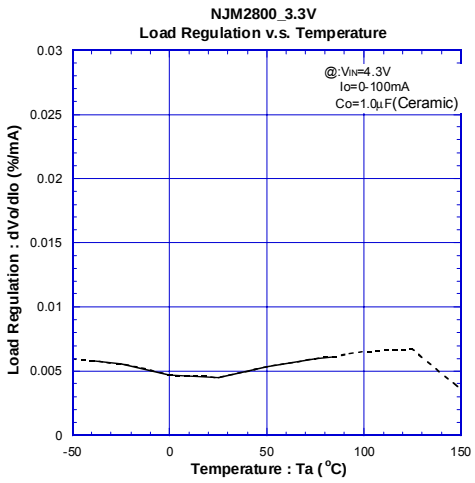
■ ELECTRICAL CHARACTERISTICS

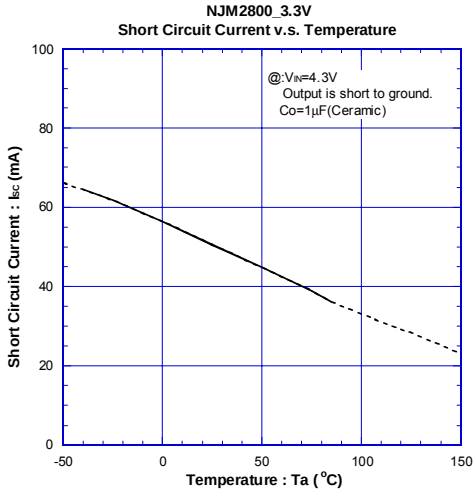






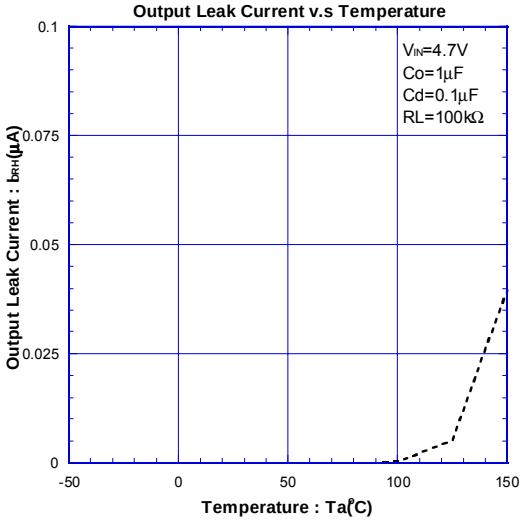




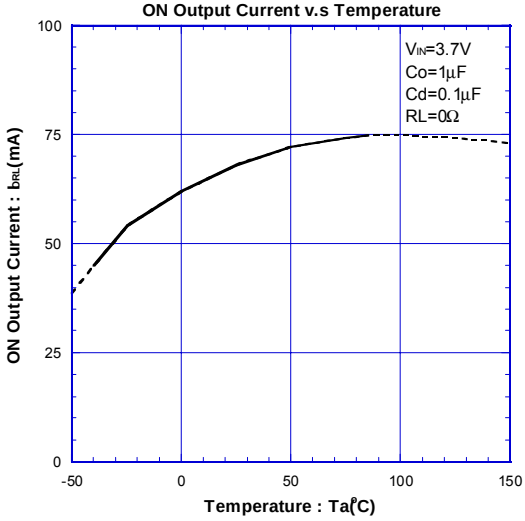


■ ELECTRICAL CHARACTERISTICS

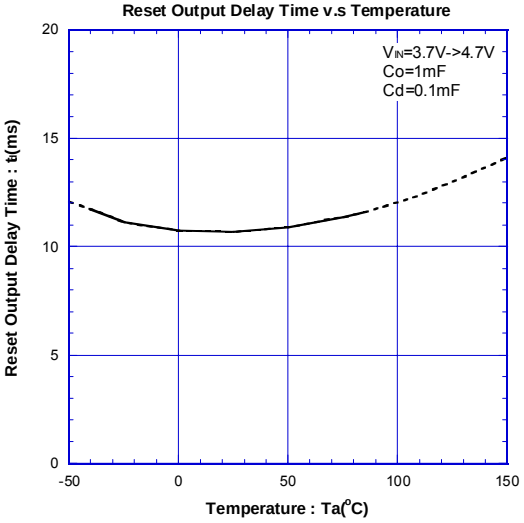
NJM2800_3.3V/4.2V
Output Leak Current v.s Temperature



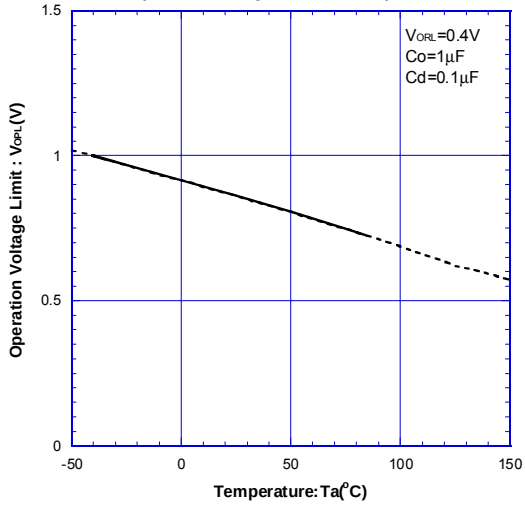
NJM2800_3.3V/4.2V
ON Output Current v.s Temperature



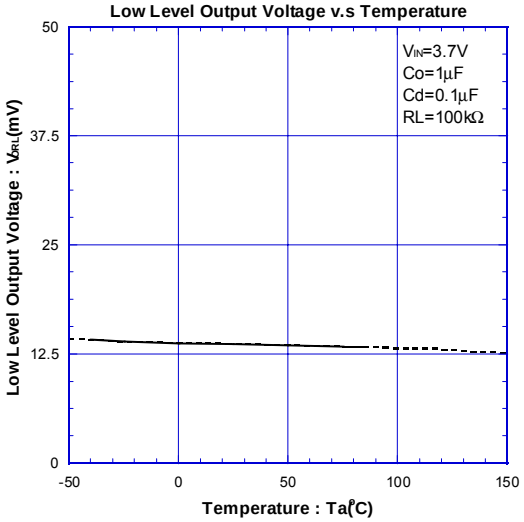
NJM2800_3.3V/4.2V
Reset Output Delay Time v.s Temperature



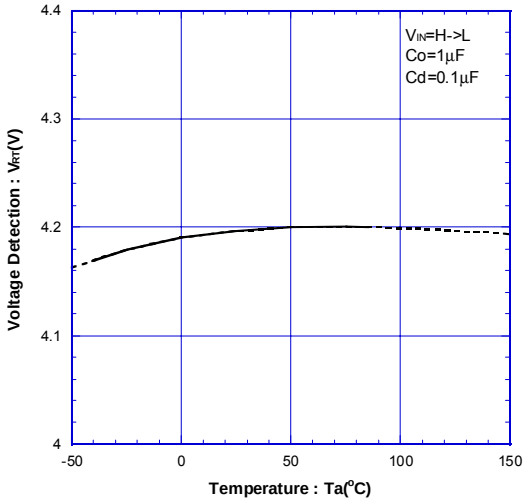
NJM2800_3.3V/4.2V
Operation Voltage Limit v.s Temperature



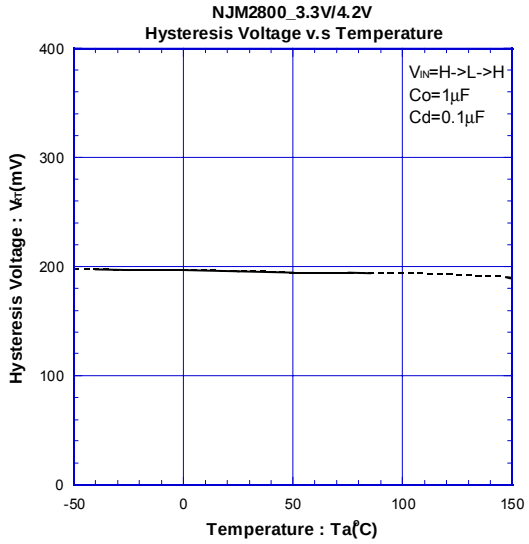
NJM2800_3.3V/4.2V
Low Level Output Voltage v.s Temperature



NJM2800_3.3V/4.2V
Voltage Deteston v.s Temperature



■ ELECTRICAL CHARACTERISTICS



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