Low Dropout Voltage Regulator with Reset

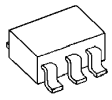
■ GENERAL DISCRIPTION

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

It provides up to 150mA of logic supply, and the reset function monitors either input or output 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



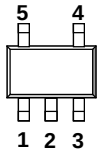
NJM2800F

NJM2800U/U1

■ FEATURES

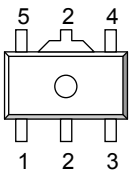
- Output Voltage Accuracy Vo = ±1.0%
- Reset Voltage Accuracy Vreset = ±1.0%
- Reset Hold Time td = 10mS±1.0mS
- Ripple Rejection 60dB typ. (f=1kHz)
- Quiescent Current I_Q=250μA (typ.)
- Input Voltage Monitor type
- Open Collector Output
- Internal Short Circuit Current Limit
- Internal Thermal Overload 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



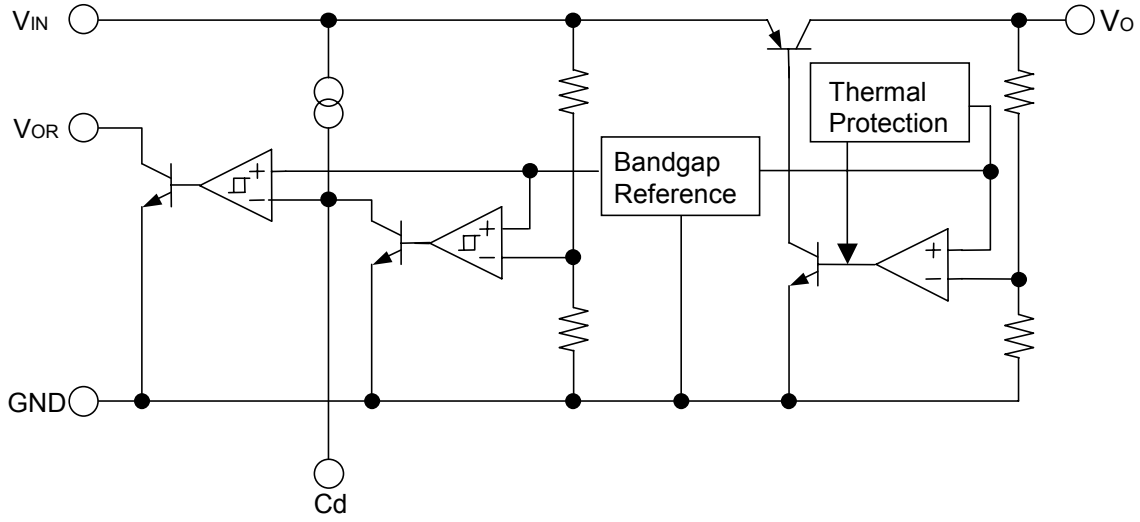
1.V_O
2.GND
3.C_d
4.V_{OR}
5.V_{IN}

NJU2800U/U1

■ OUTPUT VOLTAGE/ DETECTION VOLTAGE

Device Name	Output Voltage	Detection Voltage
NJM2800F/U1803	1.8V	3.0V
NJM2800F/U1-2528	2.5V	2.8V
NJM2800U3342	3.3V	4.2V

■ EQUIVALENT CIRCUIT



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

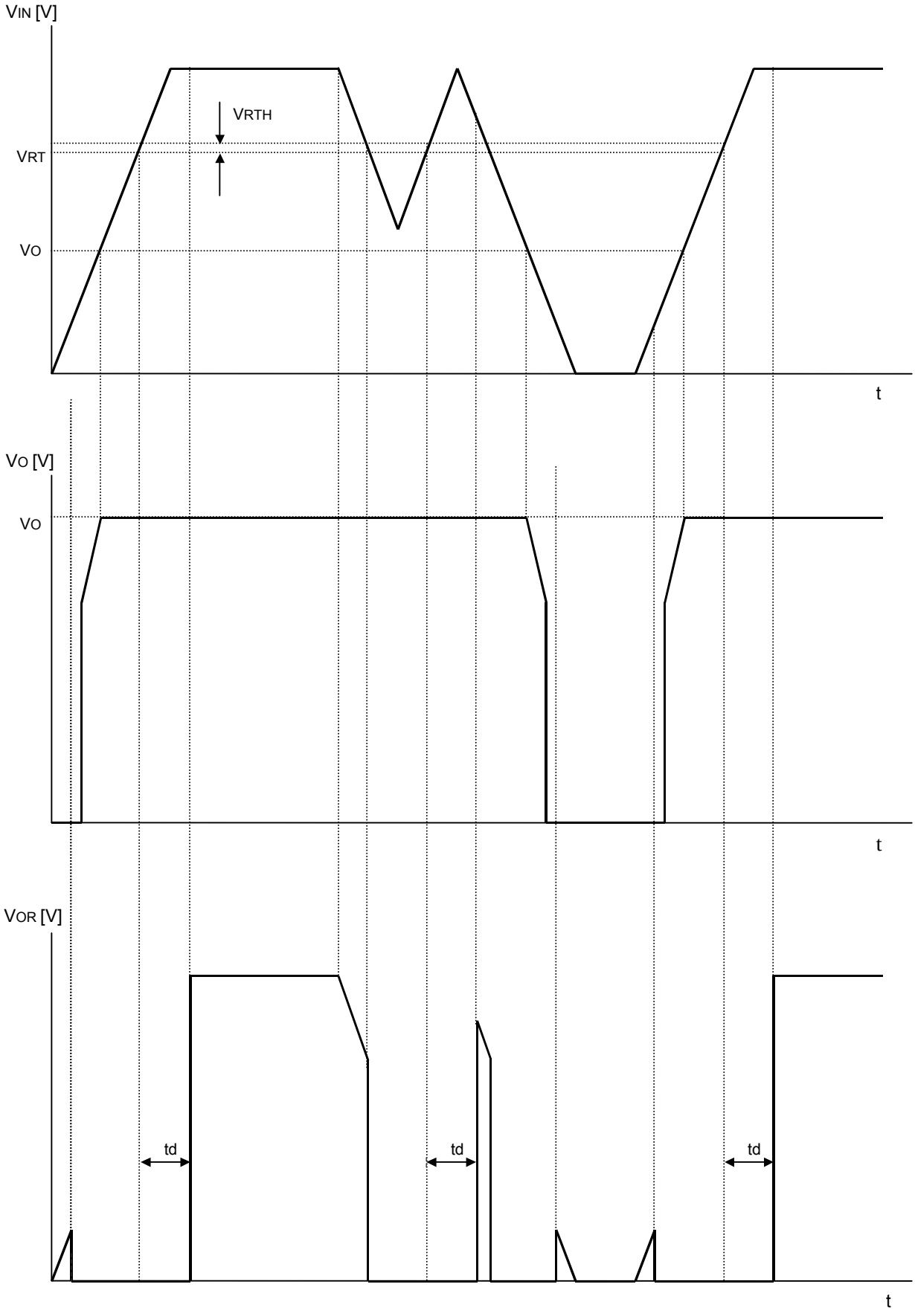
PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+14	V
Power Dissipation	P_D	200 (SOT-23-5)	mW
		350 (SOT-89-5)	
Operating Temperature	Topr	−40~+85	°C
Storage Temperature	Tstg	−40~+125	°C

■ ELECTRICAL CHARACTERISTICS (V_{IN}=Vo+1V, C_{IN}=0.1μF, Co=1μF (Vo≤2.6V: Co=2.2μF) 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	ΔV_{I_O}	Io=60mA	–	0.10	0.18	V
Ripple Rejection	RR	ein=200mVrms, f=1kHz, Io=10mA,Vo=3V	–	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	–	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%	mV
Low Level Output Voltage	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 Time	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

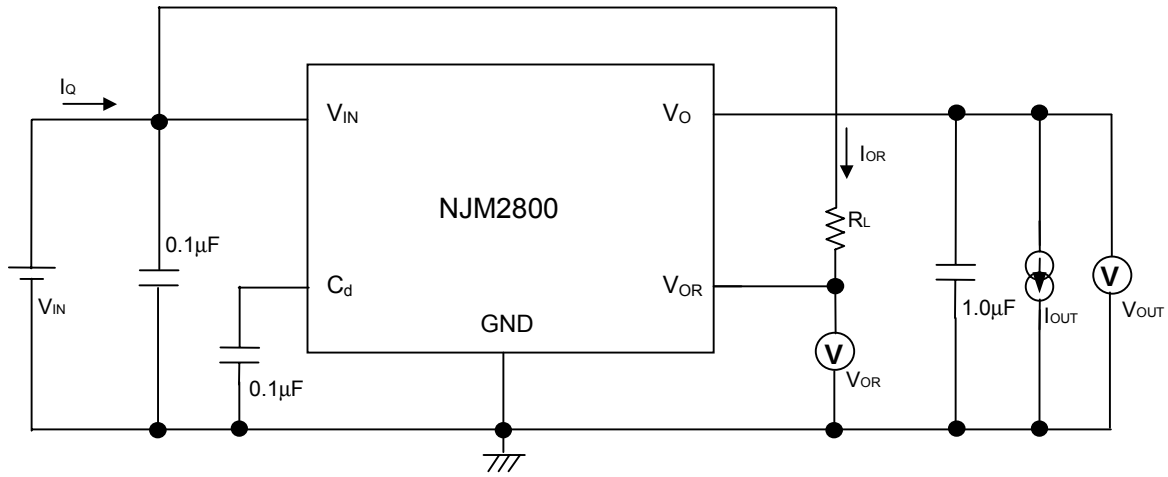
(note 1) The above specification is a common specification for all output voltages.
Therefore, it may be different from the individual specification for a specific output voltage.

■ TIMING CHART

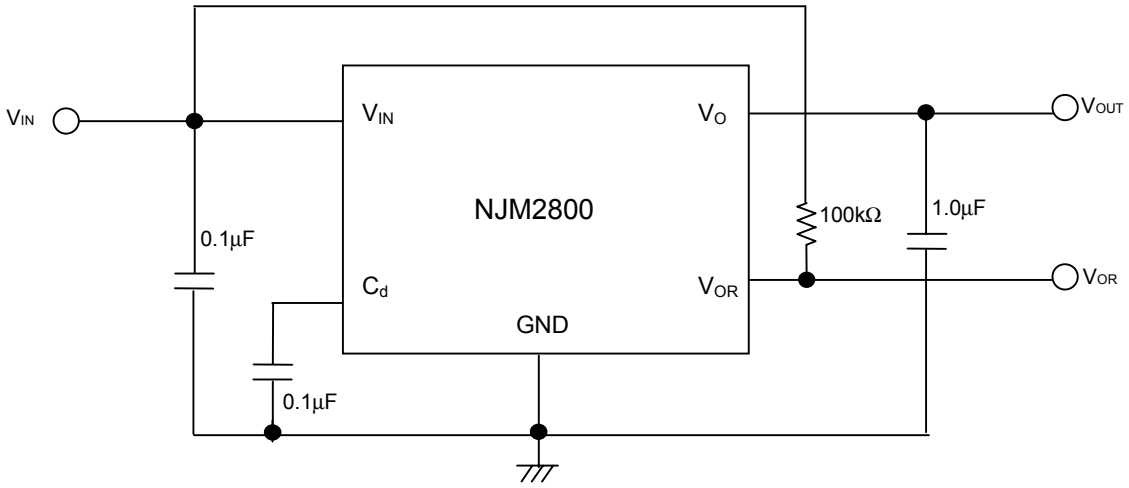


∗ V_{OR} is the case where a pull-up is carried out to V_{IN} through resistance.

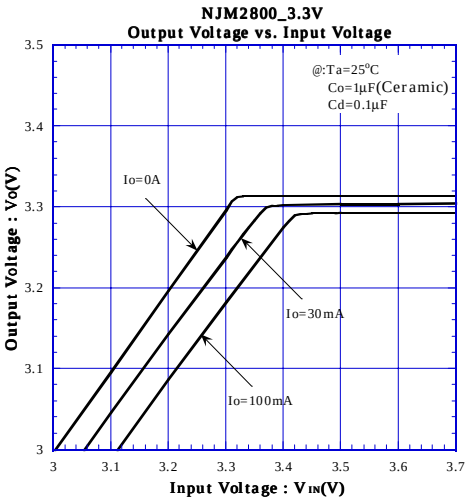
■ TEST CIRCUIT

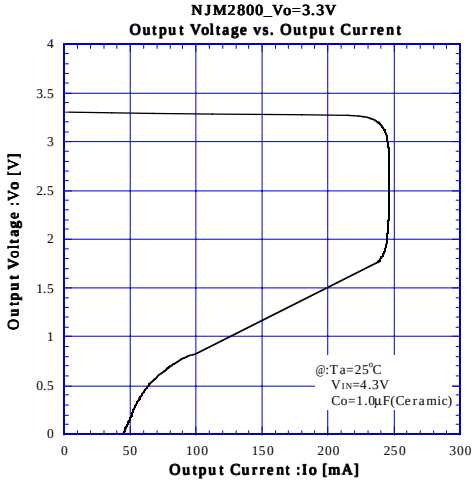


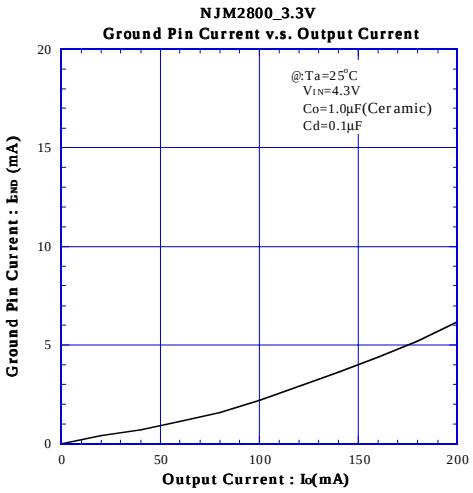
■ TYPICAL APPLICATIONS

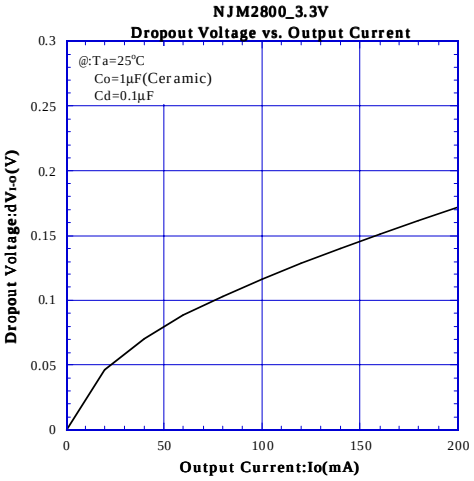


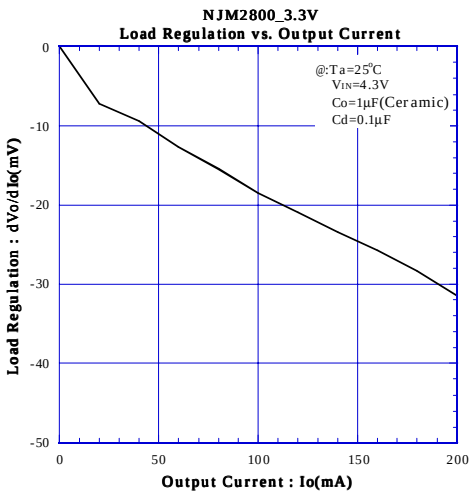
■ ELECTRICAL CHARACTERISTICS

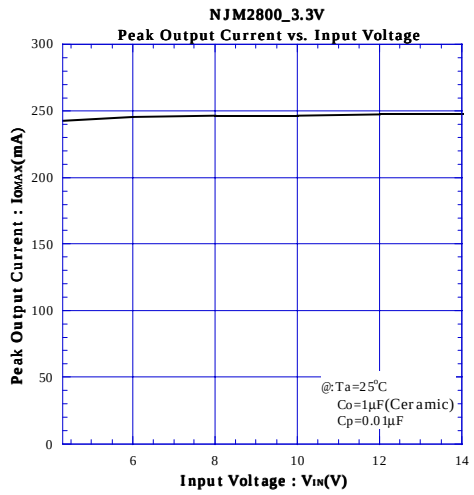






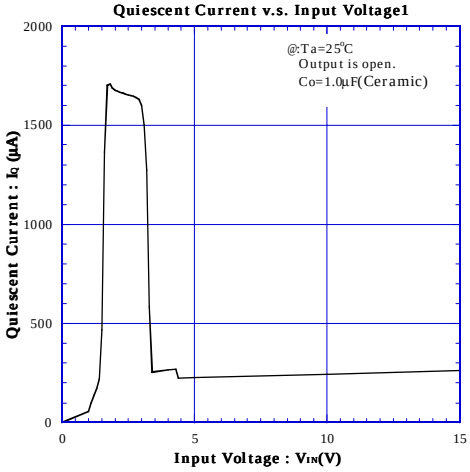




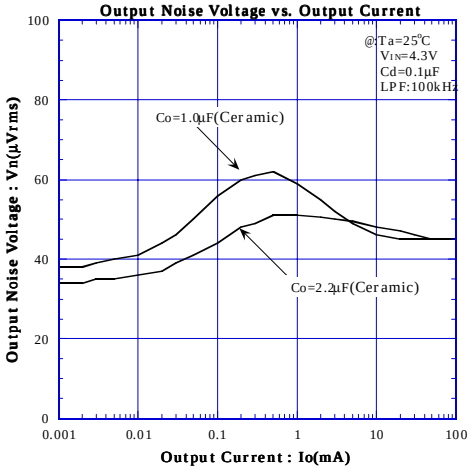


■ ELECTRICAL CHARACTERISTICS

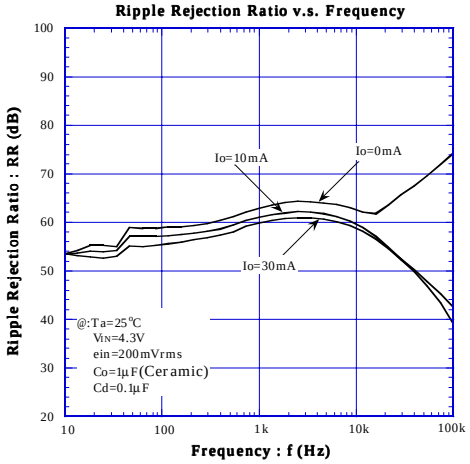
NJM2800_3.3V
Quiescent Current v.s. Input Voltage1



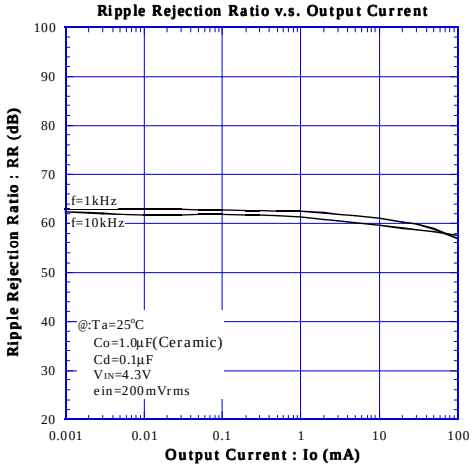
NJM2800_3.3V
Output Noise Voltage vs. Output Current



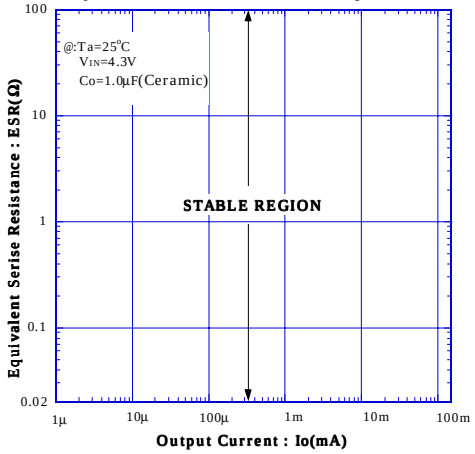
NJM2800_3.3V
Ripple Rejection Ratio v.s. Frequency



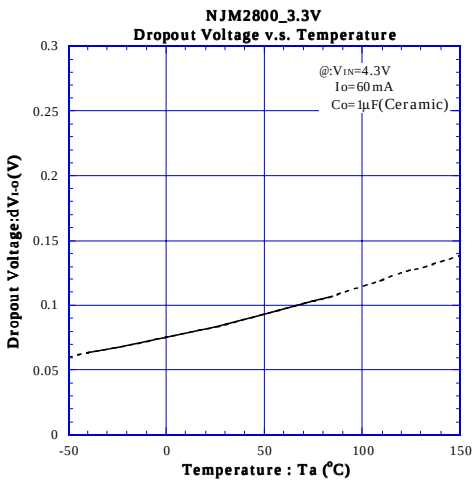
NJM2800_3.3V
Ripple Rejection Ratio v.s. Output Current

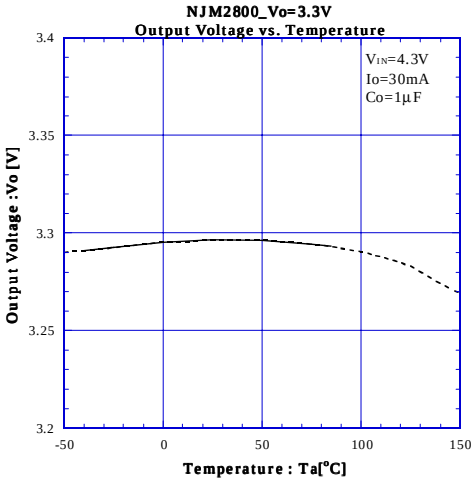


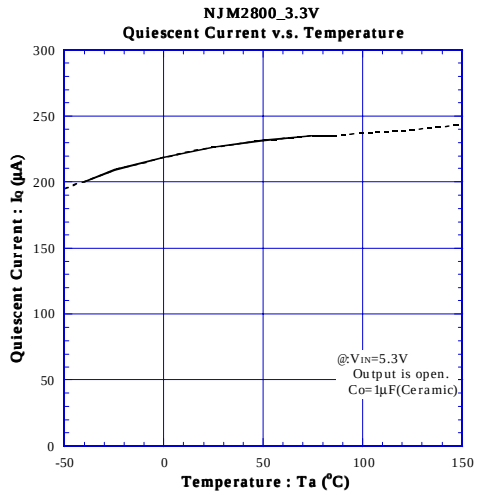
NJM2800_3.3V
Equivalent Serise Resistance vs. Output Current

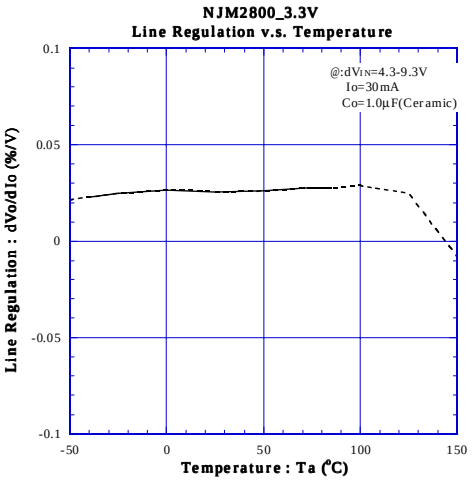


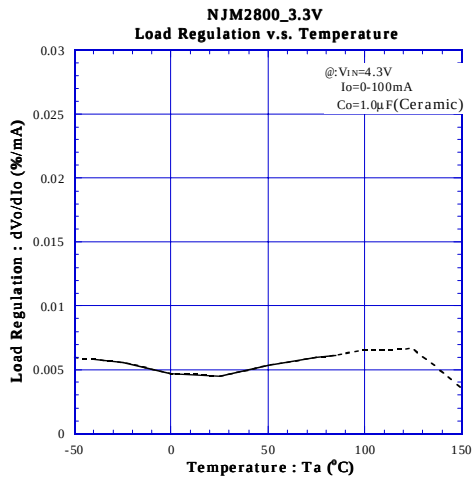
■ ELECTRICAL CHARACTERISTICS

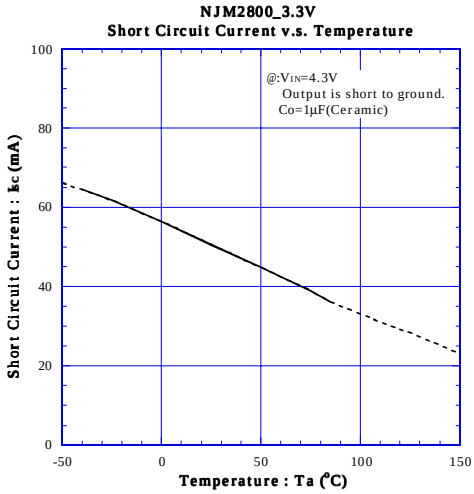












[CAUTION]
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