

LOW DROPOUT VOLTAGE REGULATOR

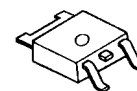
■ GENERAL DESCRIPTION

The NJM2855 is a 3-terminal low dropout voltage regulator. Advanced Bipolar technology achieves low noise, high ripple rejection.

It delivers up to 5V/1A output power with the maximum input voltage of 10V.

The NJM2855 is suitable for various applications such as portable / consumer devices.

■ PACKAGE OUTLINE

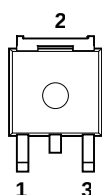


NJM2855DL1

■ FEATURES

- High Ripple Rejection 75dB typ. (f=1kHz, V_o=3V Version)
- Output Noise Voltage V_{no}=45μVrms typ.
- Output capacitor with 2.2μF ceramic capacitor (V_o≥2.7V)
- Output Current I_o (max.)=1A
- High Precision Output V_o±1.0%
- Low Dropout Voltage 0.20V typ. (I_o=600mA)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-3

■ PIN CONFIGURATION

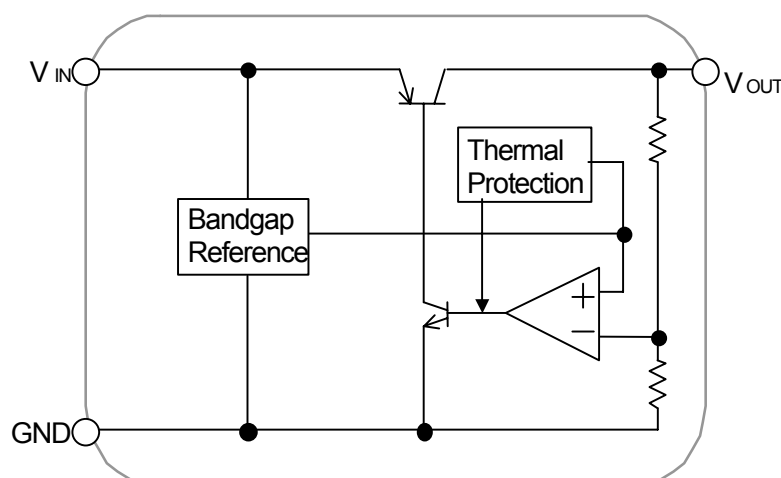


NJM2855DL1

PIN FUNCTION

- 1. V_{IN}
- 2. GND
- 3. V_{OUT}

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

The WHITE column shows applicable Voltage Rank(s)

Device Name	V _{out}	Device Name	V _{out}
NJM2855DL1-15	1.5V	NJM2855DL1-35	3.5V
NJM2855DL1-16	1.6V	NJM2855DL1-36	3.6V
NJM2855DL1-17	1.7V	NJM2855DL1-37	3.7V
NJM2855DL1-18	1.8V	NJM2855DL1-38	3.8V
NJM2855DL1-19	1.9V	NJM2855DL1-39	3.9V
NJM2855DL1-02	2.0V	NJM2855DL1-04	4.0V
NJM2855DL1-21	2.1V	NJM2855DL1-41	4.1V
NJM2855DL1-22	2.2V	NJM2855DL1-42	4.2V
NJM2855DL1-23	2.3V	NJM2855DL1-43	4.3V
NJM2855DL1-24	2.4V	NJM2855DL1-44	4.4V
NJM2855DL1-25	2.5V	NJM2855DL1-45	4.5V
NJM2855DL1-26	2.6V	NJM2855DL1-46	4.6V
NJM2855DL1-27	2.7V	NJM2855DL1-47	4.7V
NJM2855DL1-28	2.8V	NJM2855DL1-48	4.8V
NJM2855DL1-29	2.9V	NJM2855DL1-49	4.9V
NJM2855DL1-03	3.0V	NJM2855DL1-05	5.0V
NJM2855DL1-31	3.1V		
NJM2855DL1-32	3.2V		
NJM2855DL1-33	3.3V		
NJM2855DL1-34	3.4V		

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+10	V
Power Dissipation	P_D	1190(*1)	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +150	°C

(*1): Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers, copper area 100mm²)

■ OPERATING VOLTAGE

$V_{IN}=+2.5V \sim +8V$ (In case of $V_O<2.3V$ version)

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_O+1V$, $C_{IN}=0.33\mu F$, $C_O=2.2\mu F$ (1.7V< $V_O\leq 2.6V$:4.7 μF , $V_O\leq 1.7V$:10 μF), $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_O	$I_O=30mA$	-1.0%	-	+1.0%	V
Input Voltage	V_{IN}		-	-	8	V
Quiescent Current	I_Q	$I_O=0mA$	-	400	600	μA
Output Current	I_O	$V_O-0.3V$	1000	1300	-	mA
Line Regulation	$\Delta V_O/\Delta V_{IN}$	$V_{IN}=V_O+1V\sim V_O+6V$ ($V_O\leq 2V$), $V_{IN}=V_O+1V\sim 8V$ ($V_O>2V$), $I_O=30mA$	-	-	0.10	%/V
Load Regulation	$\Delta V_O/\Delta I_O$	$I_O=0 \sim 1A$	-	-	0.004	%/mA
Dropout Voltage(*2)	ΔV_{I-O}	$I_O=600mA$	-	0.20	0.28	V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_O=10mA$ $V_O=3.0V$ Version	-	75	-	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_O/\Delta T_a$	$T_a=0\sim 85^\circ C$, $I_O=10mA$	-	± 50	-	ppm/°C
Output Noise Voltage	V_{NO}	$f=10Hz\sim 80kHz$, $I_O=10mA$, $V_O=3.0V$ Version(*3)	-	45	-	μV_{rms}
Input Voltage	V_{IN}		-	-	8	V

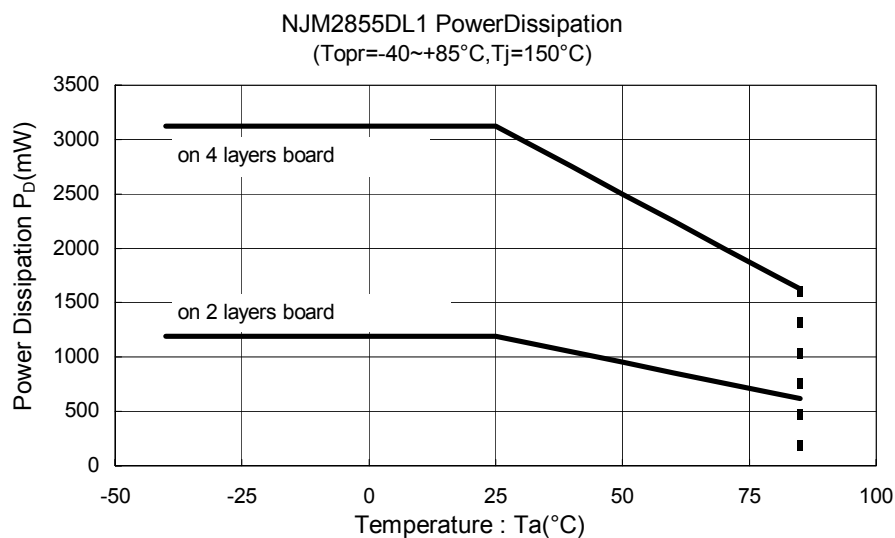
(*2): The output voltage excludes under 2.1V.

(*3): $V_O>2.0V$: $V_{IN}=V_O+1V$, $V_O\leq 2.0V$: $V_{IN}=3.0V$

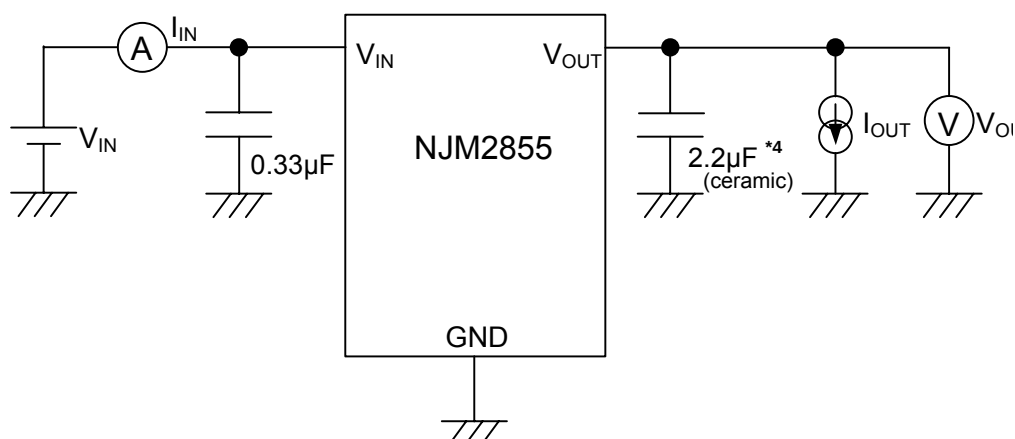
The above specification is a common specification for all output voltages.

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

POWER DISSIPATION vs. AMBIENT TEMPERATURE

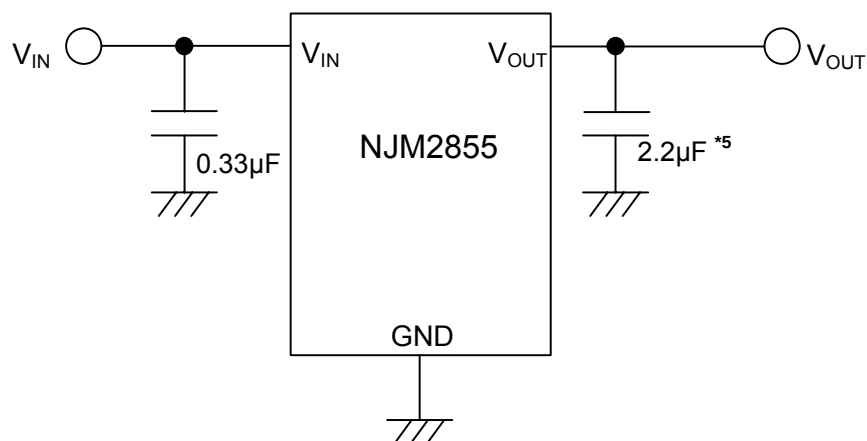


TEST CIRCUIT



*4 1.7V < $V_O \leq 2.6\text{V}$ version: $C_O = 4.7\mu\text{F}$ (ceramic)
 $V_O \leq 1.7\text{V}$ version: $C_O = 10\mu\text{F}$ (ceramic)

TYPICAL APPLICATION



*5 1.7V < $V_O \leq 2.6\text{V}$ version: $C_O = 4.7\mu\text{F}$
 $V_O \leq 1.7\text{V}$ version: $C_O = 10\mu\text{F}$

***Input Capacitance C_{IN}**

Input Capacitance C_{IN} is required to prevent oscillation and reduce power supply ripple for applications with high power supply impedance or a long power supply line.

Use the C_{IN} value of 0.33 μ F greater to avoid the problem.

C_{IN} should connect between GND and V_{IN} as short as possible.

***Output Capacitance C_O**

Output capacitor (C_O) is required for a phase compensation of the internal error amplifier. The capacitance and the equivalent series resistance (ESR) influence stability of the regulator.

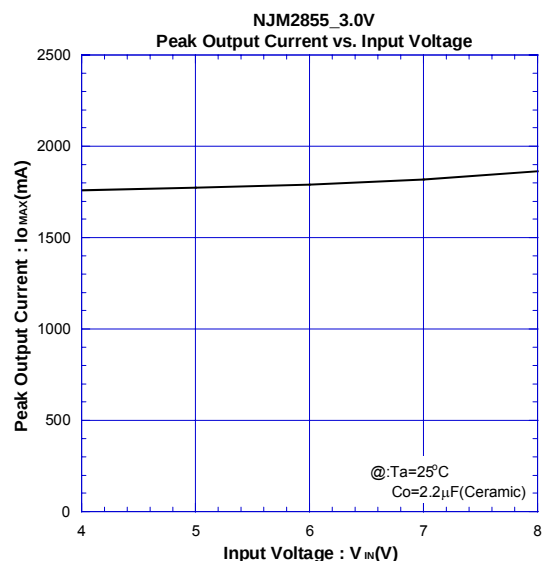
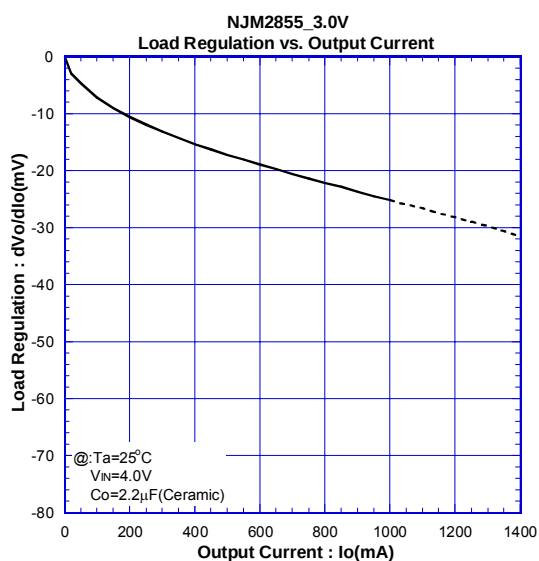
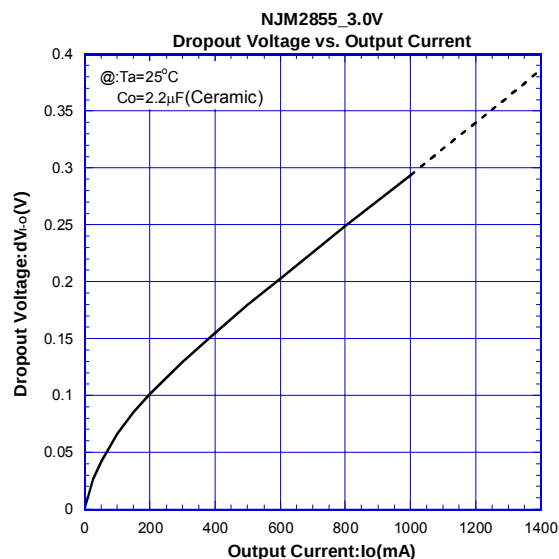
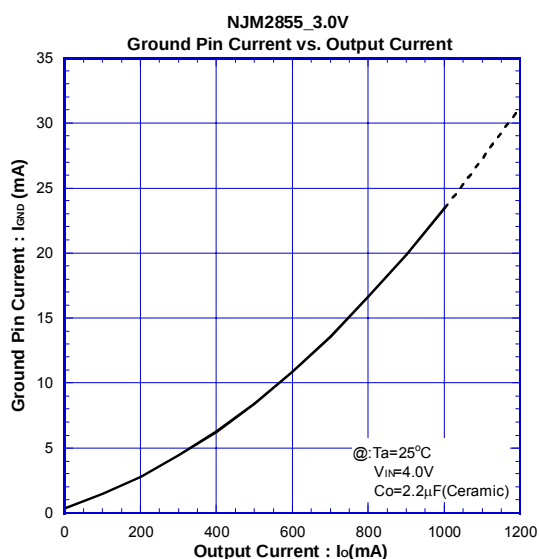
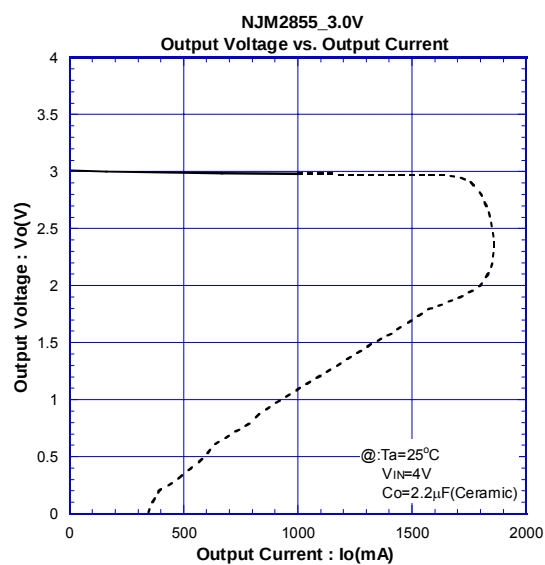
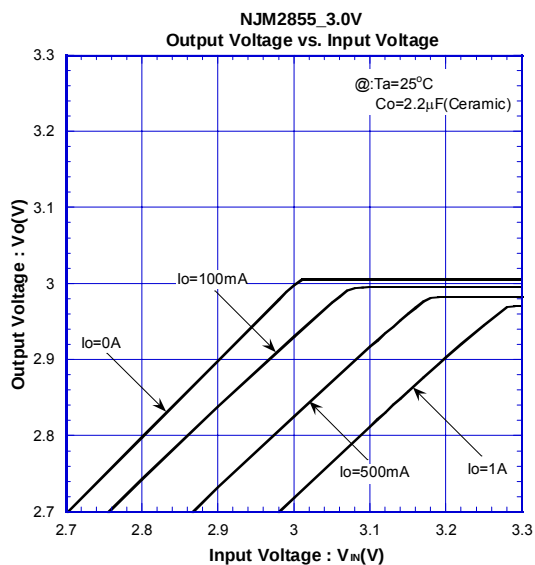
If use a smaller C_O , it may cause excess output noise or oscillation of the regulator due to lack of the phase compensation. Therefore, use C_O with the recommended capacitance or greater value and connect between V_O terminal and GND terminal with minimal wiring.

The recommended capacitance depends on the output voltage. Low voltage regulator requires greater value of the C_O . Thus, check the recommended capacitance for each output voltage.

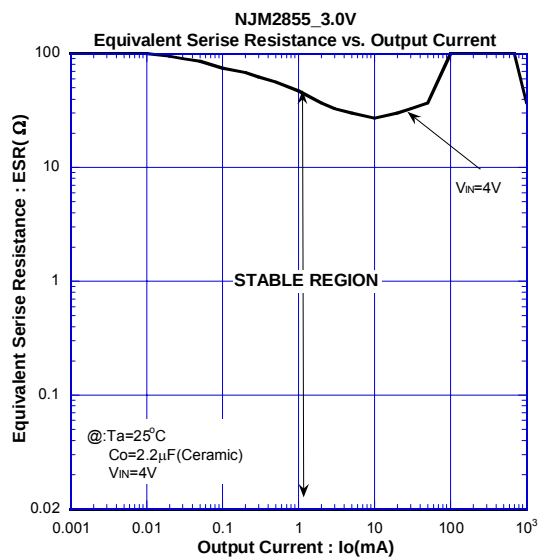
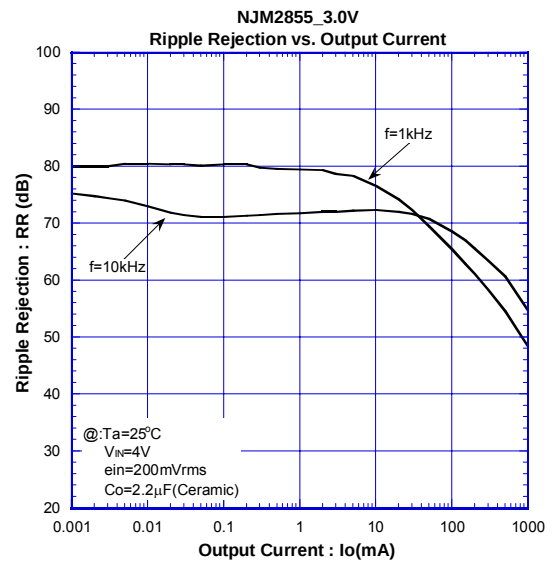
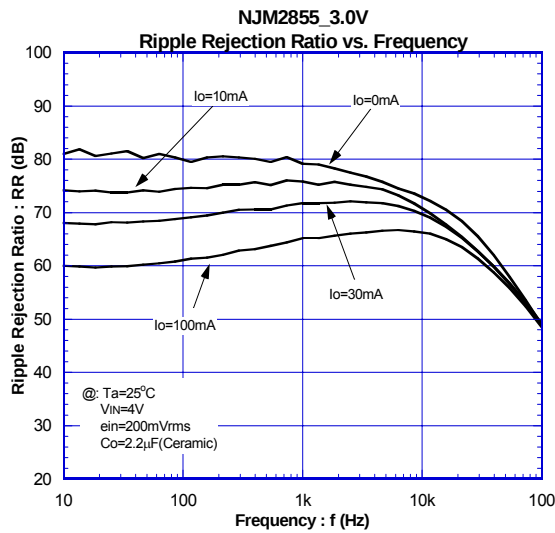
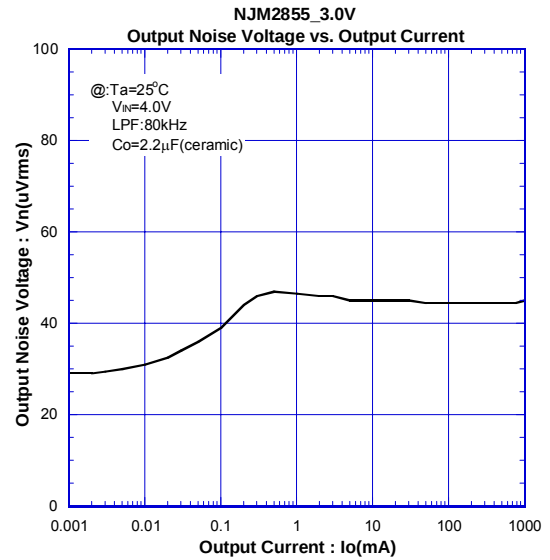
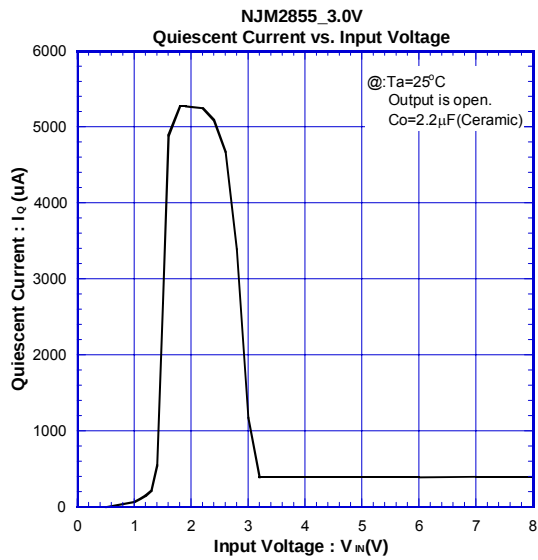
Use of a greater C_O reduces output noise and ripple output, and also improves transient response of the output voltage against rapid load change.

This product is designed to work with any capacitor including a low ESR capacitor for the C_O ; however, refer "Equivalent Series Resistance vs. Output Current" and choose suitable capacitor.

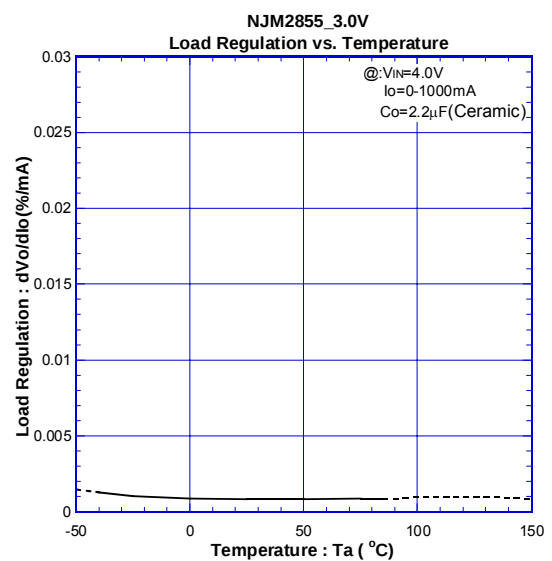
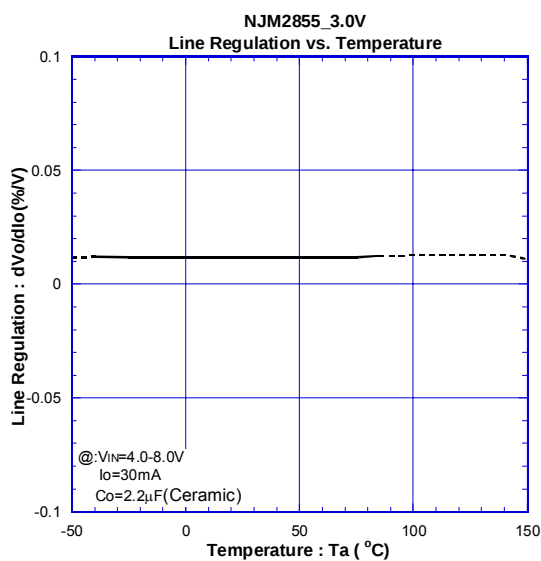
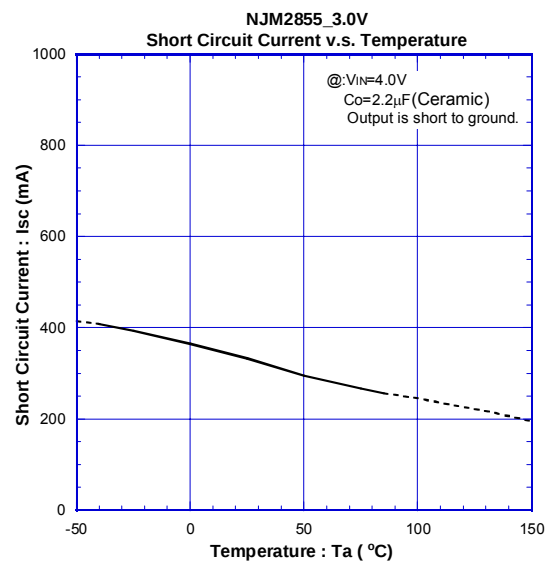
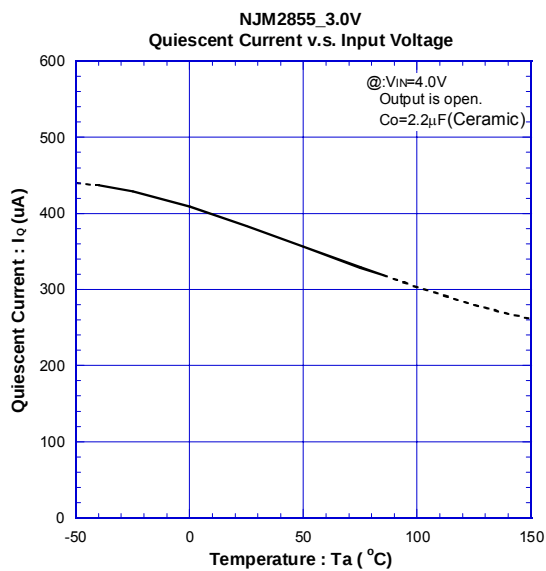
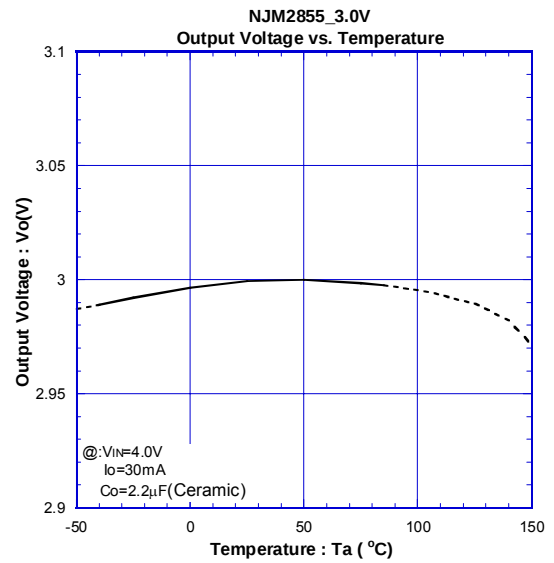
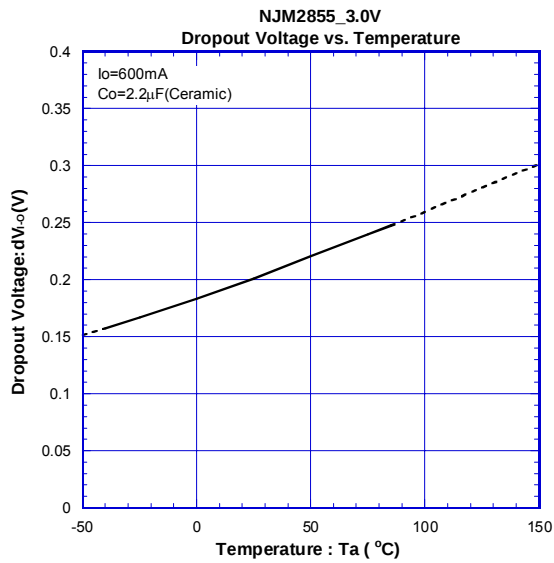
■ TYPICAL CHARACTERISTICS



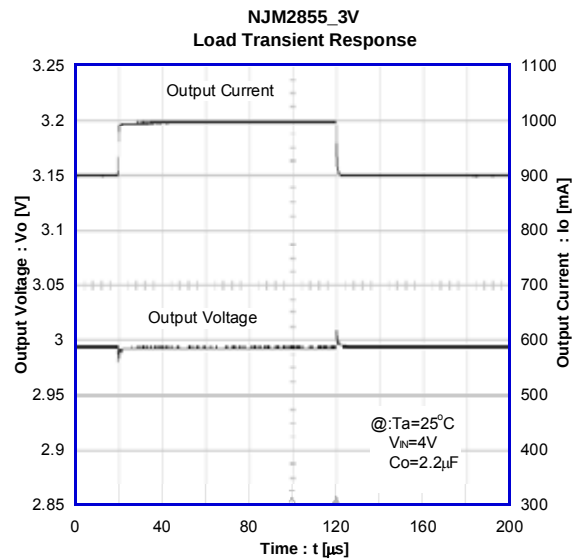
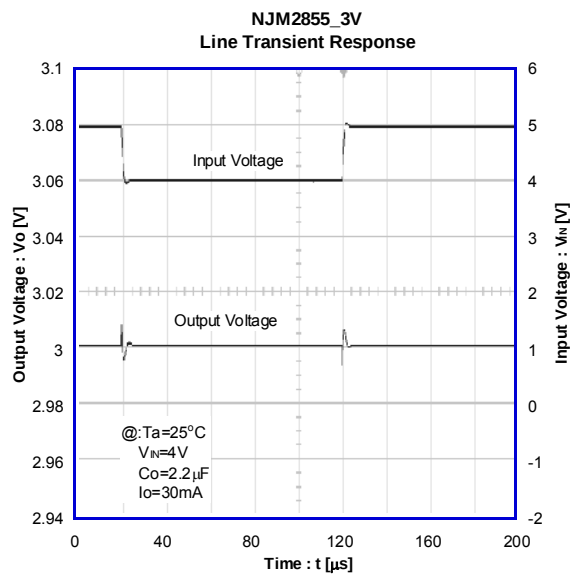
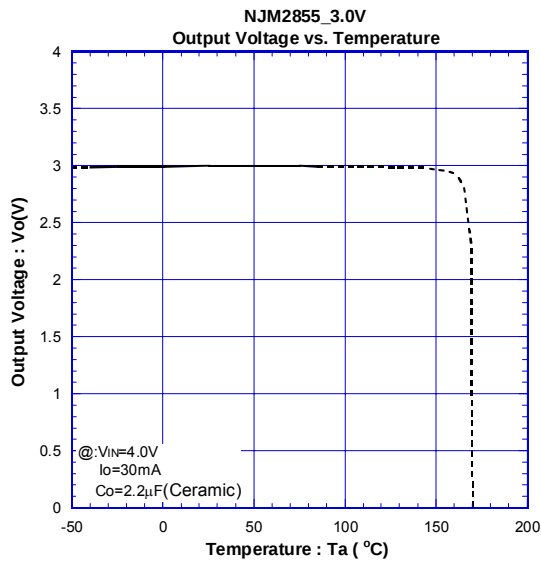
■ TYPICAL CHARACTERISTICS



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■ TYPICAL CHARACTERISTICS



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