LOW DROPOUT VOLTAGE REGULATOR

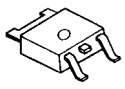
■ GENERAL DESCRIPTION

The NJM2835 is a 500mA output low dropout voltage regulator.

Advanced Bipolar technology achieves low noise, high ripple rejection and high supply voltage.

2.1V to 15.5V output voltage range, 2.2μF small decoupling capacitor, built-in noise bypass capacitor make the NJM2835 suitable for various applications.

■ PACKAGE OUTLINE

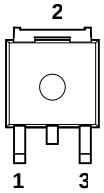


NJM2835DL1

■ FEATURES

- Output voltage options available 2.1～15.5V
- High Ripple Rejection 75dB typ. (f=1kHz,Vo=3V Version)
- Output Noise Voltage Vno=45μVrms typ.
- Output capacitor with 2.2μF ceramic capacitor (Vo≥5.1V)
- Output Current Io(max.)=500mA
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.18V typ. (Io=300mA)
- Internal Thermal Overload Protection
- Internal Over Current Protection
- Bipolar Technology
- Package Outline TO-252-3

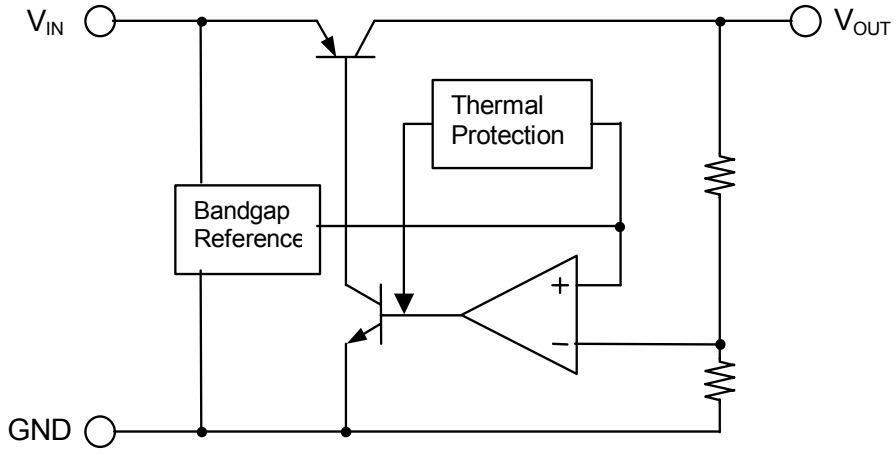
■ PIN CONFIGURATION



PIN FUNCTION
1.V_{IN}
2.GND
3.V_{OUT}

NJM2835DL1

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	V_{OUT}	Device Name	V_{OUT}
NJM2835DL1-21	2.1V	NJM2835DL1-85	8.5V
NJM2835DL1-03	3.0V	NJM2835DL1-12	12.0V
NJM2835DL1-05	5.0V	NJM2835DL1-15	15.0V

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+20	V
Power Dissipation	P_D	10(Tc≤25°C) 1(Ta≤25°C)	W
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40 ~ +150	°C

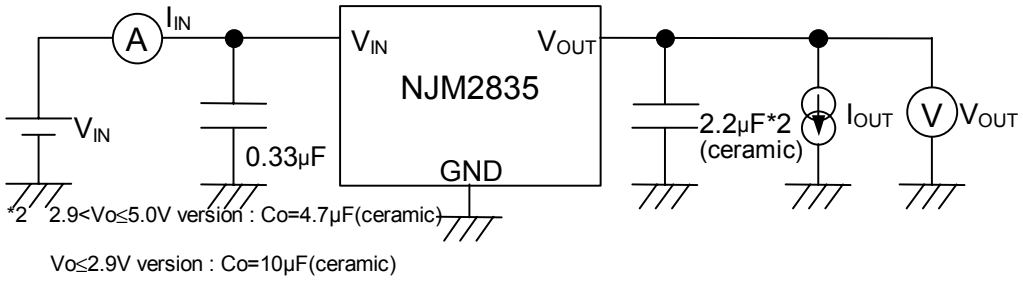
■ ELECTRICAL CHARACTERISTICS

($V_{IN=}$ Vo+1V, C_{IN}=0.33μF, Co=2.2μF (2.9V＜Vo≦5V:Co=4.7μF,Vo≦2.9V:Co=10μF),Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION		MIN	TYP	MAX	UNIT
Output Voltage	Vo	Io=30mA		-1.0%	-	+1.0%	V
Quiescent Current	I_Q	Io=0mA	Vo≤5V Version	-	200	300	μA
			5V<Vo≤10V Version	-	215	315	μA
			10V<Vo≤15V Version	-	230	330	μA
Output Current	Io	Vo-0.3V		500	650	-	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V ~ Vo+6V(Vo≤12V), V_{IN}=Vo+1V ~ 18V(Vo>12V), Io=30mA		-	-	0.10	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0 ~ 500mA		-	-	0.007	%/mA
Dropout Voltage	ΔV_{I-O}	Io=300mA		-	0.18	0.28	V
Ripple Rejection	RR	ein=200mVrms,f=1kHz,Io=10mA Vo=3V Version		-	75	-	dB
Average Temperature Coefficient of Output Voltage	$\Delta Vo/\Delta Ta$	Ta=0 ~ 85°C, Io=10mA		-	± 50	-	ppm/°C
Output Noise Voltage	V_{NO}	f=10Hz ~ 80kHz, Io=10mA, Vo=3V Version		-	45	-	μVrms
Input Voltage	V_{IN}			-	-	18	V

(*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.

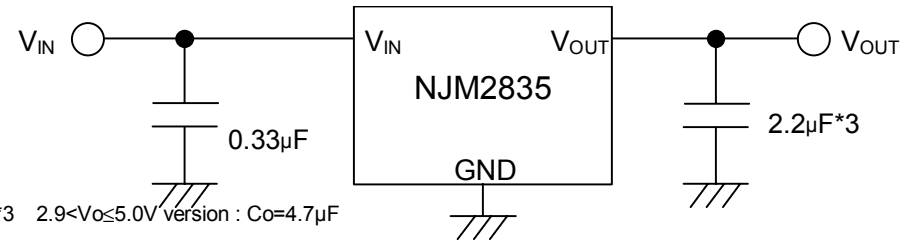
■ TEST CIRCUIT



*2 2.9<Vo≤5.0V version : Co=4.7μF(ceramic)

Vo≤2.9V version : Co=10μF(ceramic)

■ TYPICAL APPLICATION



*3 2.9<Vo≤5.0V version : Co=4.7μF

Vo≤2.9V version : Co=10μF

∗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.

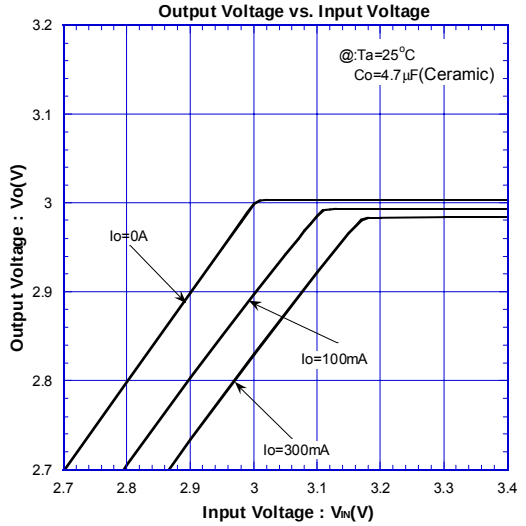
Use the C_{IN} value of 0.33μF greater to avoid the problem.

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

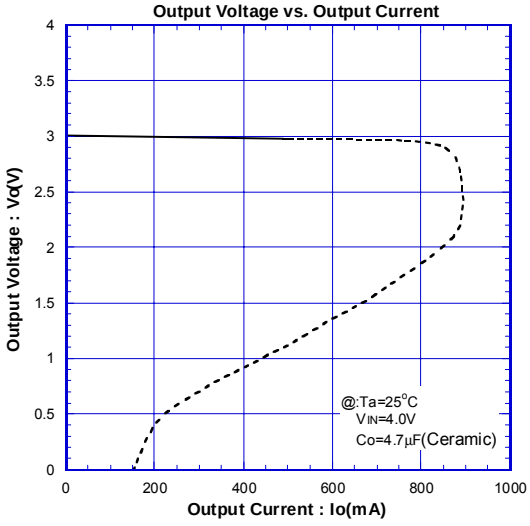
■ TYPICAL CHARACTERISTICS

●DC CHARACTERISTICS (3V Version)

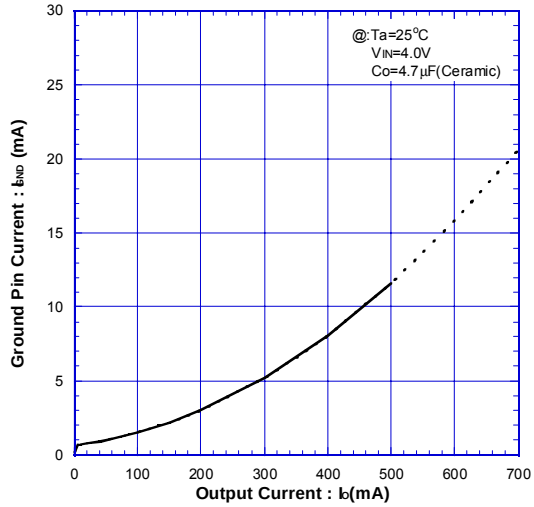
NJM2835_3.0V
Output Voltage vs. Input Voltage



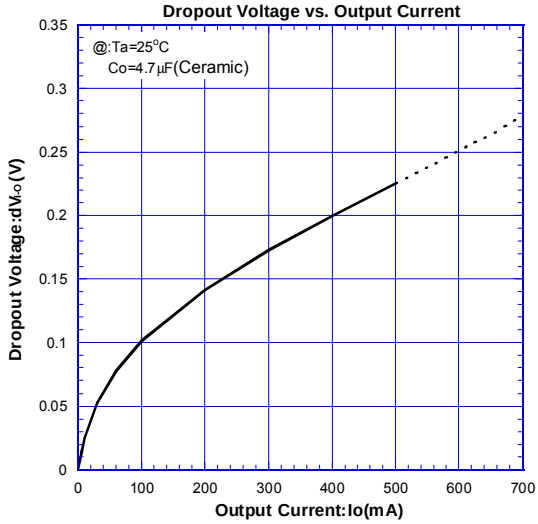
NJM2835_3.0V
Output Voltage vs. Output Current



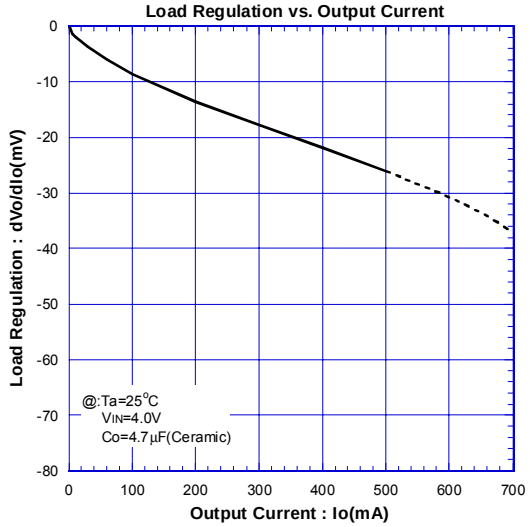
NJM2835_3.0V
Ground Pin Current v.s. Output Current



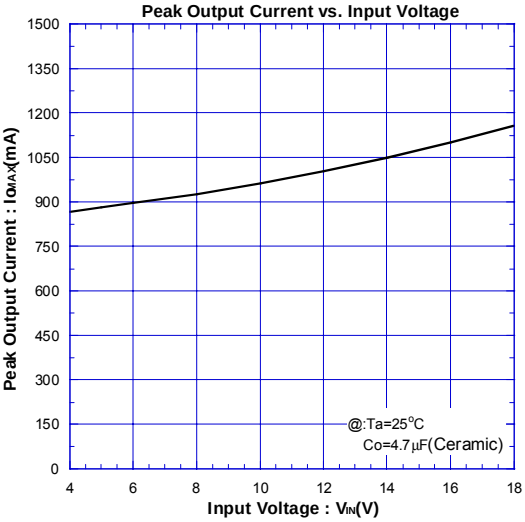
NJM2835_3.0V
Dropout Voltage vs. Output Current



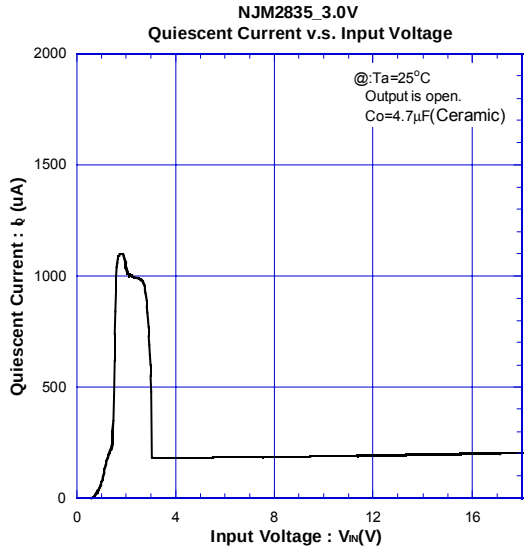
NJM2835_3.0V
Load Regulation vs. Output Current



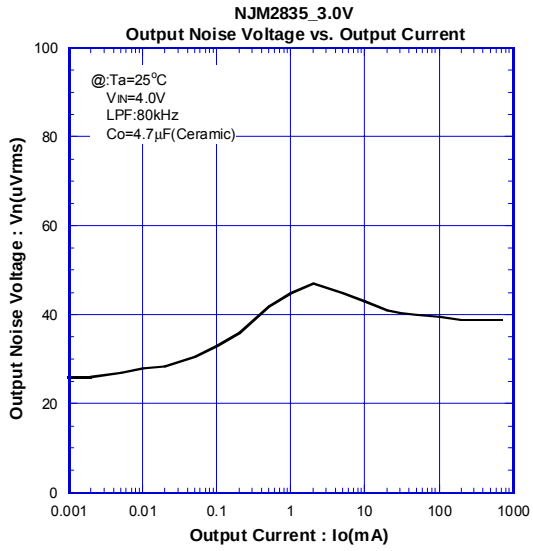
NJM2835_3.0V
Peak Output Current vs. Input Voltage

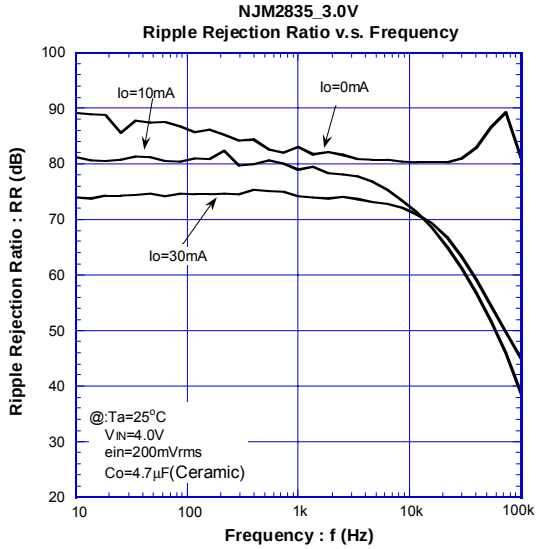


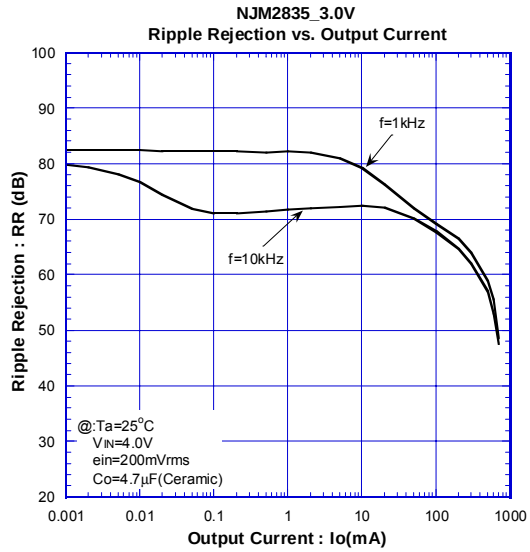
●DC CHARACTERISTICS (3V Version)

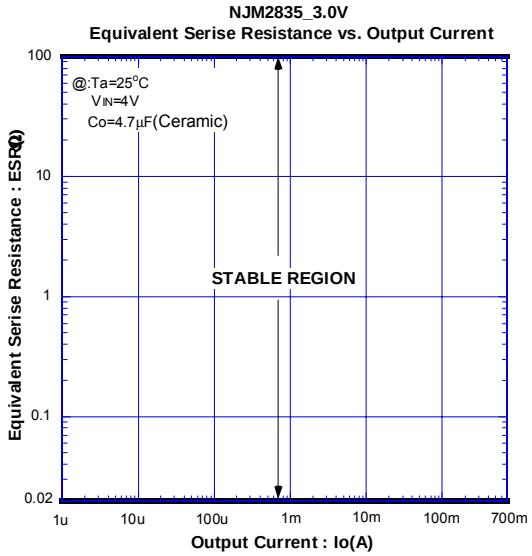


●AC CHARACTERISTICS (3V Version)





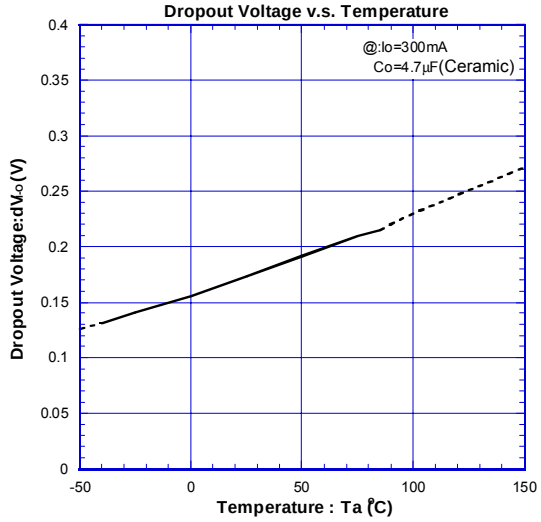




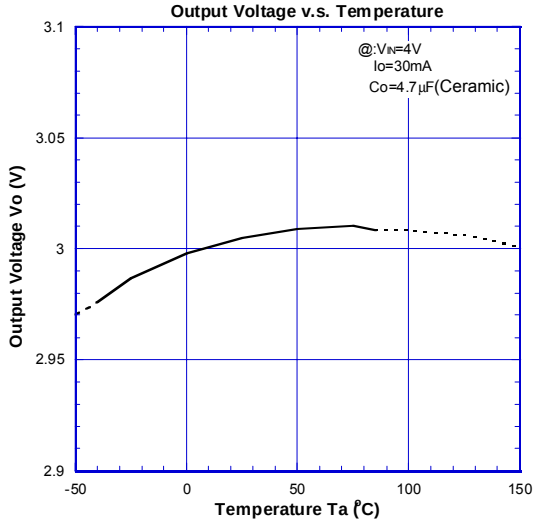
■ TYPICAL CHARACTERISTICS

●TEMPERATURE CHARACTERISTICS (3V Version)

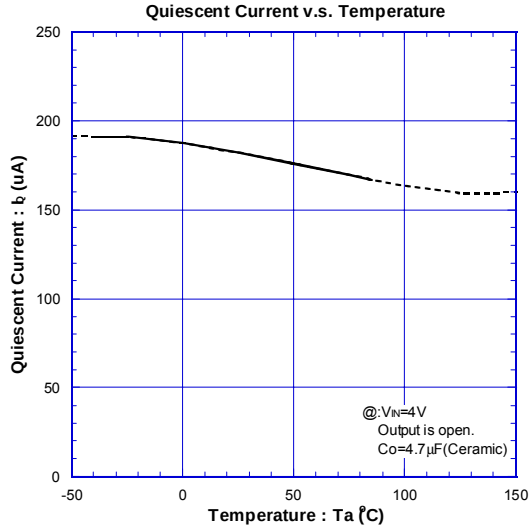
NJM2835_3.0V
Dropout Voltage v.s. Temperature



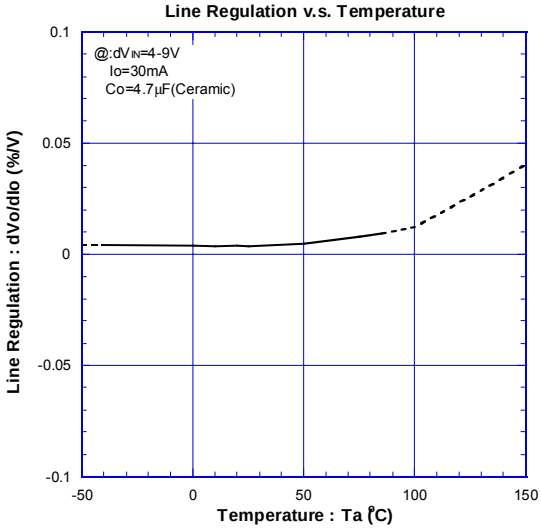
NJM2835_3.0V
Output Voltage v.s. Temperature



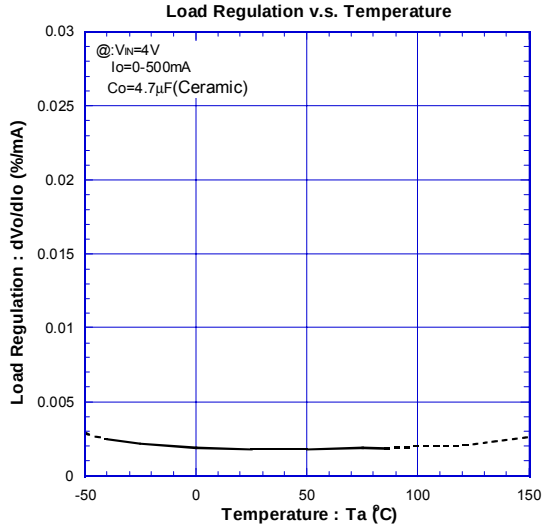
NJM2835_3.0V
Quiescent Current v.s. Temperature



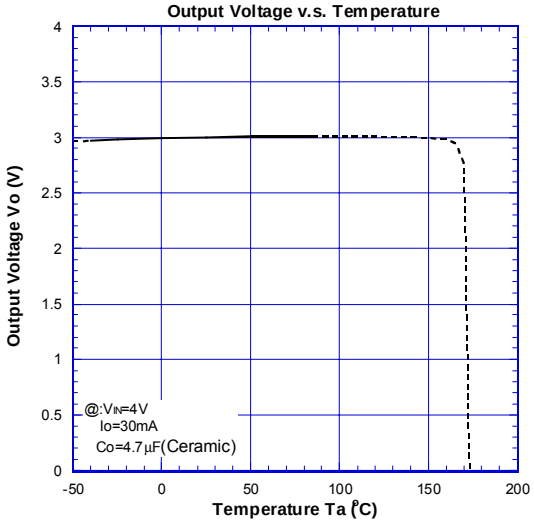
NJM2835_3.0V
Line Regulation v.s. Temperature



NJM2835_3.0V
Load Regulation v.s. Temperature

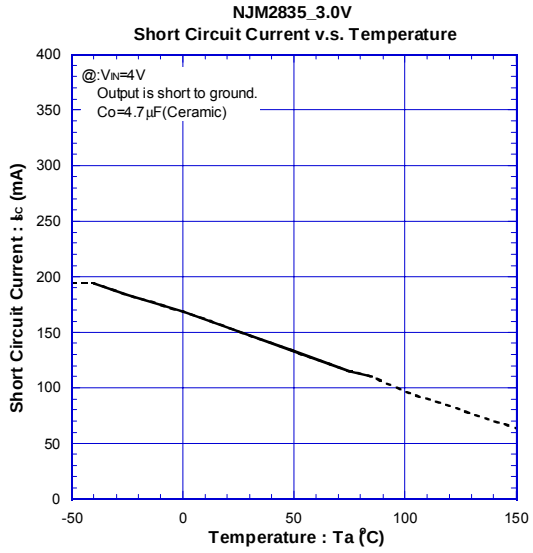


NJM2835_3.0V
Output Voltage v.s. Temperature



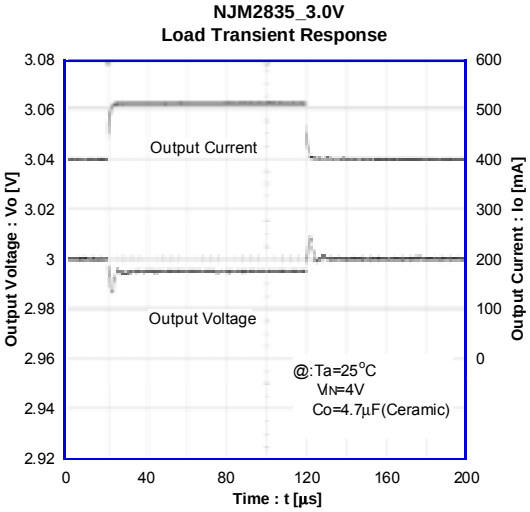
■ TYPICAL CHARACTERISTICS

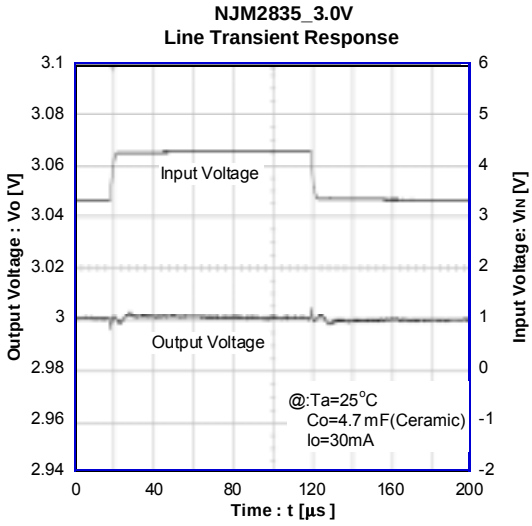
●TEMPERATURE CHARACTERISTICS (3V Version)



■ TYPICAL CHARACTERISTICS

●TRANSIENT RESPONSE (3V Version)

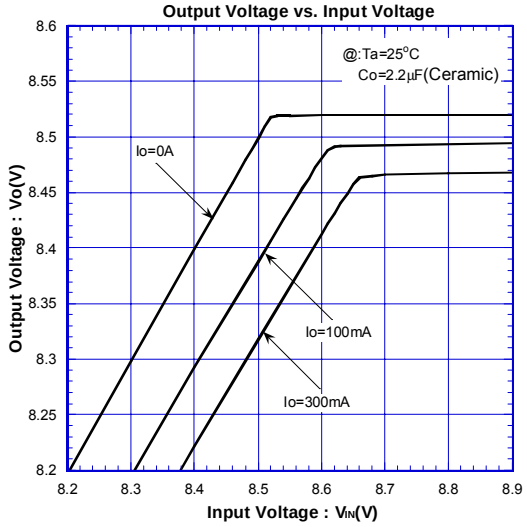




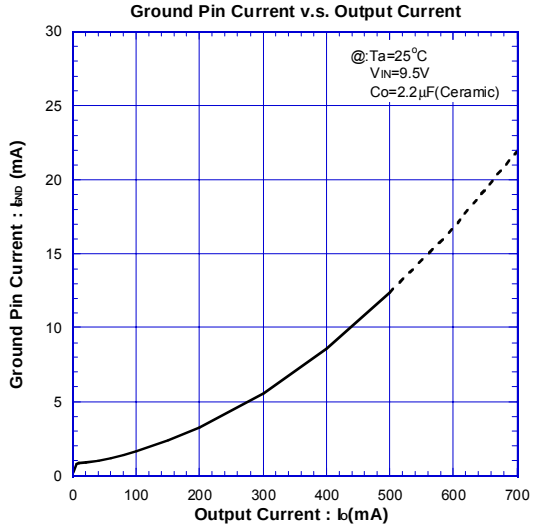
■ TYPICAL CHARACTERISTICS

●DC CHARACTERISTICS (8.5V Version)

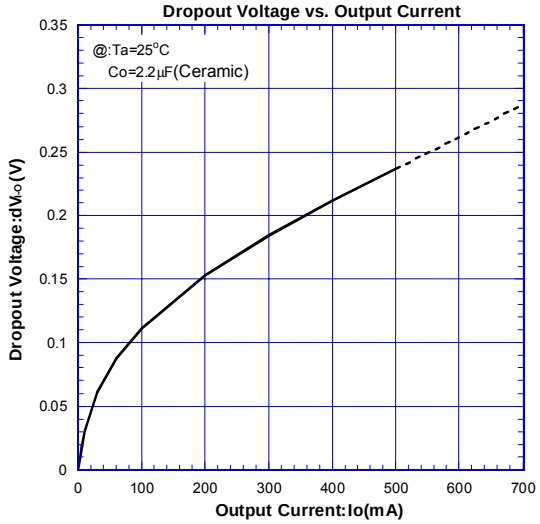
NJM2835_8.5V
Output Voltage vs. Input Voltage



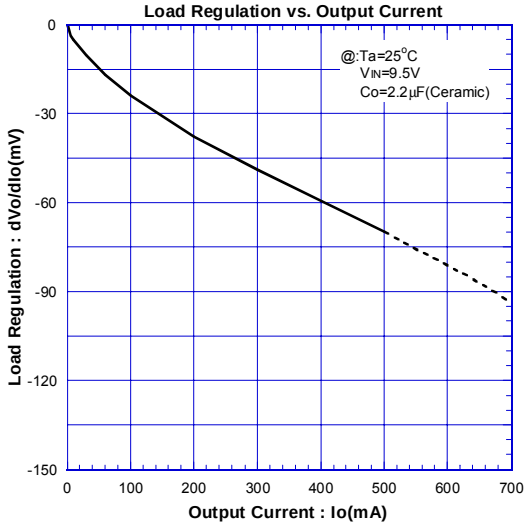
NJM2835_8.5V
Ground Pin Current v.s. Output Current



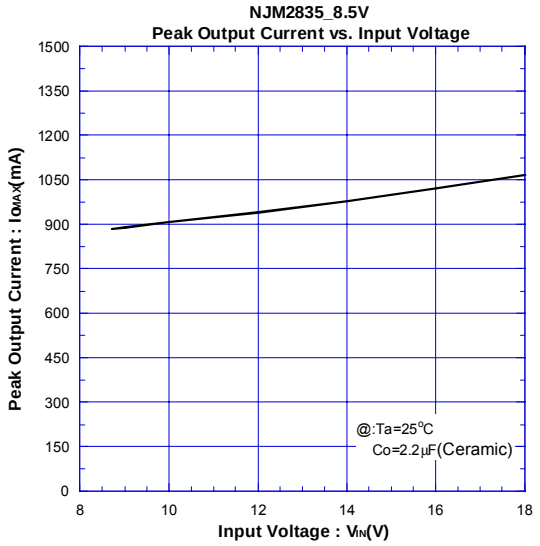
NJM2835_8.5V
Dropout Voltage vs. Output Current



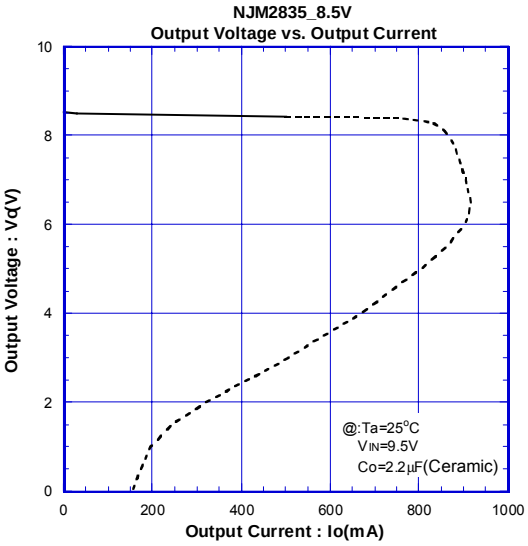
NJM2830_8.5V
Load Regulation vs. Output Current



NJM2835_8.5V
Peak Output Current vs. Input Voltage

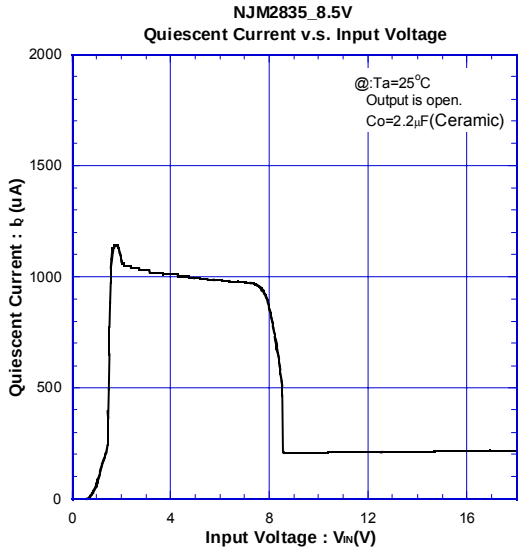


NJM2835_8.5V
Output Voltage vs. Output Current

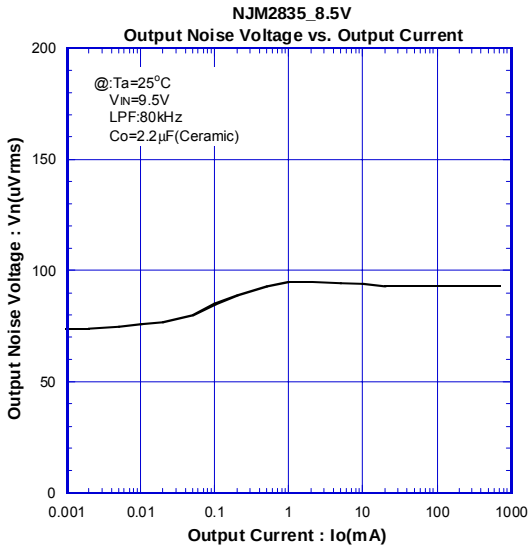


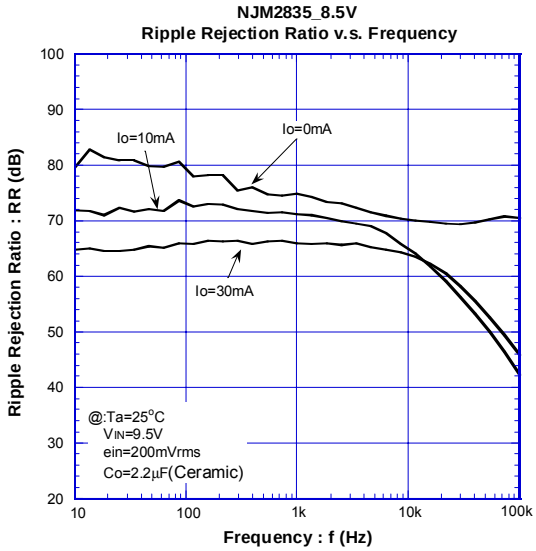
■ TYPICAL CHARACTERISTICS

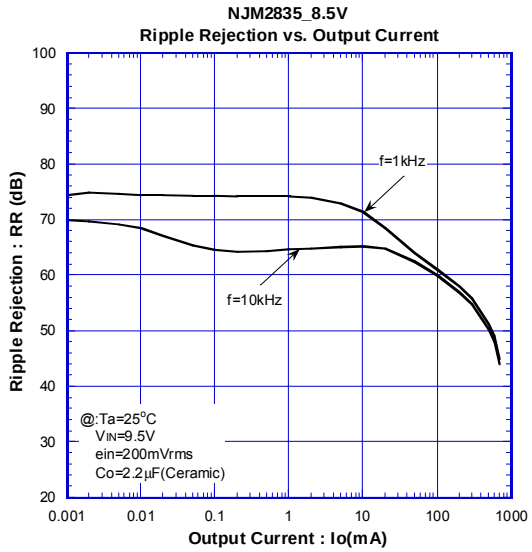
●DC CHARACTERISTICS (8.5V Version)

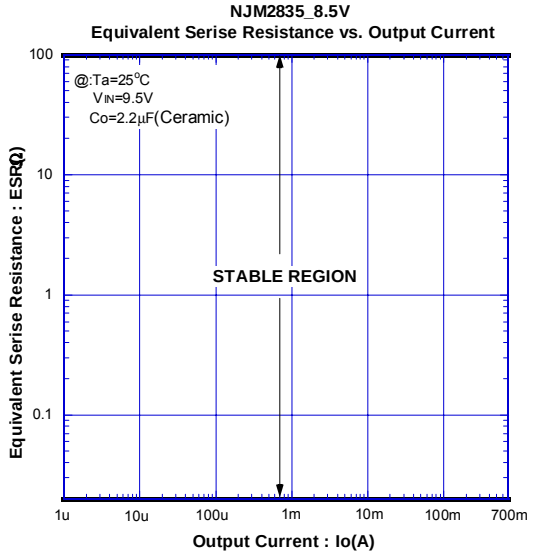


●AC CHARACTERISTICS (8.5V Version)





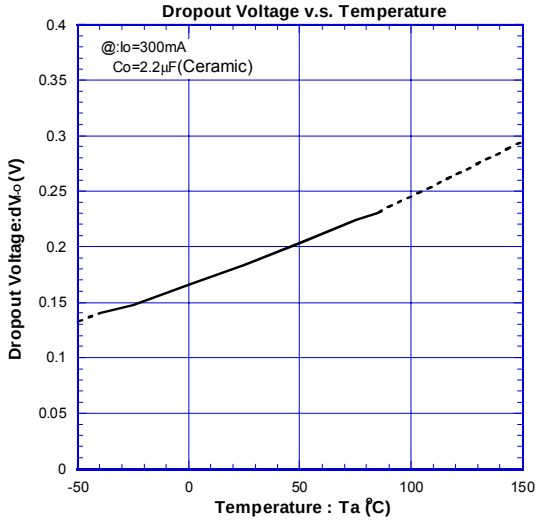




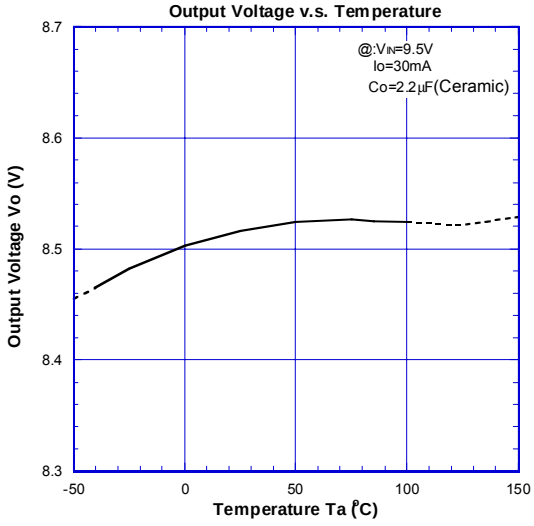
■ TYPICAL CHARACTERISTICS

●TEMPERATURE CHARACTERISTICS (8.5V Version)

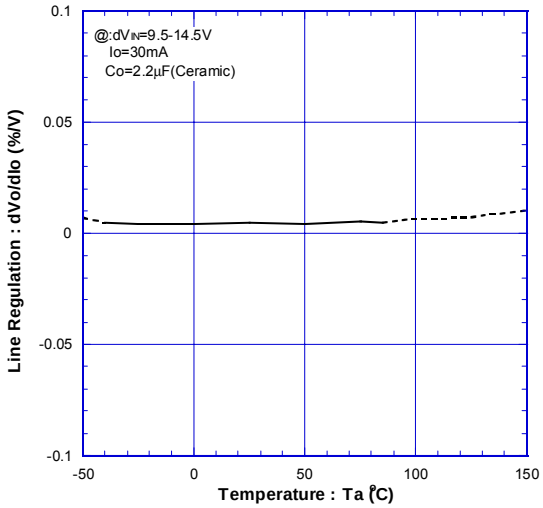
NJM2835_8.5V
Dropout Voltage v.s. Temperature



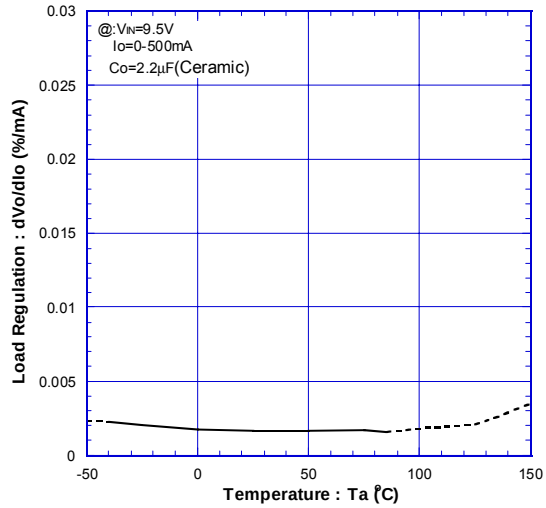
NJM2835_8.5V
Output Voltage v.s. Temperature



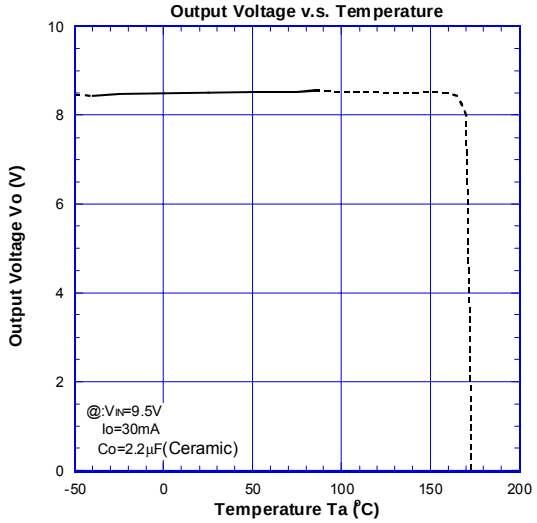
NJM2835_8.5V
Line Regulation v.s. Temperature



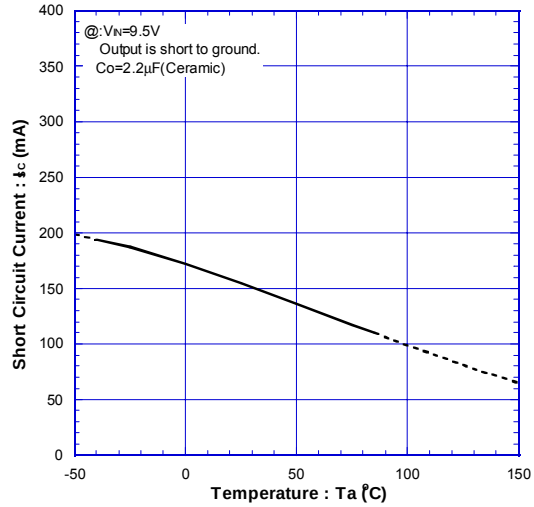
NJM2835_8.5V
Load Regulation v.s. Temperature



NJM2835_8.5V
Output Voltage v.s. Temperature

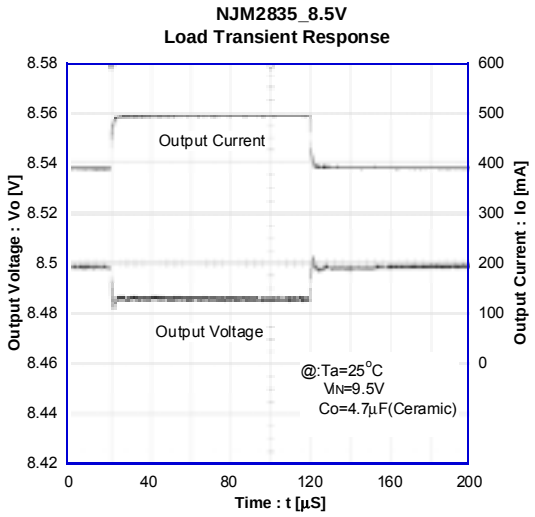


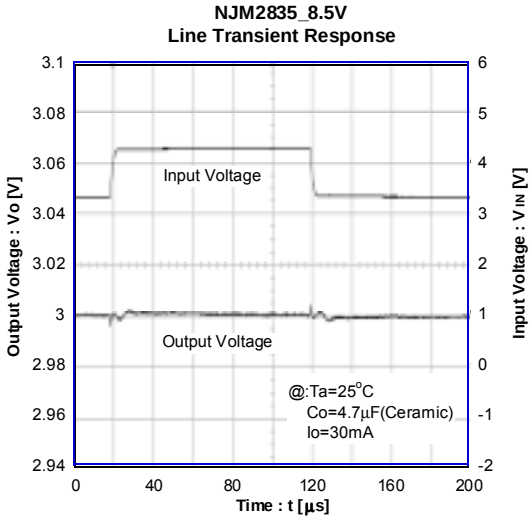
NJM2830_8.5V
Short Circuit Current v.s. Temperature



■ TYPICAL CHARACTERISTICS

●TRANSIENT RESPONSE (8.5V Version)

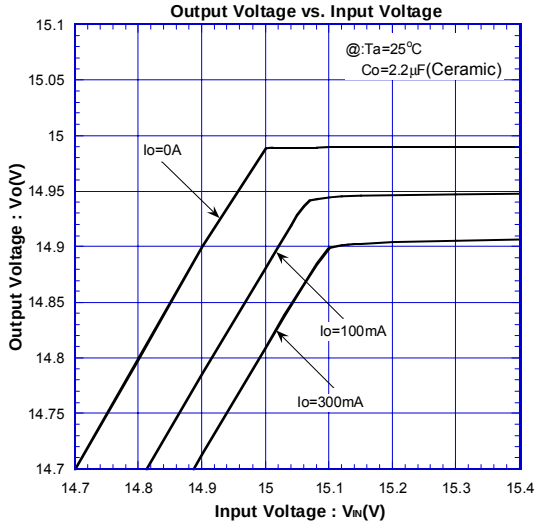




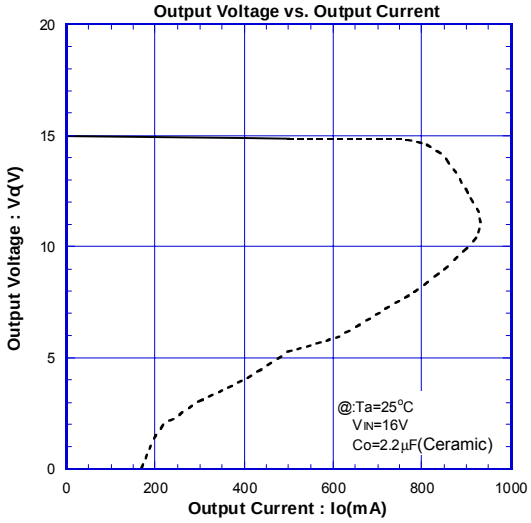
■ TYPICAL CHARACTERISTICS

●DC CHARACTERISTICS (15V Version)

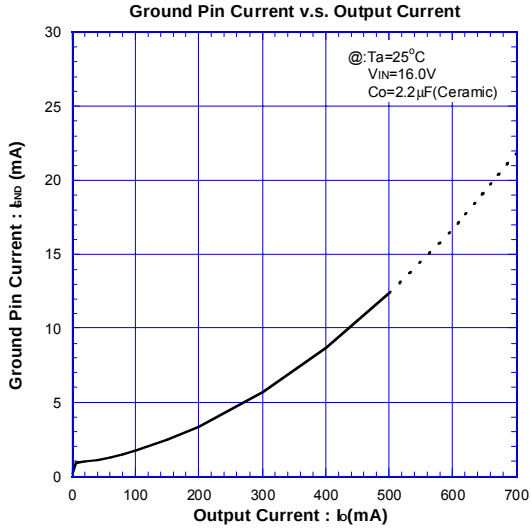
NJM2835_15V
Output Voltage vs. Input Voltage



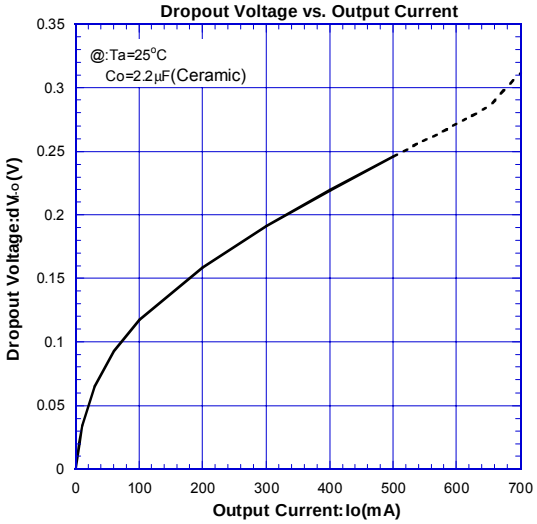
NJM2835_15V
Output Voltage vs. Output Current



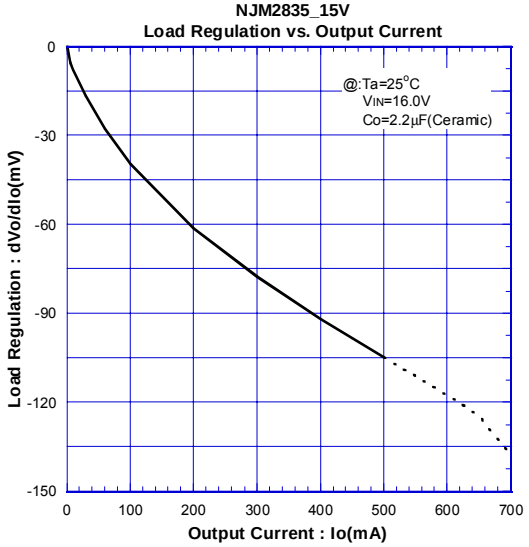
NJM2835_15V
Ground Pin Current v.s. Output Current



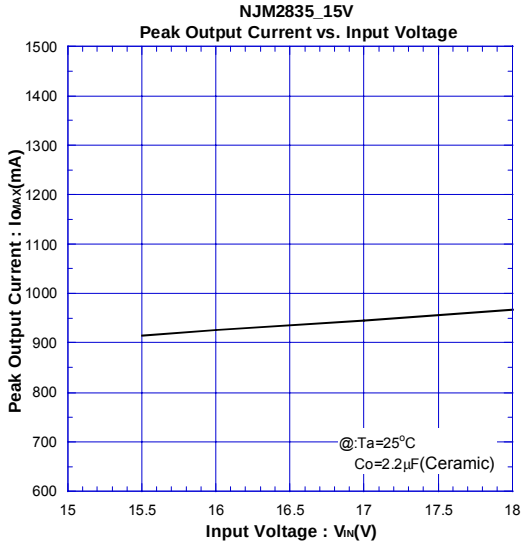
NJM2835_15V
Dropout Voltage vs. Output Current



NJM2835_15V
Load Regulation vs. Output Current

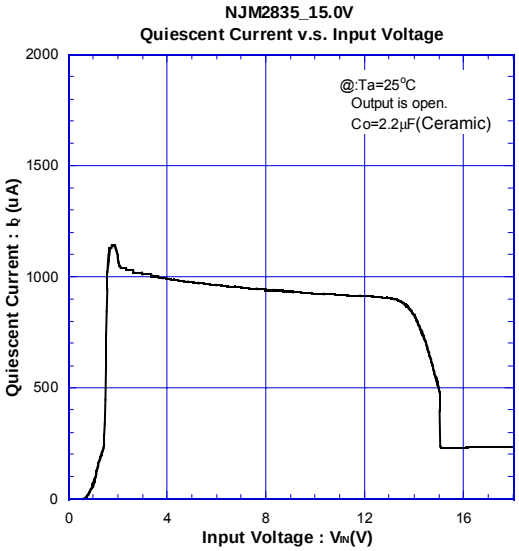


NJM2835_15V
Peak Output Current vs. Input Voltage

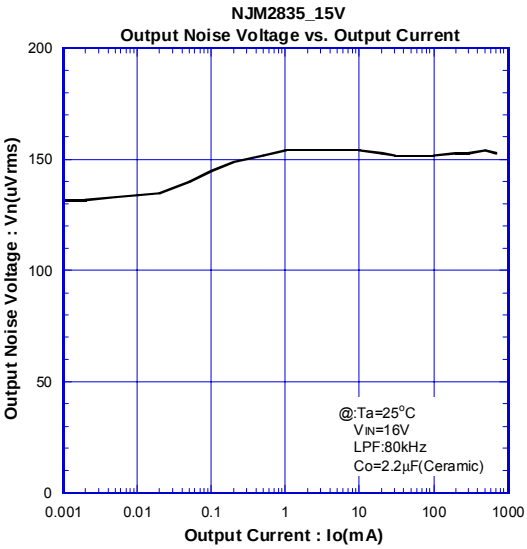


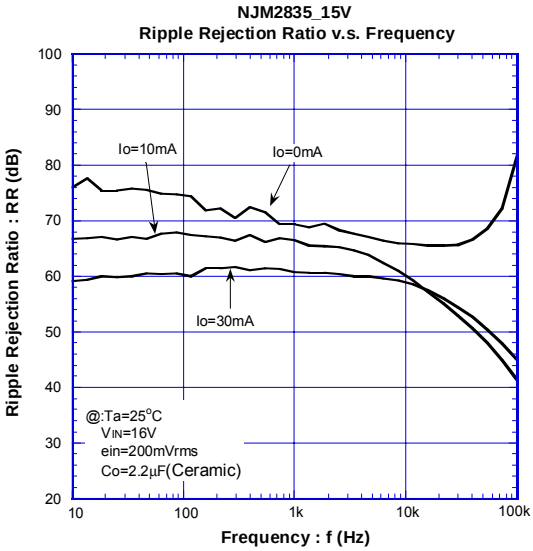
■ TYPICAL CHARACTERISTICS

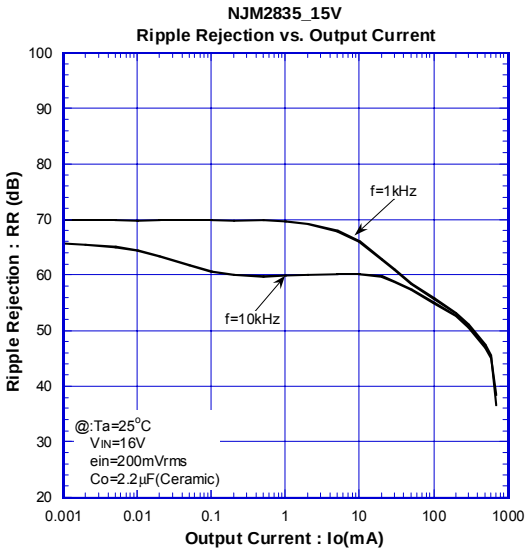
●DC CHARACTERISTICS (15V Version)

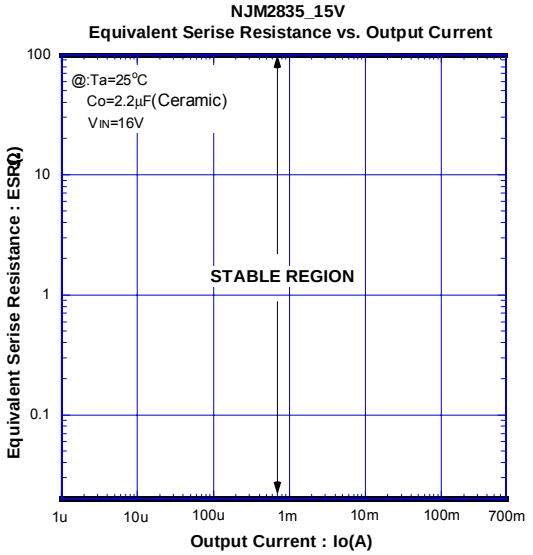


●AC CHARACTERISTICS (15V Version)





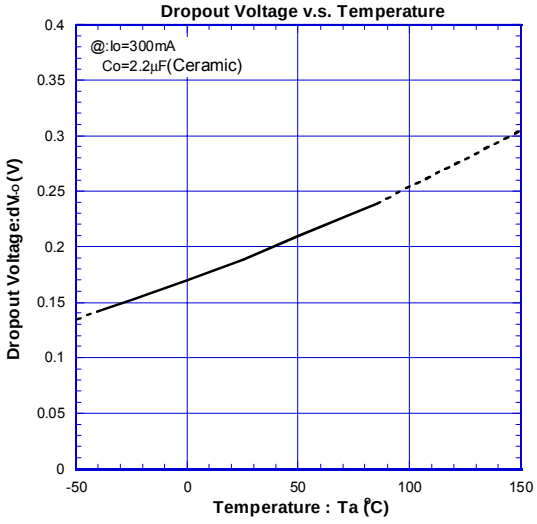




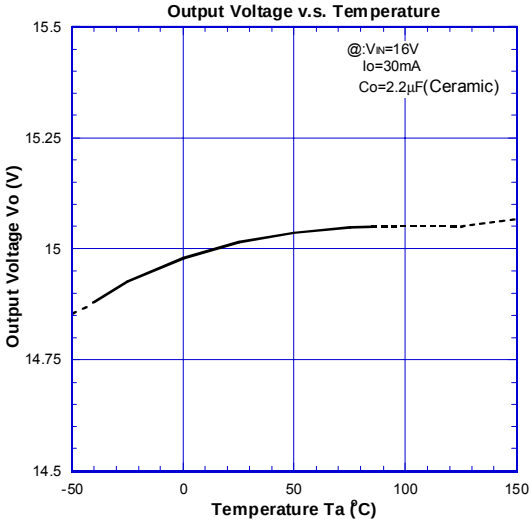
■ TYPICAL CHARACTERISTICS

●TEMPERATURE CHARACTERISTICS (15V Version)

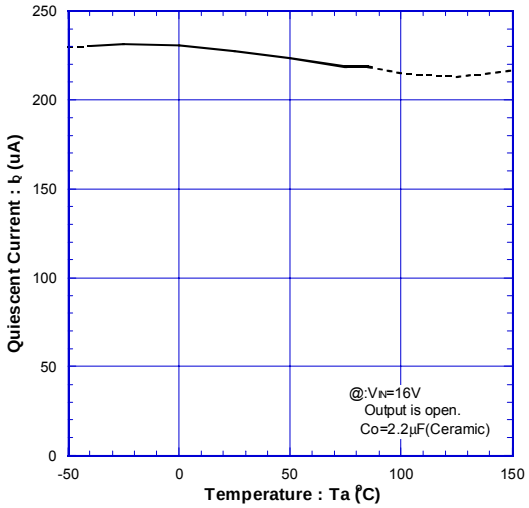
NJM2835_15V
Dropout Voltage v.s. Temperature



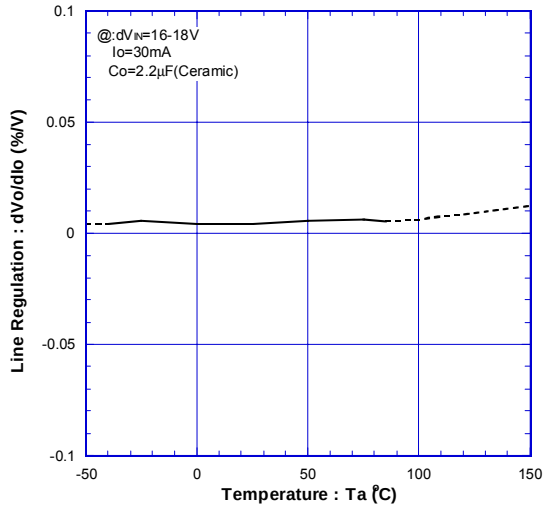
NJM2835_15V
Output Voltage v.s. Temperature



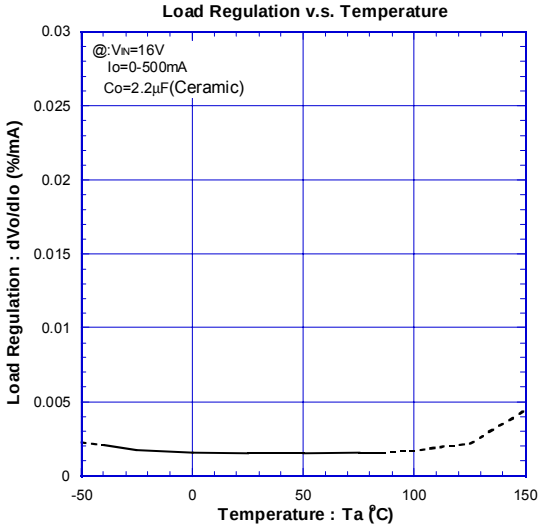
NJM2835_15V
Quiescent Current v.s. Temperature



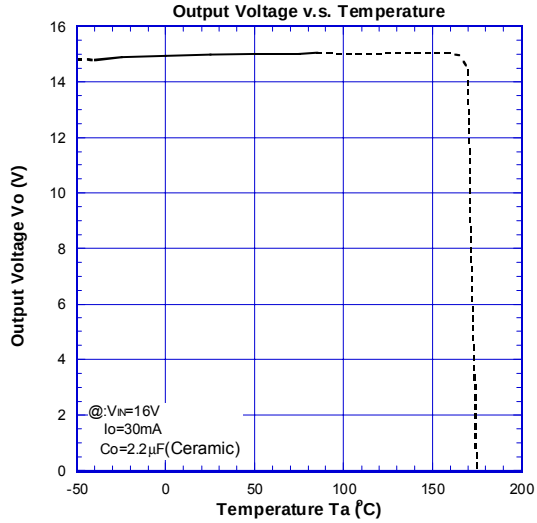
NJM2835_15V
Line Regulation v.s. Temperature



NJM2835_15V
Load Regulation v.s. Temperature

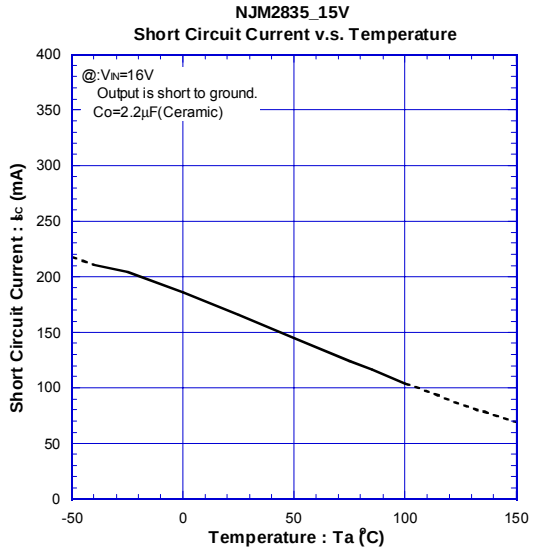


NJM2835_15V
Output Voltage v.s. Temperature



■ TYPICAL CHARACTERISTICS

●TEMPERATURE CHARACTERISTICS (15V Version)



■ TYPICAL CHARACTERISTICS

●TRANSIENT RESPONSE (15V Version)