

LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

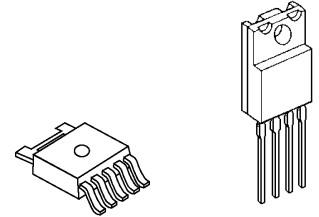
■ GENERAL DESCRIPTION

The NJM2386/88 is a general purpose low dropout voltage regulators with ON/OFF control.

The output current is up to 1.0A and dropout voltage is 0.2V typical at 500mA load.

It features high maximum input voltage of 35V for a wide application range including TV, home appliances and power modules.

■ PACKAGE OUTLINE



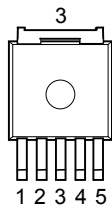
NJM2386DL3

NJM2388F

■ FEATURES

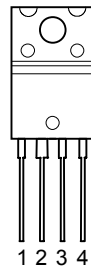
- High Maximum Input Voltage Up to 35V
- Low Dropout Voltage 0.2V typ. at $I_o=0.5A$
- Output Current $I_o(max.)=1.0A$
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Overvoltage Protection
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-5(NJM2386), TO-220F-4(NJM2388)

■ PIN CONFIGURATION



NJM2386DL3

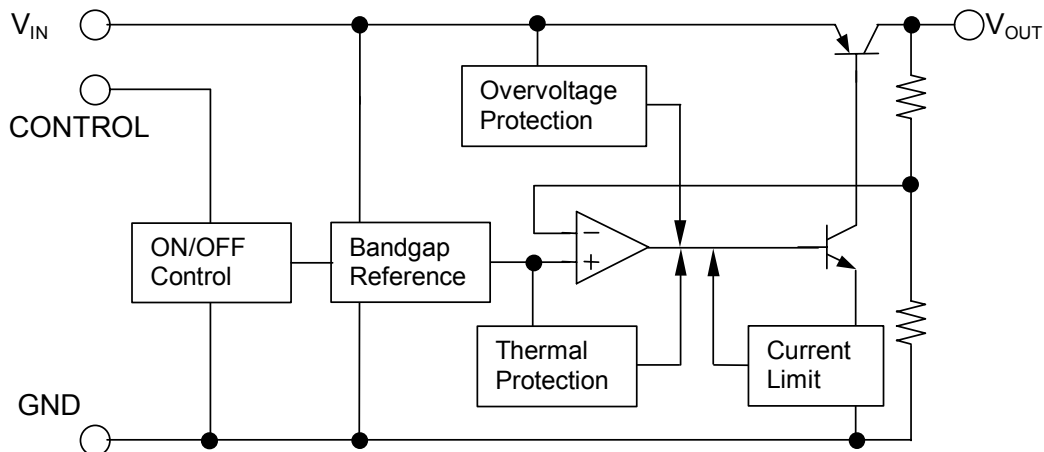
- PIN FUNCTION**
1. V_{IN}
 2. ON/OFF CONTROL
 3. V_{OUT}
 4. N.C.
 5. GND



NJM2388F

- PIN FUNCTION**
1. V_{IN}
 2. V_{OUT}
 3. GND
 4. ON/OFF CONTROL

■ EQUIVALENT CIRCUIT



NJM2386/88

■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}
NJM2386DL3-33	3.3V
NJM2386DL3-05	5.0V
NJM2386DL3-63	6.3V
NJM2386DL3-08	8.0V
NJM2386DL3-09	9.0V
NJM2386DL3-12	12.0V

Device Name	V _{OUT}
NJM2388F33	3.3V
NJM2388F05	5.0V
NJM2388F63	6.3V
NJM2388F08	8.0V
NJM2388F84	8.4V
NJM2388F09	9.0V
NJM2388F10	10.0V
NJM2388F12	12.0V

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS		UNIT
Input Voltage	V _{IN}	+35		V
Control Voltage	V _{CONT}	+35(*1)		V
Output Current	I _o	1.0		A
Power Dissipation	P _D	NJM2386	10(Tc<25°C) / 1(Ta<25°C)	W
		NJM2388	18(Tc<50°C)	
Operating Junction Temperature Range	T _j	-40 ~ +150		°C
Operating Temperature Range	T _{opr}	-40 ~ +85		°C
Storage Temperature Range	T _{stg}	-50 ~ +150		°C

(*1): When input voltage is less than +35V, the absolute maximum control voltage is equal to the input voltage.

■ ELECTRICAL CHARACTERISTICS (V_{IN}=V_O+1V, I_o=0.5A, C_{IN}=0.33μF, C_O=22μF, Ta=25°C)

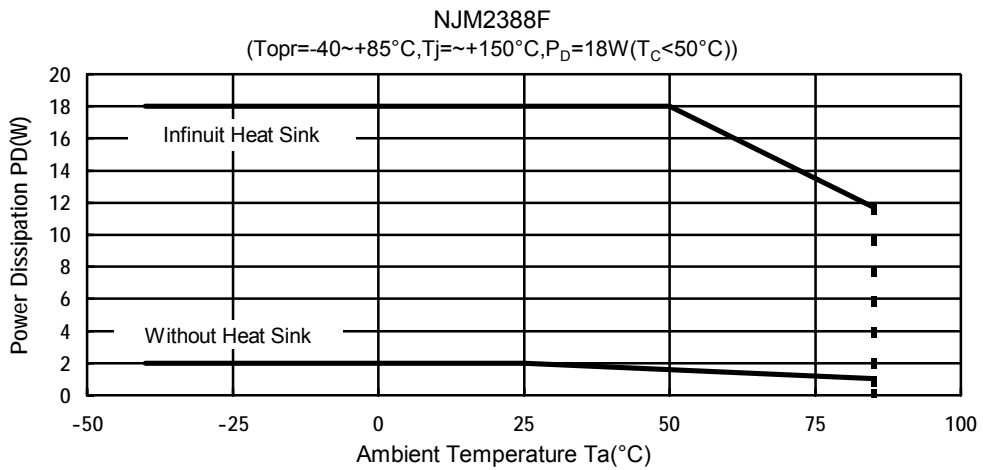
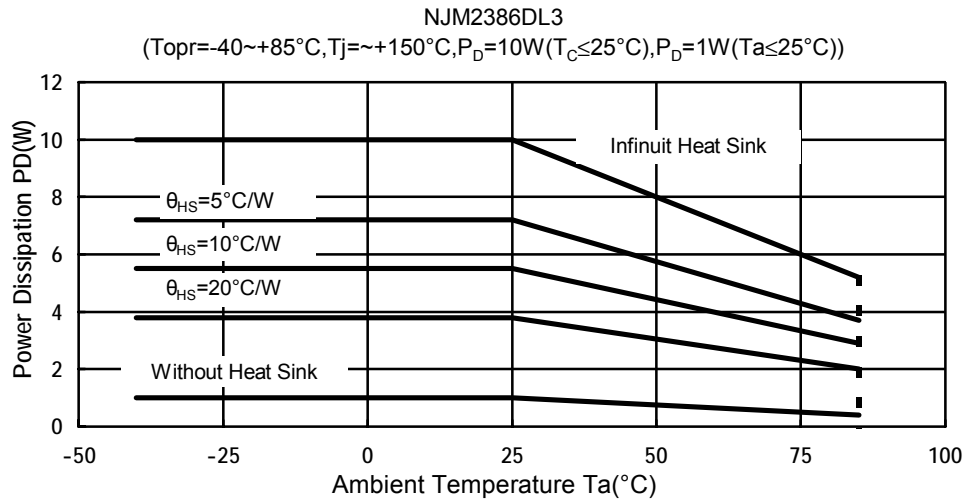
Measurement is to be conducted is pulse testing.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _o	V _{IN} =V _O +1V	-2%	-	+2%	V
Line Regulation	ΔV _o /ΔV _{IN}	V _{IN} =V _O +1V ~ V _O +17V	-	0.04	0.16	%/V
Load Regulation	ΔV _o /ΔI _o	V _{IN} =V _O +2V, I _o =0A ~ 1.0A	-	0.2	1.4	%/A
Average Temperature Coefficient of Output Voltage	ΔV _o /ΔT	T _j =0 ~ +125°C	-	±0.02	-	%/°C
Quiescent Current	I _Q	I _o =0A	-	-	5	mA
Quiescent Current at Control OFF(*2)	I _{Q(OFF)}	V _{CONT} =0V	-	-	500	μA
Dropout Voltage	ΔV _{I-O}	I _o =0.5A	-	0.2	0.5	V
Ripple Rejection	NJM238**33	RR V _{IN} =V _O +2V, e _{in} =0.5Vrms, f=120Hz	54	67	-	dB
	NJM238**05		54	67	-	
	NJM238**63		54	67	-	
	NJM238**08		52	65	-	
	NJM238**84		52	65	-	
	NJM238**09		52	65	-	
	NJM238**10		50	63	-	
NJM238**12	50	63	-			
ON Control Voltage	V _{CONT(ON)}		2.0(*3)	-	-	V
OFF Control Voltage	V _{CONT(OFF)}		-	-	0.4	V
ON Control Current	I _{CONT(ON)}	V _C =2.7V	-	-	20	μA
OFF Control Current	I _{CONT(OFF)}	V _C =0.4V	-	-	-20	μA

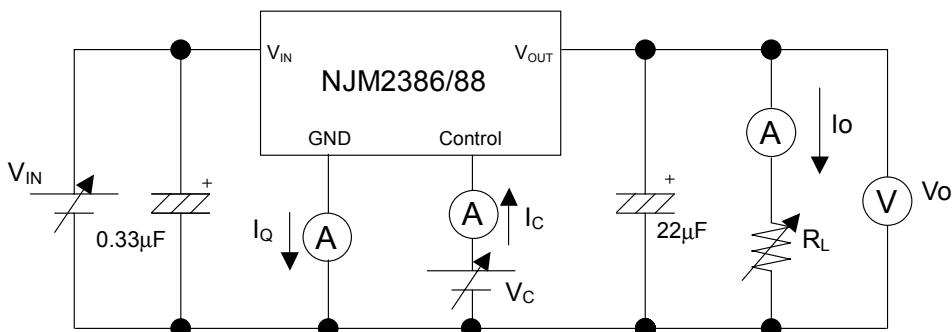
(*2) This electrical characteristics is applied to NJM2388.

(*3): When ON/OFF CONTROL Terminal is open, Output Voltage is ON.

POWER DISSIPATION vs. AMBIENT TEMPERATURE



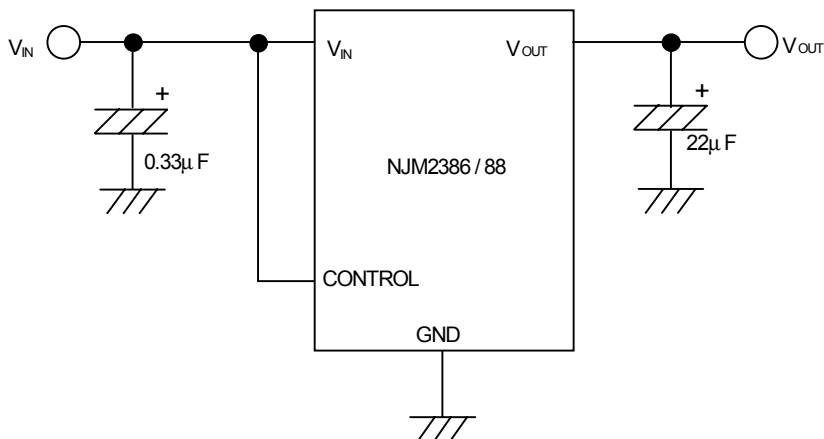
TEST CIRCUIT



NJM2386/88

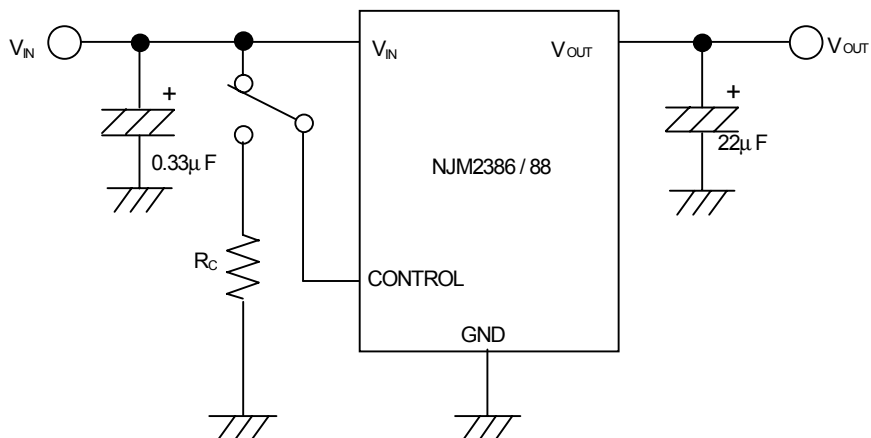
■ TYPICAL APPLICATION

① In the case where ON/OFF Control is not required:



Connect control terminal to V_{IN} terminal or open.

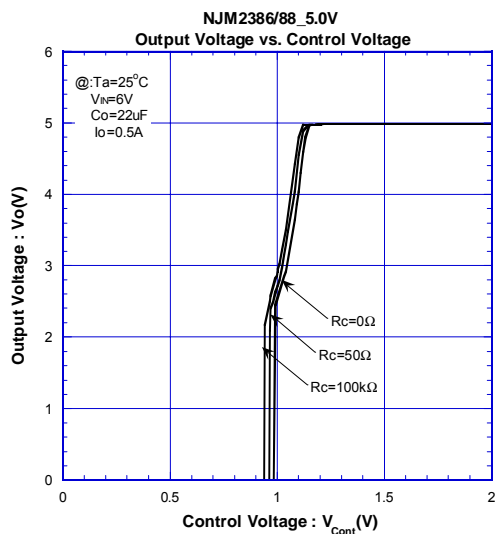
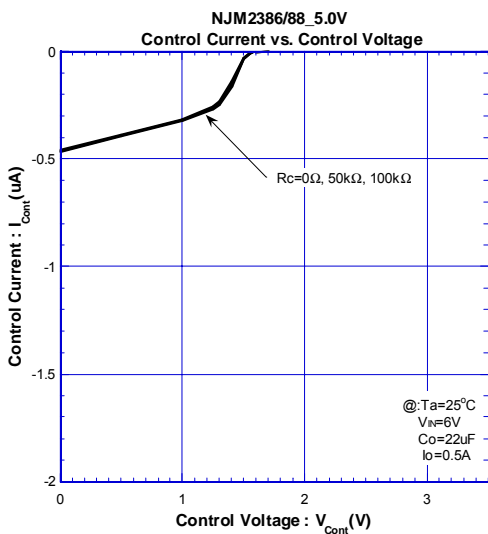
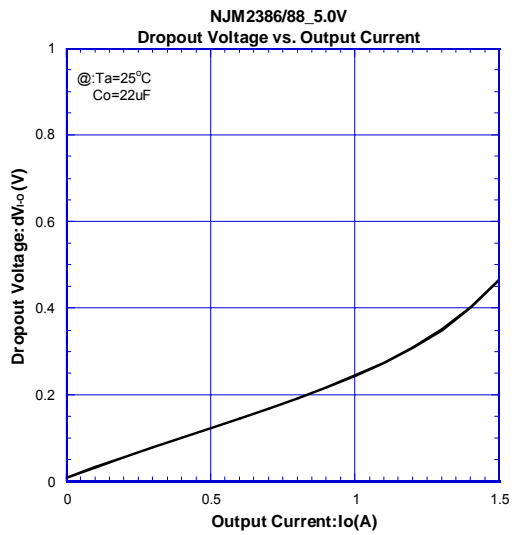
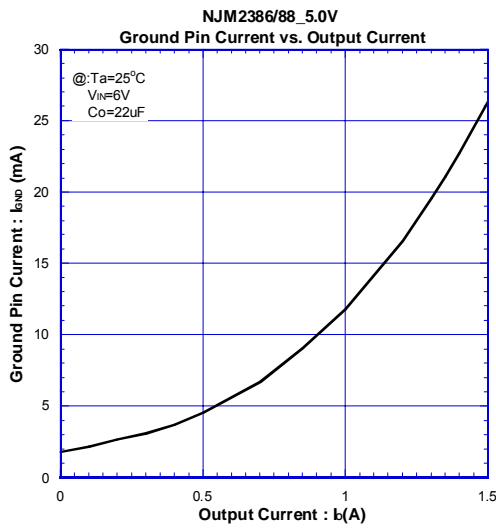
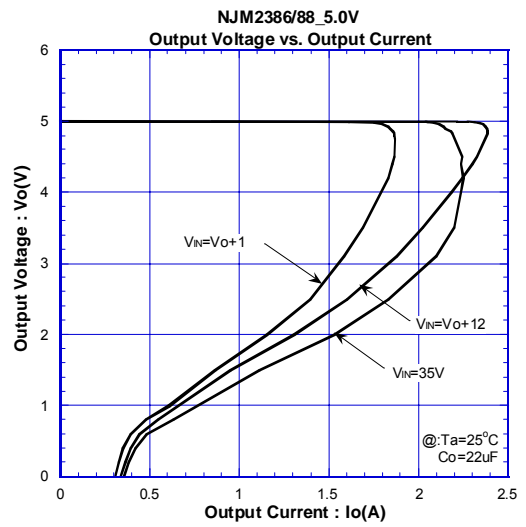
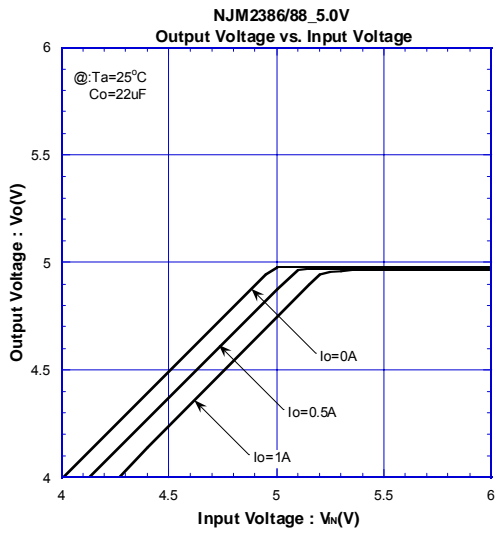
② In use of ON/OFF CONTROL:



State of control terminal:

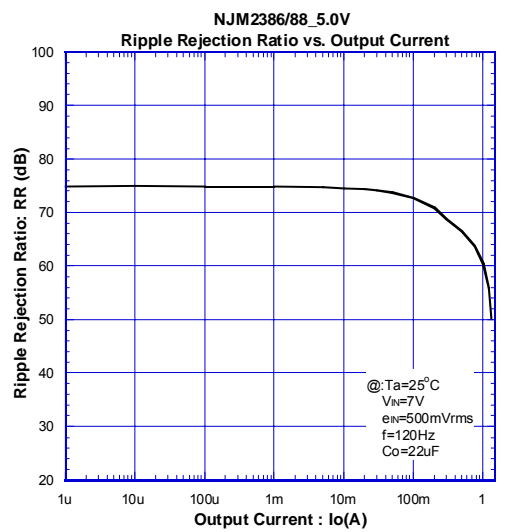
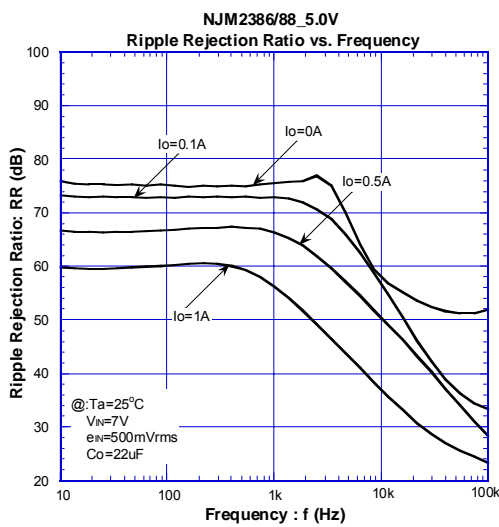
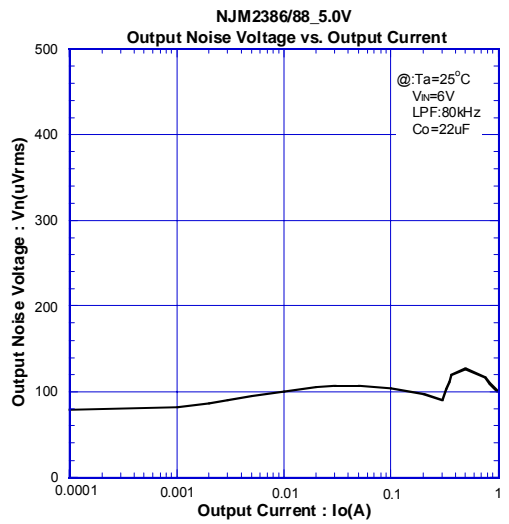
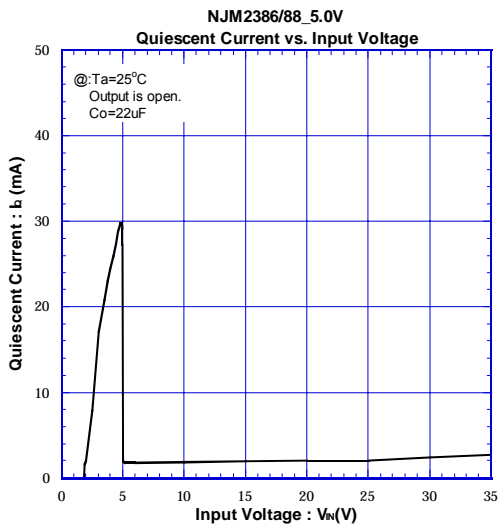
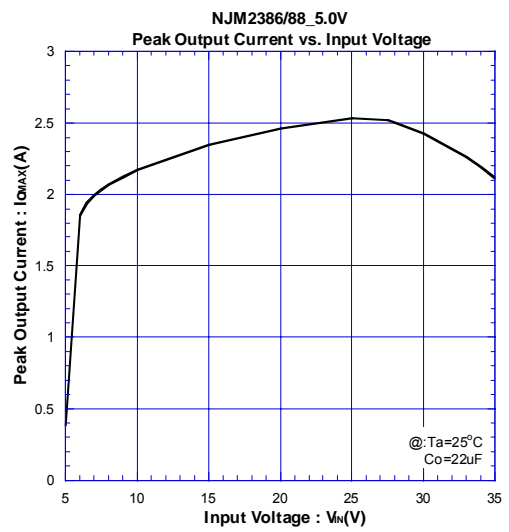
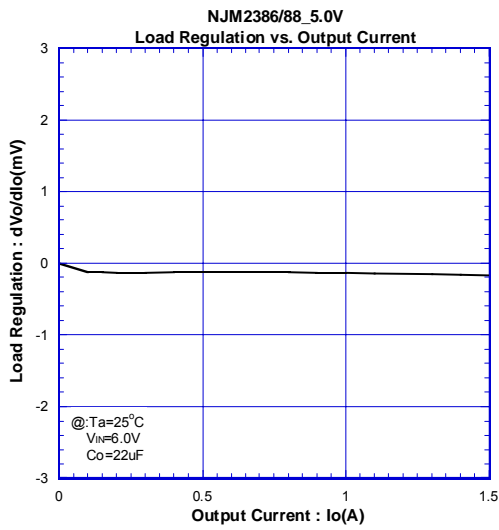
- “H” or “open” → output is enabled.
- “L” → output is disabled.

TYPICAL CHARACTERISTICS

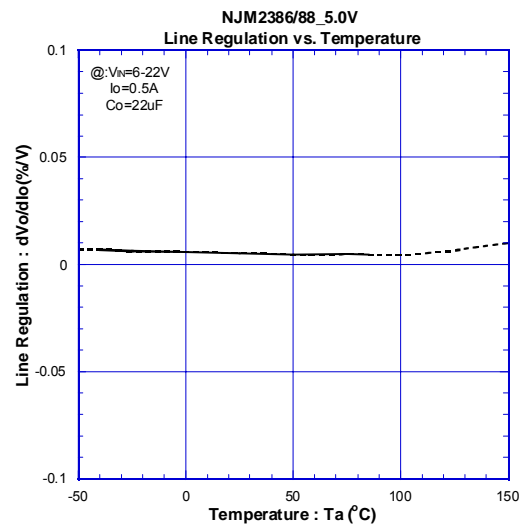
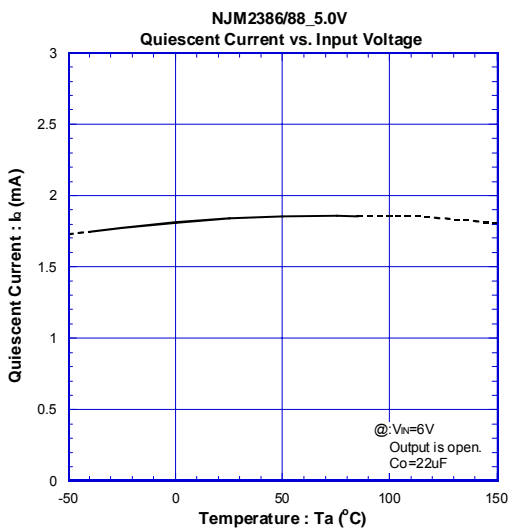
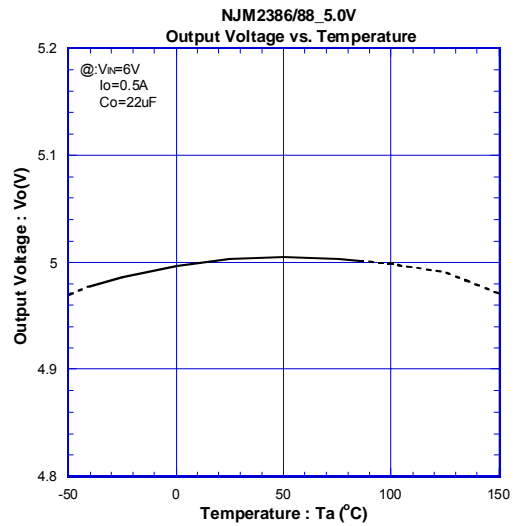
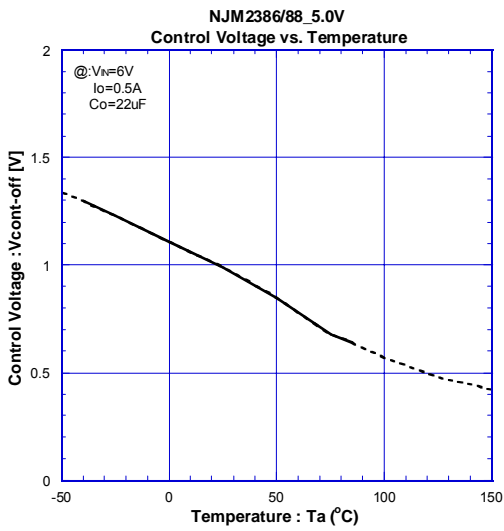
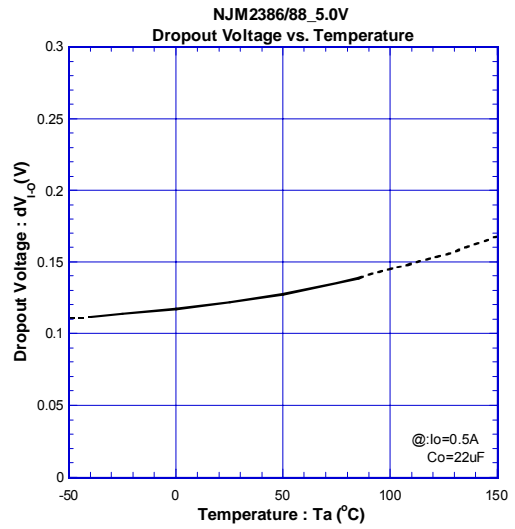
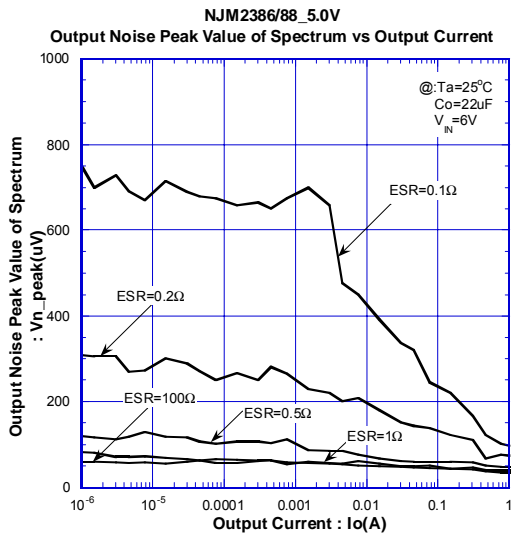


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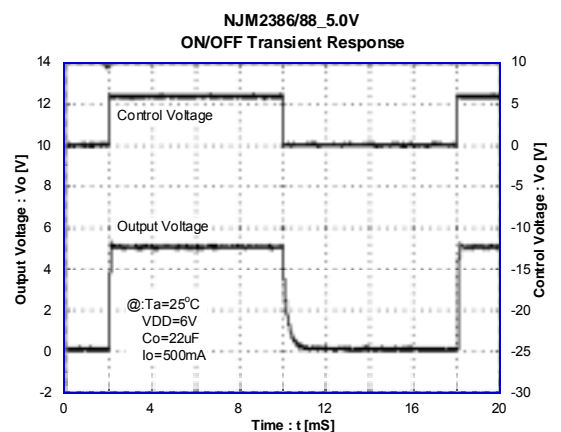
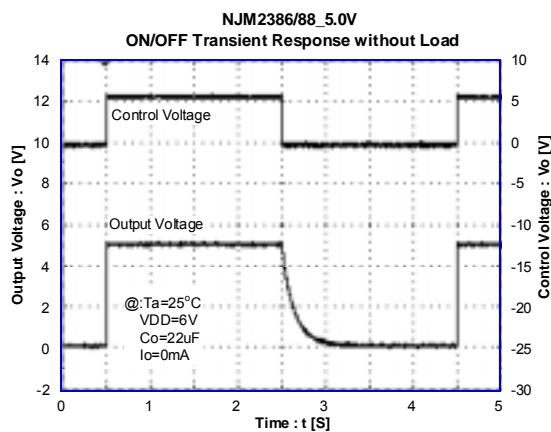
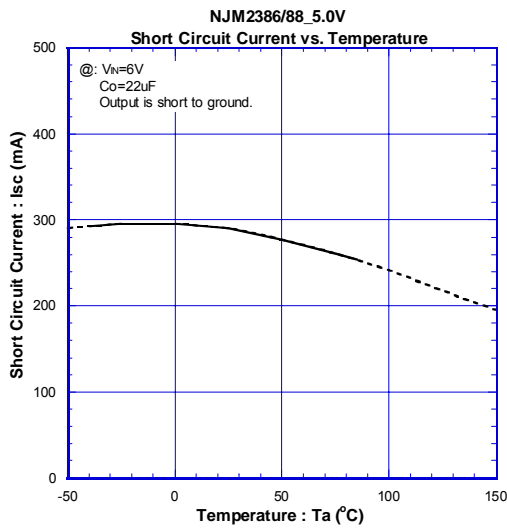
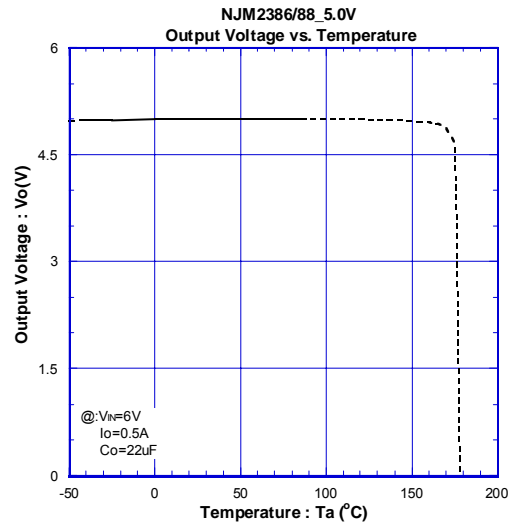
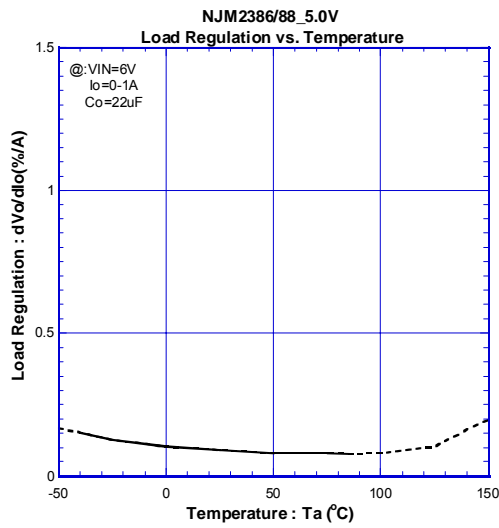


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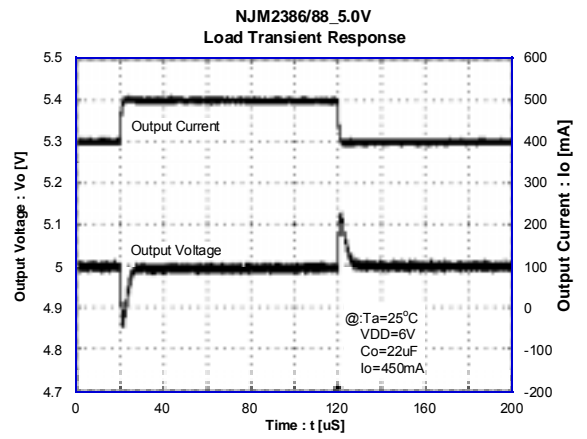
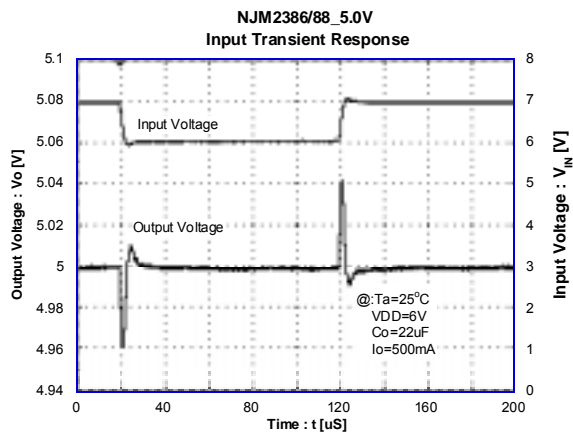


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TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



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