

LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

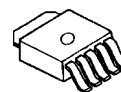
■ GENERAL DESCRIPTION

The NJM2388 is low dropout voltage regulator with ON/OFF control.

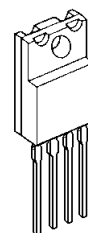
The output current is up to 1.0A and dropout voltage is 0.2V typ. at $I_o=0.5A$.

The NJM2388 is suitable for power module, TV, Display, car stereo and low power applications.

■ PACKAGE OUTLINE



NJM2386DL2

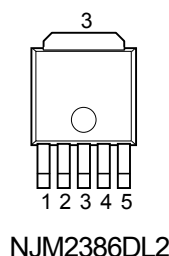


NJM2388F

■ FEATURE

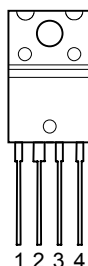
- Low Dropout Voltage 0.2V typ. at $I_o=0.5A$
- Output Current $I_o(max.)=1.0A$
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-5(NJM2386), TO-220F-4(NJM2388)

■ PIN CONFIGURATION



PIN FUNCTION

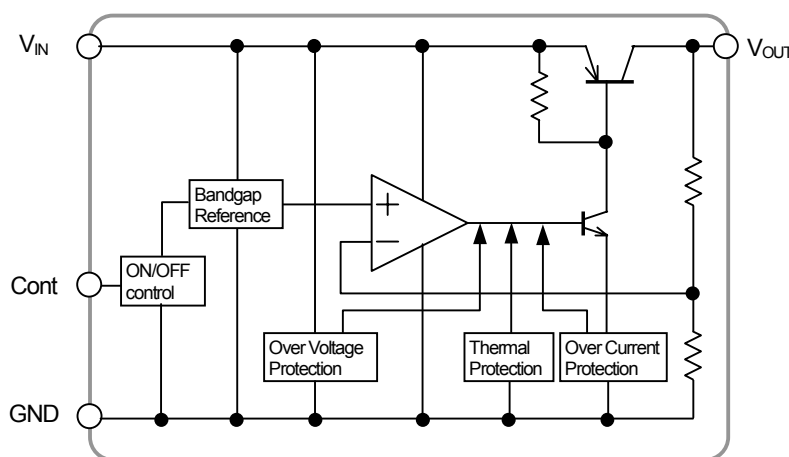
1. V_{IN}
2. ON/OFF CONTROL
3. V_{OUT}
4. N.C.
5. GND



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}
NJM2386DL2-33	3.3V
NJM2386DL2-05	5.0V
NJM2386DL2-63	6.3V
NJM2386DL2-08	8.0V
NJM2386DL2-09	9.0V
NJM2386DL2-12	12.0V

Device Name	V _{OUT}
NJM2388F33	3.3V
NJM2388F05	5.0V
NJM2388F63	6.3V
NJM2388F08	8.0V
NJM2388F84	8.4V
NJM2388F09	9.0V
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.

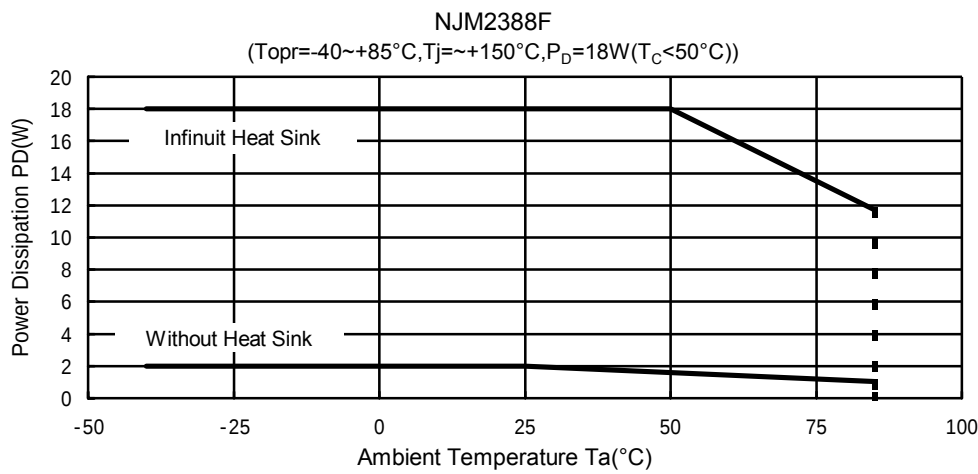
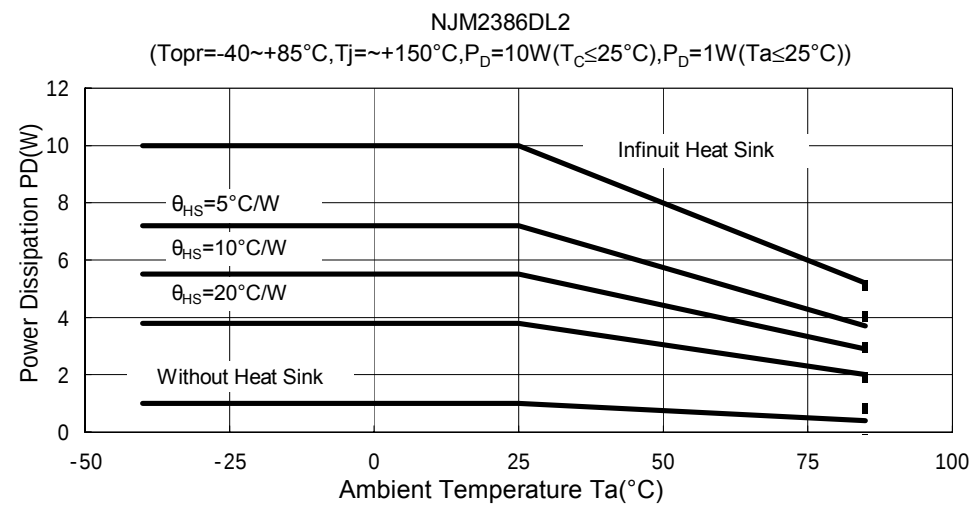
PARAMETER		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage		V _O	V _{IN} =V _O +1V	-2%	-	+2%	V
Line Regulation		ΔV _O -V _{IN}	V _{IN} =V _O +1V ~ V _O +17V	-	0.04	0.16	%/V
Load Regulation		ΔV _O -I _O	V _{IN} =V _O +2V, I _O =0A ~ 1.0A	-	0.2	1.4	%/A
Average Temperature Coefficient of Output Voltage		ΔV _O /ΔT	T _j =0 ~ +125°C	-	± 0.02	-	%/°C
Quiescent Current		I _Q	I _O =0A	-	-	5	mA
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**12			50	63	-	
ON Control Voltage		V _{CONT(ON)}		2.0(*2)	-	-	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): When ON/OFF CONTROL Terminal is open, Output Voltage is ON.

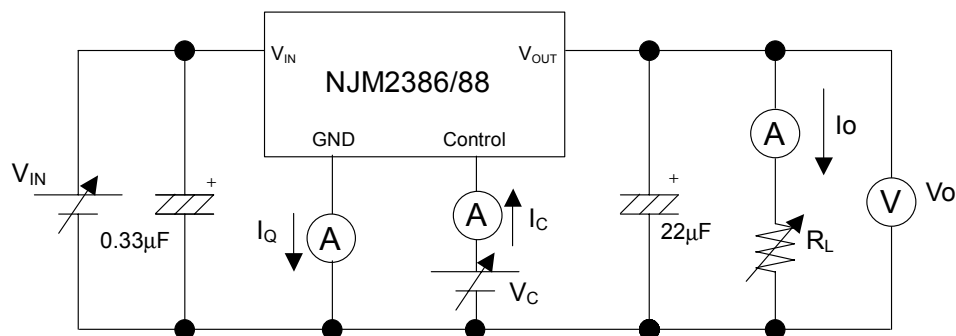
■ THERMAL CHARACTERISTICS

			NJM2386 (TO-252-5)	NJM2388 (TO-220F-4)	°C/W
Thermal Resistance	Junction-to-Ambient Temperature	θ_{ja}	125	60	
	Junction to case	θ_{jc}	12.5	5	

■ POWER DISSIPATION vs. AMBIENT TEMPERATURE



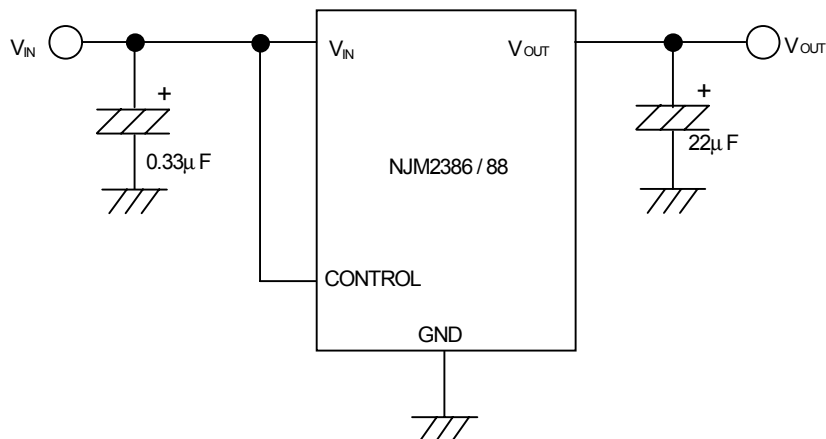
■ TEST CIRCUIT



NJM2386/88

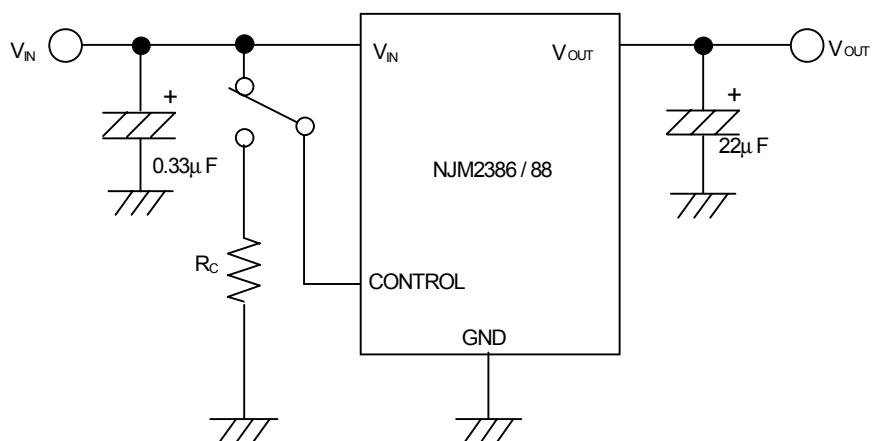
■ TYPICAL APPLICATION

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



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

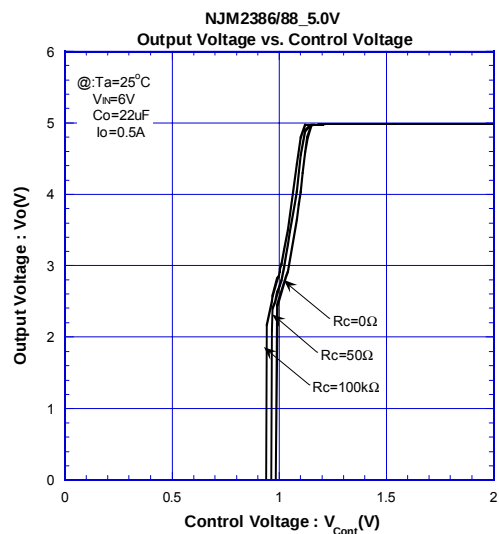
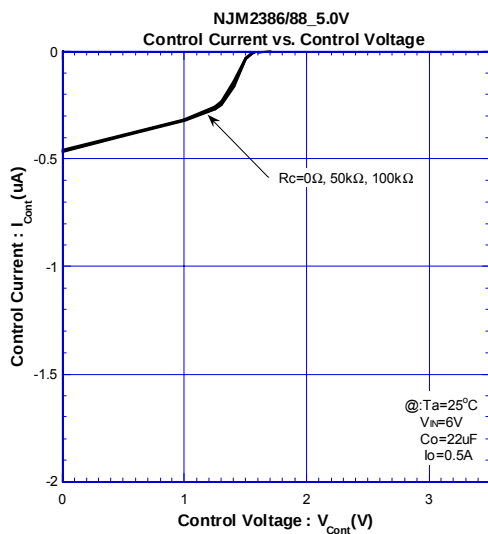
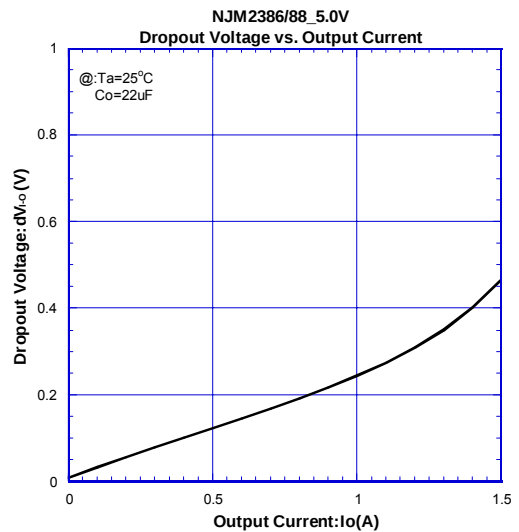
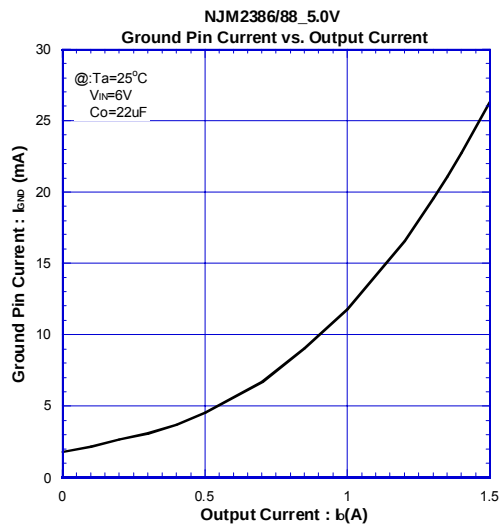
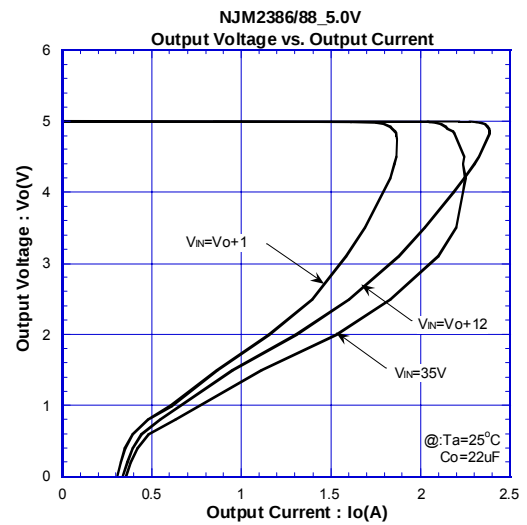
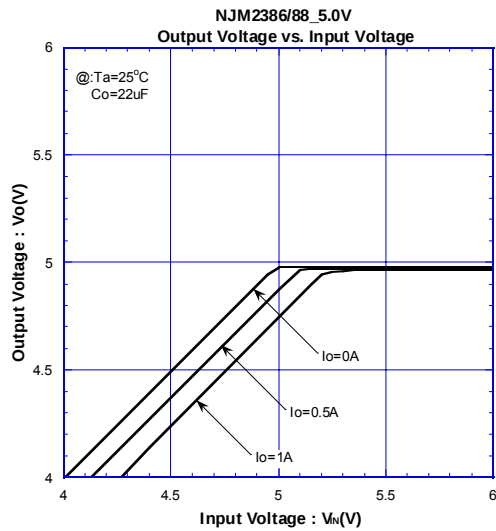
② In use of ON/OFF CONTROL:



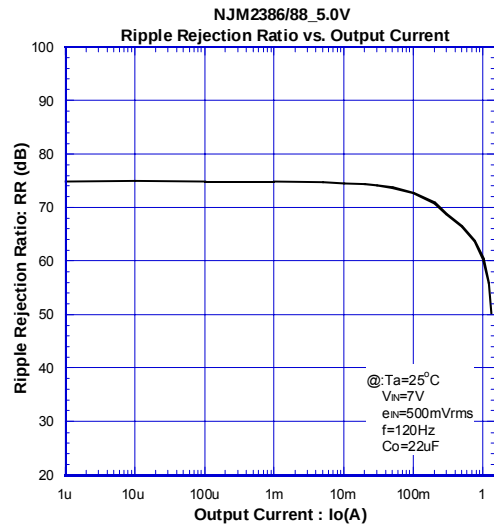
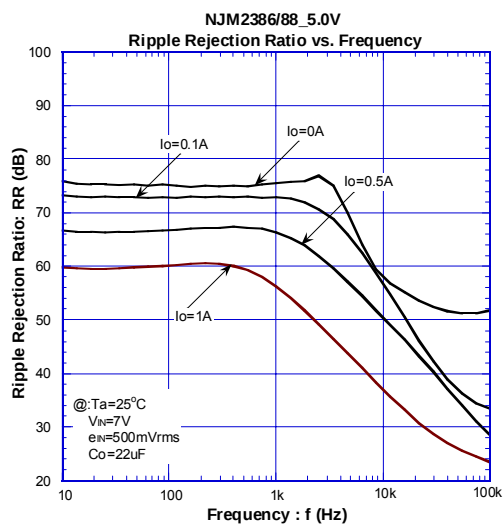
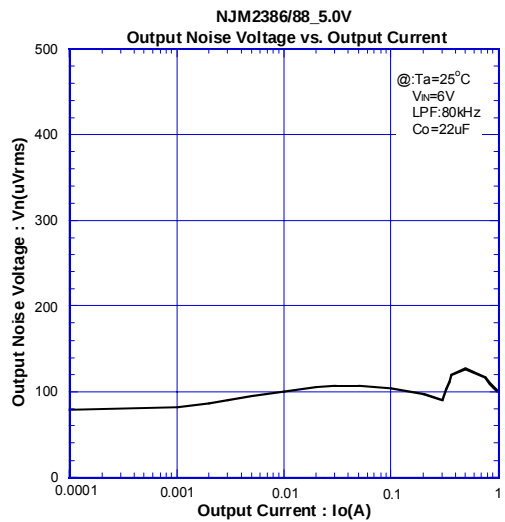
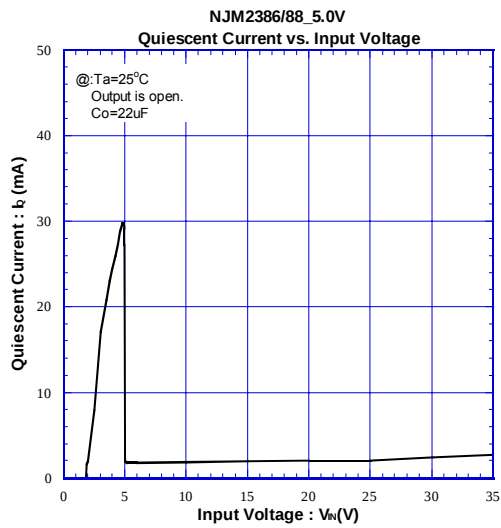
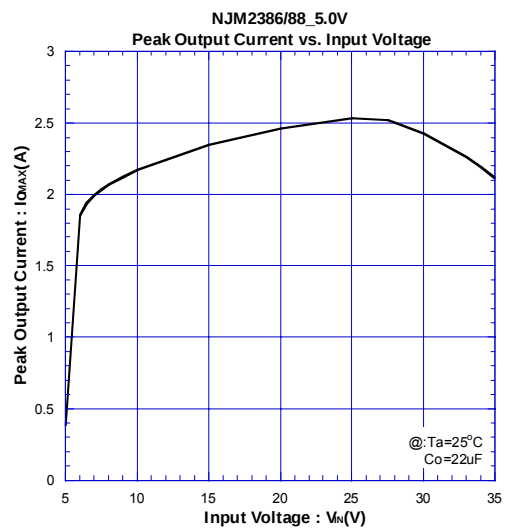
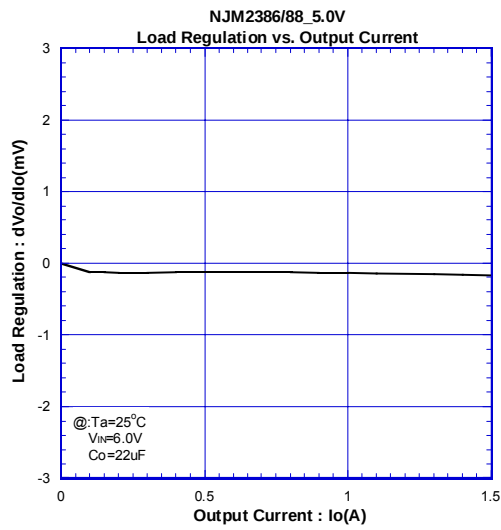
State of control terminal:

- "H" or "open" → output is enabled.
- "L" → output is disabled.

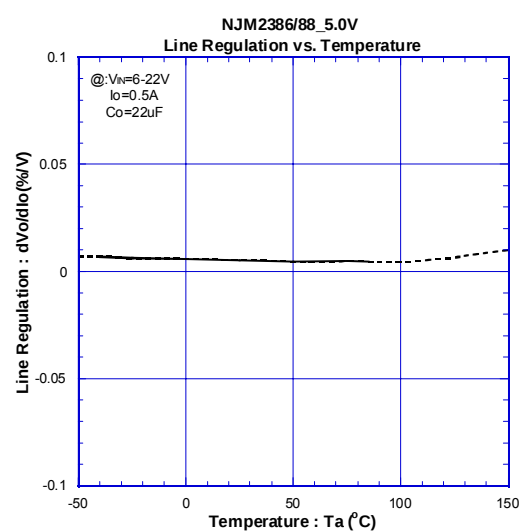
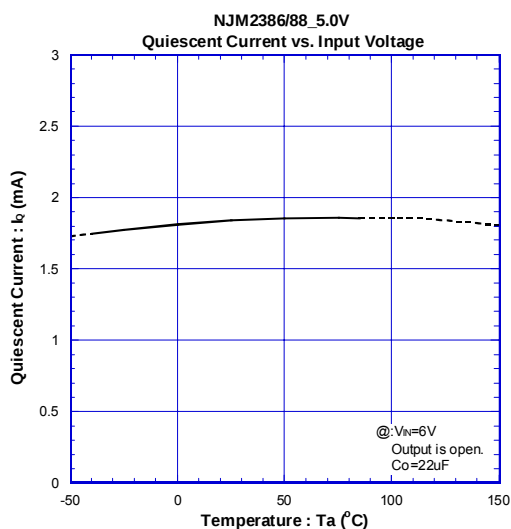
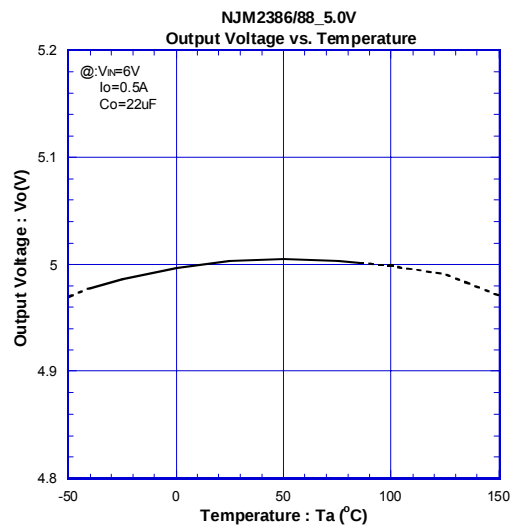
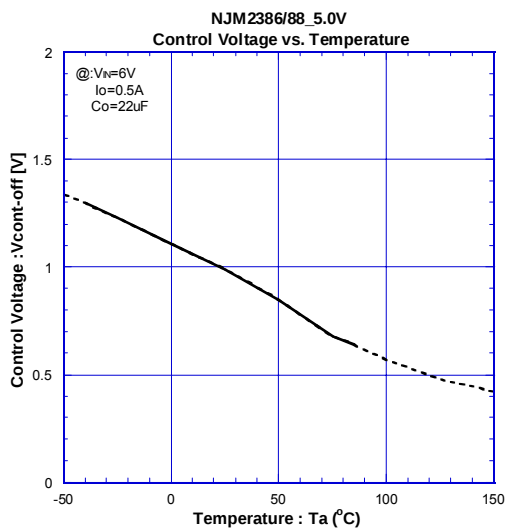
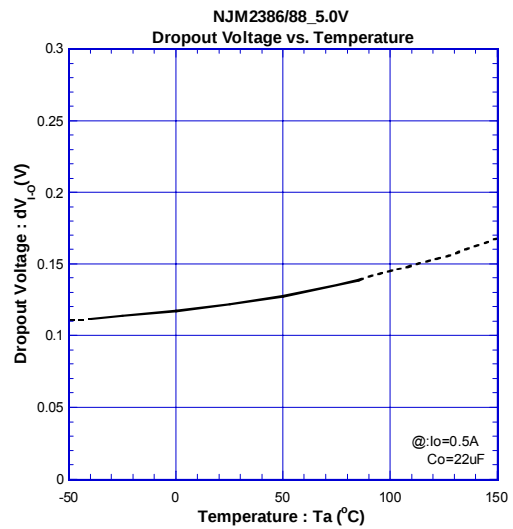
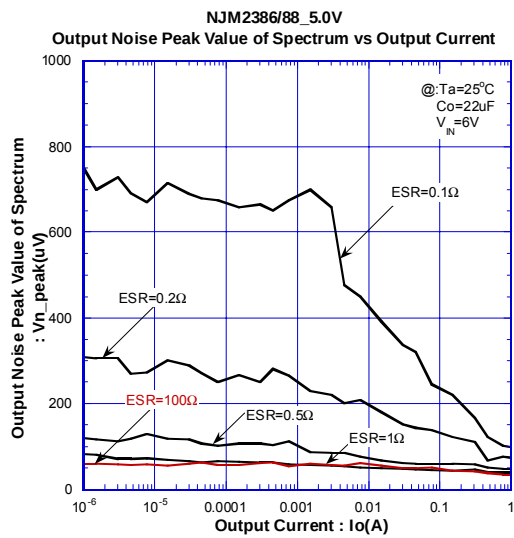
TYPICAL CHARACTERISTICS



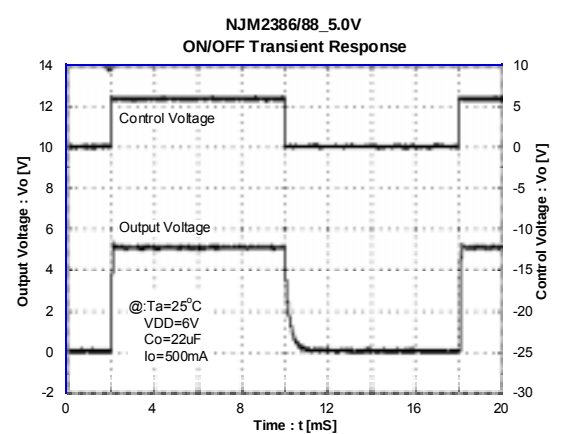
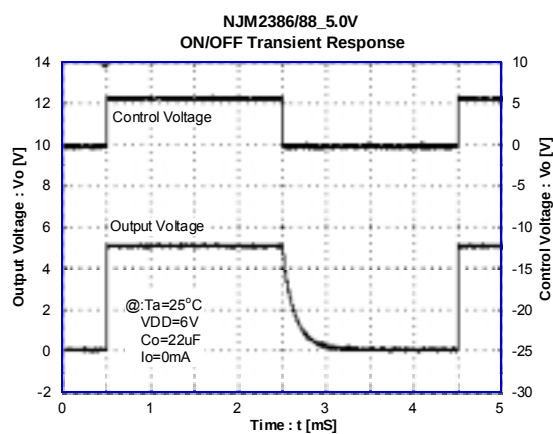
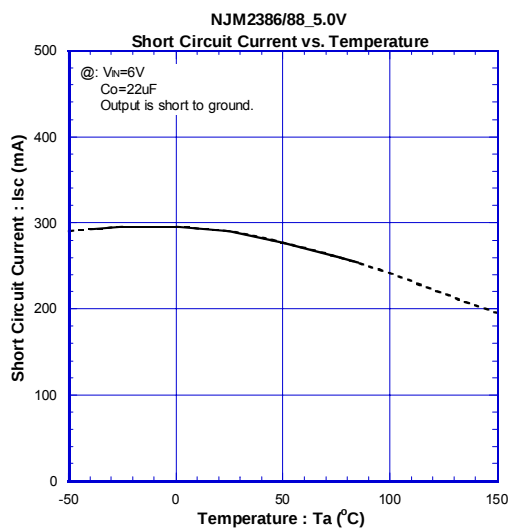
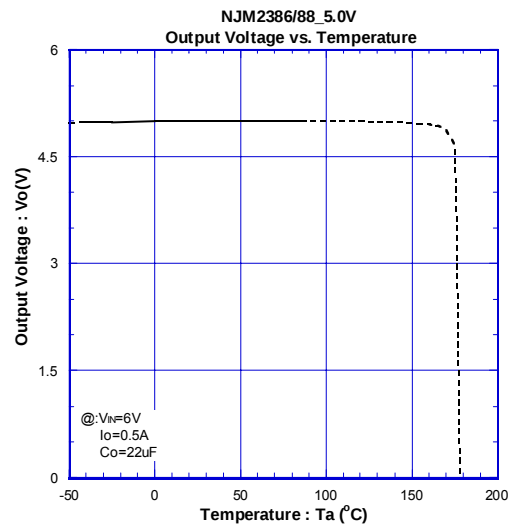
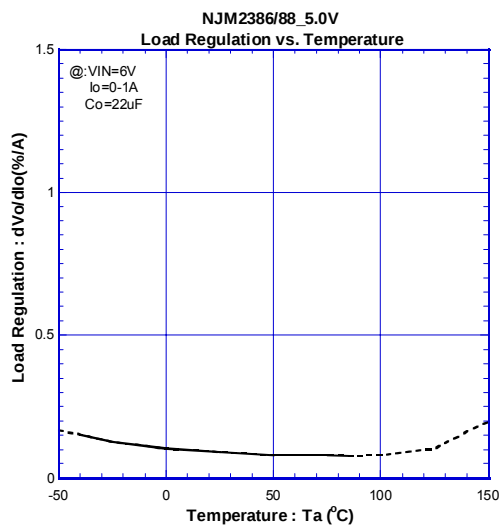
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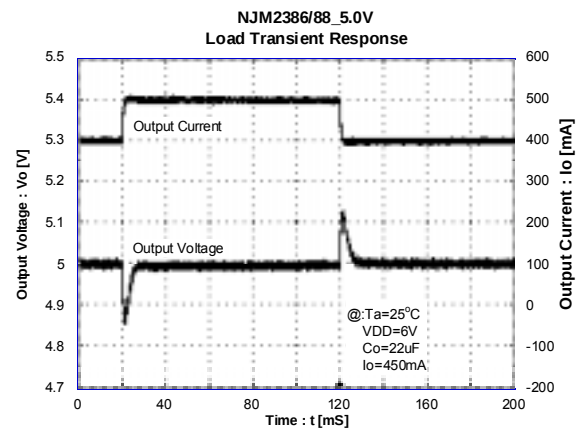
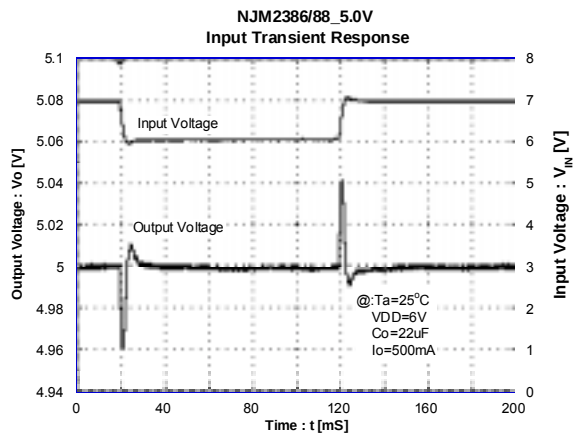
TYPICAL CHARACTERISTICS



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