

LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

■ GENERAL DESCRIPTION

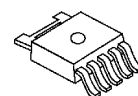
The NJM2386A is a general purpose low dropout voltage regulators with ON/OFF control.

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

It features high maximum input voltage of 30V for a wide application range including TV, home appliance and power modules.

Compared with the NJM2386, Off control quiescent current is significantly reduces for current sensitive applications.

■ PACKAGE OUTLINE

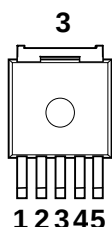


NJM2386ADL3

■ FEATURES

- High Maximum Input Voltage Up to 30V
- Low Dropout Voltage 0.2V typ. at $I_o=0.5A$
- Output Current $I_o(max.)=1.0A$
- ON/OFF Control (Active High)
- OFF Control Quiescent Current
- Internal Short Circuit Current Limit
- Internal Overvoltage Protection
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-5

■ PIN CONFIGURATION

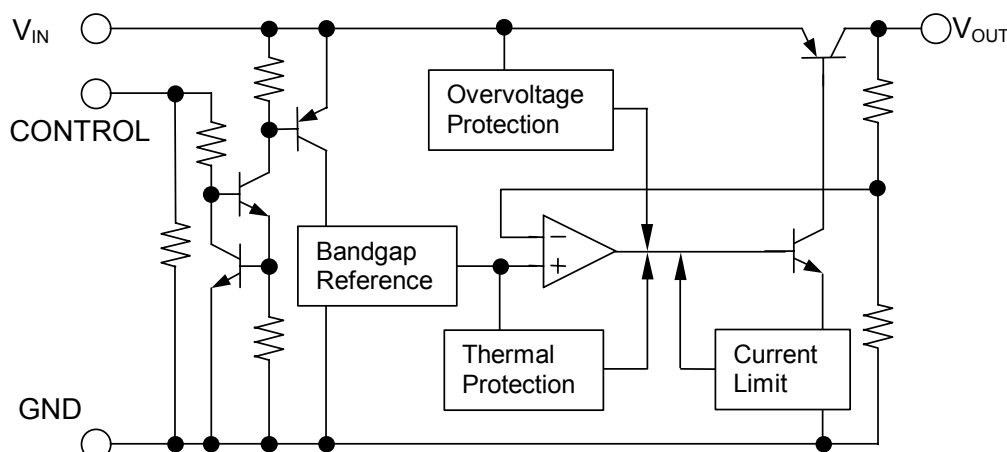


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PIN FUNCTION

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

■ EQUIVALENT CIRCUIT



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■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}	Device Name	V _{OUT}
NJM2386ADL3-33	3.3V	NJM2386ADL3-10	10.0V
NJM2386ADL3-05	5.0V	NJM2386ADL3-12	12.0V
NJM2386ADL3-06	6.0V		
NJM2386ADL3-08	8.0V		
NJM2386ADL3-09	9.0V		

■ 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	10(Tc≤25°C) / 1(Ta≤25°C)	W
Operating Junction Temperature Range	T _j	-40 ~ +150	°C
Operating Temperature Range	Topr	-40 ~ +85	°C
Storage Temperature Range	Tstg	-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, T_j=25°C)

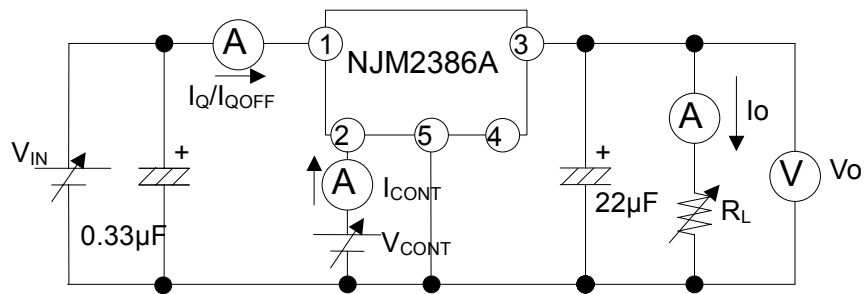
Measurement is conducted by pulse testing.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Voltage	V _{IN}		-	-	30	V
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, V _{CONT} =2.7V Except I _{CONT}	-	-	5	mA
OFF Control Quiescent Current	I _{Q(OFF)}	V _{CONT} =0V	-	-	1	μA
Dropout Voltage	ΔV _{I-O}	I _O =0.5A	-	0.2	0.5	V
Ripple Rejection	NJM2386ADL3-33	RR V _{IN} =V _O +2V, e _{in} =0.5Vrms, f=120Hz	54	67	-	dB
	NJM2386ADL3-05		54	67	-	
	NJM2386ADL3-06		54	67	-	
	NJM2386ADL3-08		52	65	-	
	NJM2386ADL3-09		52	65	-	
	NJM2386ADL3-10		50	63	-	
	NJM2386ADL3-12		50	63	-	
ON Control Voltage	V _{CONT(ON)}		2.0(*2)			
OFF Control Voltage	V _{CONT(OFF)}		-	-	0.4	V
ON Control Current	I _{CONT(ON)}	V _C =2.7V	10	30	50	μA
OFF Control Current	I _{CONT(OFF)}	V _C =0.4V	1	3	5	μA

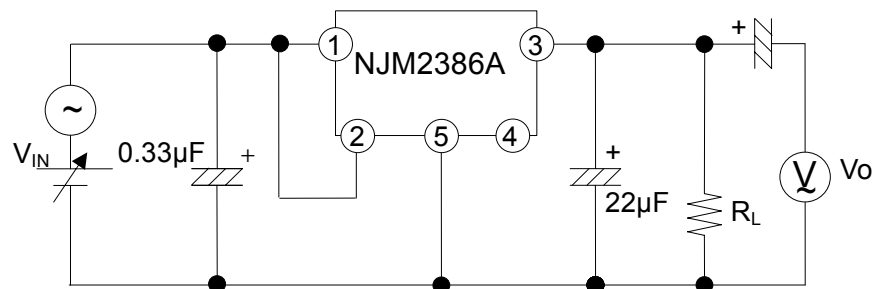
(*2): When ON/OFF CONTROL Terminal is open, Output Voltage is OFF.

■ TEST CIRCUIT

● Standard Test Circuit



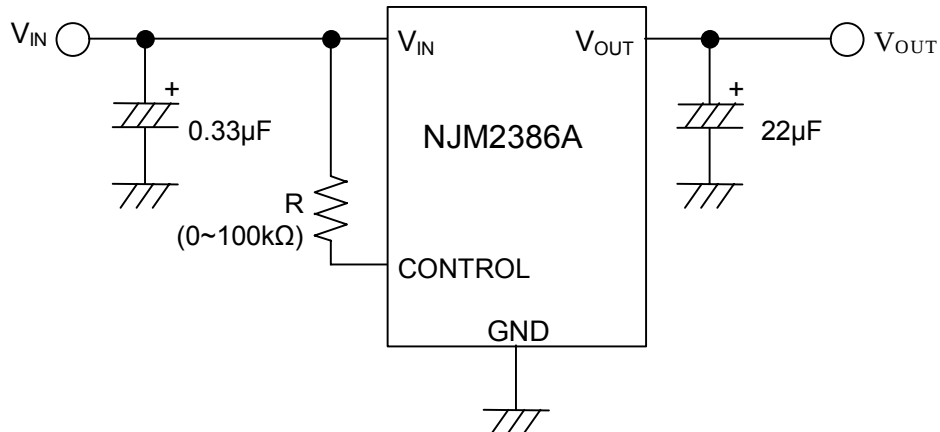
● Ripple Rejection Test Circuit



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■ TYPICAL APPLICATION

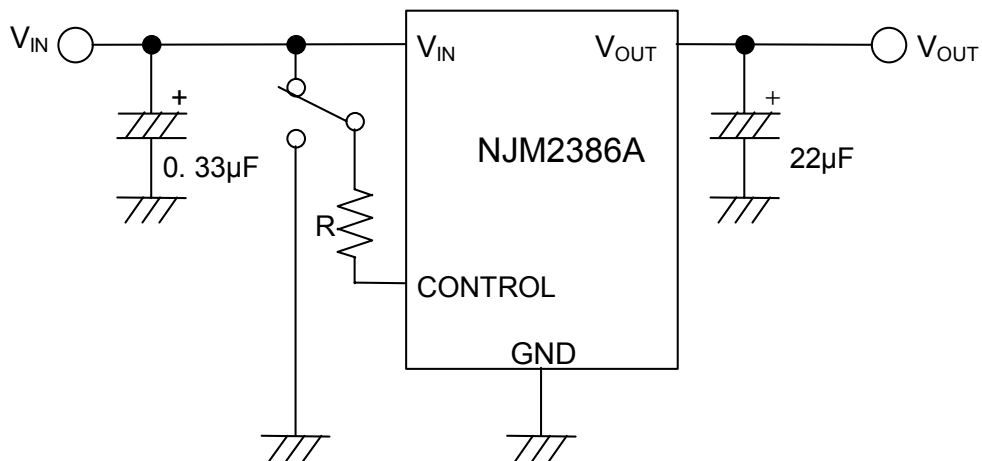
① In the case where ON/OFF Control is not required:



Connect control terminal to V_{IN} terminal.

The quiescent current can be reduced by using a resistance “R”. Instead, it increases the minimum operating voltage. For further information, please refer to Figure “Output Voltage vs. Control Voltage”.

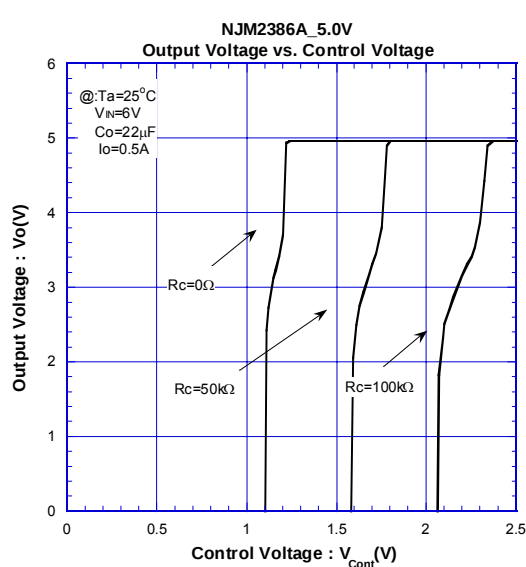
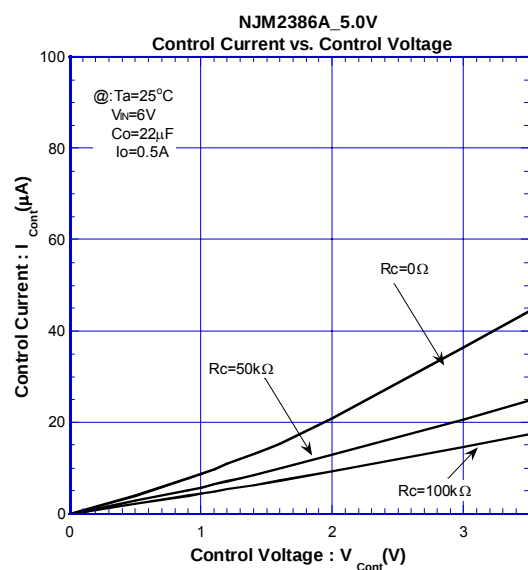
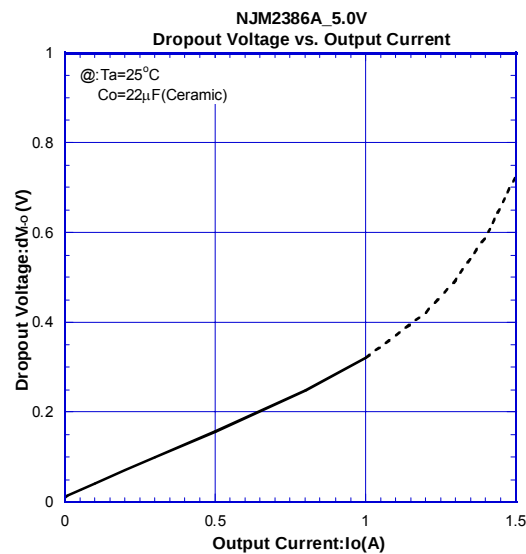
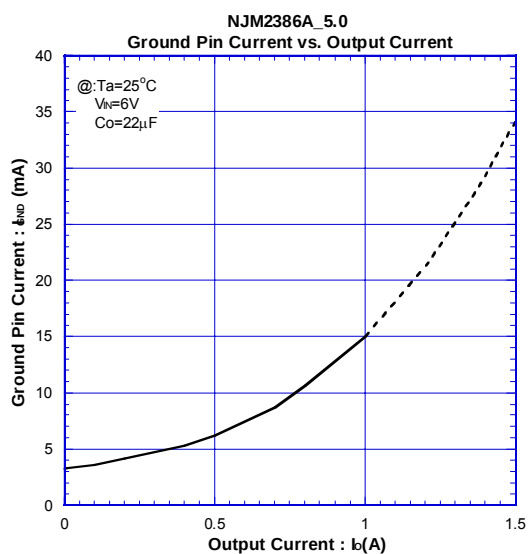
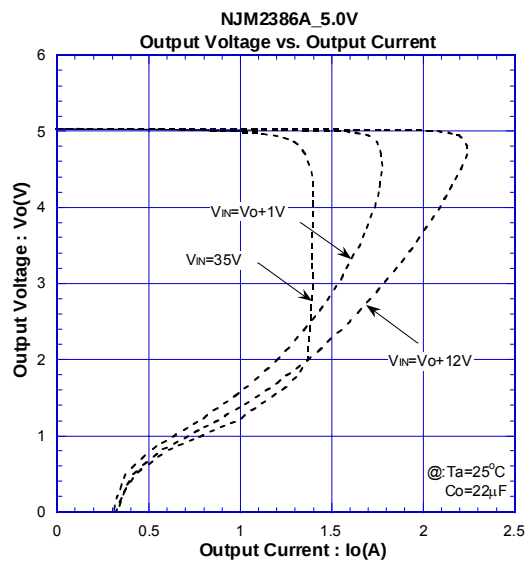
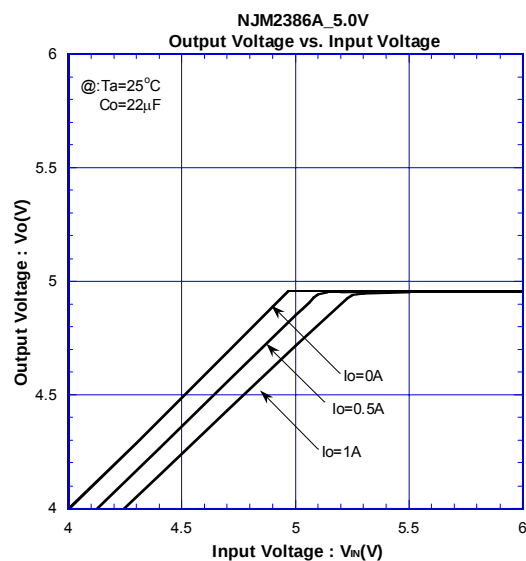
② In use of ON/OFF CONTROL:



State of control terminal:

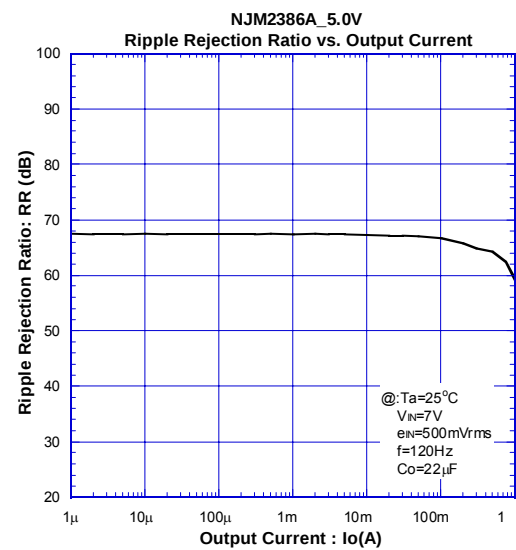
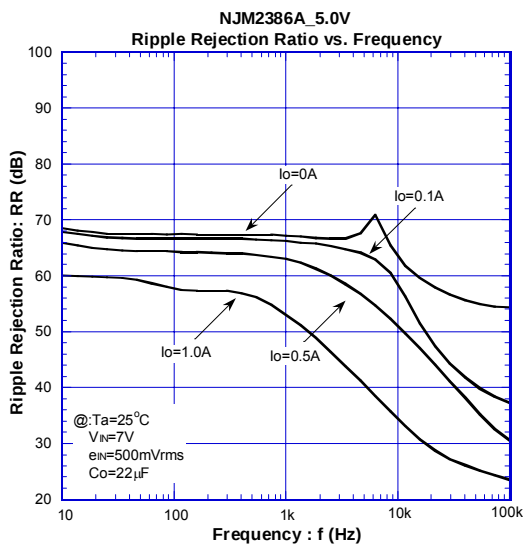
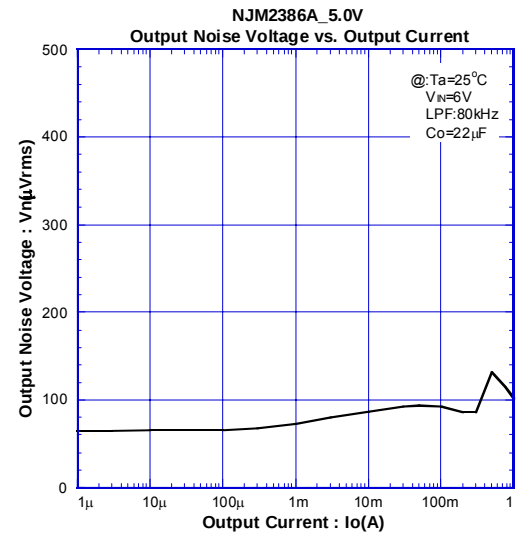
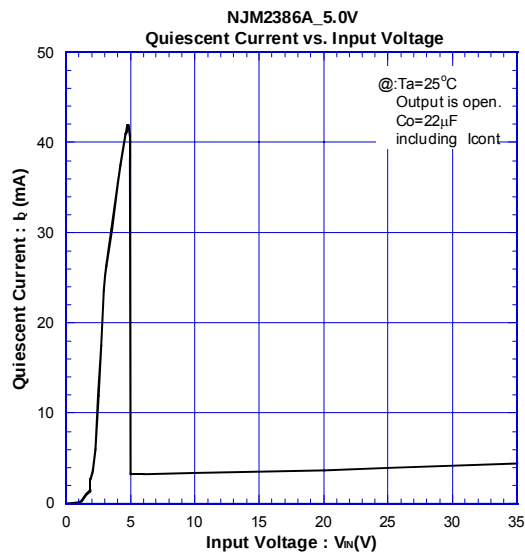
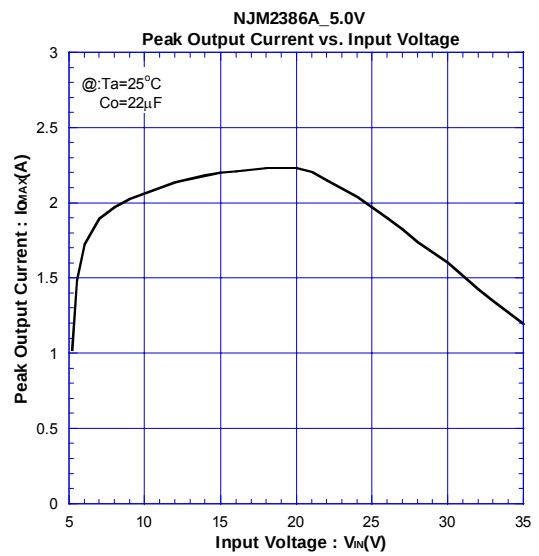
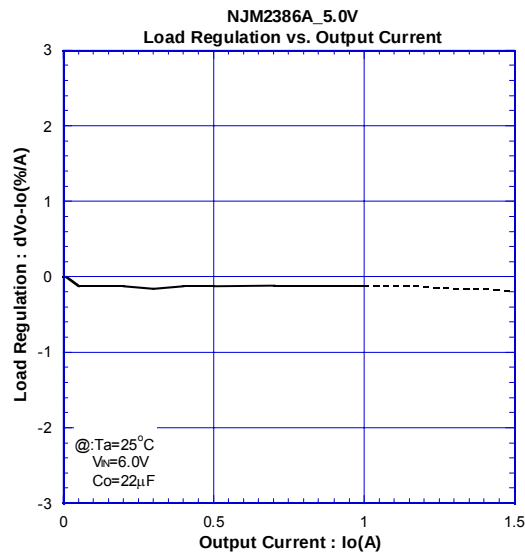
- “H” → output is enabled.
- “L” or “open” → output is disabled.

■ TYPICAL CHARACTERISTICS

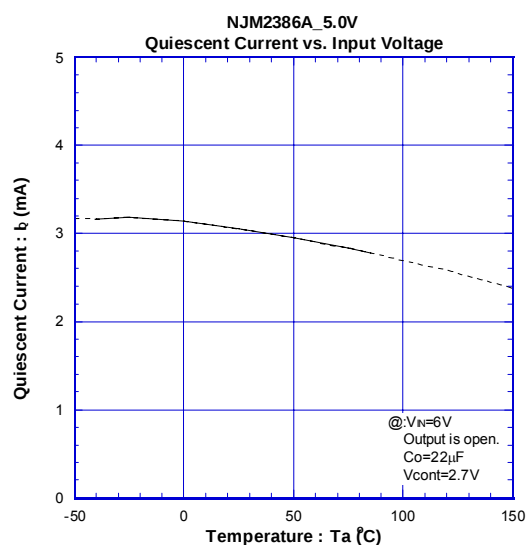
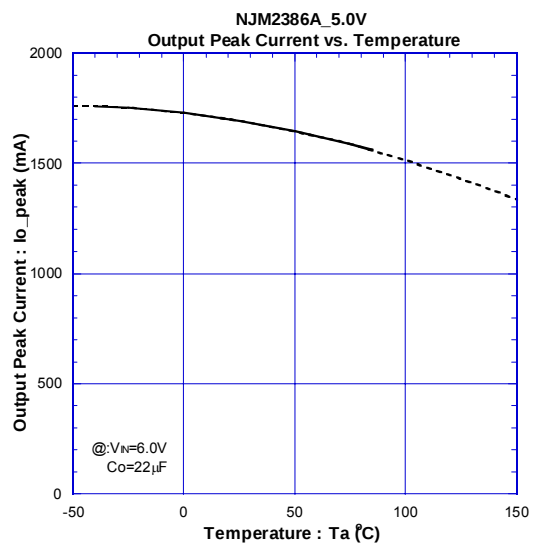
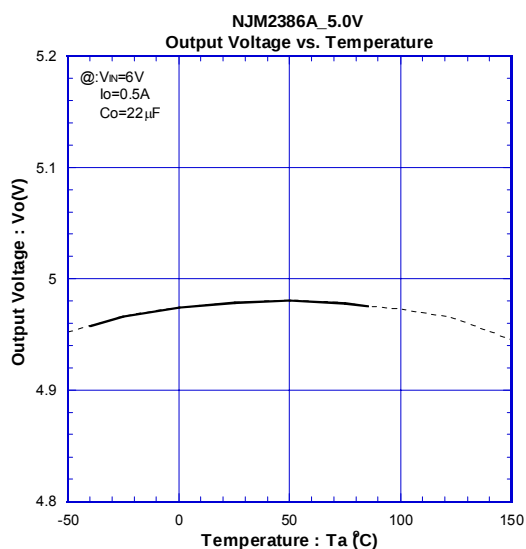
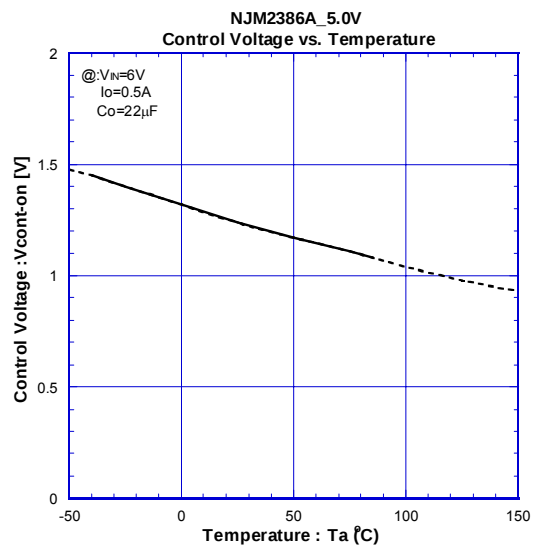
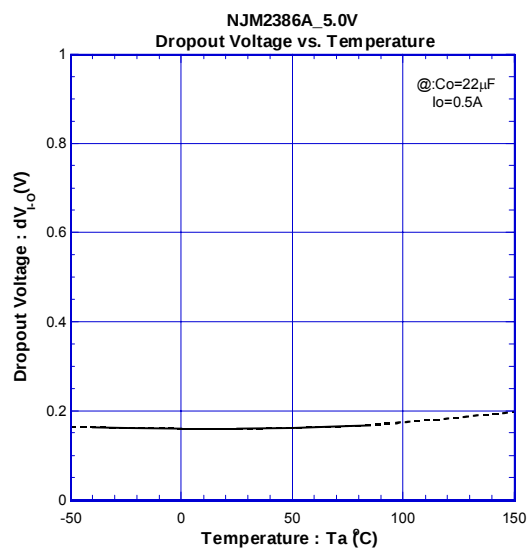


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■ TYPICAL CHARACTERISTICS

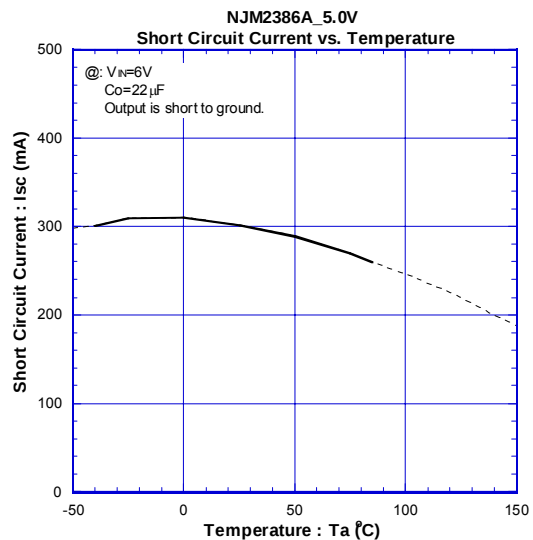
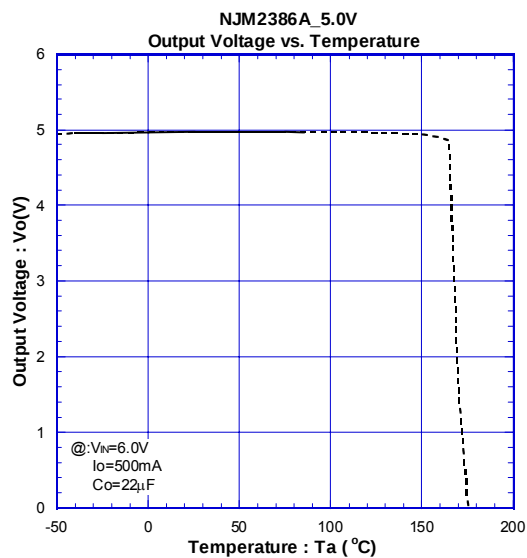
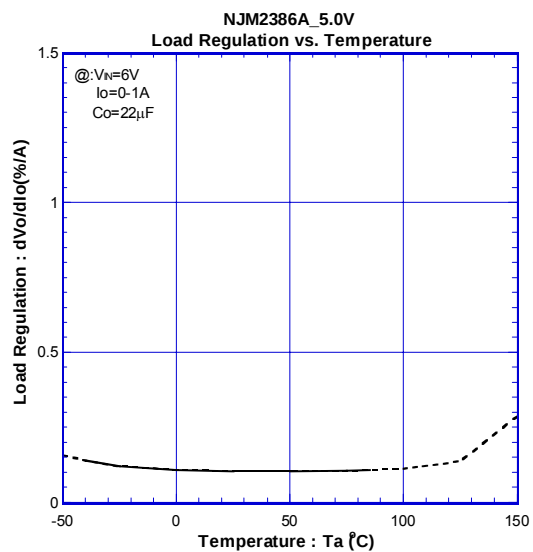
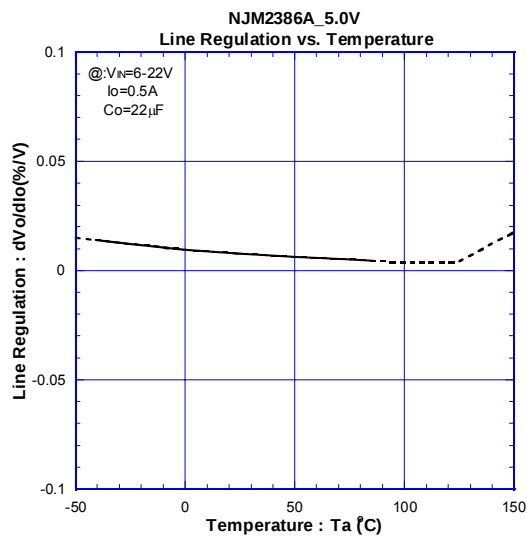


TYPICAL CHARACTERISTICS

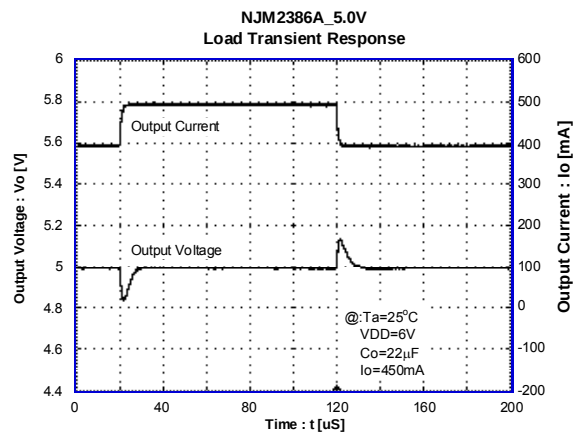
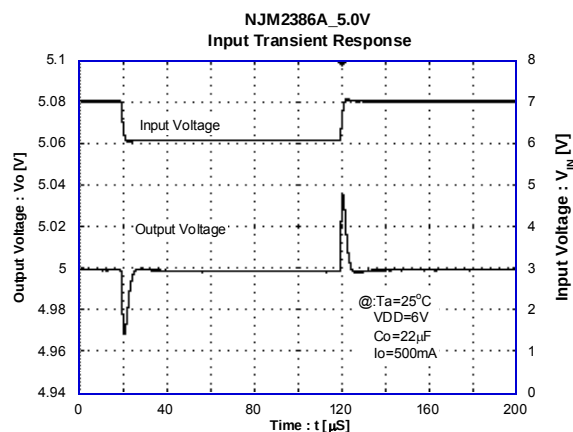
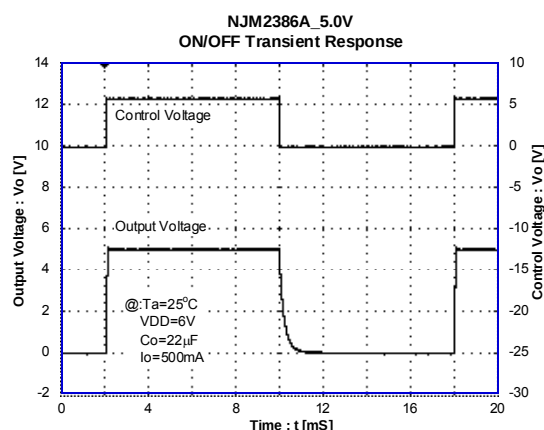
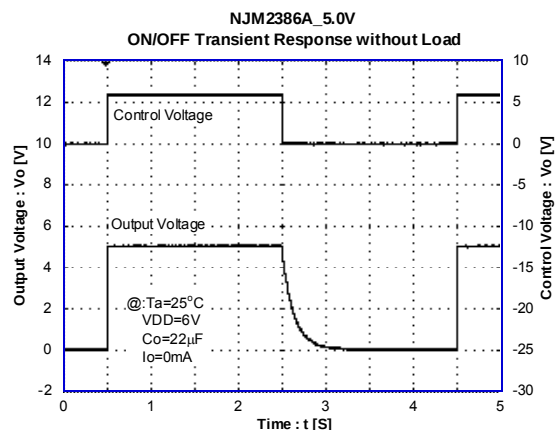


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TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



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