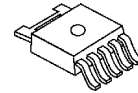


ADJUSTABLE LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

■ GENERAL DESCRIPTION

The NJM2387A is an adjustable low dropout voltage regulator. The output current is up to 1.0A and dropout voltage is 0.2V typ. at $I_o=0.5A$. OFF control quiescent current is drastically reduced compare with the current NJM2387 through changing ON/OFF control circuit. The NJM2387A is suitable for power module, TV, Display, car stereo and low power applications.

■ PACKAGE OUTLINE

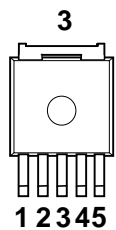


NJM2387ADL3

■ FEATURES

- Low Dropout Voltage $\Delta V_{I-O}=0.2V$ typ. at $I_o=0.5A$
- Output Current $I_o(\text{max.})=1.0A$
- Reference Voltage $V_{\text{ref}}=1.26V \pm 2\%$
- ON/OFF Control
- Internal Short Circuit Current Limit
- Internal Overvoltage Protection
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-5

■ PIN CONFIGURATION

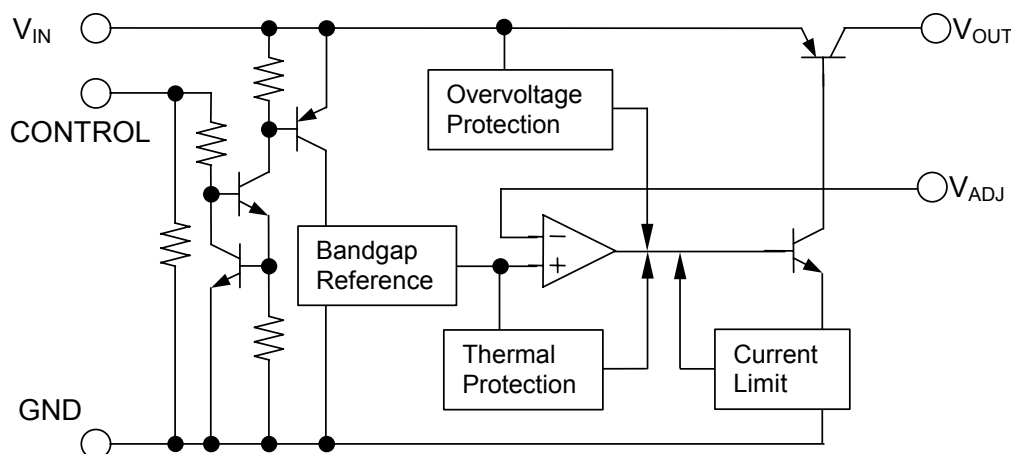


PIN FUNCTION

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

NJM2387ADL3

■ EQUIVALENT CIRCUIT



NJM2387ADL3

NJM2387A

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	+35	V
Control Voltage	V _{CONT}	+35(*1)	V
Adjust Terminal Voltage	V _{ADJ}	+6	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	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.

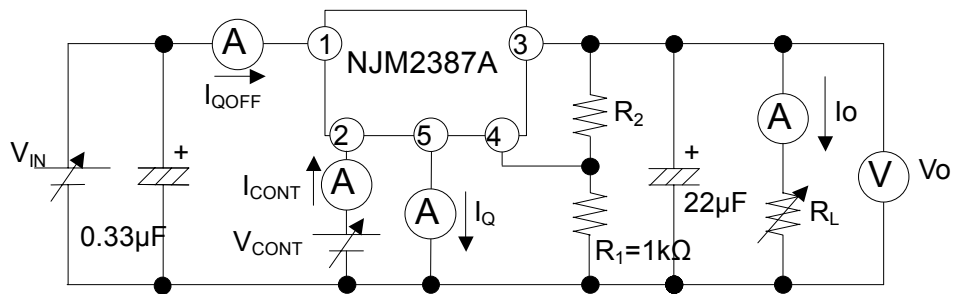
■ ELECTRICAL CHARACTERISTICS (V_{IN}=15V, V_O=10V, I_o=0.5A, R₁=1kΩ, C_{IN}=0.33μF, C_o=22μF, T_j=25°C)

Measurement is conducted by pulse testing.

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input Voltage	V _{IN}	-	3.8	-	30	V
Output Voltage	V _{O(ADJ)}	-	1.5	-	20	V
Reference Voltage	V _{ref}	-	1.235	1.26	1.285	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 _{LO}	I _o =0.5A	-	0.2	0.5	V
Ripple Rejection	RR	V _{in} =V _o +2V, e _{in} =0.5Vrms e _{in} =0.5Vrms, f=120Hz	52	65	-	dB
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	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.

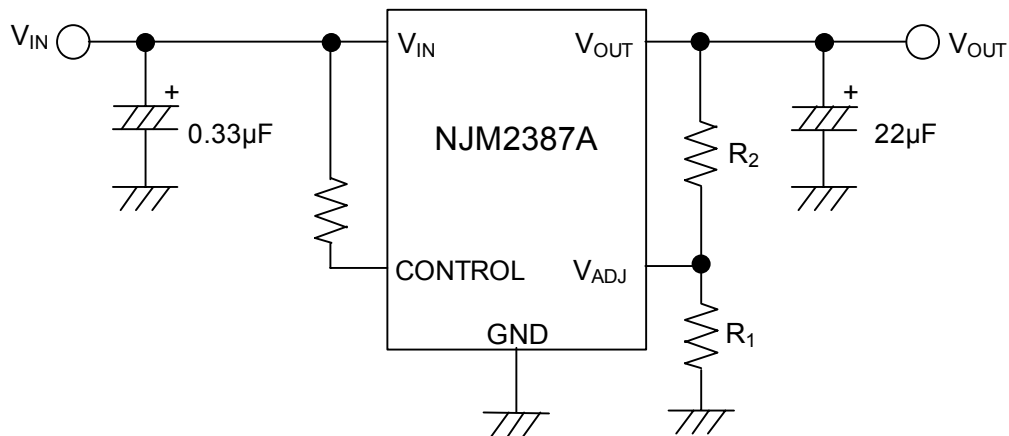
TEST CIRCUIT



$$V_o = V_{ref} \times (1 + R_2/R_1)$$

TYPICAL APPLICATION

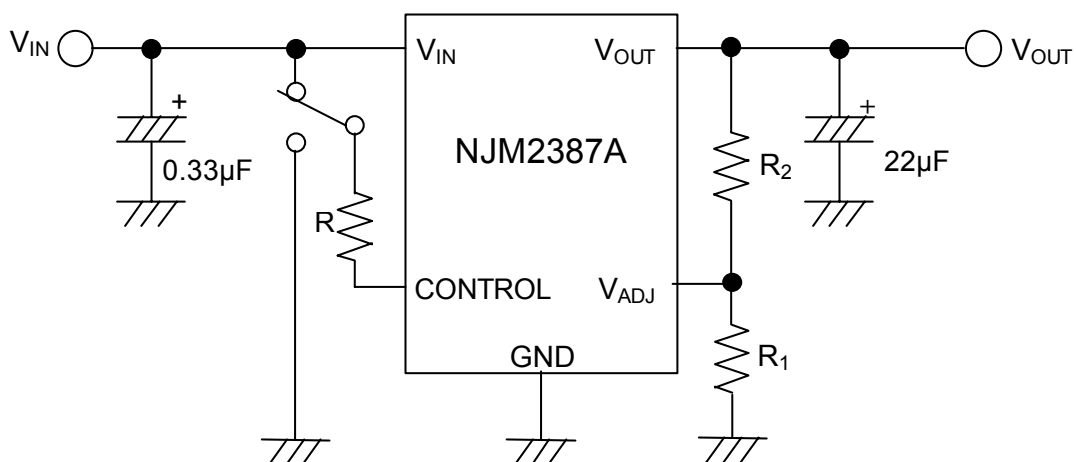
① In the case where ON/OFF Control is not required:



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:

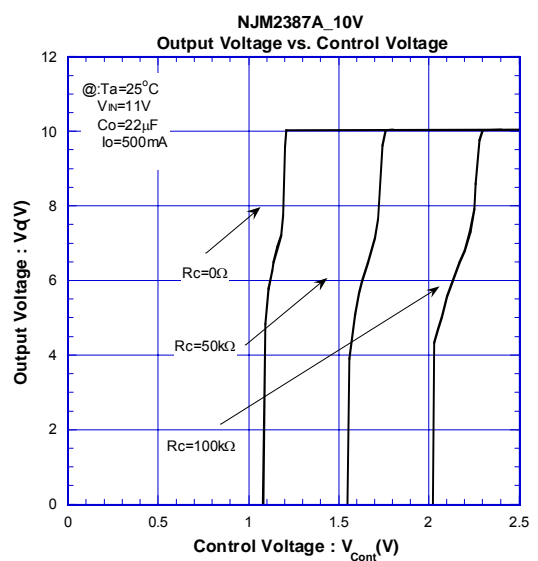
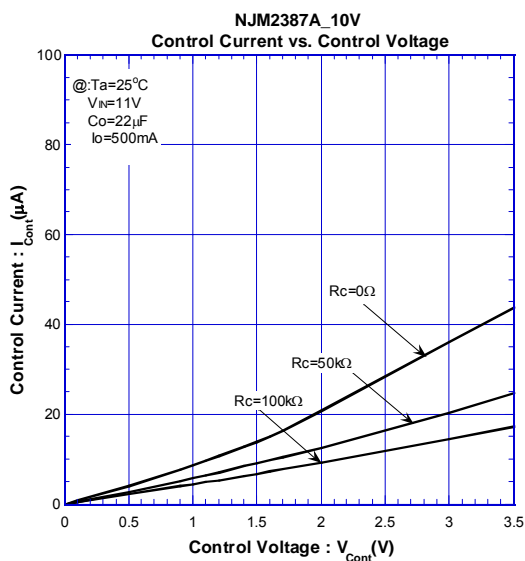
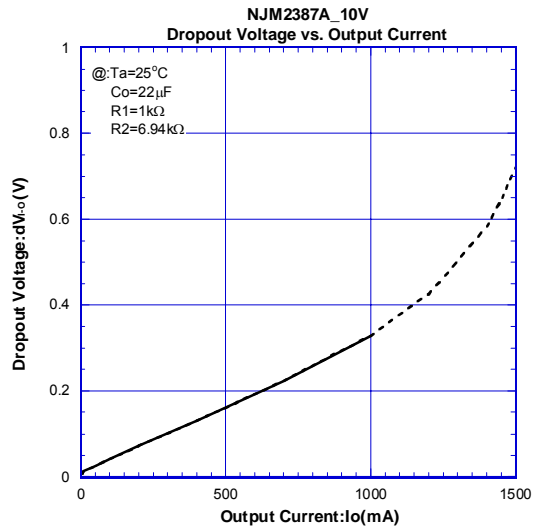
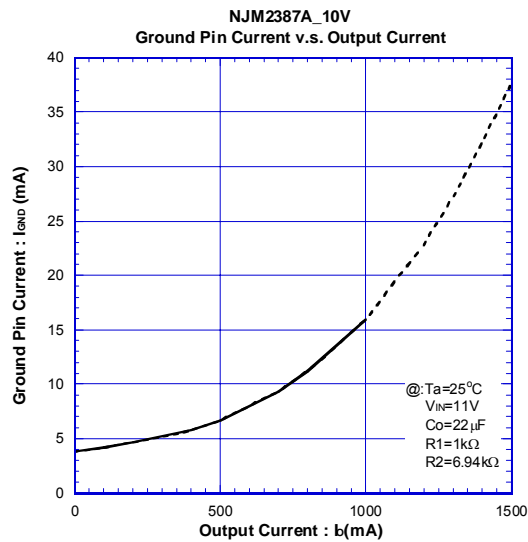
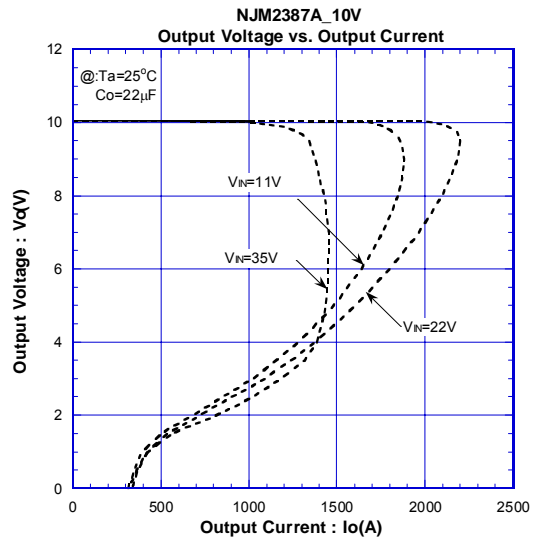
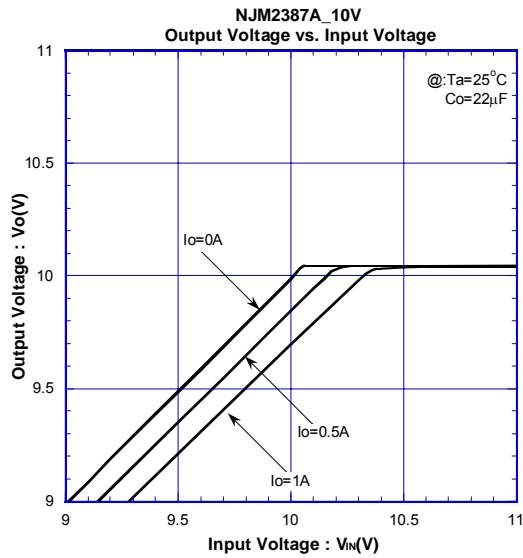


State of control terminal:

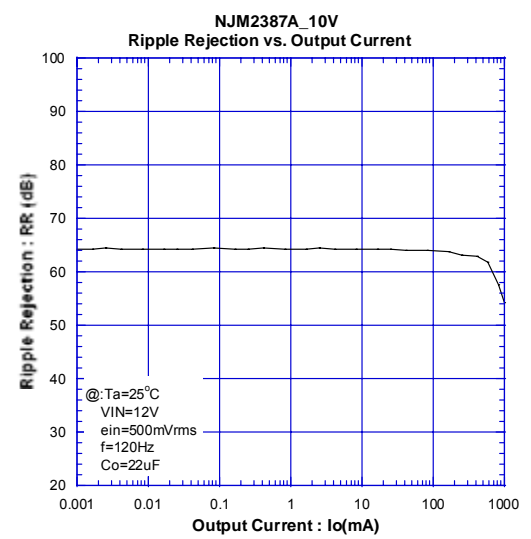
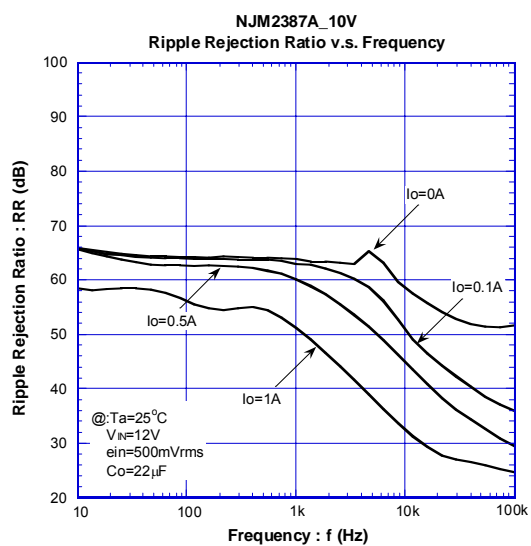
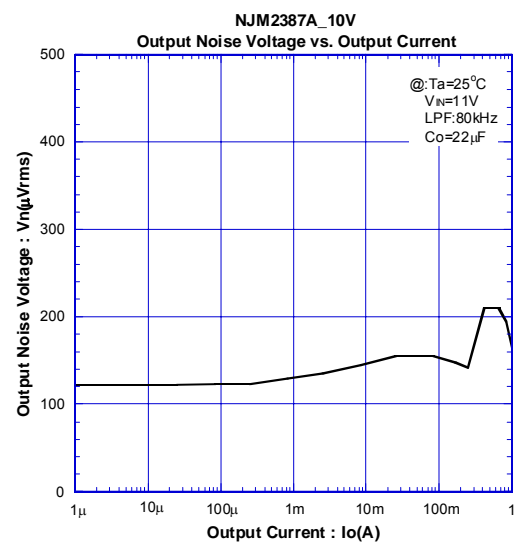
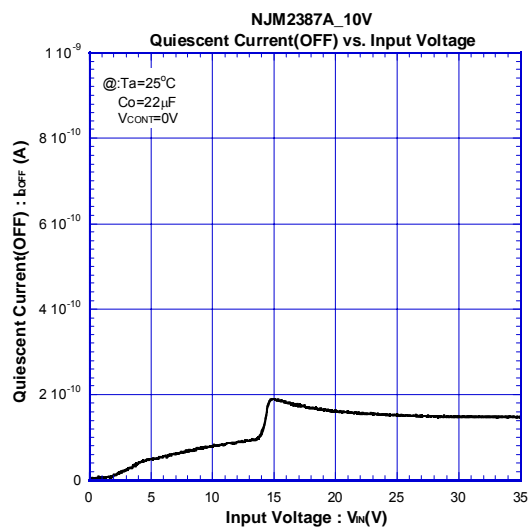
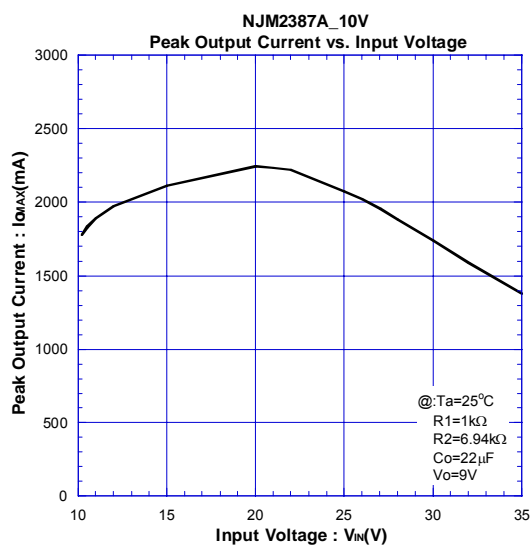
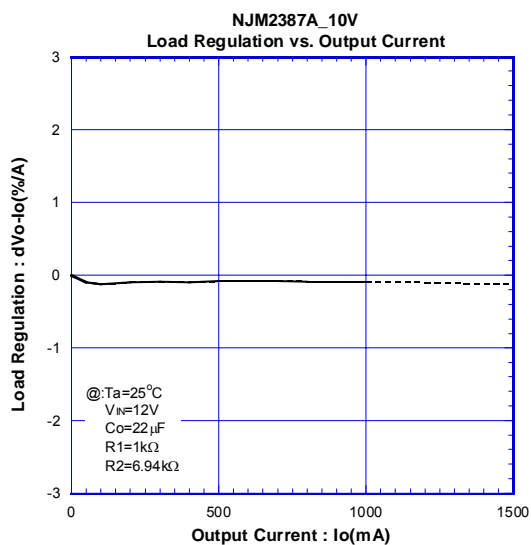
- "H" → output is enabled.
- "L" or "open" → output is disabled.

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ELECTRICAL CHARACTERISTICS

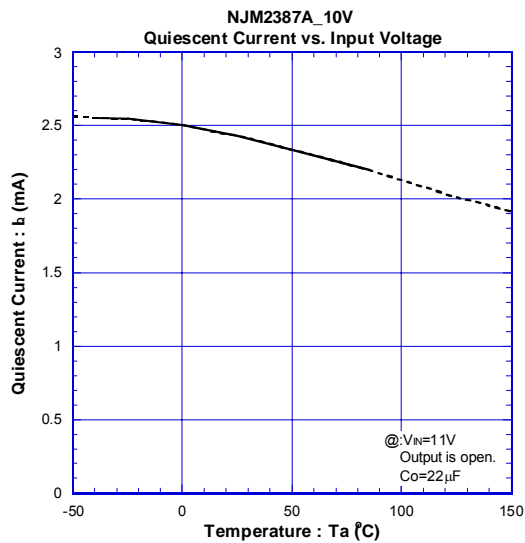
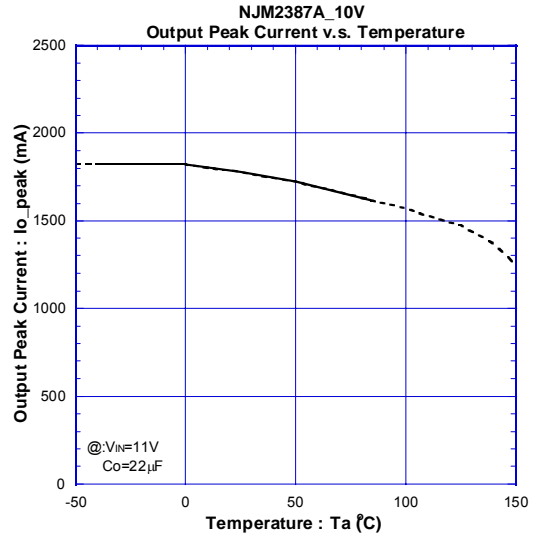
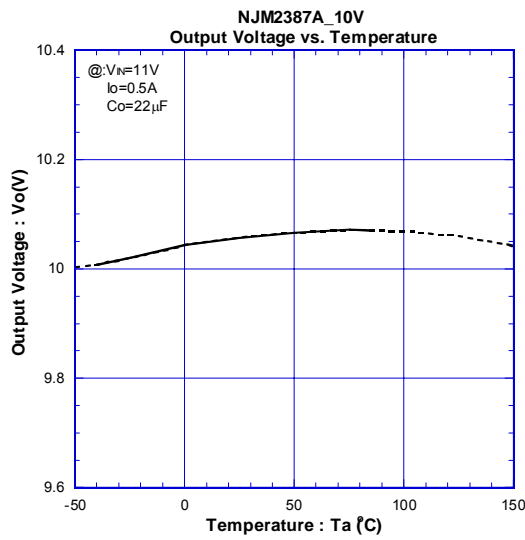
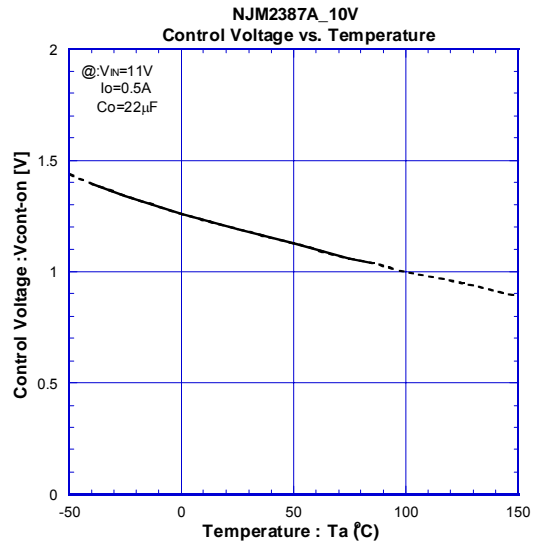
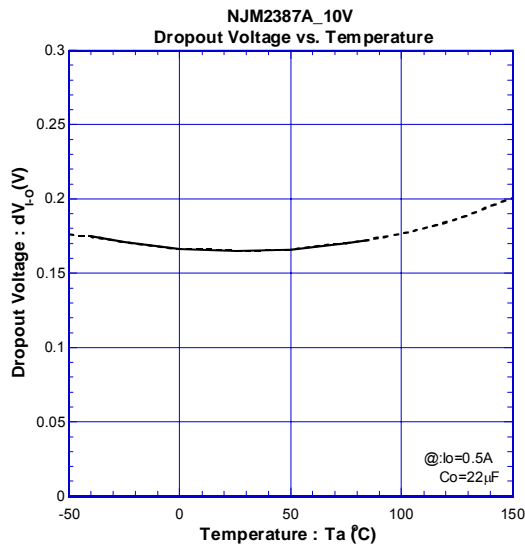


ELECTRICAL CHARACTERISTICS

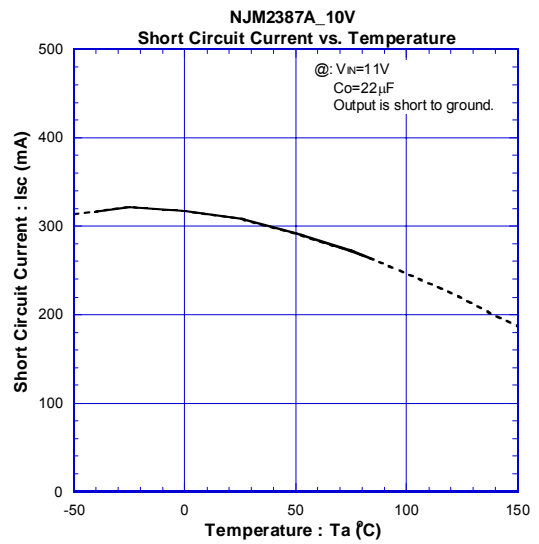
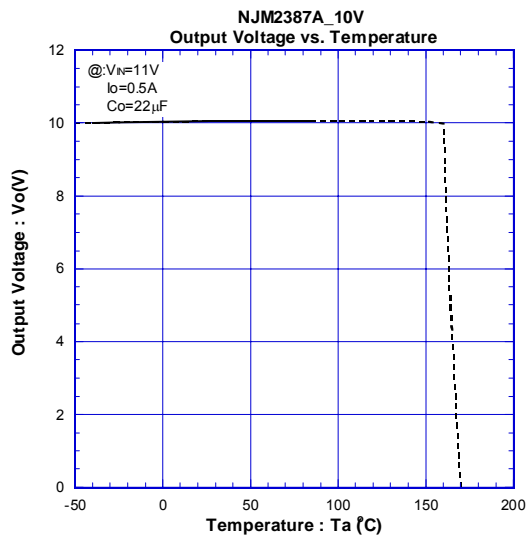
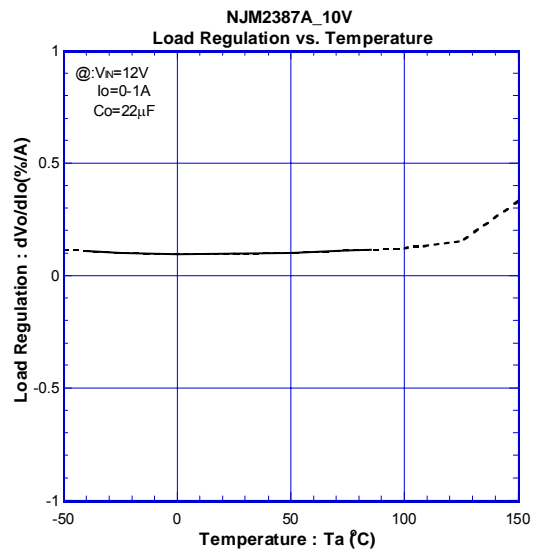
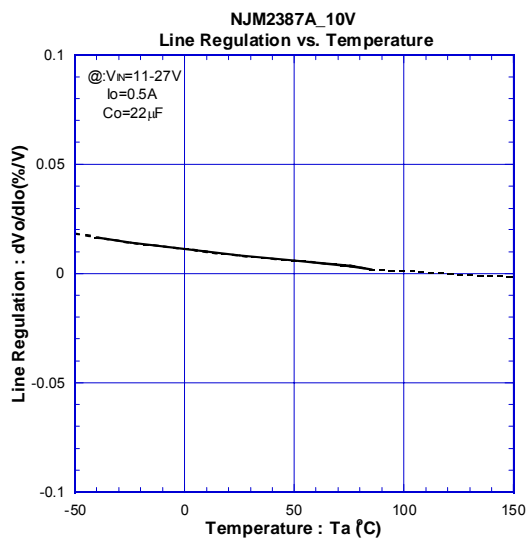


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ELECTRICAL CHARACTERISTICS

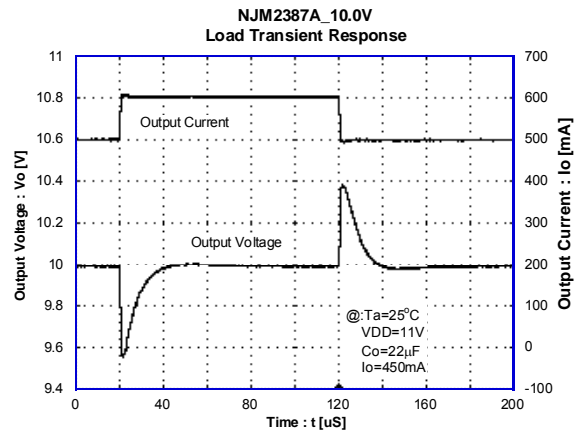
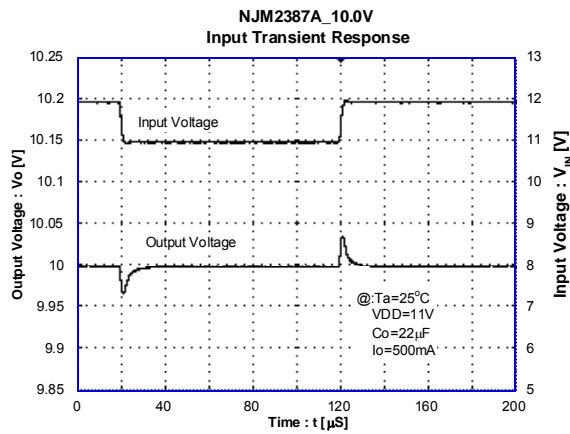
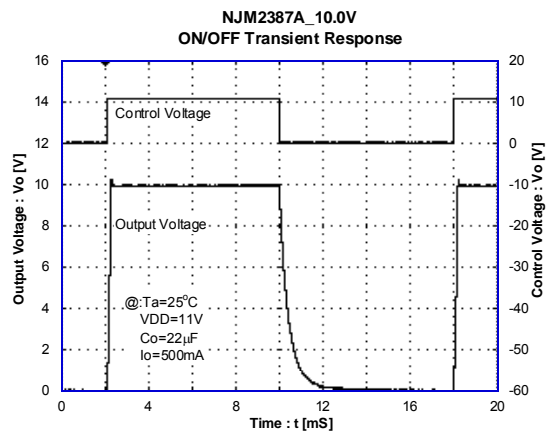
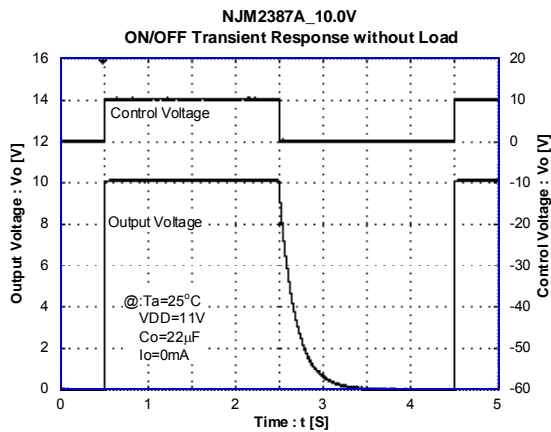


■ ELECTRICAL CHARACTERISTICS



NJM2387A

■ ELECTRICAL CHARACTERISTICS



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