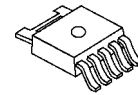


## ADJUSTABLE LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

### ■ 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

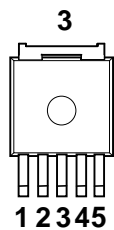


NJM2387ADL3

### ■ 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

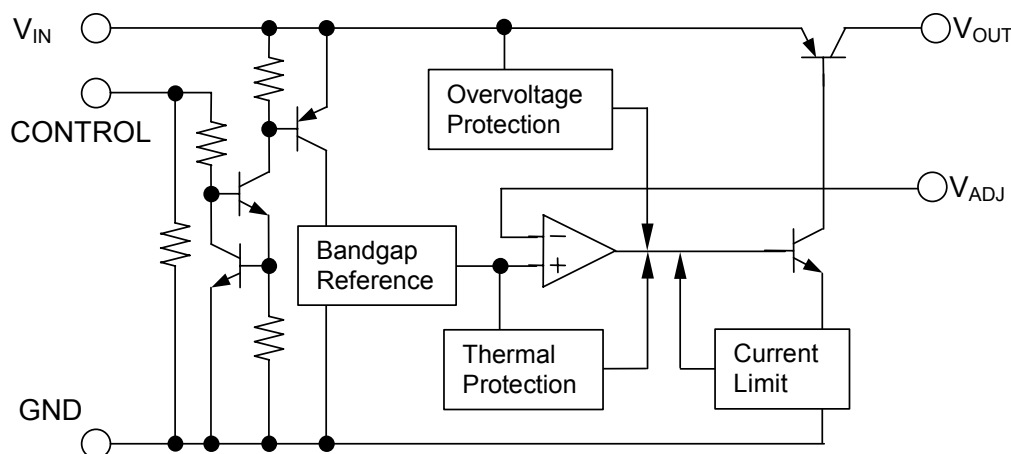


NJM2387ADL3

#### PIN FUNCTION

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

### ■ EQUIVALENT CIRCUIT



NJM2387ADL3

# NJM2387A

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## ■ 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	$P_D$	$10(T_c \leq 25^\circ C) / 1(T_a \leq 25^\circ C)$	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.

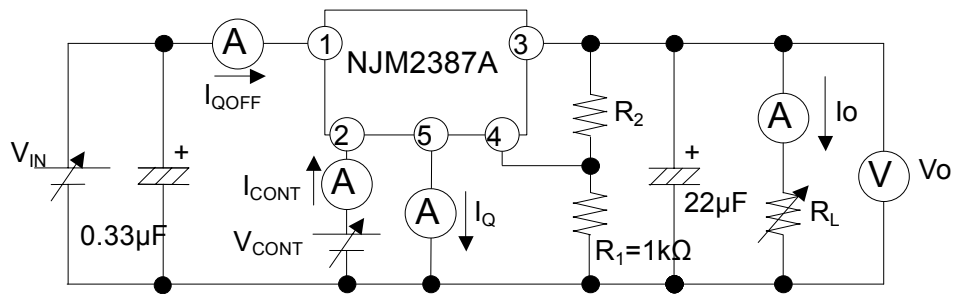
## ■ ELECTRICAL CHARACTERISTICS ( $V_{IN}=15V$ , $V_O=10V$ , $I_o=0.5A$ , $R_1=1k\Omega$ , $C_{IN}=0.33\mu F$ , $C_o=22\mu F$ , $T_j=25^\circ C$ )

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	$\Delta V_o / \Delta V_{IN}$	$V_{IN}=V_O+1V \sim V_O+17V$	-	0.04	0.16	%/V
Load Regulation	$\Delta V_o / \Delta I_o$	$V_{IN}=V_O+2V, I_o=0A \sim 1.0A$	-	0.2	1.4	%/A
Average Temperature Coefficient of Output Voltage	$\Delta V_o / \Delta T$	$T_j=0 \sim +125^\circ C$	-	$\pm 0.02$	-	%/°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	$\mu A$
Dropout Voltage	$\Delta V_{LO}$	$I_o=0.5A$	-	0.2	0.5	V
Ripple Rejection	RR	$V_{in}=V_o+2V, e_{in}=0.5V_{rms}$ $e_{in}=0.5V_{rms}, f=120Hz$	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	$\mu A$
OFF Control Current	$I_{CONT(OFF)}$	$V_C=0.4V$	1	3	5	$\mu A$

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

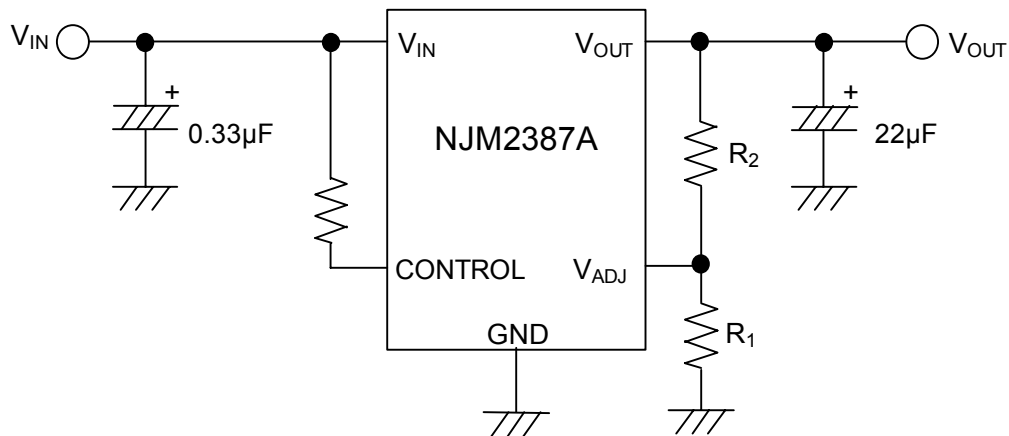
## ■ TEST CIRCUIT



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

## ■ TYPICAL APPLICATION

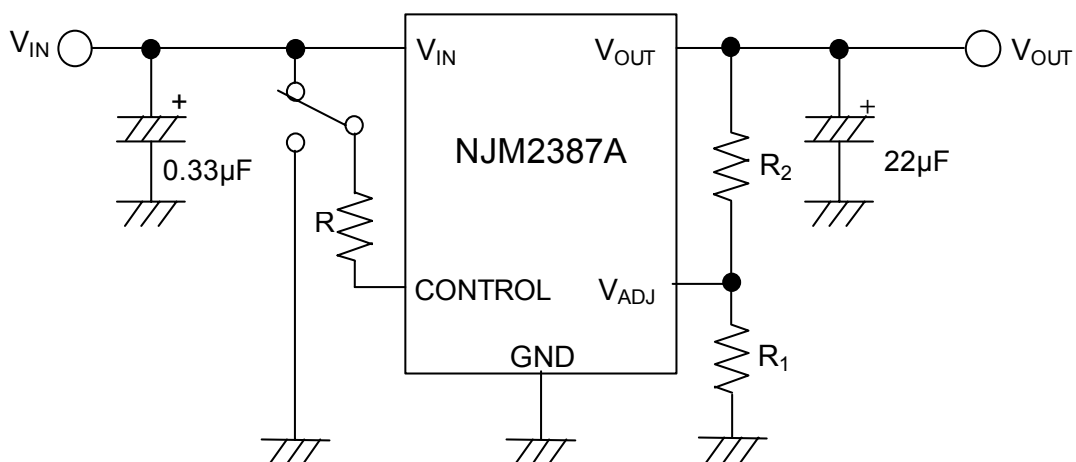
① In the case where ON/OFF Control is not required:



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:



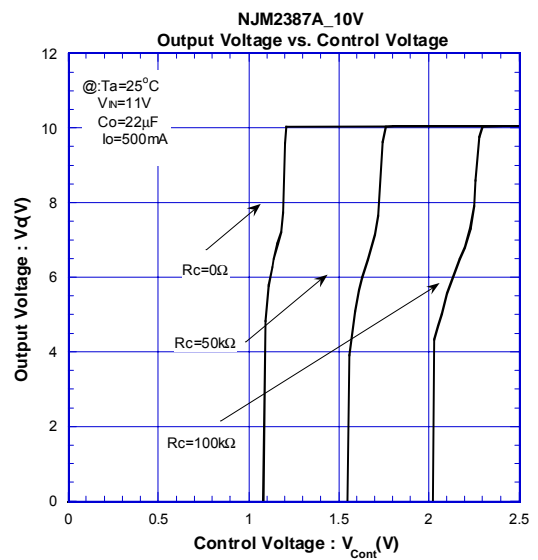
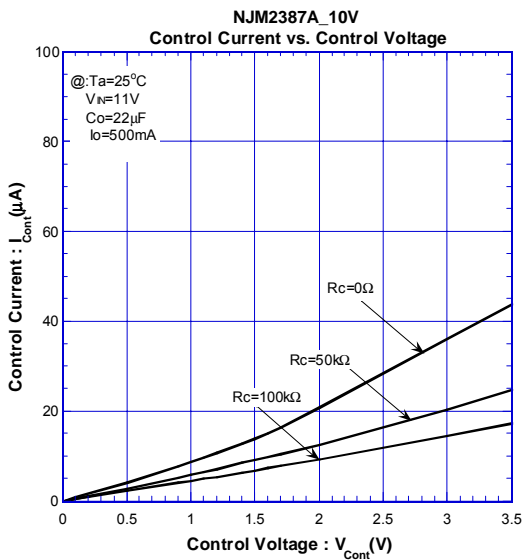
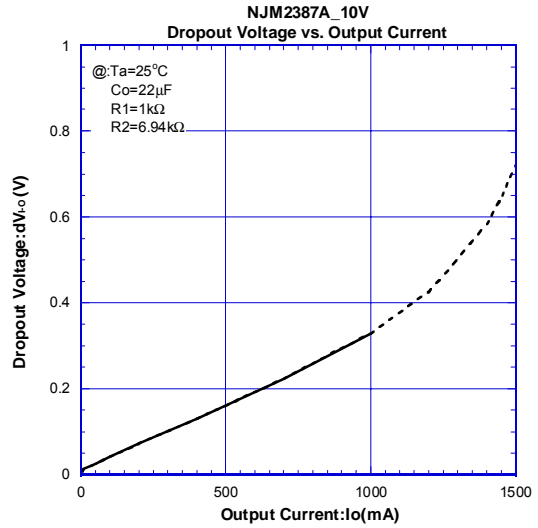
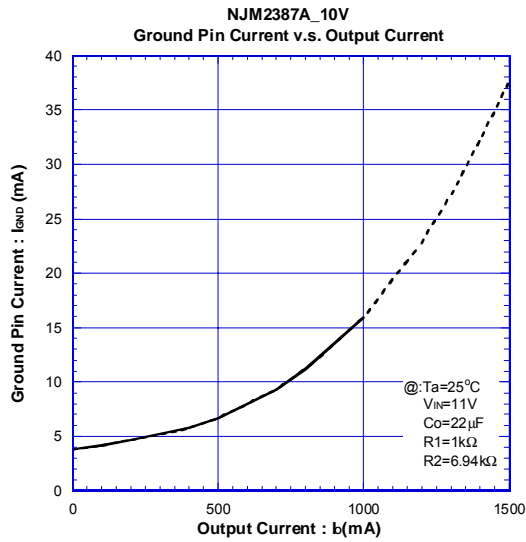
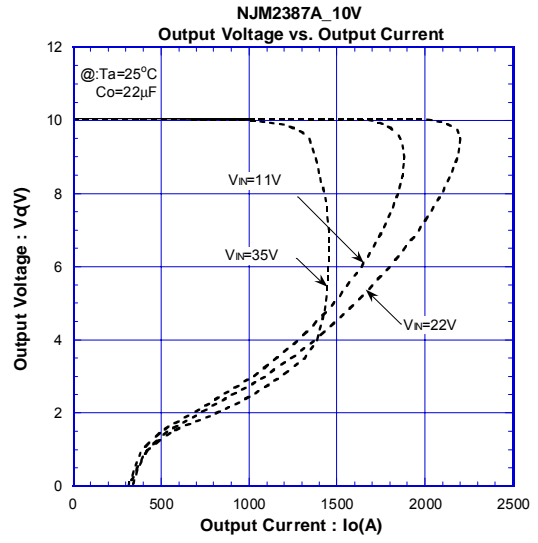
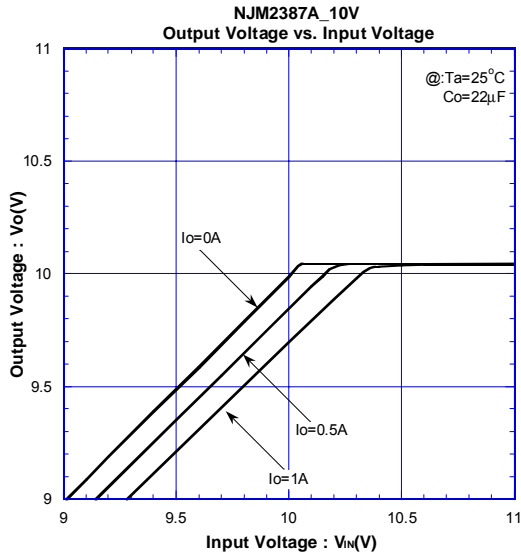
State of control terminal:

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

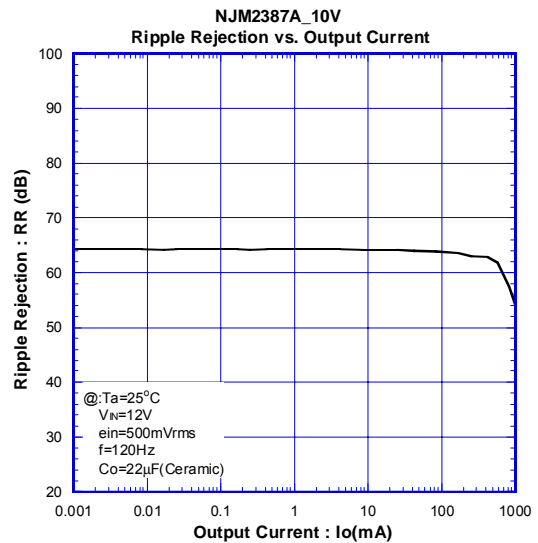
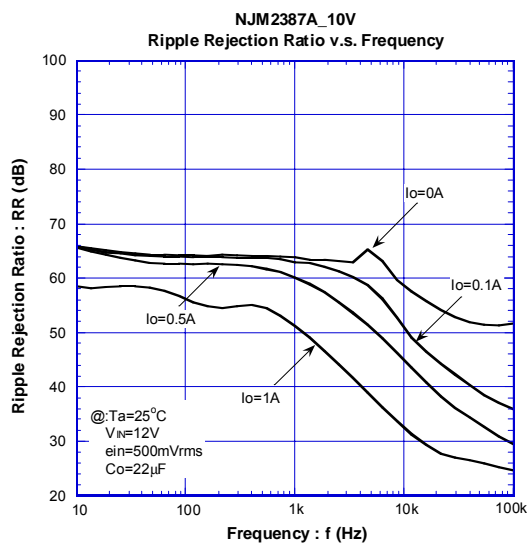
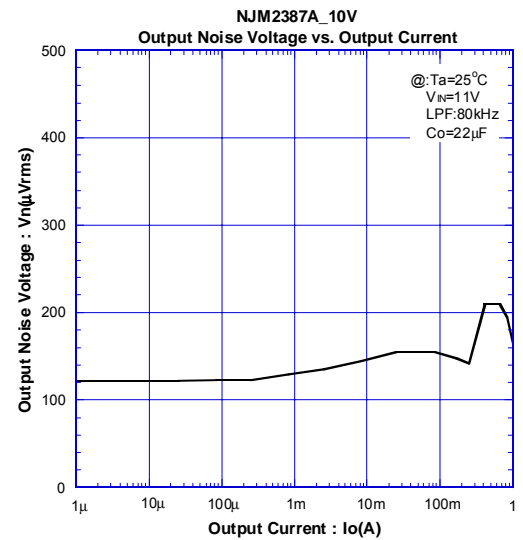
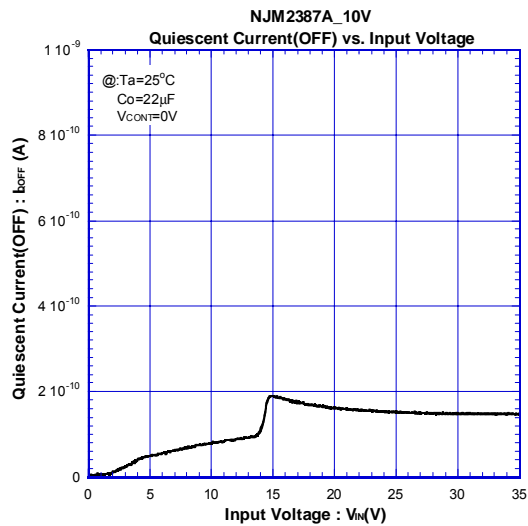
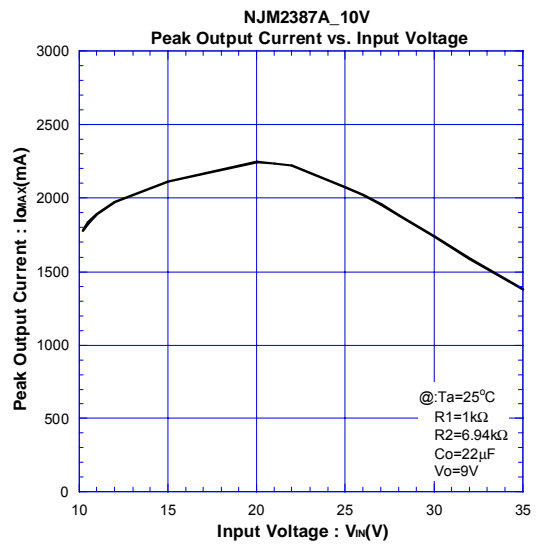
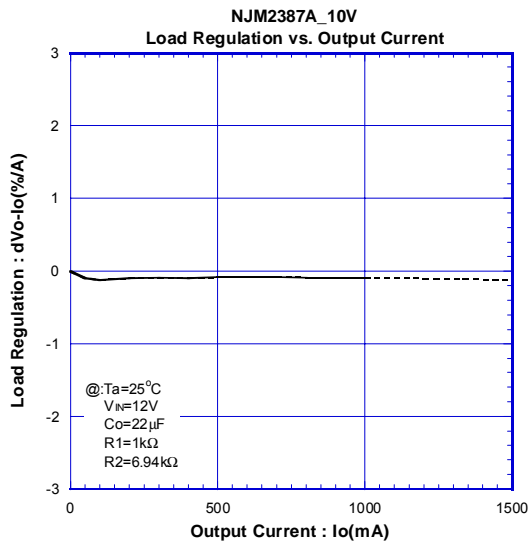
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## ELECTRICAL CHARACTERISTICS



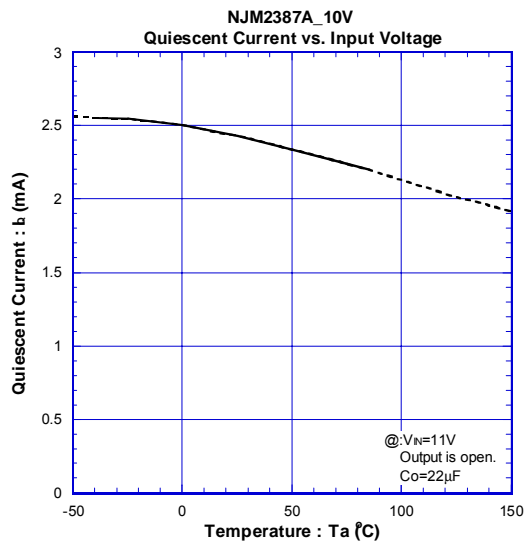
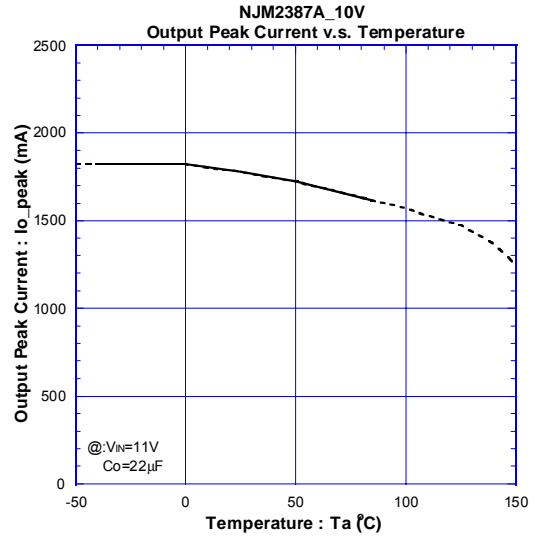
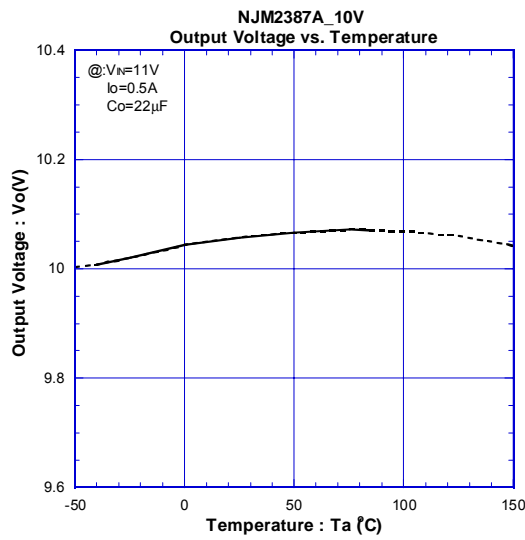
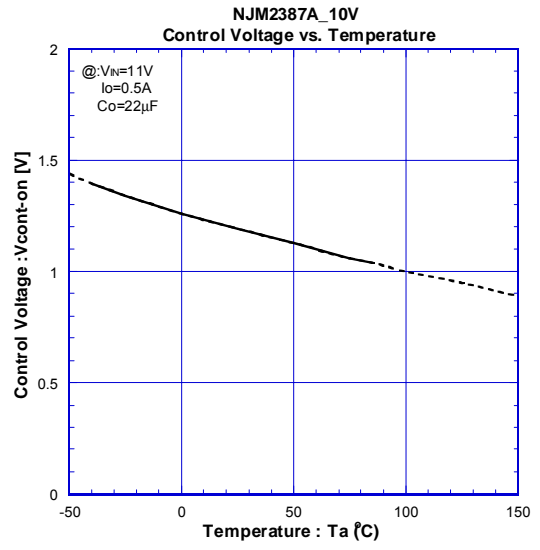
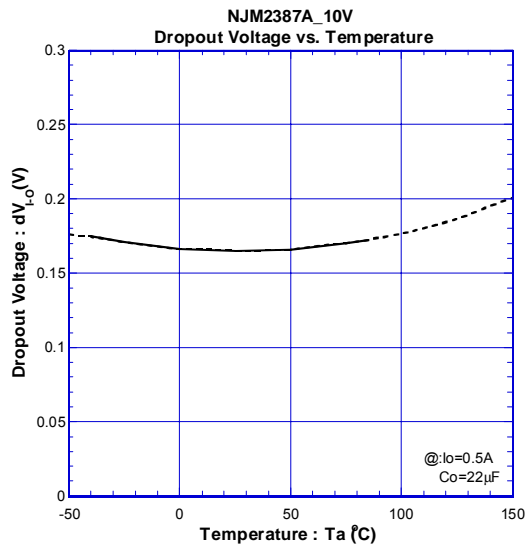
## ■ ELECTRICAL CHARACTERISTICS



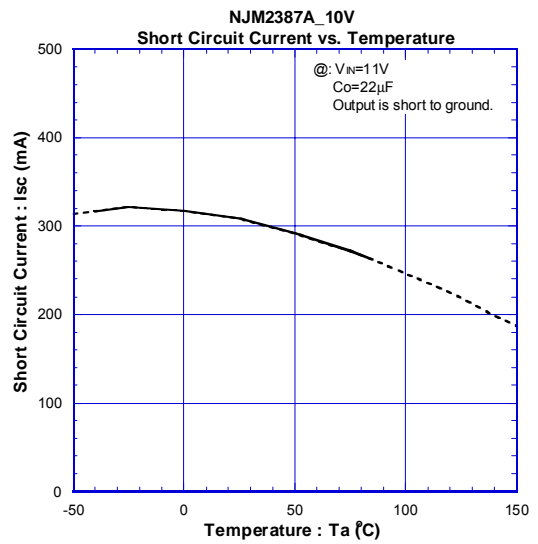
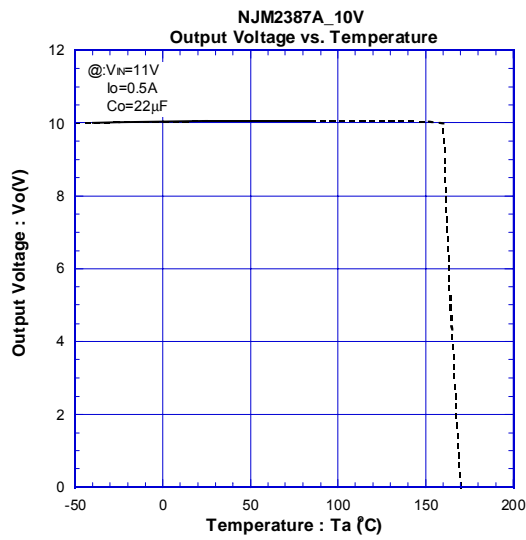
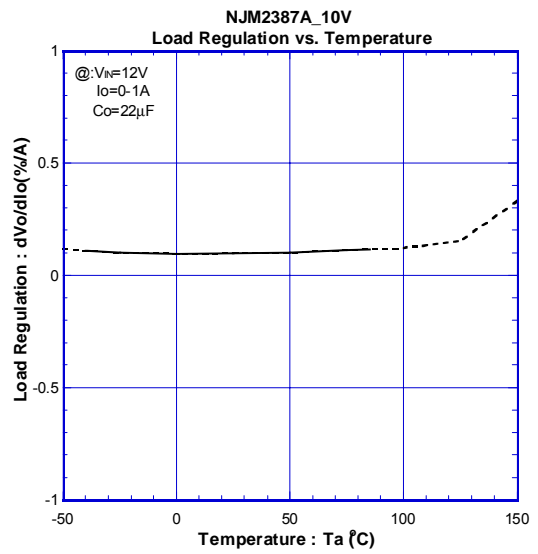
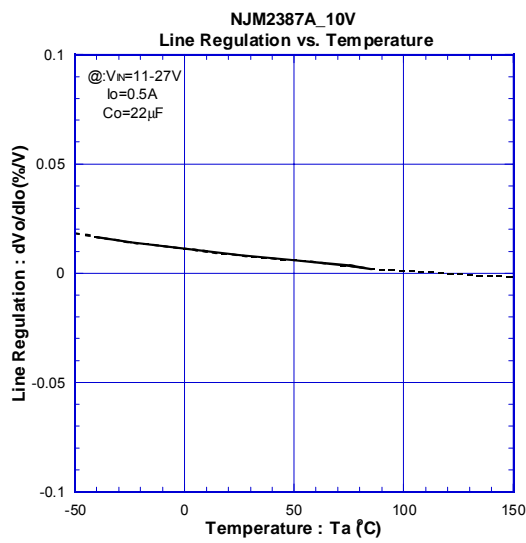
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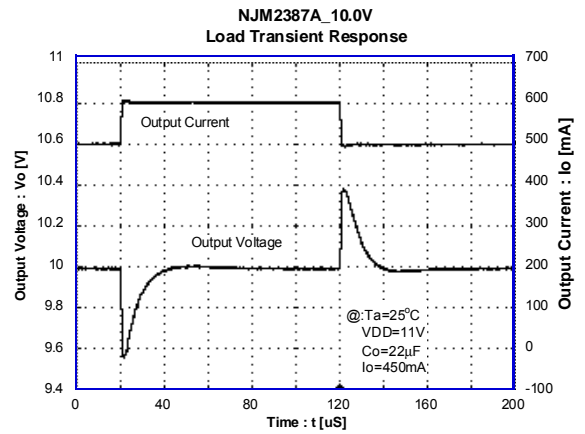
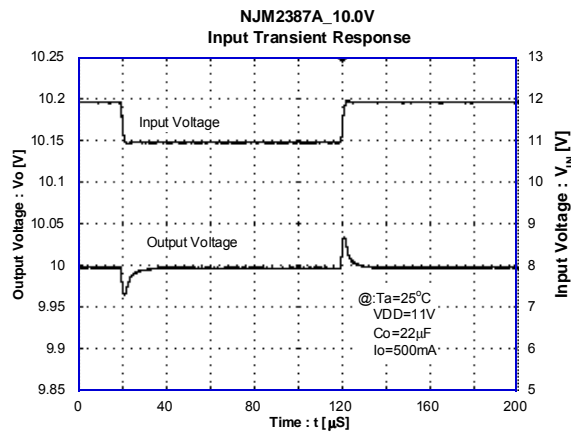
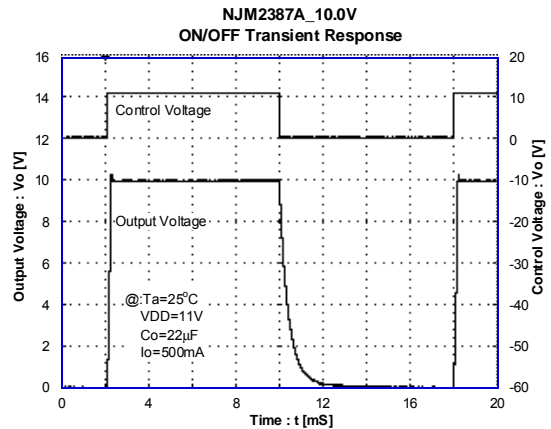
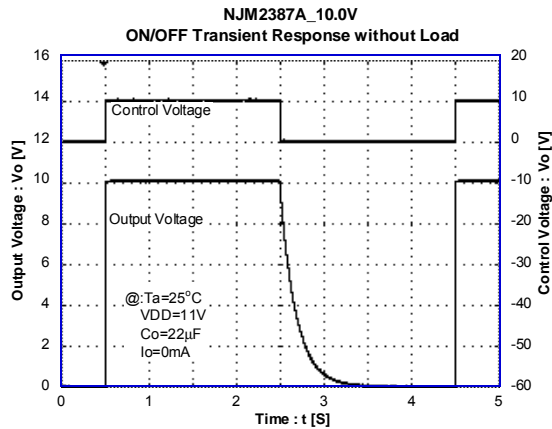
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## ELECTRICAL CHARACTERISTICS



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