

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

NJM2874/75/76 is a low dropout voltage regulator designed for cellular phone application.

Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

■ PACKAGE OUTLINE

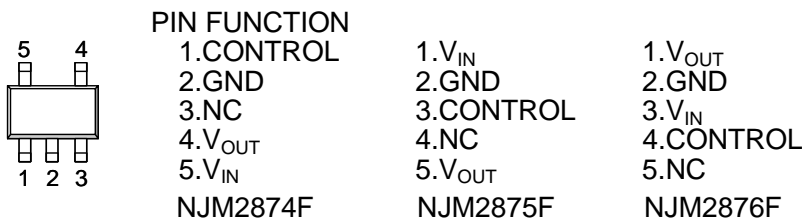


NJM2874F/75F/76F

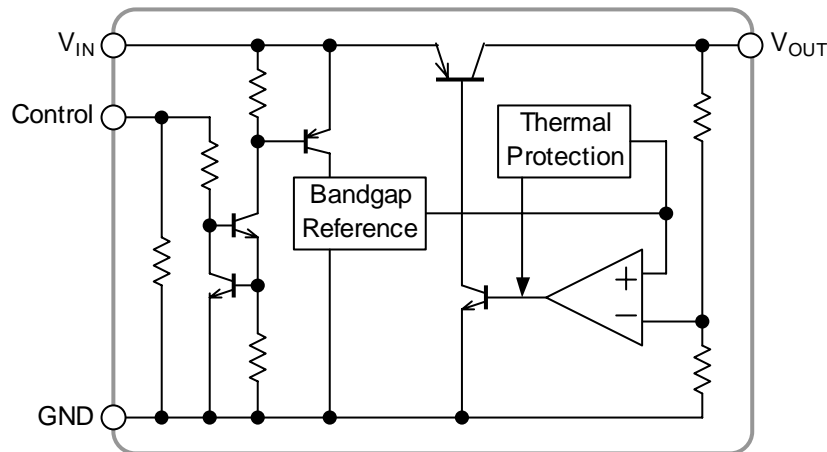
■ FEATURES

- High Ripple Rejection 75dB typ. (f=1kHz Vo=3V Version)
- Output Noise Voltage Vno=45μVrms typ.
- Output capacitor with 1.0μF ceramic capacitor (Vo≥2.7V)
- Output Current Io(max.)=150mA
- High Precision Output Vo±1%
- Low Dropout Voltage 0.10V typ. (Io=60mA)
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline SOT-23-5

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}
NJM287×F21	2.1V
NJM287×F28	2.8V
NJM287×F03	3.0V
NJM287×F33	3.3V
NJM287×F05	5.0V

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+14	V
Control Voltage	V_{CONT}	+14(*1)	V
Power Dissipation	P_D	SOT-23-5	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C

(*1): When input voltage is less than +14V, the absolute maximum control voltage is equal to the input voltage.

(*2) : Mounted on glass epoxy board. (114.3x76.2x1.6mm: 2Layer, FR-4)

(*3) : Device itself

■ ELECTRICAL CHARACTERISTICS

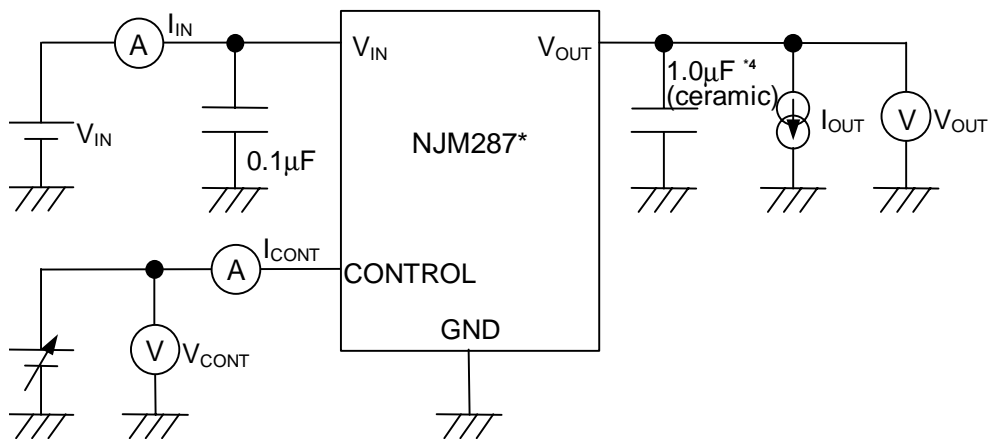
($V_{IN}=V_o+1V$, $C_{IN}=0.1\mu F$, $C_o=1.0\mu F$: $V_o \geq 2.7V$ ($C_o=2.2\mu F$: $V_o \leq 2.6V$), $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_o	$I_o=30mA$	-1.0%	-	+1.0%	V
Quiescent Current	I_Q	$I_o=0mA$, expect I_{cont}	-	120	180	μA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	$V_{CONT}=0V$	-	-	100	nA
Output Current	I_o	$V_o=0.3V$	150	200	-	mA
Line Regulation	$\Delta V_o/\Delta V_{IN}$	$V_{IN}=V_o+1V \sim V_o+6V$, $I_o=30mA$	-	-	0.10	%/V
Load Regulation	$\Delta V_o/\Delta I_o$	$I_o=0 \sim 100mA$	-	-	0.03	%/mA
Dropout Voltage	ΔV_{L-O}	$I_o=60mA$	-	0.10	0.18	V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_o=10mA$, $V_o=3V$ Version	-	75	-	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$	$T_a=0 \sim 85^\circ C$, $I_o=10mA$	-	± 50	-	ppm/°C
Output Noise Voltage	V_{NO}	$f=10Hz \sim 80kHz$, $I_o=10mA$, $V_o=3V$ Version	-	45	-	μV_{rms}
Control Voltage for ON-state	$V_{CONT(ON)}$		1.6	-	-	V
Control Voltage for OFF-state	$V_{CONT(OFF)}$		-	-	0.6	V

The above specification is a common specification for all output voltages.

Therefore, it may be different from the individual specification for a specific output voltage.

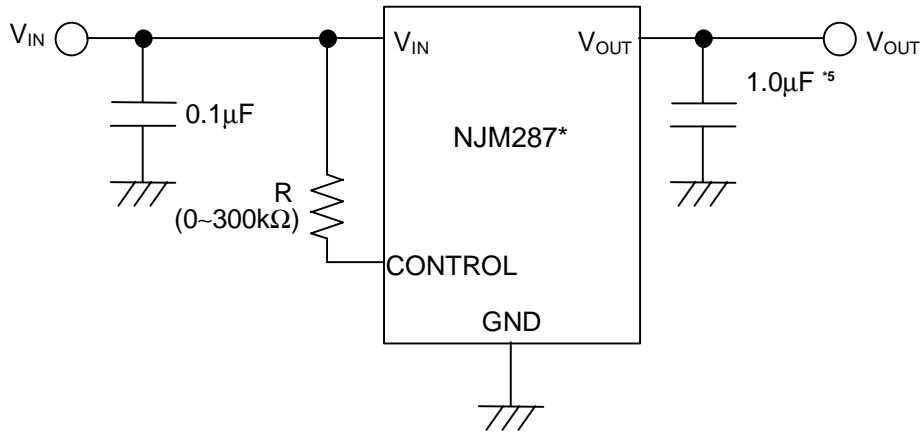
■ TEST CIRCUIT



*4 $V_o \leq 2.6V$ version: $C_o=2.2\mu F$ (ceramic)

■ TYPICAL APPLICATION

① In case that ON/OFF Control is not required:

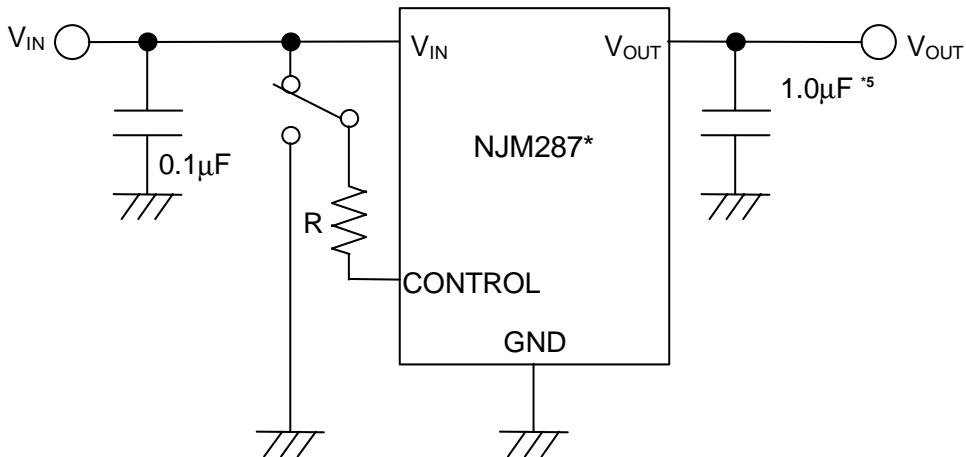


*5 $V_o \leq 2.6V$ version: $C_o = 2.2\mu F$

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:



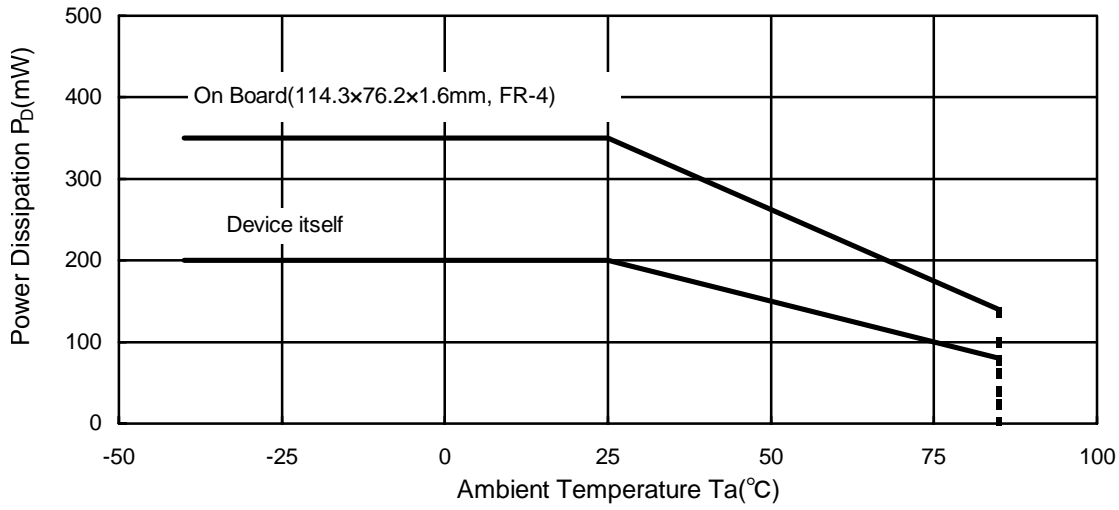
*5 $V_o \leq 2.6V$ version: $C_o = 2.2\mu F$

State of control terminal:

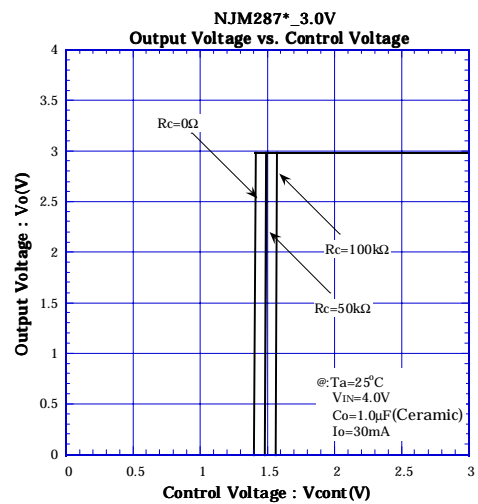
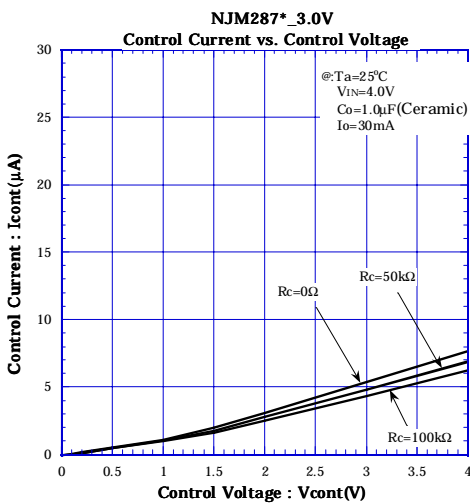
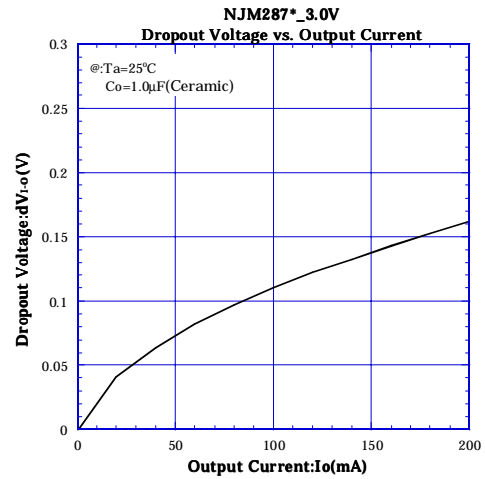
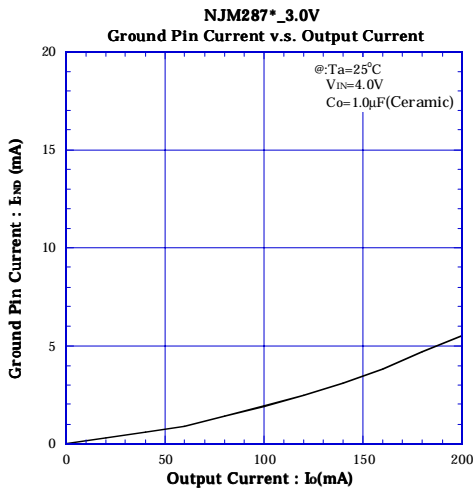
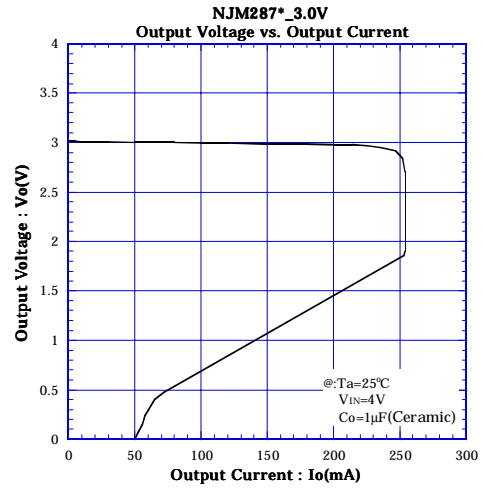
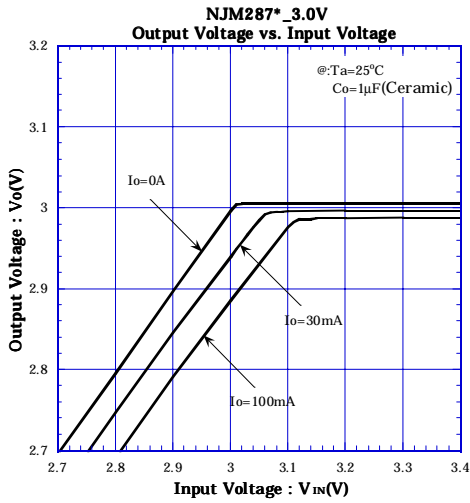
- “H” → output is enabled.
- “L” or “open” → output is disabled.

■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

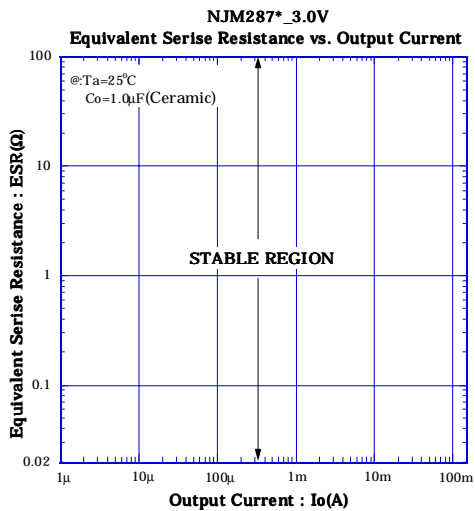
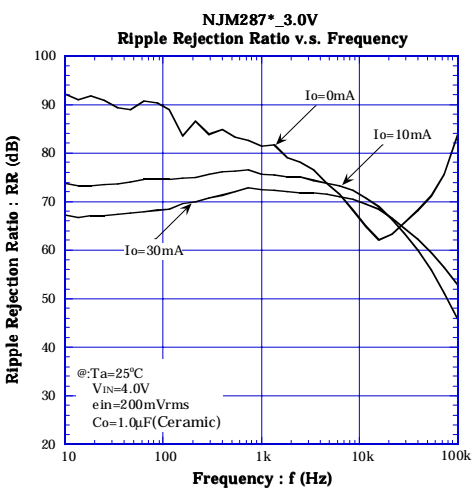
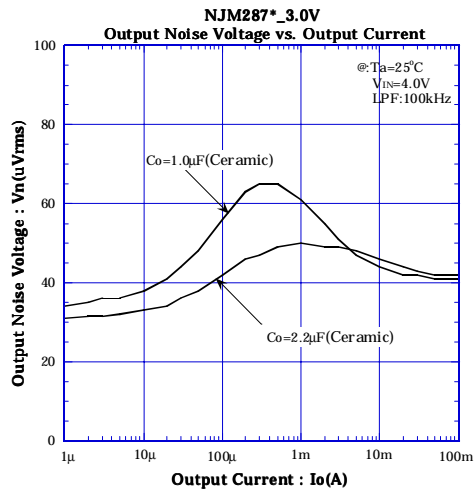
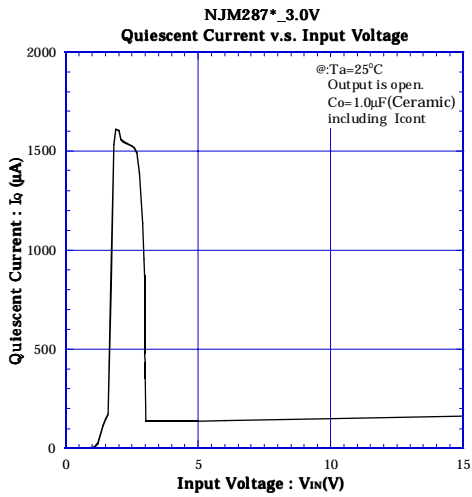
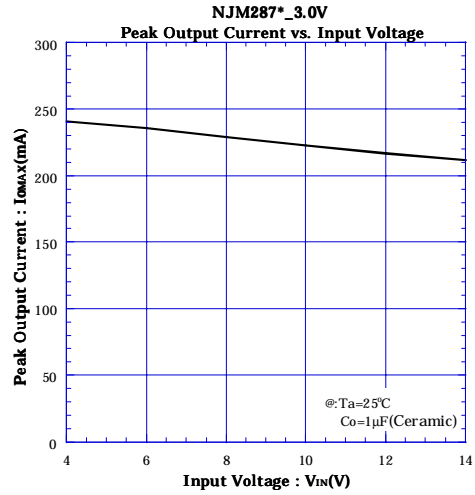
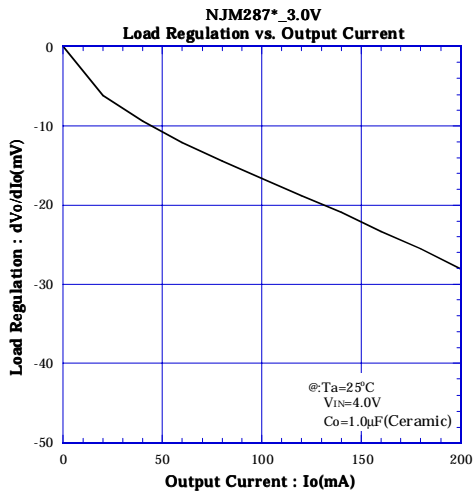
NJM2874/75/76F Power Dissipation
 (Topr=-40~+85°C, Tj=125°C, P_D=200mW (Ta ≤ 25°C))



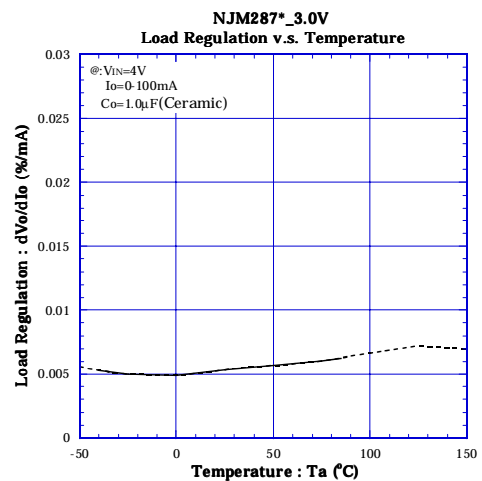
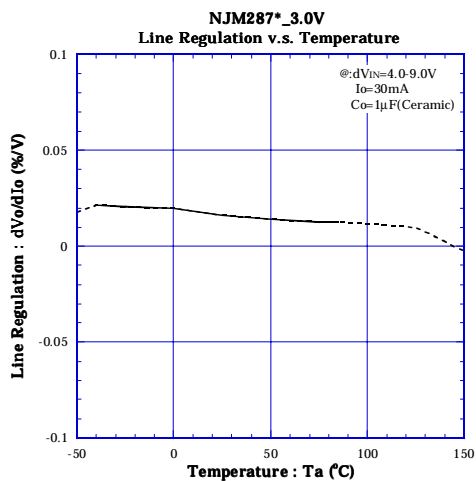
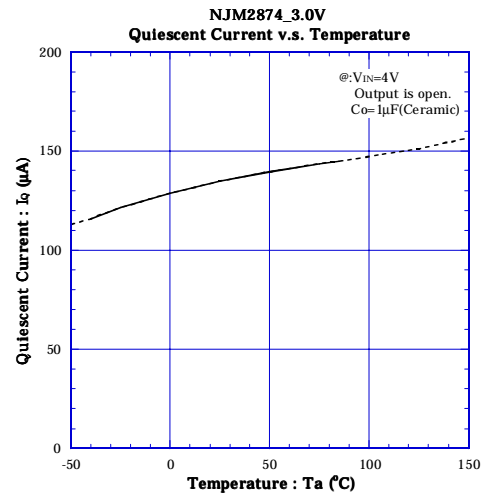
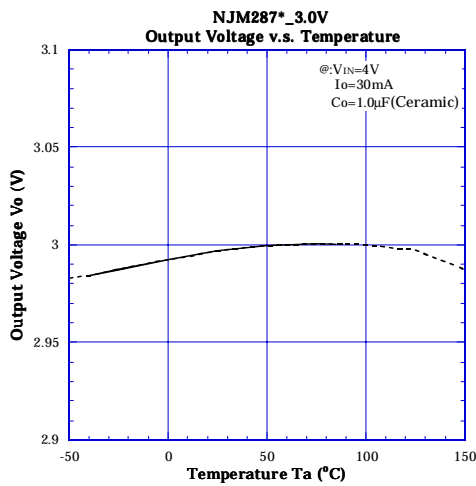
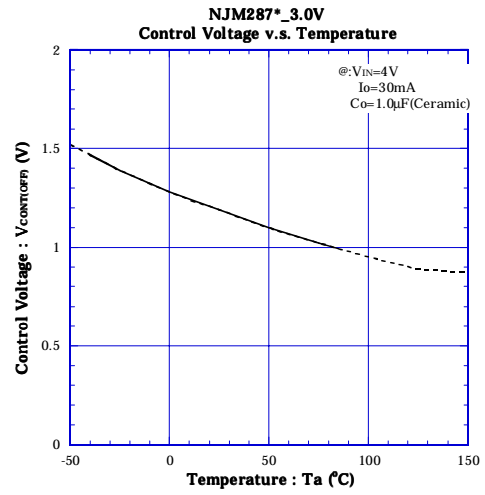
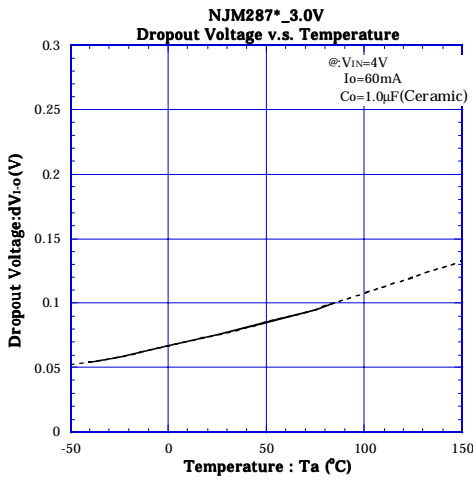
■ ELECTRICAL CHARACTERISTICS



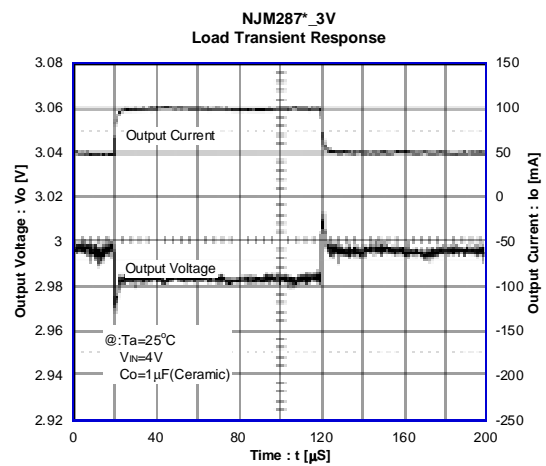
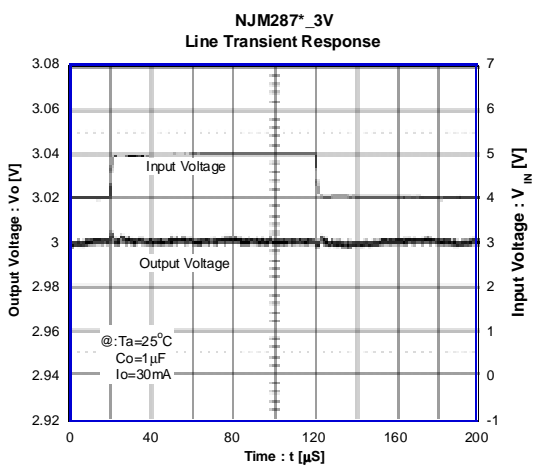
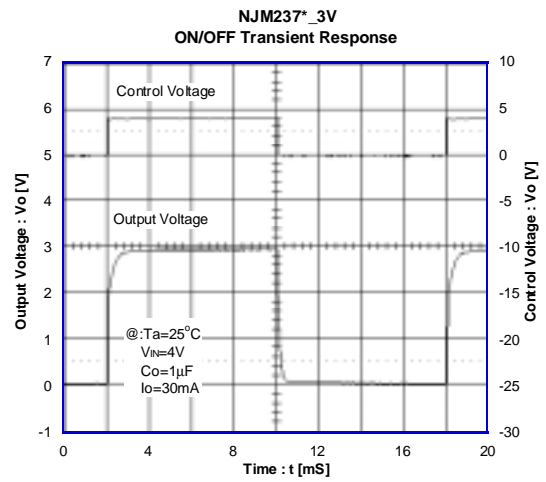
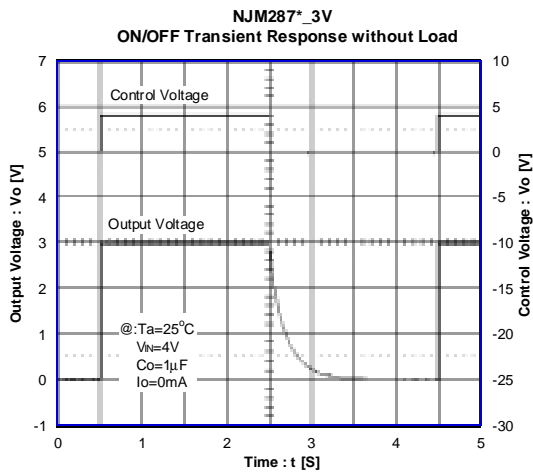
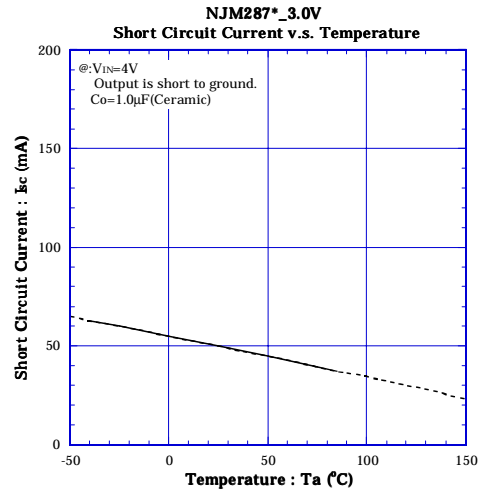
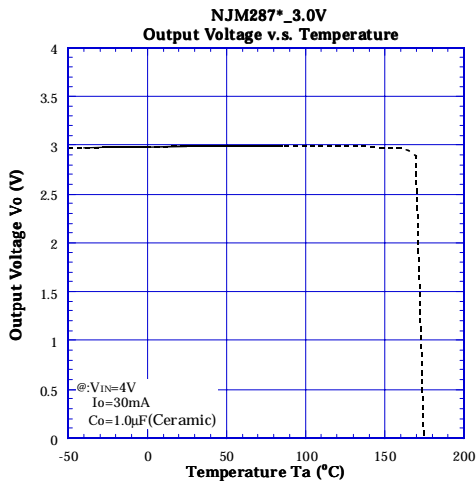
■ ELECTRICAL CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS



[CAUTION]

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