LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

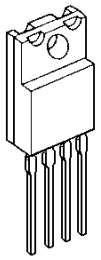
■ GENERAL DESCRIPTION

The NJM2396 is low dropout voltage regulator with ON/OFF control.

The output current is up to 1.5A and dropout voltage is 0.2Vtyp. at Io=0.5A.

The NJM2396 is suitable for power module, TV, Display, car stereo and low power applications.

■ PACKAGE OUTLINE

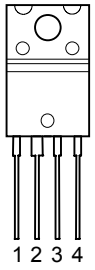


NJM2396F

■ FEATURE

- Low Dropout Voltage ΔV_{I-O}=0.2V typ. at Io=0.5A
- Output Current Io(max.)=1.5A
- ON/OFF Control
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-220F-4

■ PIN CONFIGURATION



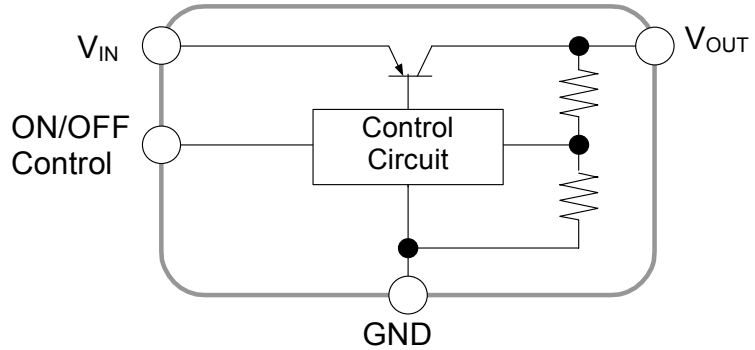
NJM2396F

PIN FUNCTION
1. V_{IN}
2. V_{OUT}
3. GND
4. ON/OFF CONTROL

■ OUTPUT VOLTAGE RANK LIST

Device Name	V_{OUT}
NJM2396F33	3.3V
NJM2396F05	5.0V
NJM2396F63	6.3V
NJM2396F08	8.0V
NJM2396F83	8.3V
NJM2396F09	9.0V
NJM2396F12	12.0V

■ EQUIVALENT CIRCUIT



■ 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	Io	1.5	A
Power Dissipation	P_D	18(Tc<50°C)	W
Operating Junction Temperature Range	Tj	-40 to +150	°C
Operating Temperature Range	Topr	-40 to 85	°C
Storage Temperature Range	Tstg	-50 to 150	°C

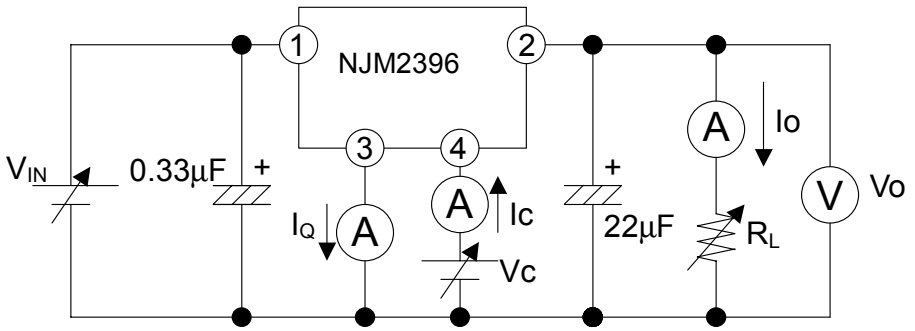
(*1): When input voltage is less than +35V, the absolute maximum control voltage is equal to the input voltage.

■ ELECTRICAL CHARACTERISTICS (V_{IN}=V_O+1V,Io=0.5A,C_{IN}=0.33µF,Co=22µF,Tj=25°C)
Measurement is to be conducted is pulse testing.

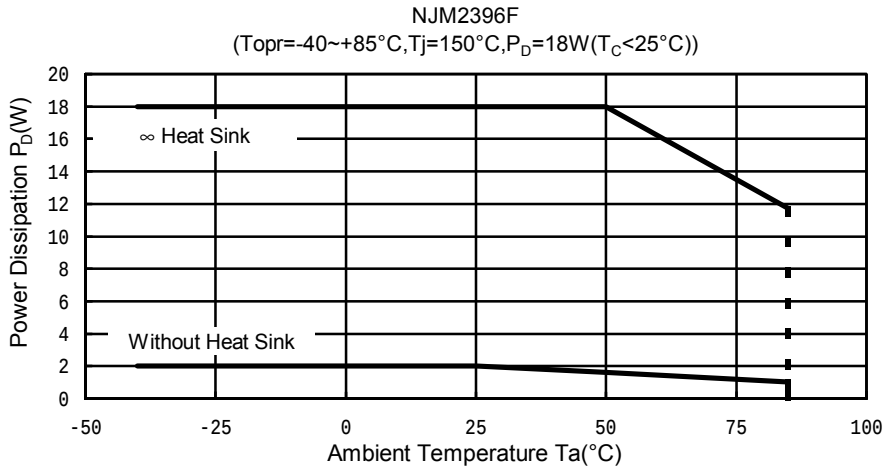
PARAMETER		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage		Vo	V_{IN}=V_O+1V	-4%	-	+4%	V
Line Regulation		$\Delta Vo/\Delta V_{IN}$	V_{IN}=V_O+1V to V_O+17V	-	0.04	0.16	%/V
Load Regulation		$\Delta Vo/\Delta Io$	V_{IN}=V_O+2V,Io=0A to 1.5A	-	0.2	1.4	%/A
Average Temperature Coefficient of Output Voltage		$\Delta Vo/\Delta T$	Tj=0 to 125°C	-	±0.02	-	%/°C
Standby Current		I_Q	Io=0A	-	-	5	mA
Dropout Voltage		ΔV_{I-O}	Io=0.5A	-	0.2	0.5	V
Ripple Rejection	NJM2396F33	RR	V_{IN}=V_O+2V ein=0.5Vrms,f=120Hz	52	60	-	dB
	NJM2396F05			52	60	-	
	NJM2396F63			52	60	-	
	NJM2396F08			50	58	-	
	NJM2396F83			50	58	-	
	NJM2396F09			50	58	-	
	NJM2396F12			48	58	-	
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.

■ TEST CIRCUIT

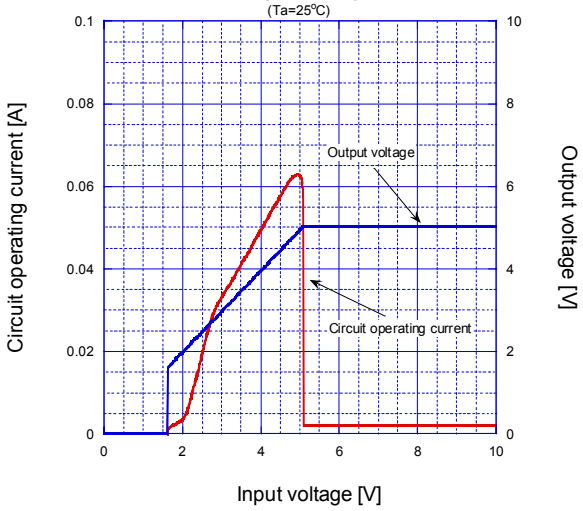


■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

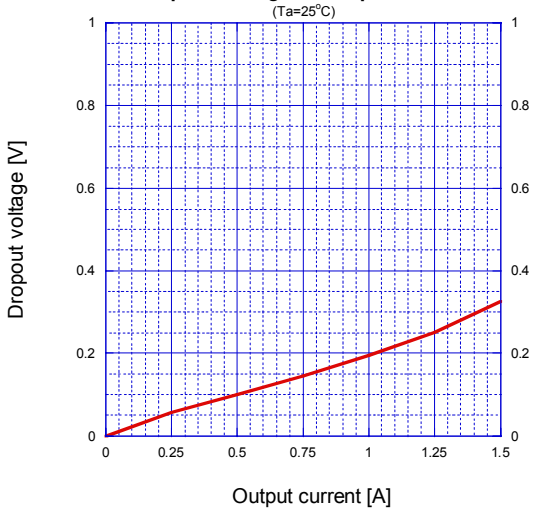


■ TYPICAL CHARACTERISTICS

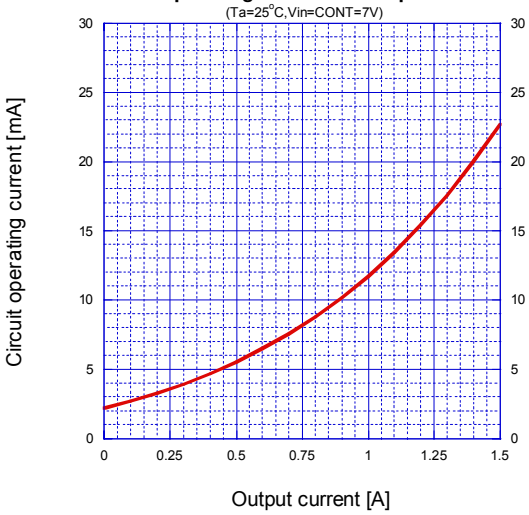
NJM2396F05
Circuit operating current/Output voltage vs.Input voltage
(Ta=25°C)



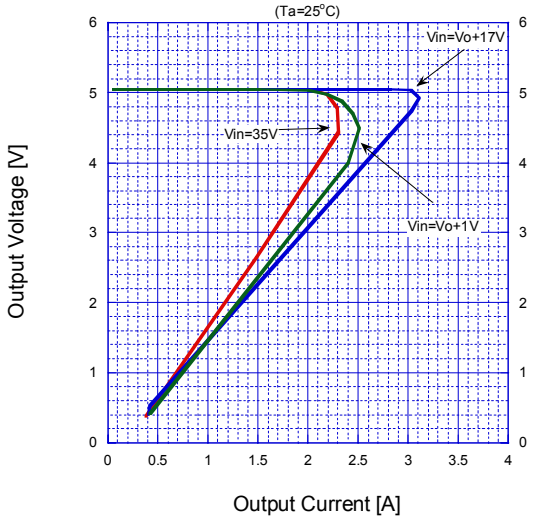
NJM2396F05
Dropout voltage vs.Output current
(Ta=25°C)



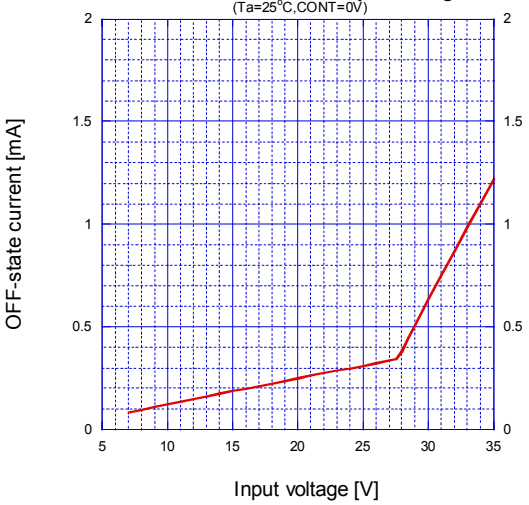
NJM2396F05
Circuit operating current vs.Output current
(Ta=25°C,Vin=CONT=7V)



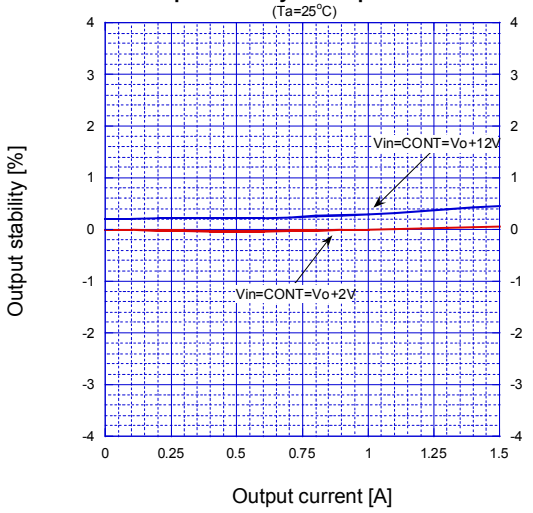
NJM2396F05
Overcurrent Protection Characteristics
(Ta=25°C)



NJM2396F05
OFF-state current vs.Input voltage
(Ta=25°C,CONT=0V)

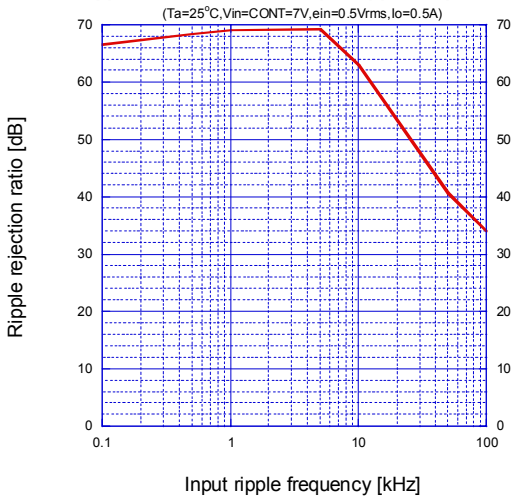


NJM2396F05
Output stability vs.Output current
(Ta=25°C)

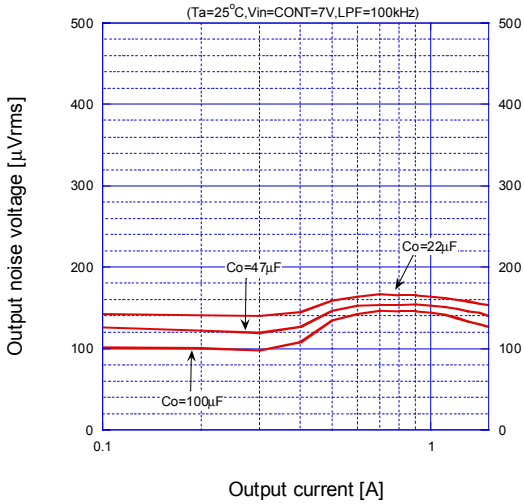


■ TYPICAL CHARACTERISTICS

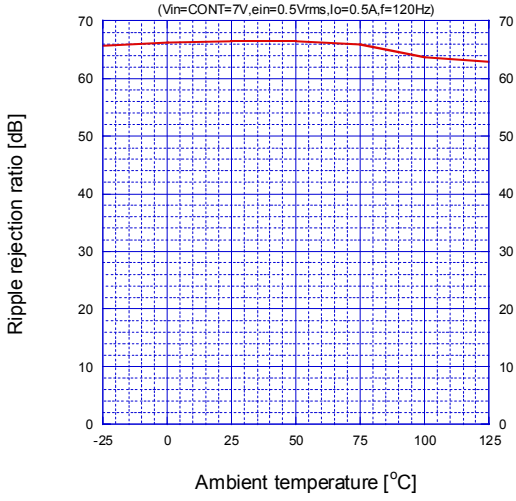
NJM2396F05
Ripple rejection ratio vs.Input ripple frequency



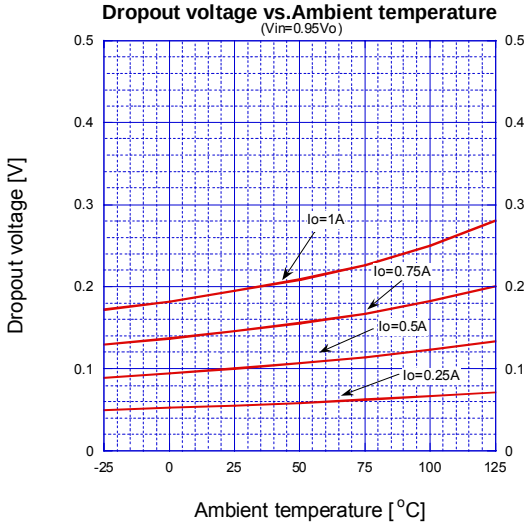
NJM2396F05
Output noise voltage vs.Output current



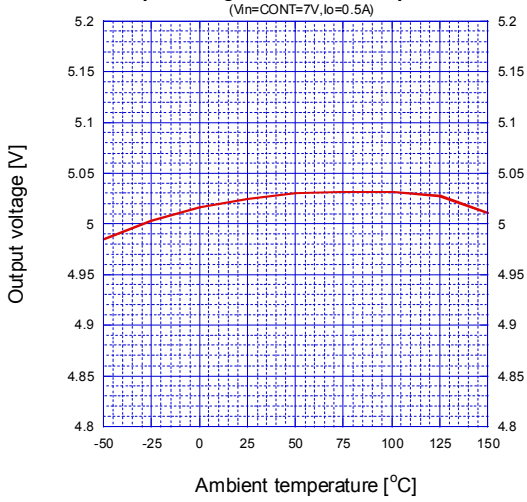
NJM2396F05
Ripple rejection ratio vs.Ambient temperature



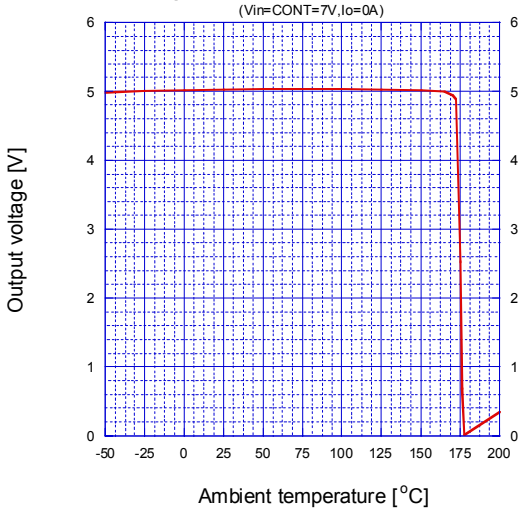
NJM2396F05
Dropout voltage vs.Ambient temperature



NJM2396F05
Output voltage vs.Ambient temperature

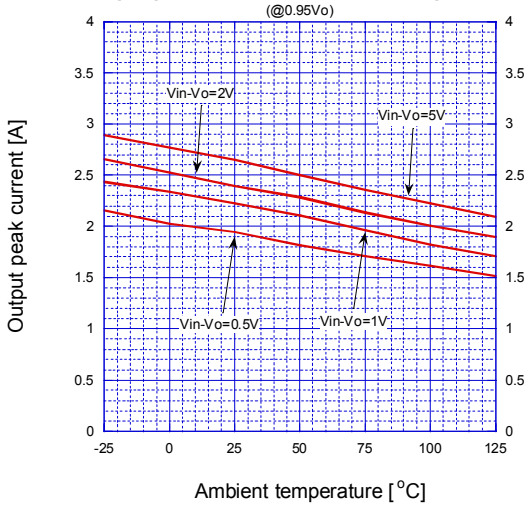


NJM2396F05
Overtemperature Protection Characteristics

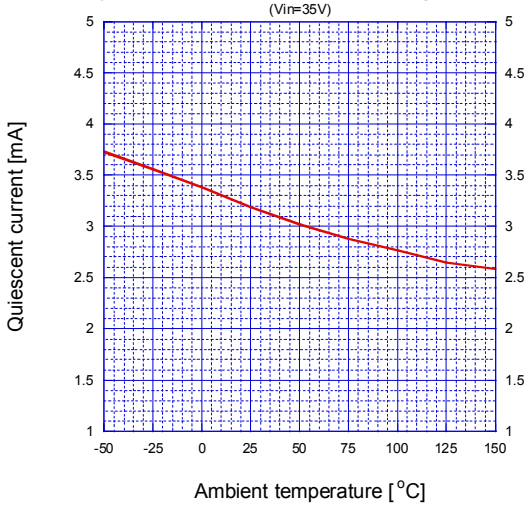


■ TYPICAL CHARACTERISTICS

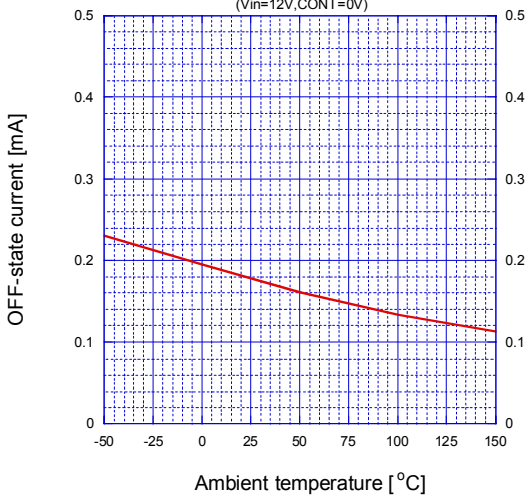
NJM2396F05
Output peak current vs.Ambient temperature
(@0.95Vo)



NJM2396F05
Quiescent current vs.Ambient temperature
(Vin=35V)



NJM2396F05
OFF-state current vs.Ambient temperature
(Vin=12V,CONT=0V)



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