LOW DROPOUT VOLTAGE REGULATOR WITH ON/OFF CONTROL

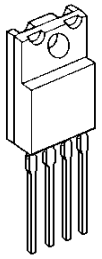
■ GENERAL DESCRIPTION

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

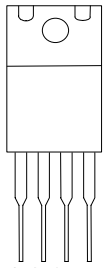


NJM2396F

■ 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(4pin)

■PIN CONFIGURATION



1 2 3 4

NJM2396F

PIN FUNCTION

1. IN
2. OUT
3. GND
4. ON/OFF CONTROL
   "H" or OPEN :ON
   "L" :OFF

■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

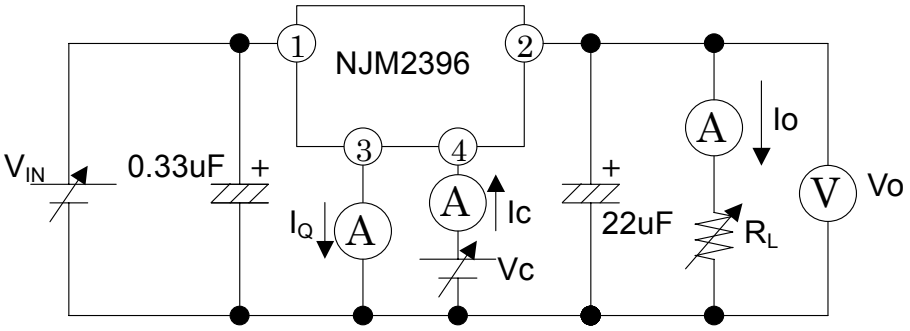
(*1): When input voltage is less than +35V, the absolute maximum control voltage is equal to the input voltage.

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

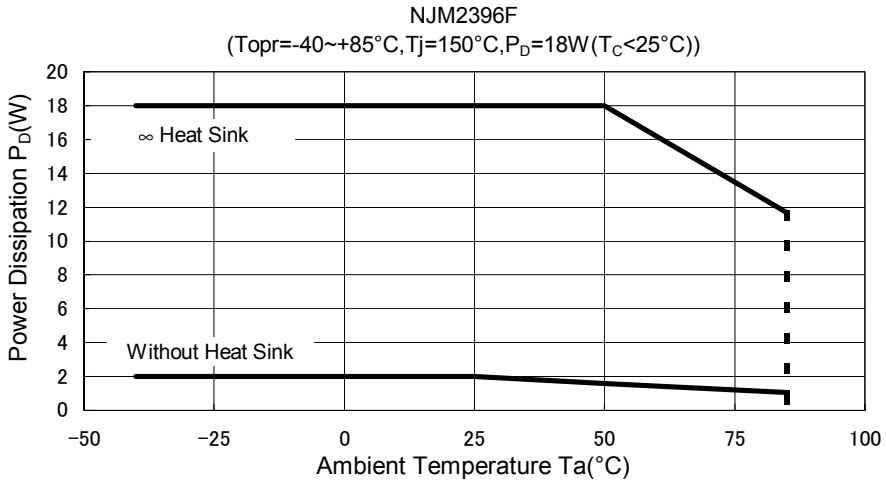
PARAMETER		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage		Vo	V_{IN}=V_O+1V	-4%	-	+4%	V
Line Regulation		ΔVo-V_{IN}	V_{IN}=V_O+1V to V_O+17V	-	0.04	0.16	%/V
Load Regulation		ΔVo-Io	V_{IN}=V_O+2V,Io=0A to 1.5A	-	0.2	1.4	%/A
Average Temperature Coefficient of Output Voltage		ΔVo/ΔT	Tj=0 to 125°C	-	±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	-	
	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	uA
OFF Control Current		$I_{CONT(OFF)}$	V_C=0.4V	-	-	-20	uA

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

■ TEST CIRCUIT

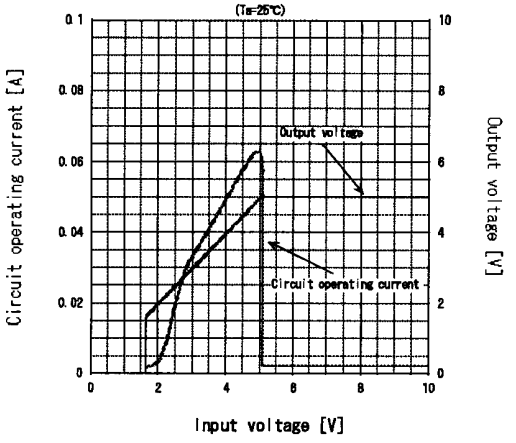


■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

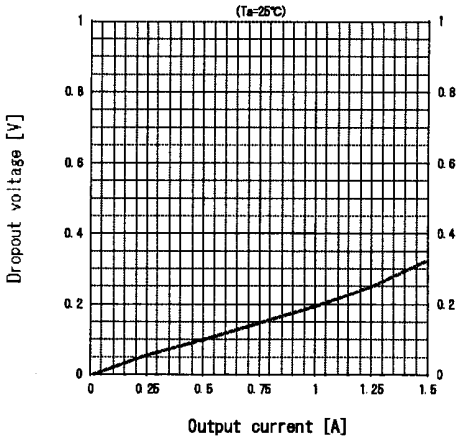


■ TYPICAL CHARACTERISTICS

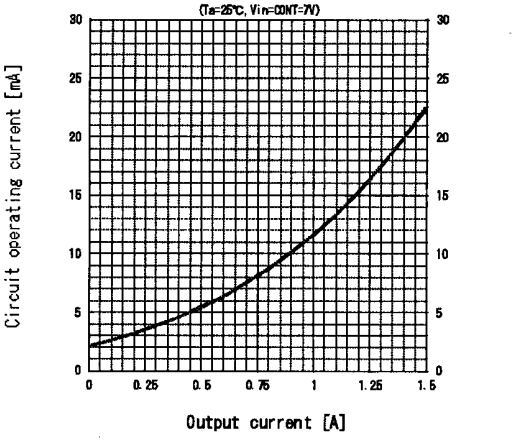
NJM2396F05
Circuit operating current/Output voltage vs. Input voltage
(Ta=25°C)



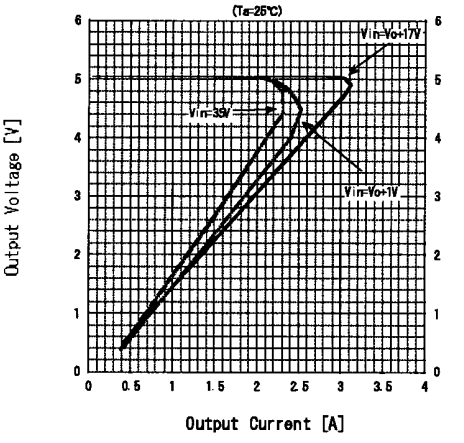
NJM2396F05
Dropout voltage vs. Output current
(Ta=25°C)



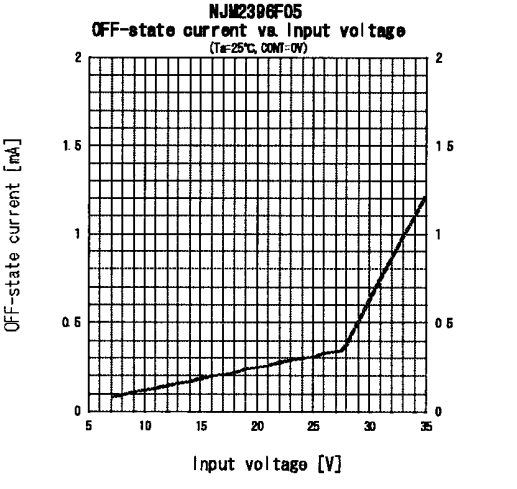
NJM2396F05
Circuit operating current vs. Output current
(Ta=25°C, Vin=CONT=7V)



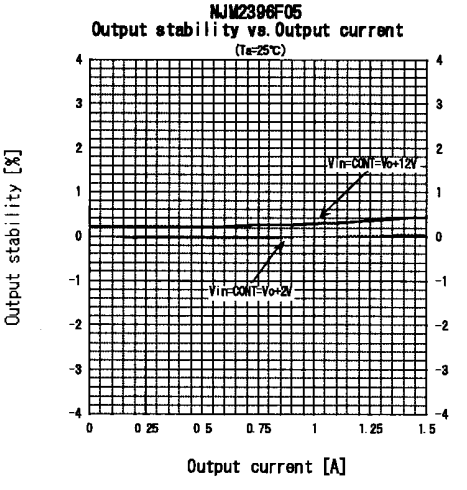
NJM2396F05
Overcurrent Protection Characteristics
(Ta=25°C)



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

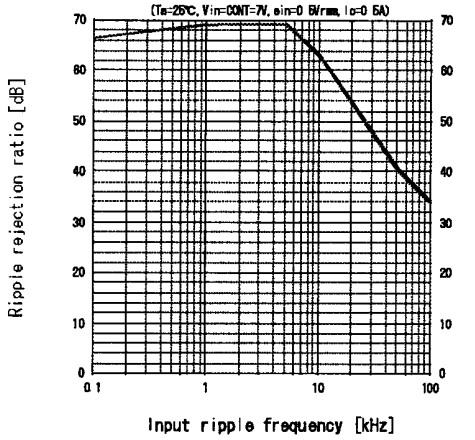


NJM2396F05
Output stability vs. Output current
(Ta=25°C)

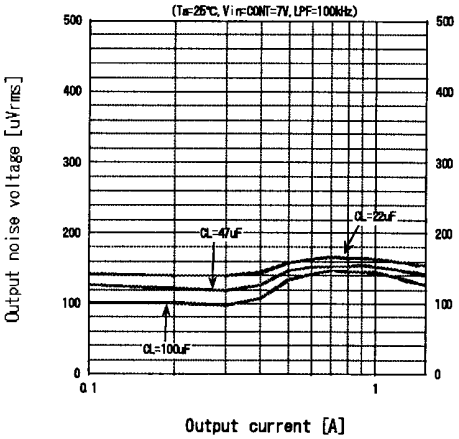


■ TYPICAL CHARACTERISTICS

NJM2396F05
Ripple rejection ratio vs. Input ripple frequency



NJM2396F05
Output noise voltage vs. Output current



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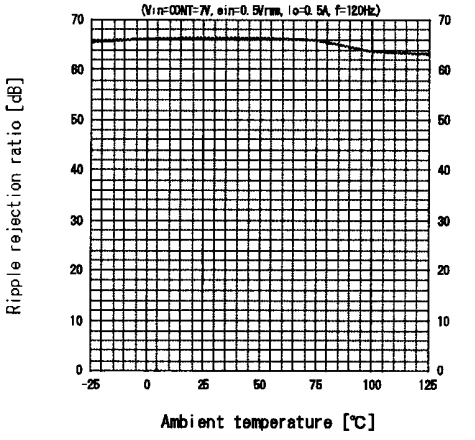
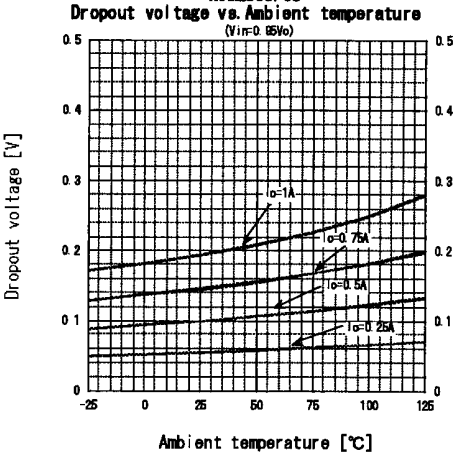
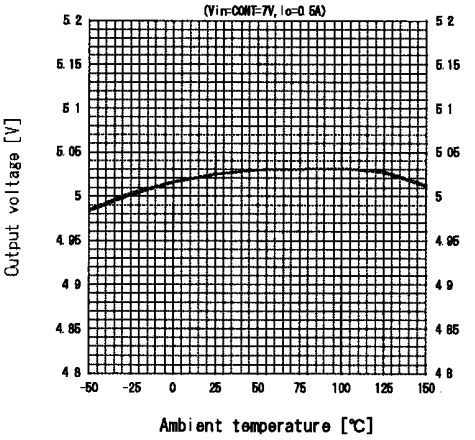
Ripple rejection ratio vs. Ambient temperature



NJM2396F05
Dropout voltage vs. Ambient temperature



NJM2396F05
Output voltage vs. Ambient temperature



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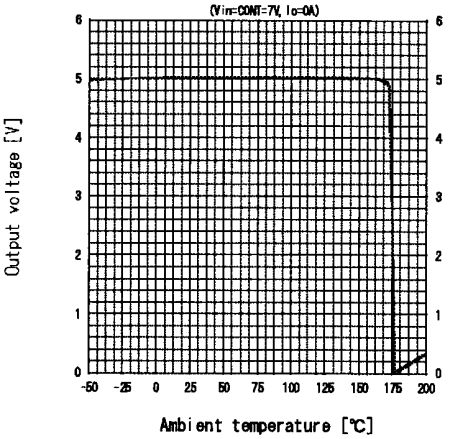
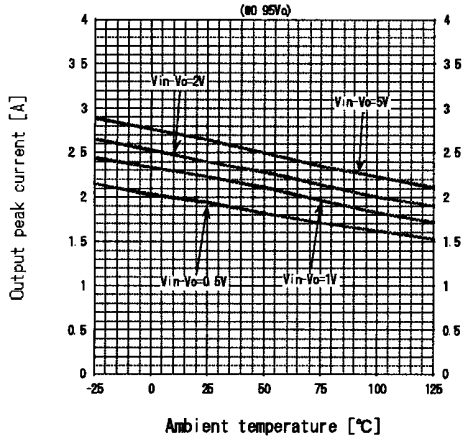
Overtemperature Protection Characteristics

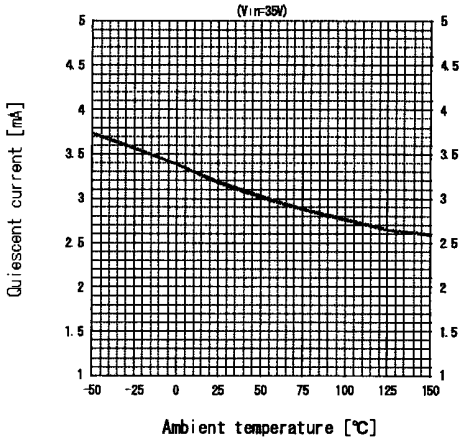


■ TYPICAL CHARACTERISTICS

NJM2396F05
Output peak current vs. Ambient temperature



NJM2396F05
Quiescent current vs. Ambient temperature



NJM2396F05
OFF-state current vs. Ambient temperature