



1 AMP DUAL COMBINATION VOLTAGE REGULATOR

FEATURES

- OUTPUT CURRENT UP TO 1.0A
- OUTPUT VOLTAGES OF +5V & -5V
- 0.01% / V LINE REGULATION
- 0.3% / A LOAD REGULATION
- THERMAL OVERLOAD PROTECTION
- SHORT CIRCUIT PROTECTION
- OUTPUT TRANSISTOR SOA PROTECTION
- 1% VOLTAGE TOLERANCE (-A VERSIONS)

PIN OUT

IP805905DD

PIN1= +Vin, PIN2= +Vout, PIN3=Common, PIN4=-Vin, PIN5=-Vout

IP905805DD

PIN1= -Vin, PIN2= -Vout, PIN3=Common, PIN4=+Vin, PIN5=+Vout

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

V _I	DC Input Voltage (for V _O = 5V)	35V
P _D	Power Dissipation	Internally limited ¹
T _j	Operating Junction Temperature Range	-55 to 150°C
T _{stg}	Storage Temperature	-65 to 150°C

Note 1. Although power dissipation is internally limited, these specifications are applicable for maximum power dissipation P_{MAX} of 20W. I_{MAX} = 1.0A.

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Parameter	Test Conditions	IP7805A LM,IP140A-05			IP7805 LM,IP140-05			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V _O Output Voltage	I _O = 1A V _{IN} = 10V	4.95	5	5.05	4.8	5	5.2	V
	I _O = 5mA to I _{MAX} P _D ≤ P _{MAX} V _{IN} = 7.5V to 20V T _J = -55 to 150°C	4.85		5.15	4.75		5.25	
V _O Low Supply	I _O = 5mA to I _{MAX} P _D ≤ P _{MAX} V _{IN} = 7V to 20V	4.75		5.15	4.75		5.25	V
ΔV _O Line Regulation	I _O = 0.5 I _{MAX}	V _{IN} = 7V to 25V		3	10		50	mV
		V _{IN} = 7.5V to 25V T _J = -55 to 150°C		3	10		50	
	I _O ≤ I _{MAX} V _{IN} = 7.3V to 20V		3	10		50		
	V _{IN} = 8V to 12V T _J = -55 to 150°C		1	4		20		
ΔV _O Load Regulation	V _{IN} = 10V	I _O = 5mA to 1.5A		10	25		50	mV
		I _O = 250mA to 750mA		4	15		25	
	V _{IN} = 10V I _O = 5mA to I _{MAX} T _J = -55 to 150°C		7	25		50		
I _Q Quiescent Current	I _O ≤ I _{MAX} V _{IN} = 10V	T _J = -55 to 150°C		4	6		6	mA
				4	6.5		7	
ΔI _Q Quiescent Current Change	I _O = 5mA to I _{MAX} V _{IN} = 10V			0.2	0.5		0.5	mA
		I _O ≤ I _{MAX} V _{IN} = 7.5V to 20V T _J = -55 to 150°C		0.1	0.8		0.8	
	I _O ≤ 0.5 I _{MAX} V _{IN} = 8V to 25V		0.1	0.8		0.8		
	I _O ≤ 0.5 I _{MAX} V _{IN} = 7V to 25V T _J = -55 to 150°C		0.2	1		1.0		
V _N Output Noise Voltage	f = 10Hz to 100kHz V _{IN} = 10V		40	200		40		μV
ΔV _{IN} / ΔV _O Ripple Rejection	f = 120Hz V _{IN} = 8V to 18V	I _O ≤ I _{MAX}	68	80		68		dB
		I _O ≤ 0.5 I _{MAX} T _J = -55 to 150°C	68	80		68		
Dropout Voltage	I _O = I _{MAX}		2	2.5		2		V
R _O Output Resistance	f = 1 kHz		5			5		mΩ
I _{sc} Short Circuit Current	V _{IN} = 35V		0.6	1.2		0.6	1.2	A
I _{pk} Peak Output Current	V _{IN} = 10V		2.4	3.3		2.4	3.3	
Average Temperature Coefficient of V _O	I _O = 5mA		0.2	2		0.6		mV / °C
Input Voltage required to maintain line regulation	I _O ≤ I _{MAX}	7.3			7.3			V

- 1) All characteristics are measured with a capacitor across the input of 0.22μF and a capacitor across the output of 0.1μF. All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques (t_p ≤ 10ms, δ ≤ 5%). Output voltage changes due to changes in internal temperature must be taken into account separately.
- 2) Although power dissipation is internally limited, these specifications are applicable for maximum power dissipation P_{MAX} of 20W, I_{MAX} = 1.0A.
- 3) T_J = 25°C unless otherwise stated.

Parameter	Test Conditions	IP/LM 7905A Series IP/LM 120A Series			IP/LM 7905 Series IP/LM 120 Series			Units
		Min.	Typ.	Max.	Min.	Typ.	Max.	
V_O Output Voltage	$I_O = 500\text{mA}$ $V_{IN} = -10\text{V}$	-4.95	-5	-5.05	-4.9	-5	-5.1	V
	$I_O = 5\text{mA to } I_{MAX}$ $V_{IN} = -7.5\text{V to } -20\text{V}$ $P_D \leq P_{MAX}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	-4.85		-5.15	-4.8		-5.2	
ΔV_O Line Regulation	$I_O = 0.5 I_{MAX}$	$V_{IN} = -7\text{V to } -25\text{V}$	3	10	3	25	mV	
		$V_{IN} = -7.5\text{V to } -20\text{V}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	3	10	3	50		
	$V_{IN} = -8\text{V to } -12\text{V}$ $I_O \leq I_{MAX}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	1	4	1	25			
ΔV_O Load Regulation	$V_{IN} = -10\text{V}$	$I_O = 5\text{mA to } 1.5\text{A}$	25	35	25	100	mV	
		$I_O = 5\text{mA to } I_{MAX}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	25	35	25	100		
I_Q Quiescent Current	$I_O \leq 0.5 I_{MAX}$ $V_{IN} = -10\text{V}$ $T_J = -55 \text{ to } 150^\circ\text{C}$		1	1.9	1	1.9	mA	
			1	2	1	2		
ΔI_Q Quiescent Current Change	$I_O = 5\text{mA to } I_{MAX}$ $V_{IN} = -10\text{V}$ $T_J = -55 \text{ to } 150^\circ\text{C}$		0.2	0.4	0.2	0.4	mA	
			0.2	0.5	0.2	0.5		
V_N Output Noise Voltage	$f = 10\text{Hz to } 100\text{kHz}$ $V_{IN} = -10\text{V}$		100		100		μV	
$\frac{\Delta V_{IN}}{\Delta V_O}$ Ripple Rejection	$f = 120\text{Hz}$ $V_{IN} = -8\text{V to } -18\text{V}$	$I_O \leq I_{MAX}$	58		54		dB	
		$I_O \leq 0.5 I_{MAX}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	58		54			
Dropout Voltage	$I_O = I_{MAX}$		1.4		1.4		V	
R_O Output Resistance	$f = 1 \text{ kHz}$		5		5		$\text{m}\Omega$	
I_{sc} Short Circuit Current	$V_{IN} = -35\text{V}$		0.6	1.2	0.6	1.2	A	
I_{pk} Peak Output Current Average	$V_{IN} = -10\text{V}$		2.4	3.3	2.4	3.3		
Temperature Coefficient of V_O	$I_O = 5\text{mA}$		0.2		0.2		$\frac{\text{mV}}{^\circ\text{C}}$	
Input Voltage required to maintain line regulation	$I_O \leq I_{MAX}$	-7.3			-7.3		V	

1) All characteristics are measured with a capacitor across the input of $0.22\mu\text{F}$ and a capacitor across the output of $0.1\mu\text{F}$.
All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_p \leq 10\text{ms}$, $\delta \leq 5\%$). Output voltage changes due to changes in internal temperature must be taken into account separately.

2) Test Conditions unless otherwise stated: $P_{MAX} = 20\text{W}$ for all package devices

$$I_{MAX} = 1.0\text{A}, T_J = 25^\circ\text{C}$$

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