



## 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<sub>case</sub> = 25°C unless otherwise stated)

V <sub>I</sub>	DC Input Voltage (for V <sub>O</sub> = 5V)	35V
P <sub>D</sub>	Power Dissipation	Internally limited <sup>1</sup>
T <sub>j</sub>	Operating Junction Temperature Range	-55 to 150°C
T <sub>stg</sub>	Storage Temperature	-65 to 150°C

Note 1. Although power dissipation is internally limited, these specifications are applicable for maximum power dissipation P<sub>MAX</sub> of 20W. I<sub>MAX</sub> = 1.0A.

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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

- 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<sub>p</sub> ≤ 10ms, δ ≤ 5%). Output voltage changes due to changes in internal temperature must be taken into account separately.
- Although power dissipation is internally limited, these specifications are applicable for maximum power dissipation P<sub>MAX</sub> of 20W, I<sub>MAX</sub> = 1.0A.
- T<sub>J</sub> = 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	
$\Delta V_O$ Line Regulation	$I_O = 0.5 I_{MAX}$ $V_{IN} = -7\text{V to } -25\text{V}$ $V_{IN} = -7.5\text{V to } -20\text{V}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	3	10		3	25	mV	
		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		
$\Delta V_O$ Load Regulation	$V_{IN} = -10\text{V}$ $I_O = 5\text{mA to } I_{MAX}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	25	35		25	100	mV	
		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		
$\Delta I_Q$ 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		$\mu\text{V}$	
$\frac{\Delta V_{IN}}{\Delta V_O}$ Ripple Rejection	$f = 120\text{Hz}$ $V_{IN} = -8\text{V to } -18\text{V}$ $I_O \leq I_{MAX}$ $I_O \leq 0.5 I_{MAX}$ $T_J = -55 \text{ to } 150^\circ\text{C}$	58			54		dB	
		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

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

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.