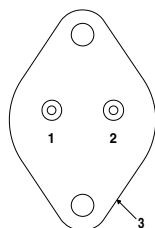
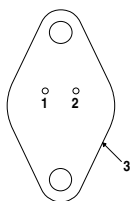


1.5 AMP NEGATIVE VOLTAGE REGULATOR



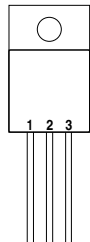
Pin 1 – Ground
Pin 2 – V_{OUT}
Case – V_{IN}

K Package – TO-3



Pin 1 – Ground
Pin 2 – V_{OUT}
Case – V_{IN}

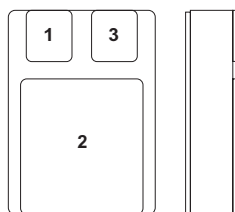
R Package – TO-66



Pin 1 – Ground
Pin 2 – V_{IN}
Pin 3 – V_{OUT}
Case – V_{IN}

G Package – TO-257
IG Package – TO-257*

* isolated Case on IG package



Pin 1 – Ground
Pin 2 – V_{IN}
Pin 3 – V_{OUT}

SMD Package – SMD1
Ceramic Surface Mount

FEATURES

- OUTPUT VOLTAGE OF -5V
- 0.7% / V LINE REGULATION AVAILABLE
- 0.5% / A LOAD REGULATION AVAILABLE
- THERMAL OVERLOAD PROTECTION
- SHORT CIRCUIT PROTECTION
- OUTPUT TRANSISTOR SOA PROTECTION
- 1% VOLTAGE TOLERANCE OPTION
(-A VERSIONS)

DESCRIPTION

The A suffix devices provide 0.7% / V line regulation, 0.5% / A load regulation and $\pm 1\%$ output voltage tolerance at room temperature.

Protection features include Safe Operating Area current limiting and thermal shutdown.

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise stated)

V_I	DC Input Voltage	35V
P_D	Power Dissipation	Internally limited
T_j	Operating Junction Temperature Range	-55 to 150°C
T_{stg}	Storage Temperature	-65 to 150°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.

Parameter	Test Conditions	LM7905A LM120A-05			LM7905 , LM120-05 LM120-05			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	
	$V_{IN} = -8\text{V to } -12\text{V}$			1	4	1	25	
	$I_O \leq I_{MAX}$	$T_J = -55 \text{ to } 150^\circ\text{C}$		1	12	2	50	
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	$I_O \leq 0.5 I_{MAX}$			1	1.9	1	1.9	mA
	$V_{IN} = -10\text{V}$ $T_J = -55 \text{ to } 150^\circ\text{C}$			1	2	1	2	
ΔI_Q Quiescent Current Change	$I_O = 5\text{mA to } I_{MAX}$			0.2	0.4	0.2	0.4	mA
	$V_{IN} = -10\text{V}$ $T_J = -55 \text{ to } 150^\circ\text{C}$			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	$f = 120\text{Hz}$	$I_O \leq I_{MAX}$		58		54		dB
	$V_{IN} = -8\text{V to } -18\text{V}$	$I_O \leq 0.5 I_{MAX}$						
		$T_J = -55 \text{ to } 150^\circ\text{C}$		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		$\text{mV}/^\circ\text{C}$
Input Voltage required to maintain line regulation	$I_O \leq I_{MAX}$			-7.3		-7.3		V

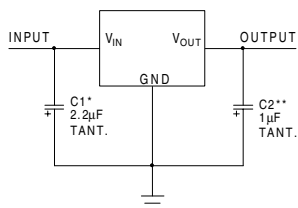
- 1) All characteristics are measured with a capacitor across the input of $0.22\mu\text{F}$ and a capacitor across the output of $0.1\mu\text{F}$.
 All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_p \leq 10\text{ms}$, $\delta \leq 5\%$). Output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

- 2) Test Conditions unless otherwise stated: $P_{MAX} = 10\text{W}$ for SMD , $P_{MAX} = 20\text{W}$ for all other package devices

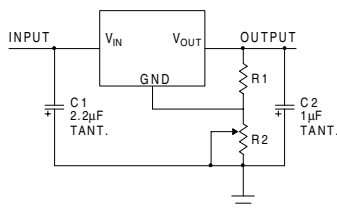
$$I_{MAX} = 1.0\text{A} , T_J = 25^\circ\text{C}$$

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APPLICATIONS INFORMATION

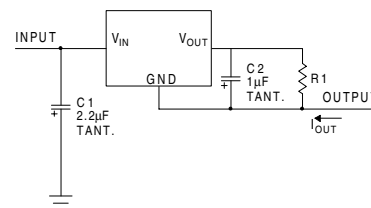


Fixed Output Regulator



Adjustable Output Regulator

$$V_{OUT} \approx V_{REG} \frac{(R1+R2)}{R1}$$



Current Regulator

$$I_{OUT} = \frac{V_{REG}}{R1} + I_Q$$

* Required if the regulator is located far from the power supply.

** Required for stability. 25µF electrolytic may be substituted.

Order Information

Part Number	K-Pack (TO-3)	R-Pack (TO-66)	G/IG-Pack (TO-257)	SMD-Pack SMD1	Temp. Range	Note: To order, add the package identifier to the part number. eg. LM7905AK LM120SMD-05
LM7905A	✓	✓	✓	✓	-55 to +150°C	
LM7905	✓	✓	✓	✓	"	
LM120A-05	✓	✓	✓	✓	"	
LM120-05	✓	✓	✓	✓	"	