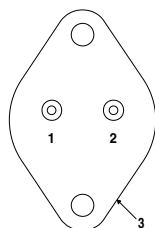
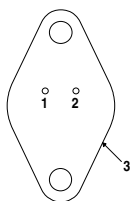


1.5 AMP NEGATIVE VOLTAGE REGULATOR



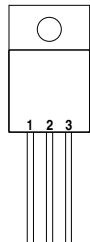
Pin 1 – Ground
Pin 2 – V_{OUT}
Case – V_{IN}

K Package – TO-3



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

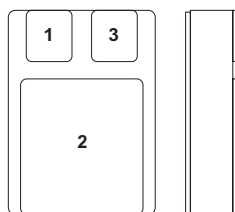
R Package – TO-66



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

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Parameter		Test Conditions		LM7905A LM120A-05			LM7905 , LM120-05 LM120-05			Units	
				Min.	Typ.	Max.	Min.	Typ.	Max.		
V _O	Output Voltage	I _O = 500mA	V _{IN} = -10V	-4.95	-5	-5.05	-4.9	-5	-5.1	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	-4.8		-5.2		
ΔV _O	Line Regulation	I _O = 0.5 I _{MAX}	V _{IN} = -7V to -25V		3	10		3	25	mV	
			V _{IN} = -7.5V to -20V T _J = -55 to 150°C		3	10		3	50		
		V _{IN} = -8V to -12V			1	4		1	25		
		I _O ≤ I _{MAX}	T _J = -55 to 150°C		1	12		2	50		
ΔV _O	Load Regulation	V _{IN} = -10V	I _O = 5mA to 1.5A		25	35		25	100	mV	
			I _O = 5mA to I _{MAX} T _J = -55 to 150°C		25	35		25	100		
I _Q	Quiescent Current	I _O ≤ 0.5 I _{MAX} V _{IN} = -10V			1	1.9		1	1.9	mA	
		T _J = -55 to 150°C			1	2		1	2		
ΔI _Q	Quiescent Current Change	I _O = 5mA to I _{MAX} V _{IN} = -10V			0.2	0.4		0.2	0.4	mA	
		T _J = -55 to 150°C			0.2	0.5		0.2	0.5		
V _N	Output Noise Voltage	f = 10Hz to 100kHz V _{IN} = -10V			100			100		μV	
$\frac{\Delta V_{IN}}{\Delta V_O}$	Ripple Rejection	f = 120Hz V _{IN} = -8V to -18V	I _O ≤ I _{MAX}	58				54			dB
			I _O ≤ 0.5 I _{MAX}	58				54			
			T _J = -55 to 150°C								
Dropout Voltage		I _O = I _{MAX}			1.4			1.4		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 Average	V _{IN} = -10V			2.4	3.3		2.4	3.3		
Temperature Coefficient of V _O		I _O = 5mA			0.2			0.2		mV /°C	
Input Voltage required to maintain line regulation		I _O ≤ I _{MAX}			-7.3			-7.3		V	

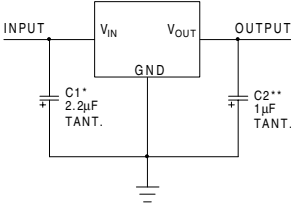
- 1) All characteristics are measured with a capacitor across the input of $0.22\mu\text{F}$ and a capacitor across the output of $0.1\mu\text{F}$.
 All characteristics except noise voltage and ripple rejection ratio are measured using pulse techniques ($t_p \leq 10\text{ms}$, $\delta \leq 5\%$). Output 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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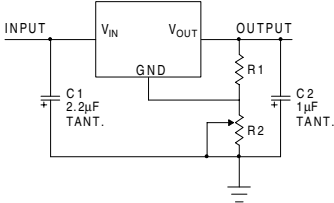
APPLICATIONS INFORMATION



Fixed Output Regulator

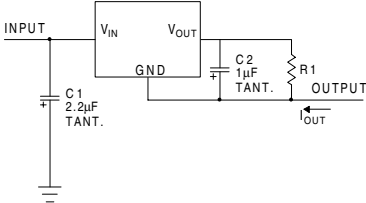
* Required if the regulator is located far from the power supply.

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



Adjustable Output Regulator

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



Current Regulator

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

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	✓	✓	✓	✓	"	

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