

## THREE-TERMINAL 3A-5V POSITIVE VOLTAGE REGULATORS

- OUTPUT CURRENT : 3A
- INTERNAL CURRENT AND THERMAL LIMITING
- TYPICAL OUTPUT IMPEDANCE : 0.01Ω
- MINIMUM INPUT VOLTAGE : 7.5V
- POWER DISSIPATION : 30W

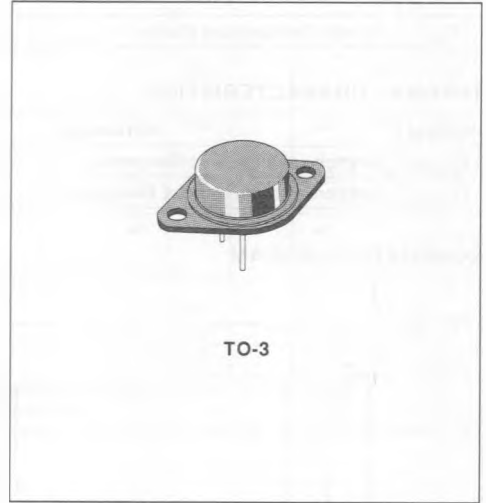
### DESCRIPTION

The LM223, LM323 are three-terminal positive voltage regulators with a preset 5V output and a load driving capability of 3A. New circuit design and processing techniques are used to provide the high output current without sacrificing the regulation characteristics of lower current devices.

The 3A regulator is virtually blowout proof.

Current limiting, power limiting and thermal shut-down provide the same high level of reliability obtained with these techniques in the LM209, 1A regulator.

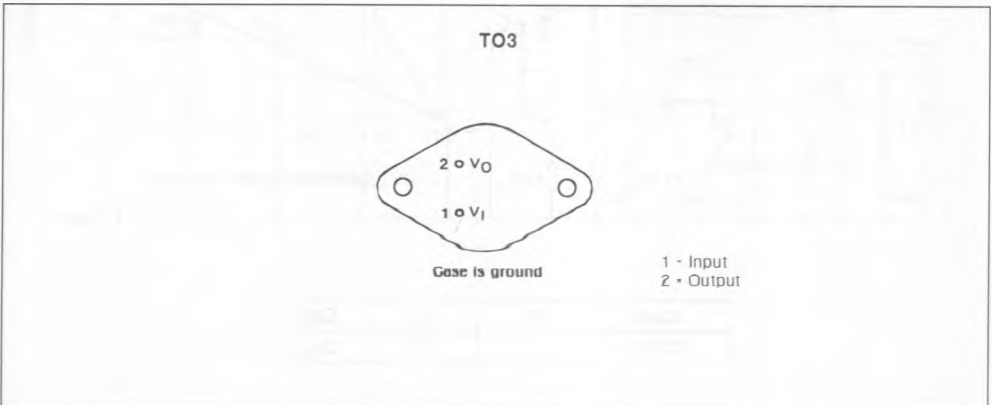
An overall worst case specification for the combined effects of input voltage, load current, ambient temperature, and power dissipation ensure that the LM223, LM323 will perform satisfactorily as a system element.



### ORDER CODES

Part Number	Temperature Range	K
LM223	- 25°C to + 150°C	•
LM323	0°C to + 125°C	•

### PIN CONNECTION (bottom view)



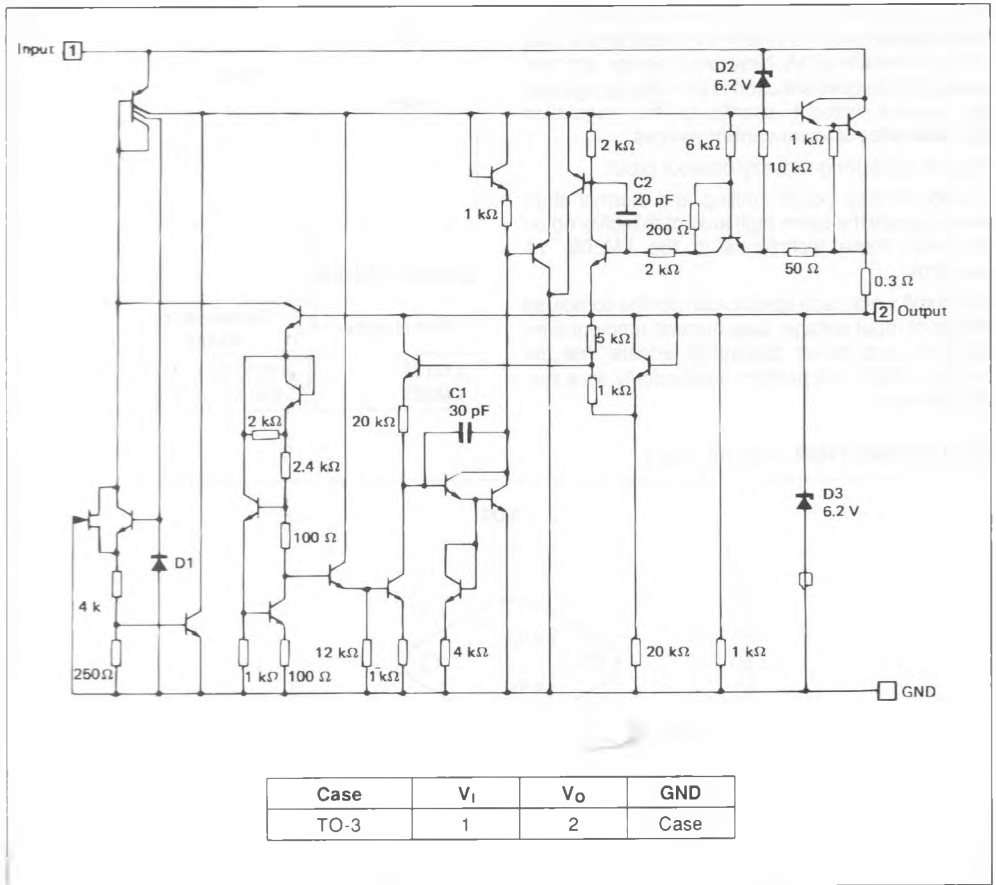
**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter		Value	Unit
$V_I$	Input Voltage		20	V
$I_O$	Output Current		Internally Limited	
$P_{Tot}$	Power Dissipation		Internally Limited	
$T_{oper}$	Operating Junction Temperature Range	LM223 LM323	- 25 to + 150 0 to + 125	°C
$T_{stg}$	Storage Temperature Range		- 65 to + 150	°C

**THERMAL CHARACTERISTICS**

Symbol	Parameter		Typ.	Max.	Unit
$R_{th(j-c)}$	Junction-case Thermal Resistance	TO-3	4		°C/W
$R_{th(j-a)}$	Junction-ambient Thermal Resistance	TO-3		35	°C/W

**SCHEMATIC DIAGRAM**



## ELECTRICAL CHARACTERISTICS

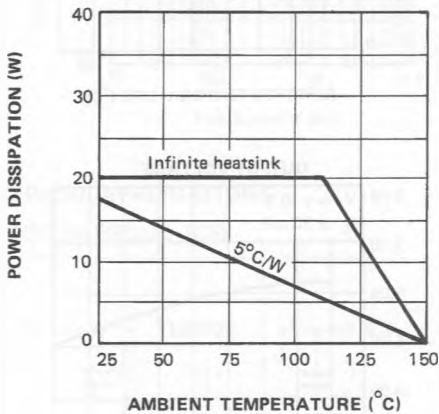
LM223 :  $-25^{\circ}\text{C} < T_j < +150^{\circ}\text{C}$ LM323 :  $0^{\circ}\text{C} < T_j < +125^{\circ}\text{C}$ 

(unless otherwise specified)

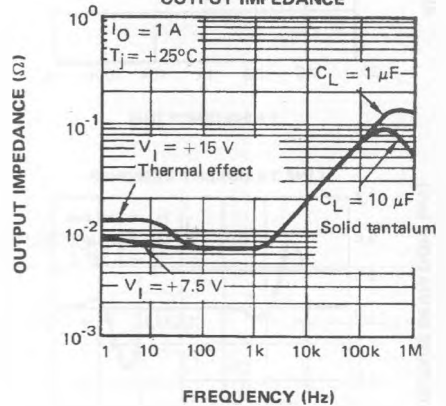
Symbol	Parameter	LM223			LM323			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
$V_O$	Output Voltage Range - (note 2) $T_j = +25^{\circ}\text{C}$ , $V_I = +7.5\text{V}$ , $I_O = 0$ $T_{\min} \leq T_j \leq T_{\max}$ , $P \leq P_{\max}$ $+7.5\text{V} \leq V_I \leq +15\text{V}$ , $0 \leq I_O \leq 3\text{A}$	4.7	5.0	5.3	4.8	5.0	5.2	V
$K_{V_I}$	Line Regulation ( $T_j = +25^{\circ}\text{C}$ , $+7.5\text{V} \leq V_I \leq +15\text{V}$ ) - Note 3		5	25		5	25	mV
$K_{V_O}$	Load Regulation ( $T_j = +25^{\circ}\text{C}$ , $V_I = +7.5\text{V}$ , $0 \leq I_O \leq 3\text{A}$ ) - Note 3		25	100		25	100	mV
$I_{IB}$	Quiescent Current ( $+7.5\text{V} \leq V_I \leq +15\text{V}$ , $0 \leq I_O \leq 3\text{A}$ )		12	20		12	20	mA
$V_{NO}$	Output Noise Voltage ( $T_j = +25^{\circ}\text{C}$ , $10\text{Hz} \leq f \leq 100\text{kHz}$ )		40			40		$\mu\text{V}_{\text{rms}}$
$I_{OS}$	Short-circuit Current Limit ( $T_j = +25^{\circ}\text{C}$ ) $V_I = +15\text{V}$ $V_I = +7.5\text{V}$		3	4.5		3	4.5	A
$K_{VH}$	Long Term Stability			35			35	mV

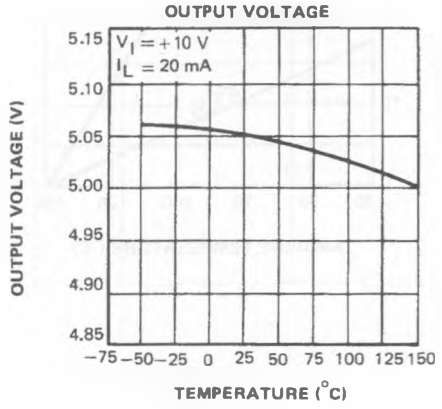
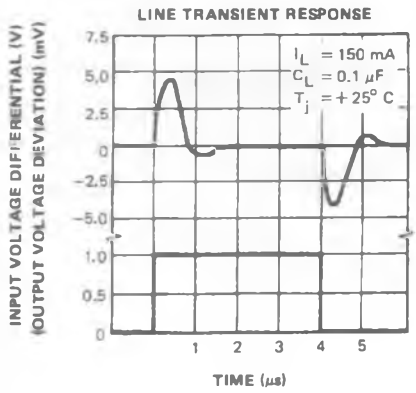
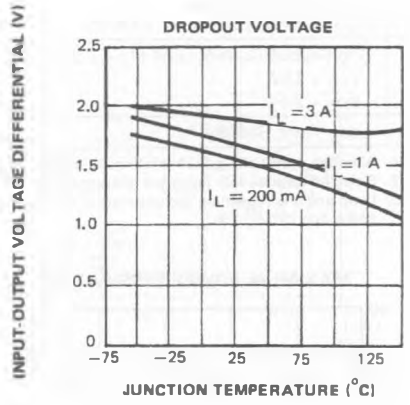
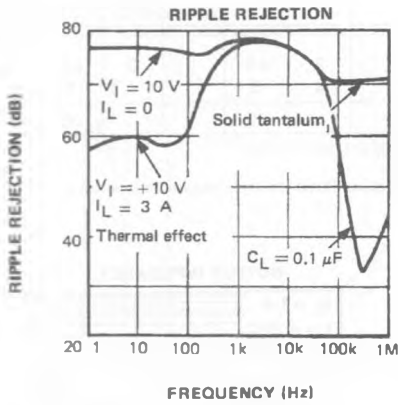
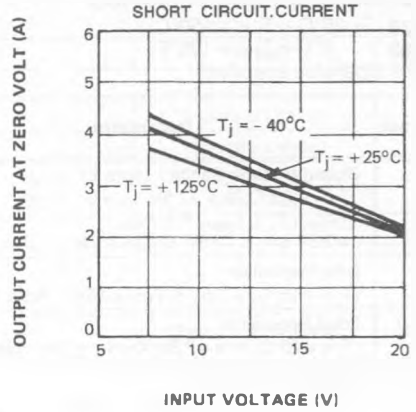
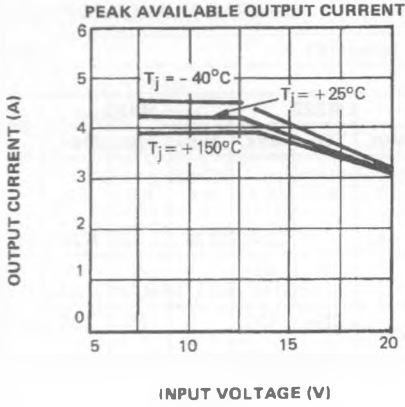
- Notes : 1. Although power dissipation is internally limited, specifications apply only for  $P \leq 30\text{W}$ .  
 2. Selected devices with tightened tolerance output voltage available.  
 3. Load and line regulation are specified at constant junction temperature. Pulse testing is required with a pulse width  $\leq 1\text{ms}$  and a duty cycle  $\leq 5\%$ .

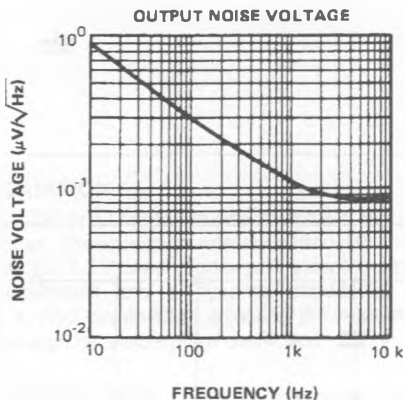
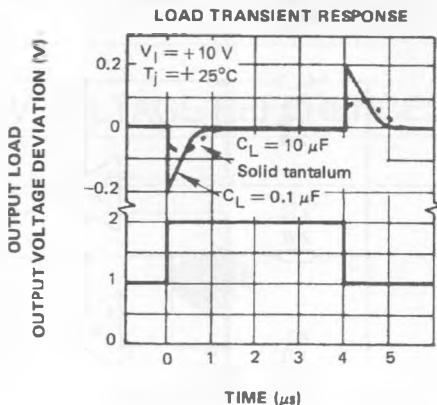
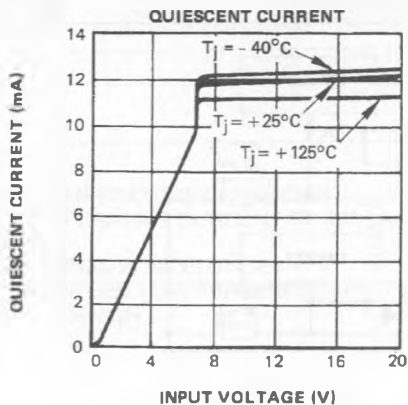
## MAXIMUM POWER DISSIPATION



## OUTPUT IMPEDANCE

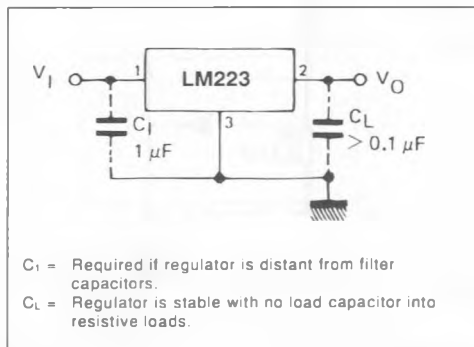




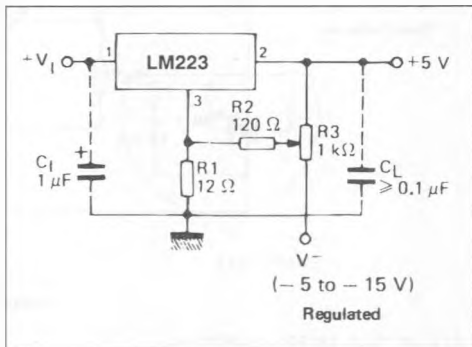


**TYPICAL APPLICATIONS**

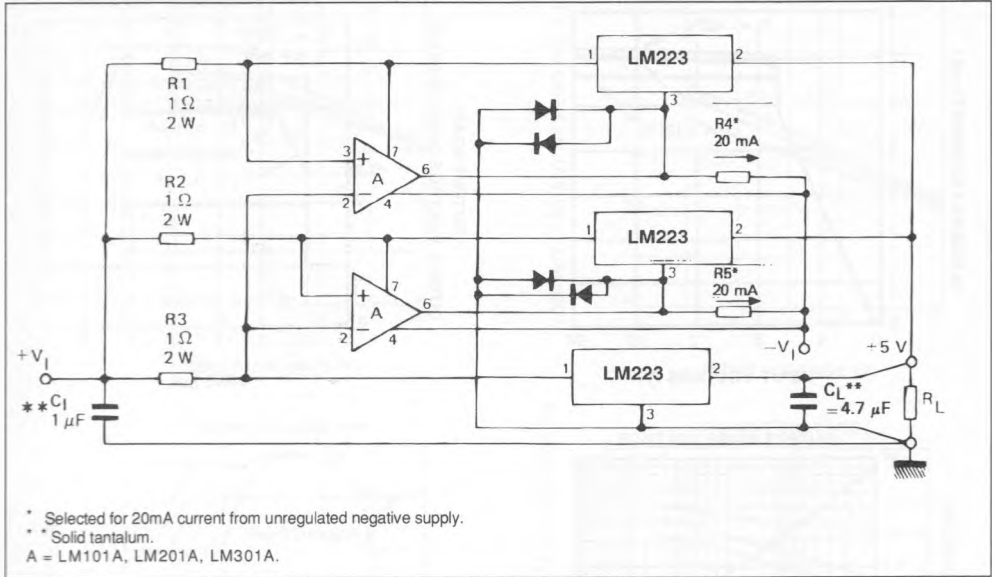
**BASIC 3A REGULATOR**



**TRIMMING OUTPUT TO 5V**



10A REGULATOR WITH COMPLETE OVERLOAD PROTECTION



ADJUSTABLE REGULATOR 0 – 10V/3A

