



## LM309K

### Voltage Regulators

#### GENERAL DESCRIPTION

The LM309K is complete 5V regulator fabricated on a single silicon chip.

The available output current is greater than 1A.

He is designed for local regulation on digital logic cards, eliminating the distribution problems associated with single-point regulation. The devices are available in the TO3 power package.

The regulators are essentially blow-out proof. Current limiting is included to limit the peak output current to a safe value. In addition, thermal shutdown is provided to keep the IC from overheating. If internal dissipation becomes too great, the regulator will shut down to prevent excessive heating.

Considerable effort was expended to make these devices easy to use and minimize the number of external components. It is not necessary to bypass the output, although this does improve transient response somewhat. Input bypassing is needed, however, if the regulator is located very far from the filter capacitor of the power supply. Stability is also achieved by methods that provide very good rejection of load or line transients as are usually seen with TTL logic.

Compliance to RoHS.

#### ABSOLUTE MAXIMUM RATINGS

Input Voltage	35V
Output Current	1A
Power Dissipation	Internally Limited
Operating Junction Temperature Range	0° to 125°C
Storage Temperature Range	-65° to 150°C

#### CHARACTERISTICS (1)

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Output Voltage	$T_j = 25^\circ\text{C}$	4.8	5.05	5.2	V
Line Regulation	$T_j = 25^\circ\text{C}$ $7\text{V} \leq V_{\text{IN}} \leq 25\text{V}$	-	4	50	mV
Load Regulation	$T_j = 25^\circ\text{C}$ $5\text{mA} \leq I_{\text{OUT}} \leq 1.5\text{A}$	-	50	100	mV
Output Voltage	$7\text{V} \leq V_{\text{IN}} \leq 25\text{V}$ $5\text{mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$ $P < P_{\text{MAX}}$	4.75	-	5.25	V
Quiescent Current	$7\text{V} \leq V_{\text{IN}} \leq 25\text{V}$	-	5.2	10	mA
Quiescent Current Change	$7\text{V} \leq V_{\text{IN}} \leq 25\text{V}$ $5\text{mA} \leq I_{\text{OUT}} \leq I_{\text{MAX}}$	-	-	0.8	mA
Output Noise Voltage	$T_A = 25^\circ\text{C}$ $10\text{Hz} \leq f \leq$	-	40	-	mV
Long Term Stability		-	-	20	mV
Thermal Resistance Junction to case	(2)	-	3	-	°C/W

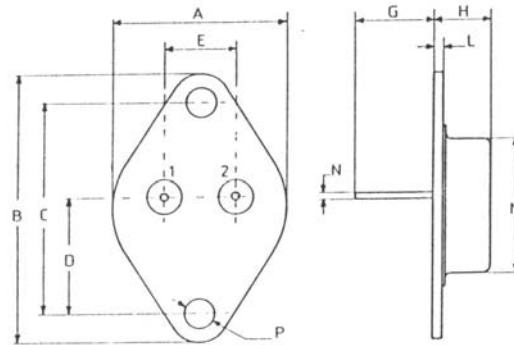
(1)  $T_j = 0^\circ$  to  $125^\circ\text{C}$  ;  $I_{\text{OUT}} = 0.5\text{A}$  ;  $I_{\text{MAX}} = 0.2\text{A}$  and  $P_{\text{MAX}} = 2\text{W}$  ;  $I_{\text{MAX}} = 1\text{A}$  and  $P_{\text{MAX}} = 20\text{W}$

(2) Without a heat sink, the thermal resistance is approximately  $35^\circ\text{C}$ . With a heat sink, the effective thermal resistance can only approach the values specified, depending on the efficiency of the sink.

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### MECHANICAL DATA CASE TO-3

DIMENSIONS		
	mm	inches
A	25,51	1,004
B	38,93	1,53
C	30,12	1,18
D	17,25	0,68
E	10,89	0,43
G	11,62	0,46
H	8,54	0,34
L	1,55	0,6
M	19,47	0,77
N	1	0,04
P	4,06	0,16



Pin 1 :	Input
Pin 2 :	Output
Case :	GND