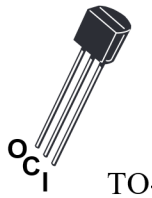
78L09

Positive-Voltage Regulators

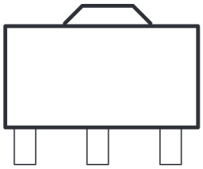
- 3-Terminal Regulators
- Output Current up to 100 mA
- No External Components
- Internal Thermal-Overload Protection
- Internal Short-Circuit Current Limiting
- Provided Pb-Free packages from the end of 2004



TO-92

78L09ACZ

INPUT
COMMON
OUTPUT



SOT-89

78L09CPK

description

This series of fixed-voltage integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power-pass elements to make high-current voltage regulators. One of these regulators can deliver up to 100 mA of output current. The internal limiting and thermal-shutdown features of these regulators make them essentially immune to overload. When used as a replacement for a zener diode-resistor combination, an effective improvement in output impedance can be obtained, together with lower bias current.

electrical characteristics at specified virtual junction temperature, V_I = 16V, I_O =40mA (unless otherwise noted)

PARAMETER	TEST CONDITIONS	T ‡	78L09			UNIT
			MIN	TYP	MAX	
Output voltage		25°C	8.6	9	9.4	V
	I_O =1mA to 40MA, V1= 12V to 24V	Full range	8.55	9	9.45	
	I_O = 1 mA to 70 mA	Full range	8.55	9	9.45	
Input voltage regulation	V_I= 12V to 24V	25°C		45	175	mV
	V_I = 13V to 24V			40	125	
Ripple rejection	V_I =15V to 25V f = 120 Hz	25°C	38	45		dB
Output voltage regulation	I_O = 1 mA to 100 mA	25°C		19	90	mV
	I_O = 1 mA to 40 mA			11	40	
Output noise voltage	f = 10 Hz to 100 kHz	25°C		58		µV
Dropout voltage		25°C		1.7		V
Bias current		25°C		4.1	6	mA
		125°C			5.5	
Bias current change	V_I =13V to 24V	Full range			1.5	mA
	I_O = 1 mA to 40 mA				0.1	

‡ Pulse-testing techniques maintain T_J as close to T_A as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33-µF capacitor across the input and a 0.1-µF capacitor across the output. Full range for the 78L05 is T_J = 0°C to 70°C

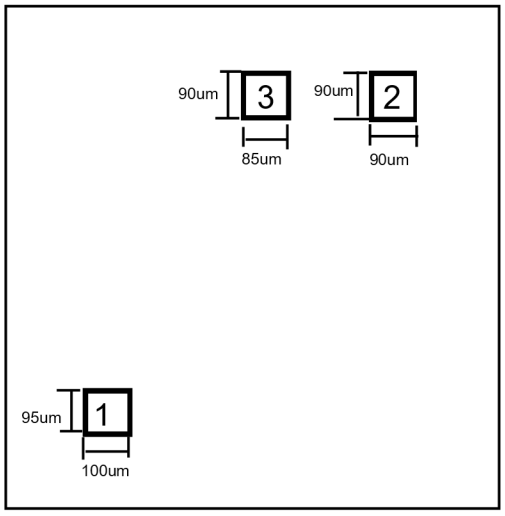
absolute maximum ratings over operating temperature range (unless othewise noted)

78L09	PARAMETER	UNIT
Input voltage, V_I	30	V
Virtual junction temperature range, T_J	150	°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260	°C
Storage temperature range, T_{stg}	–65 to 150	°C

recommended operating conditions

78L09	MIN	MAX	UNIT
Input voltage, V_I	11.5	24	V
Output current, I_O		100	mA
Operating virtual junction temperature, T_J	0	70	°C

Pad Location 78L09



Chip size 1.0 x 1.2 mm

Pad N	Pad Name	X (um)	Y (um)
1	Ground	95	100
2	Input	820	1010
3	Output	535	1015