

1. Description

The KIA 78L09 is monolithic fixed voltage regulator integrated circuit. It is suitable for applications that require supply current up to 100mA.

2. Features

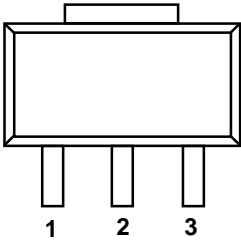
- Output current up to 100mA
- No external part needed
- Thermal overload shutdown protection
- Short circuit current limiting
- SOT89 package

3. Applications

- Battery-powered circuitry
- Post regulator for switching power supply

4. Pinning information

Table1: Pinning-SOT89,simplified outline

Pin	Description	Simplified outline
1	V_{OUT}	 <p>(SOT89 Front View)</p>
2	GND	
3	V_{IN}	

5. Marking information

KIA 78L09 Marking 8E

6. Package information

1K/Reel 8K/Box 40K/CTN

7. Maximum ratings (Ta=25°C)

Table2: Maximum ratings

Parameter	Symbol	Rating	Unit
Input voltage	V_{IN}	35	V
Power dissipation	P_D	500	mW
Junction temperature	T_J	-20~+125	°C
Operating temperature	T_{OPR}	-20~+85	°C
Storage temperature	T_{STG}	-65~+150	°C

8. Electrical characteristics

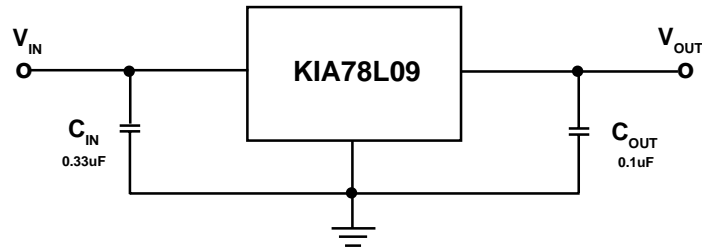
Table3: Electrical characteristics

($V_{IN}=15V, I_{OUT}=40mA, C_{IN}=0.33\mu F, C_{OUT}=0.1\mu F, T_J=25^\circ C$, Unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Output voltage	V_{OUT}		8.64	9.0	9.36	V
		$11.4V \leq V_{IN} \leq 24V$ $1.0mA \leq I_{OUT} \leq 40mA$	8.55	9.0	9.45	V
		$1.0mA \leq I_{OUT} \leq 70mA$	8.37	9.0	9.63	V
Line regulation	Reg line	$11.4V \leq V_{IN} \leq 24V$		80	200	mV
		$12V \leq V_{IN} \leq 24V$		20	160	mV
Load regulation	Reg load	$1.0mA \leq I_{OUT} \leq 100mA$		15	90	mV
		$1.0mA \leq I_{OUT} \leq 40mA$		7.0	45	mV
Quiescent current	I_Q			3.1	6.5	mA
Quiescent current change	ΔI_Q	$12V \leq V_{IN} \leq 24V$		0.15	1.5	mA
		$1.0mA \leq I_{OUT} \leq 40mA$		0.08	0.1	mA
Output noise voltage	V_{ON}	$10Hz \leq f \leq 100KHz$		50		μV_{Rm}
Ripple rejection ratio	RR	$12V \leq V_{IN} \leq 24V$ $f=120Hz$	36	44		dB
Dropout voltage	V_D			1.7		V

Note1: The maximum steady state usable output current is dependent on input voltage, heat sinking, lead length of the package and copper pattern of PCB.

9. Application circuit



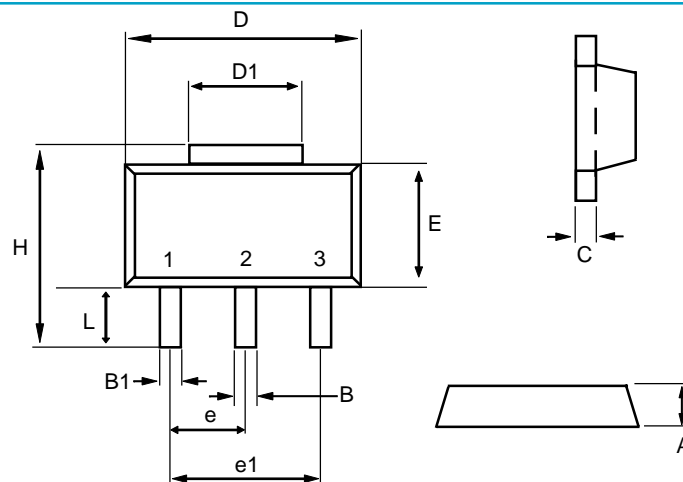
Note1: The input voltage must remain typically 1.7V above the output voltage.

Note2: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators

10. SOT89 package outline

Table4: SOT89 package outline

DIMENSIONS(mm are the original dimensions)



Dim	Min	Max	Dim	Min	Max
A	1.40	1.60	e	1.50BSC	
B	0.40	0.56	e1	3.00BSC	
B1	0.35	0.48	E	2.29	2.60
C	0.35	0.44	H	3.75	4.25
D	4.40	4.60	L	0.80	1.20
D1	1.35	1.83			