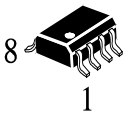
Low Drop Regulator for Automotive

IK8102

Description

The IC is linear voltage regulator 5V with low dropout voltage typically 80mV at light loads and less then 400mV at full loads, with better then 4% output voltage accuracy.



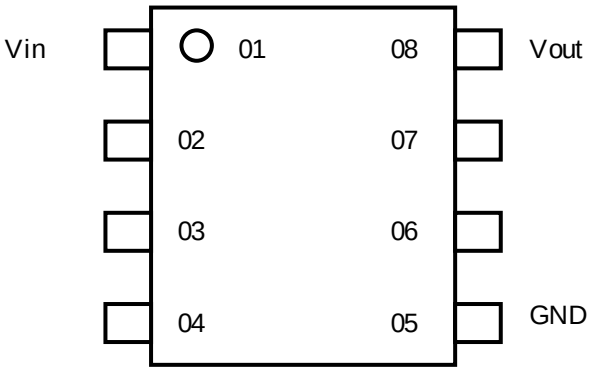
ORDERING INFORMATION
IK8102D SOP-8

T_A = -40° to 125°C for package

Feature

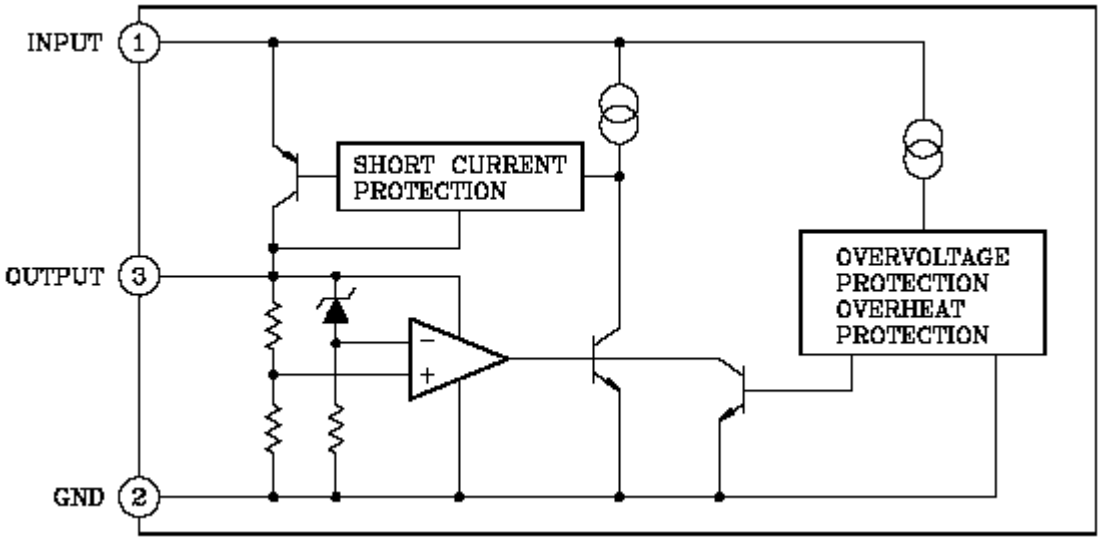
- Voltage regulator 5V with 4% output voltage accuracy
- Low dropout voltage 0.4V Max
- Load current 150mA Max
- Over Voltage & Over Temperature Protection
- Short Current Protection
- 60V Load Dump Protection
- Compliance with AEC-Q100 requirements

Pin Description

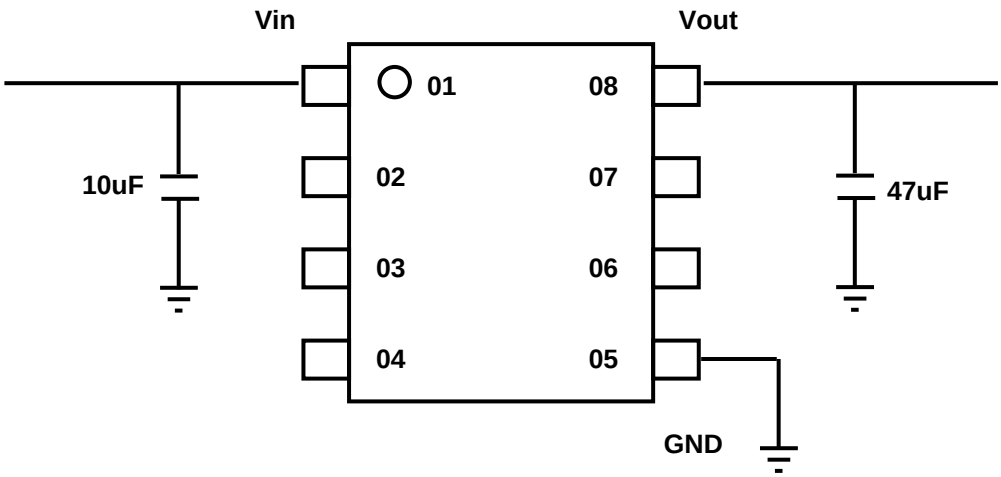


PIN	NAME	FUNCTION
01	**VIN**	**Input voltage**
02	N.C.	Not Connected
03	N.C.	Not Connected
04	N.C.	Not Connected
05	**GND**	**Ground**
06	N.C.	Not Connected
07	N.C.	Not Connected
08	**VOUT**	**Output regulator voltage 5 V**

Functional Diagram



Application Schematic



Dimensioning Information on External Components

The input capacitor Ci is necessary for compensating line influences. The output capacitor Co is necessary for the stability of the regulating circuit. Stability is guaranteed at values $Ci \geq 10\mu F$, $Co \geq 47\mu F$ and an ESR $\leq 10\Omega$ within the operating temperature range.

MAXIMUM RATINGS (Ta=25°C)

Symbol	Characteristics	Rating	Units
Vin	Operating Input Voltage	29	V
Iout	Output Current	150	mA
Ta	Operating Temperature	-40 to 85	°C
Pd	Power Dissipation	500	mW
Tj	Junction Temperature	150	°C

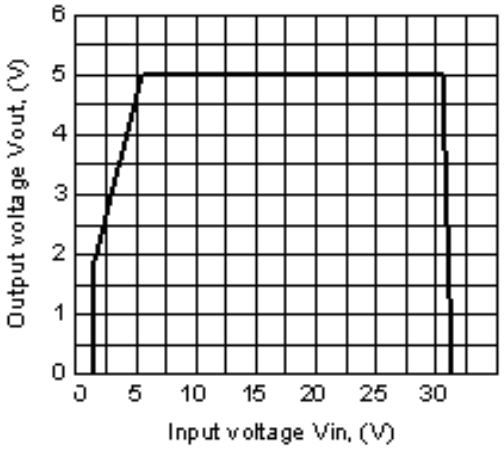
* Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied.
Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

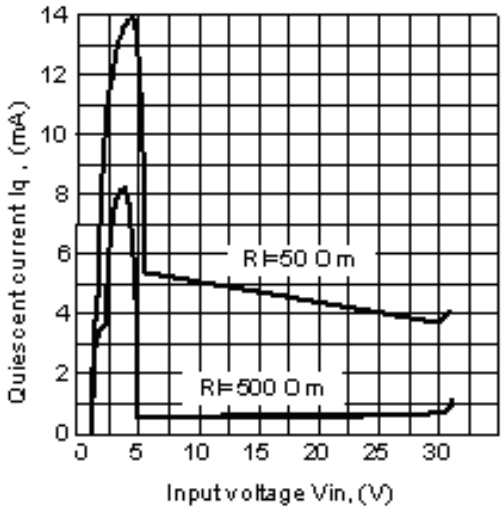
DC ELECTRICAL CHARACTERICTICS

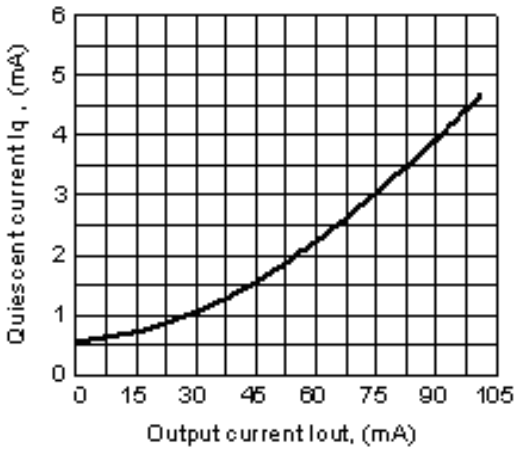
(Unless otherwise specified Vin=14V, Iout=10mA, Cout=47µF, Tj=25°C)

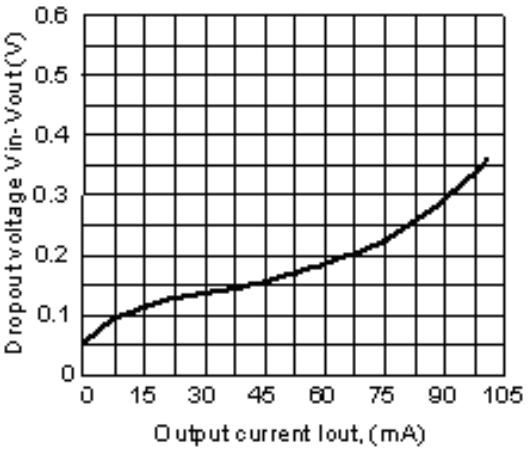
Parameter	Symbol	Conditions	Min	Type	Max	Units
Voltage regulator						
Output Voltage	Vout	Iout = 1.0 mA	4.95	5.0	5.05	V
Output Voltage	Vout	5.35V ≤ Vin ≤ 26V 10mA ≤ Iout ≤ 100mA	4.8	5.0	5.2	V
Voltage Regulation	Reg-Line	5.35V ≤ Vin ≤ 26V			15	mV
Load Regulation	Reg-Load	10mA ≤ Iout ≤ 100mA			100	mV
Dropout Voltage	Vd	Iout =50mA Iout =100mA			0.2 0.4	V
Quiescent Current	Iq	Iout =0 A			0.5	mA

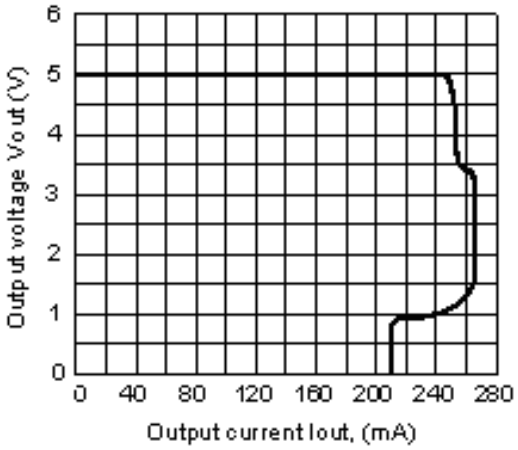
Typical characteristics

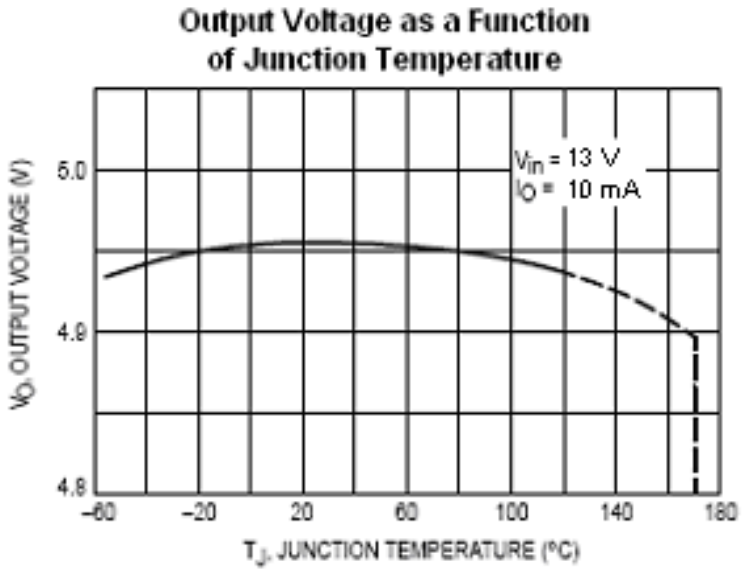






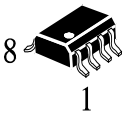


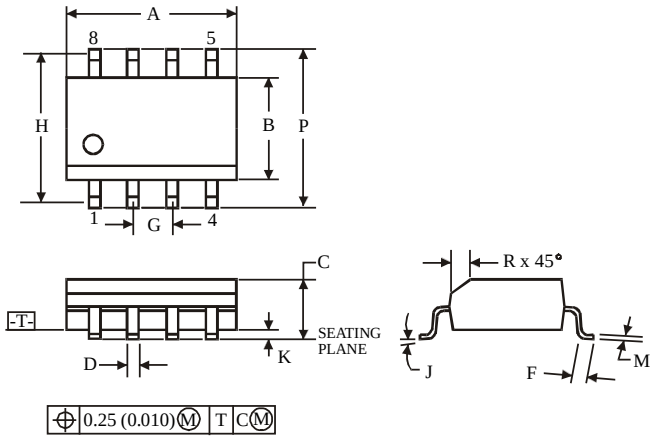



Output Voltage as a Function
of Junction Temperature
V_{in} = 13 V
I_O = 10 mA
5.0
4.9
4.8
V_O, OUTPUT VOLTAGE (V)
−60
−20
20
60
100
140
180
T_J, JUNCTION TEMPERATURE (°C)

PKG DIMENSION

D SUFFIX SOIC
(MS - 012AA)





	Dimension, mm	
Symbol	**MIN**	**MAX**
A	4.80	5.00
B	3.80	4.00
C	1.35	1.75
D	0.33	0.51
F	0.40	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.10	0.25
M	0.19	0.25
P	5.80	6.20
R	0.25	0.50

NOTES:

1. Dimensions A and B do not include mold flash or protrusion.
2. Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B – 0.25 mm (0.010) per side.