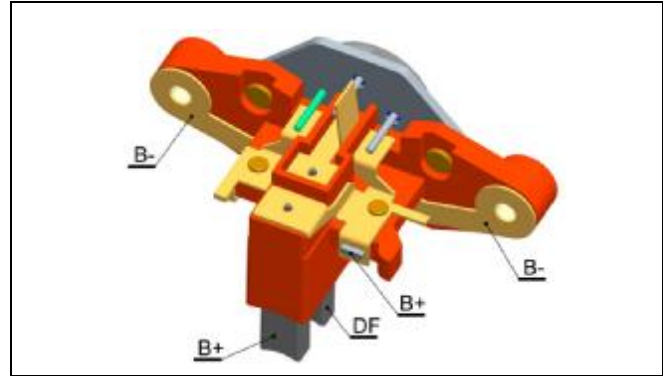


Monofunctional regulator E3-14V

Monofunctional regulator E3-14V

Feature summary:

- No external components
- Precise temperature coefficient
- Precise regulated voltage
- High output current
- Short circuit protected
- Reverse battery protection
- + 80V load dump protection
- Low energy spike protection
- Thermal shutdown
- Very low start up voltage



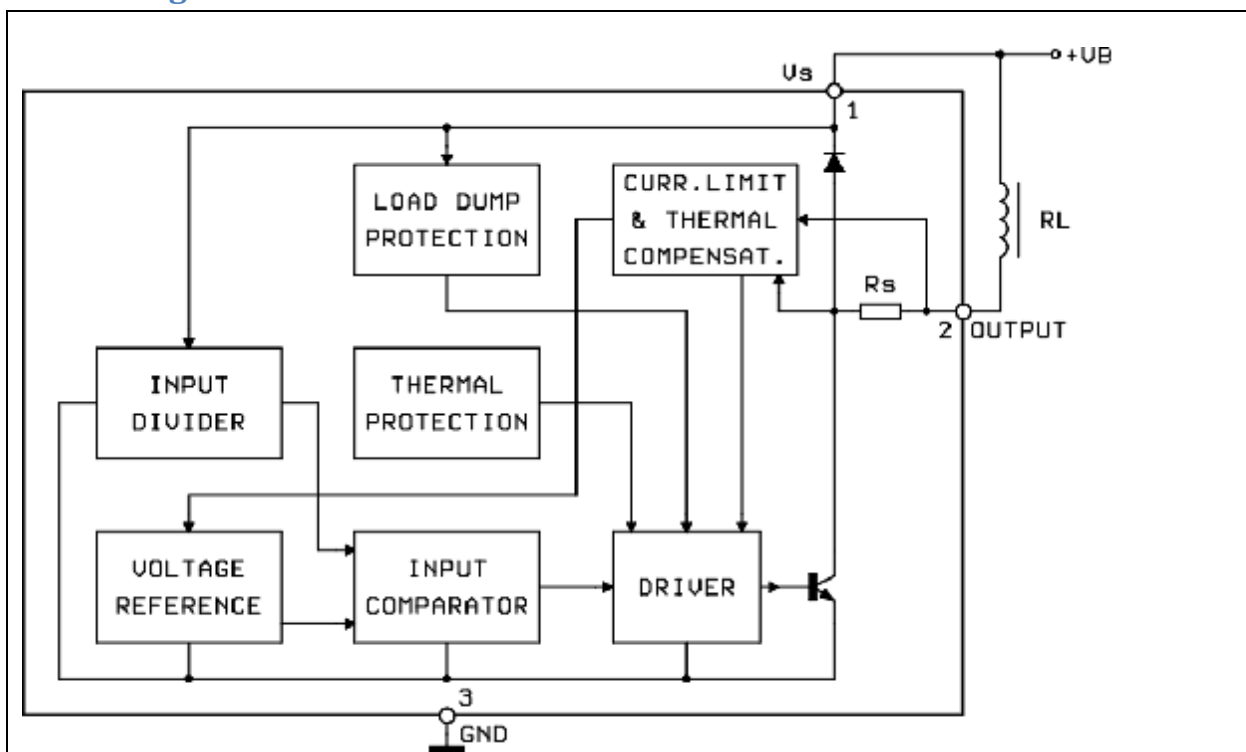
Description:

The devices are a "single function" self-oscillating voltage regulator for car alternators. Integrating both the control section and the output power stage on a single chip, the devices require no external components, reducing significantly the cost of the system and increasing reliability.

Alternator: 859 405 090 0301

Origin code number: 1 197 311 090

Block diagram:



Monofunctional regulator E3-14V

Electrical specifications

Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_S	Transient Overvoltage: Load Dump : $5\text{ms} \leq T_{\text{rise}} \leq 10\text{ms}$, rFall Time Constant $\leq 100\text{ms}$, $R_{\text{source}} \geq 0.5\Omega$	80	V
I_{clamp}	Current into Low Energy Clamping Zener ($T_{\text{rise}} = 5\text{ms}$; $T_{\text{decay}} \leq 2\text{ms}$; duty cycle $\leq 5\%$)	100	mA
I_{out}	Maximum Output Current	5.5	A
T_j, T_{stg}	Junction and Storage Temperature Range	- 55 to + 150	$^{\circ}\text{C}$

Thermal data

Symbol	Parameter	Value	Unit
$R_{\text{th i-case}}$	Thermal Resistance Junction-case Max.	3	$^{\circ}\text{C}/\text{W}$

Electrical specifications

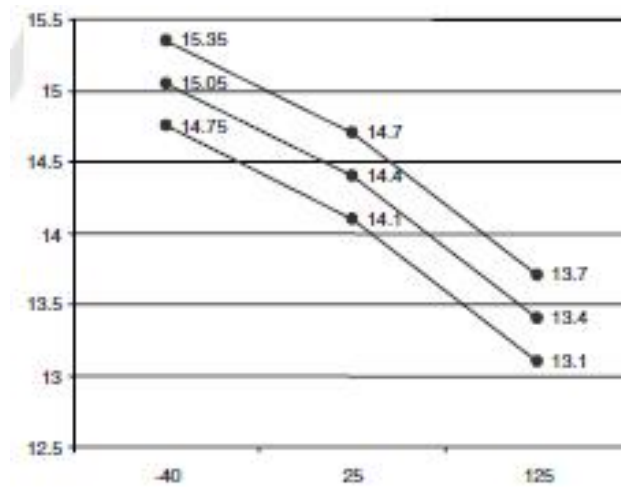
(- 40 $^{\circ}\text{C} \leq T_J \leq 125^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V_r	Voltage regulation	$T_j = -40^{\circ}\text{C}$	14.75	15.05	15.35	V
		$T_j = 25^{\circ}\text{C}$	14.1	14.4	14.7	V
		$T_j = 125^{\circ}\text{C}$	13.1	13.4	13.7	V
C_T	Temperature coeff. of the regulation voltage			-10		mV/ $^{\circ}\text{C}$
e_{CT}	Error on nominal temperature coeff.			± 30		%
V_r	Load regulation	$0.1 I_n < I_{\text{ait}} < 0.9 I_n$		250		mV
V_{su}	Control circuit minimum start up voltage	Measured at Supply Pin		2	3	V
V_{sd}	Shutdown voltage (dump protection threshold)			22		V
$V_{\text{sat 1}}$	Output saturation voltage	$I_{\text{field}} = 4 A_p$		1.2	2	V
$V_{\text{sat 2}}$	Start up saturation voltage	$I_{\text{field}} = 200 \text{ mA}$		0.7	1	V
I_q	Quiescent current	Field Off		20		mA
I_s	Supply current	$I_{\text{field}} = 4 A_p$		50		mA

Monofunctional regulator E3-14V

I_{fs}	Field pin sink current	Field Off Field Pin @ 16 V			5	mA
V_1 CLAMP	Low energy clamping zener Voltage	$I_{clamp} = 50 \text{ mA}$		120		V
f_{sw}	Switching frequency	$0.1 I_n < I_{alt} < 0.9 I_n$	30		1000	Hz

Set-point voltage versus case temperature



Application circuit

