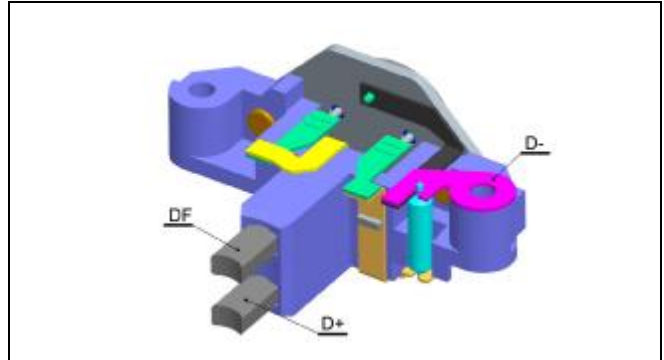


## Monofunctional regulator E2R-14V for alternators above 70A

(R = 180Ω)

### 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

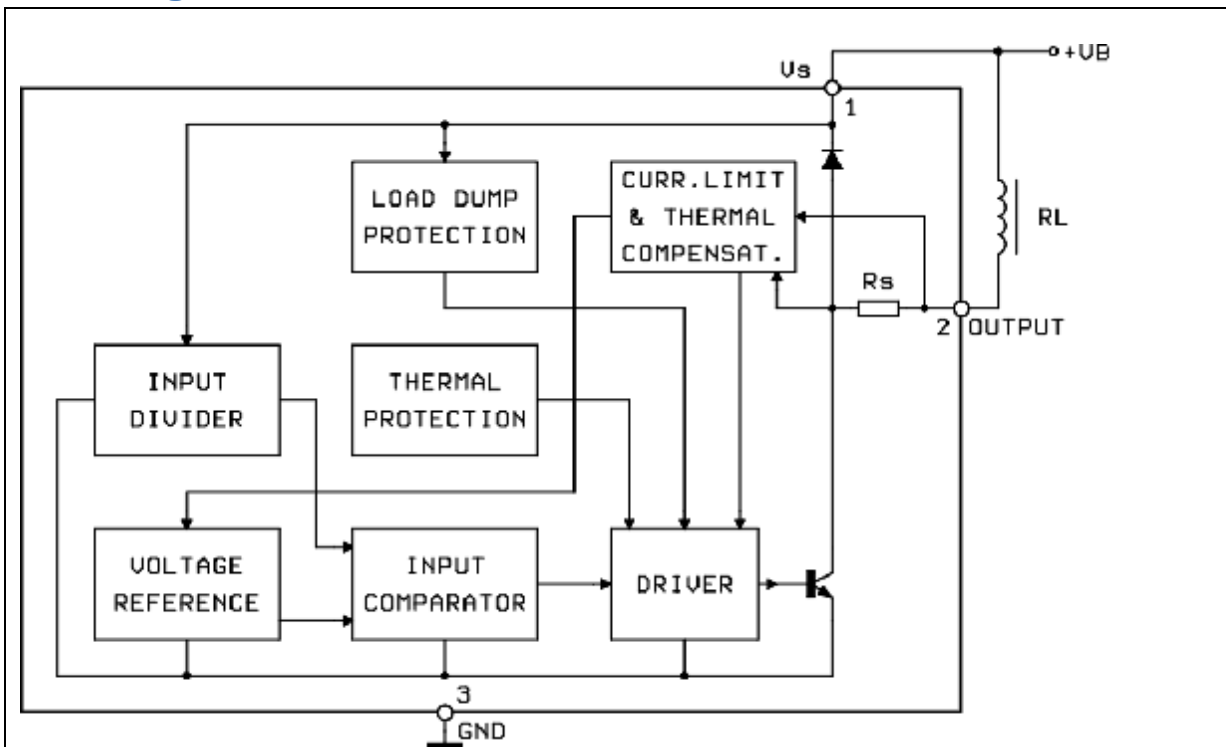


### Description:

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 0219

### Block diagram:



**Monofunctional regulator E2R-14V for alternators above 70A**

**Electrical specifications**

**Absolute maximum ratings**

Symbol	Parameter	Value	Unit
V <sub>S</sub>	Transient Overvoltage: Load Dump : 5ms ≤ T <sub>rise</sub> ≤ 10ms, rFall Time Constant ≤ 100ms, R <sub>source</sub> ≥ 0.5Ω	80	V
I <sub>clamp</sub>	Current into Low Energy Clamping Zener (T <sub>rise</sub> = 5ms ; T <sub>decay</sub> ≤ 2ms ; duty cycle ≤ 5%)	100	mA
I <sub>out</sub>	Maximum Output Current	5.5	A
T <sub>j</sub> , T <sub>stg</sub>	Junction and Storage Temperature Range	- 55 to + 150	°C

**Thermal data**

Symbol	Parameter	Value	Unit
R <sub>th i-case</sub>	Thermal Resistance Junction-case Max.	3	°C/W

**Electrical specifications**

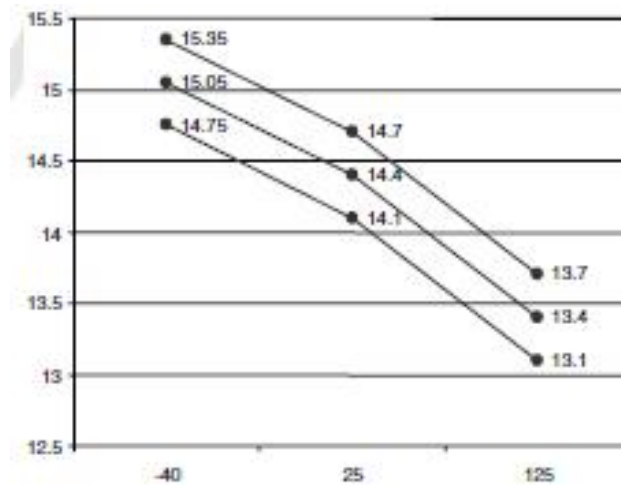
(- 40 °C ≤ T<sub>J</sub> ≤ 125 °C, unless otherwise noted)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V <sub>r</sub>	Voltage regulation	T <sub>j</sub> = -40°C	14.75	15.05	15.35	V
		T <sub>j</sub> = 25°C	14.1	14.4	14.7	V
		T <sub>j</sub> = 125°C	13.1	13.4	13.7	V
C <sub>T</sub>	Temperature coeff. of the regulation voltage			-10		mV/°C
e <sub>CT</sub>	Error on nominal temperature coeff.			± 30		%
V <sub>r</sub>	Load regulation	0.1 I <sub>n</sub> < I <sub>ait</sub> < 0.9 I <sub>n</sub>		250		mV
V <sub>su</sub>	Control circuit minimum start up voltage	Measured at Supply Pin		2	3	V
V <sub>sd</sub>	Shutdown voltage (dump protection threshold)			22		V
V <sub>sat 1</sub>	Output saturation voltage	I <sub>field</sub> = 4 A <sub>p</sub>		1.2	2	V
V <sub>sat 2</sub>	Start up saturation voltage	I <sub>field</sub> = 200 mA		0.7	1	V
I <sub>q</sub>	Quiescent current	Field Off		20		mA
I <sub>s</sub>	Supply current	I <sub>field</sub> = 4 A <sub>p</sub>		50		mA
I <sub>fs</sub>	Field pin	Field Off			5	mA

**Monofunctional regulator E2R-14V for alternators above 70A**

	sink current	Field Pin @ 16 V				
V1 CLAMP	Low energy clamping zener Voltage	$I_{clamp} = 50 \text{ mA}$		120		V
fsw	Switching frequency	$0.1 I_n < I_{alt} < 0.9 I_n$	30		1000	Hz

**Set-point voltage versus case temperature**



**Application circuit**

