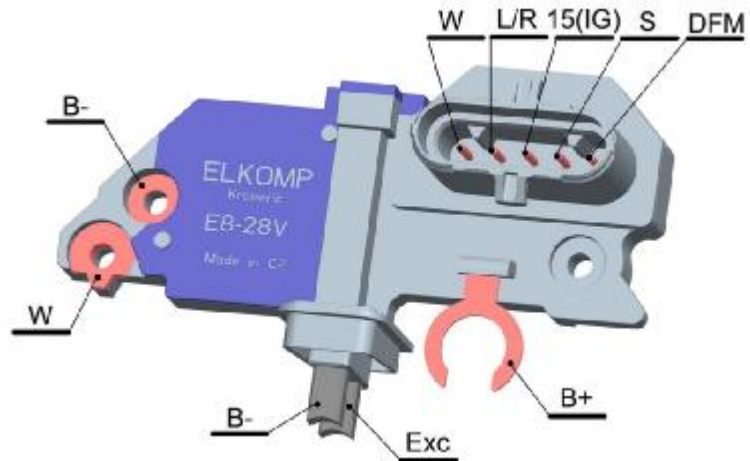


## Multifunctional regulator E8-28V- 859 405 090 0509

$V_{reg}=28,3$   
 $Temp_{coef.}=0^{\circ}C$   
 $Temp_{housing} - max. 130^{\circ}C$   
 Soft start delay  
 IRC  
 Sense  
 W digital

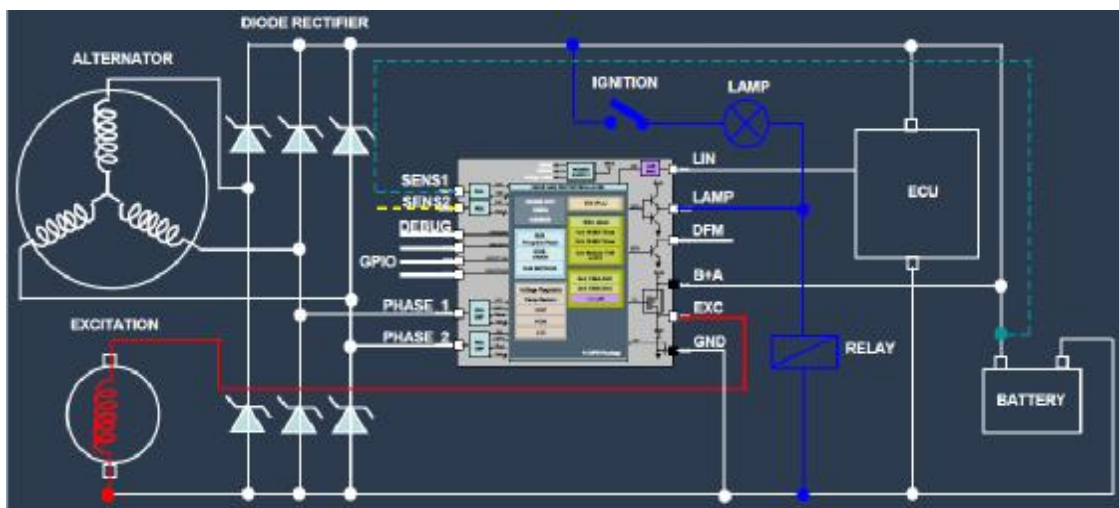


### Description:

The E8-28V is an integrated circuit designed to regulate the voltage supplied by a car alternator. This voltage is used to power the various loads in the car as well as to charge the battery. This new high performances regulator is intended to be used on modern automotive alternators equipped with an avalanche rectifier bridge, internal fans and sometimes a rectified neutral. It does not require any external support components.

The E8-28V alternator regulator has many advanced features, including fault detection, push-pull lamp driver, progressive load response (LRC), programmable TC, DF output, programmable cut-in phase frequency and self-start (even with only a single PHASE input). All features are selected by fuses at wafer probe.

### Application circuit



## Electrical specifications

Rating	Symbol	MIN value	Typ value	MAX value	Unit
B+A supply pin: DC Voltage	$V_{B+Acont}$			54	V
Transient voltage (Load Dump)	$V_{B+Atrans}$			54	V
Reverse <sup>1</sup>	$V_{B+Arev}$	-2,5			V
LAMP pin	$V_{MAX(LAMP)}$	-2		$V_{B+A}^{+1}$	V
DF pin	$V_{MAX(DF)}$	-2		54	V
Phase pins	$V_{MAX(phase)}$	-40		54	V
EXC pin <sup>1</sup>	$V_{MAX(EXC)}$	-2,5		$V_{B+A}^{+1}$	V

1. Dependant upon bond wire diameter and package

## Thermal data

Rating	Symbol	MIN value	MAX value	Unit
Storage temperature	$T_{stor}$	-45	175	°C
Junction temperature	$T_{op}$	-40	160	°C
Parametric operating temperature	$T_{pop}$	-40	140	°C

## Electrical specifications

Rating	Symbol	MIN value	Typ value	MAX value	Unit
Operating normal $V_{B+A}$	$V_{norm}$	7		33	V
Quiescent current <sup>1</sup>	$I_{SB}$	800	900	1000 <sup>2</sup>	μA
Operating current <sup>3</sup>	$I_{OP}$		12,0		mA
Range of regulation voltage (50% DC) <sup>4</sup>	$V_{reg}$	27		29	V
$\Delta V_{reg}$ <sup>5</sup>	$\Delta V_{reg}$	-300		+300	mV
$\Delta V_{reg,load}$ <sup>6</sup>	$\Delta V_{regL}$	-350		0	mV
$\Delta V_{reg,speed}$ <sup>7</sup>	$\Delta V_{regS}$	-300		+300	mV
LAMP power-up threshold voltage	$V_{LAMP}$	0,5		1,0	V
LAMP power-up threshold current	$I_{LAMP}$	0,1		0,5	mA
LAMP $V_{on}$ @2mA <sup>8</sup>	$V_{ONL1}$	0,9		1,7	V
LAMP $V_{on}$ @300mA <sup>8</sup>	$V_{ONL2}$	0,9		1,8	V
LAMP $V_{on}$ @1A <sup>8</sup>	$V_{ONL3}$	0,9		2,5	V
TRIO $V_{ON}$ @1A <sup>8</sup>	$V_{ONT}$	0		0,5	V
EXC diode $V_{forward}$ @3A <sup>8</sup>	$V_{F(diode)}$	0,6		1,4	V
EXC diode leakage <sup>8</sup>	$V_{leak(diode)}$	-1 <sup>9</sup>		10	μA
DF $V_{on}$ (B+A=28V, R=300Ω) <sup>8</sup>	$V_{ONDF1}$		1,0		V
DF $V_{on}$ (B+A=28V, R=300Ω) <sup>10</sup>	$V_{ONDF1T}$			2	V
DF $V_{on}$ (B+A=28V, R=1700Ω) <sup>8</sup>	$V_{ONDF2}$		0,3		V
FIELD $R_{DSon}$ <sup>8</sup>	$R_{DSOnF}$			150	mΩ
FIELD TMOS leakage	$V_{leak(FIELD)}$	-10 <sup>9</sup>		100	μA
Over-current LAMP protection threshold	$I_{LAMPCC}$	0,8	1,4	2,2	A
Over-current TRIO protection threshold	$I_{TRIOCC}$	2		4	A
Over-current FIELD protection threshold	$I_{FIELDCC}$	15		20	A
Over-current DF protection threshold	$I_{DFCC}$		500		mA

### Multifunctional regulator E8-28V– 859 405 090 0509

Phase terminal (DC) 0÷20000rpm				25	mA
S-Sense (V)		16	28	33	V

1. Phase 1 and Phase 2 @0V
2. At 25°C
3. 17%DC, no EXC or LAMP loads
4. See Table 1 for actual available values
5. Alternator speed 6000rpm, alternator output current = 10A
6. Alternator speed 6000rpm, Field duty cycle from 5% to 90%
7. Alternator speed from 18000rpm to 1500rpm, alternator output current = 5A
8. At 25°C
9. The small negative limit is to allow for test equipment variation
10. At 140°C

### Temperature data

Rating	Symbol	MIN value	Typ value	MAX value	Unit
Over-temperature Field Shutdown threshold	$T_{EXC}$	160	180	190	°C
Over-temperature lamp Shutdown threshold	$T_{LAMP}$	160	175	190	°C
Over-temperature lamp Shutdown hysteresis	$\delta T_{LAMP}$		10		°C
Regulation voltage primary TC	$TC_{reg}$				mV/°C